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INSTITUTE OF AGRICULTURAL RESEARCH STATISTICS

NATIONAL INDEX

OF

AGRICULTURAL

FIELD

EXPERIMENTS

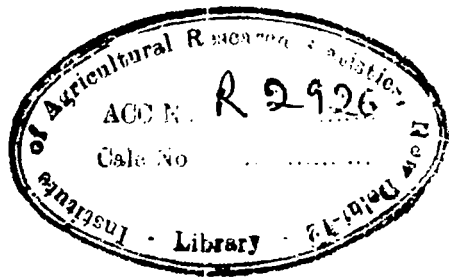
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3

FOREWORD

Increase in agricultural production is one of the main objectives of our agricultural planning. It is only by the exploitation of scientific methods of agriculture that we can hope to increase our agricultural production to the level needed for maintaining a reasonable standard of living to the country's population. The technical worth of improvement measures is best judged from carefully conducted field experiments. While it is true that a large number of agricultural field experiments are conducted in the country, the results of these experiments have not been brought together in an integrated manner for the use of research workers. The absence of such a unified account has often led to duplication of work and delay in the utilisation of results for practical farming. The Institute of Agricultural Research Statistics has rendered a very valuable service by preparing a compendium of agricultural field experiments conducted in the country. The first series of compendium containing the results of all agricultural field experiments during the period 1948-53 have already been published by the Institute.

The present compendium is the second in the series covering the period 1954-59. As in the earlier compendium, the present series also contains critical summaries of results of experiments bearing on important agronomic factors, such as the response of crops to fertilizers and manures, inter-relationship of fertilizers, varieties and cultivation practices and other information of value for giving sound advice to farmers in different regions. Judging from the demand for the first series of the compendium, I am sure that the present series will also prove equally useful.

A Standing Committee consisting of the Agricultural Commissioner with the Government of India, the Director, Indian Agricultural Research Institute, and the Statistical Adviser, Indian Council of Agricultural Research, has been set up to provide general guidance to the work under this scheme. I congratulate the members of this Committee and, in particular, the Statistical Adviser and his associates at the Institute of Agricultural Research Statistics for bringing out this compendium. The preparation of this compendium has been made possible only by the wholehearted co-operation of the States and other organisations in making available the results of their experimental researches for this purpose. My thanks are due to the officers of the State Departments of Agriculture and other institutions for participating in this work. I hope that the present series will be followed by periodical publications of similar compendia for later years, in order that the availability, in a consolidated form, of results of scientific experiments in agriculture in India may be maintained up-to-date.

NEW DELHI,
March 26, 1965.

A. D. PANDIT
Vice-President,
Indian Council of Agricultural Research.

PREFACE

The present set of volumes form Part II in the series of compendia of Agricultural Field Experiments being published by the Indian Council of Agricultural Research under the project for National Index of Field Experiments and contains a unified record of experiments conducted at agricultural research stations and institutes all over the country. Volumes in Part I in this series were published in 1962 and contained results of some 7,500 experiments conducted during the period 1948-53. The present set of volumes includes results of experiments conducted during the next period that is 1954-59. After the period, covered by Part I of the series, agricultural research and experimentation has expanded so much that for the period 1954-59, to which the present volumes refer, results of more than 15,000 experiments are available.

The present compendium is prepared on the same pattern as the previous one and is divided into 15 volumes one each for (1) Andhra Pradesh, (2) Assam, Manipur and Tripura, (3) Bihar, (4) Gujarat, (5) Kerala, (6) Madhya Pradesh, (7) Madras, (8) Maharashtra, (9) Mysore, (10) Orissa, (11) Punjab, Jammu and Kashmir and Himachal Pradesh, (12) Rajasthan, (13) Uttar Pradesh (14) West Bengal and (15) All Central Institutes. In each volume, background information of the respective state regarding its division into different soils and agro-climatic regions, rainfall and cropping pattern followed in each region and agricultural production and area under different crops in the State is given. The experiments reported in each volume have been arranged crop-wise for each State. All the experiments belonging to a particular crop at various research stations are Grouped together. For a particular crop, experiments are arranged according to the following classification :

Manurial (M), Cultural (C), Irrigational (I), Diseases, pests and chemicals other than fertilizers (D), Rotational (R), Mixed cropping (X) and combinations of these wherever they occur (*e.g.* CM as Cultural-cum-Manurial). Experiments in which crop varieties also form a factor are denoted by adding V to their symbol and are grouped together (*e.g.* MV as Manurial-cum-Varietal).

This publication owes its origin to the guidance and help of Dr. D.J. Finney, F.R.S., Professor of Statistics, Aberdeen University, Scotland, in formulating the project during his stay at the Institute of Agricultural Research Statistics as an F.A.O. expert in 1952-53.

At the Institute of Agricultural Research Statistics the work under the scheme was carried out under the supervision of Shri. T.P. Abraham, Assistant Statistical Adviser. The actual working of the scheme was conducted by Shri G.A. Kulkarni, Statistician till he left the Institute in July, 1964. The work was subsequently taken over by Shri O.P. Kathuria, Assistant Statistician. Messrs. L.B.S. Somayazulu, P.P. Rao, M.L. Sahni, Harbhajan Singh, A.L. Punhani, M.K. Joshi, N.K. Worrier, H.C. Jain and J.K. Kapoor of the statistical staff of the Institute deserve special mention for careful and painstaking work in editing and scrutiny of the manuscript as well as proofs of the compendium.

The burden of collecting the data from the various research stations and the analysis of a large number of experiments once again fell on the regional staff of the Council placed in different States. They deserve to be congratulated for the hard work they have put in.

Thanks are due to the State Departments of Agriculture, the Central Institutes and the Commodity Committees who made the data of the experiments conducted under their jurisdiction readily available to the staff of the Institute. The present publication has become possible only through their unstinted co-operation. The Institute is also thankful to the various

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officers in the States who worked as Regional Supervisors for the project from time to time and took keen interest in the working of the Scheme. The list of the names of the regional supervisors and the regional staff of the project is given on the following page.

NEW DELHI,
March 25, 1965.

V.G. PANSE
Statistical Adviser,
Institute of Agricultural Research Statistics (I.C.A.R.).

**REGIONAL SUPERVISORS AND REGIONAL STAFF FOR THE NATIONAL
INDEX OF FIELD EXPERIMENTS**

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10. WEST BENGAL (CALUTTA)	S.N. NATH	SHRI S.N. MUKERJEE, Statistical Officer, Directorate of Agriculture.

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V. VENKATESWARA RAO Vice-Principal and Secretary, Research
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Institute, Coimbatore.
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Director of Agriculture.
- SHRI N. SHANKARA MENON
Director of Agriculture.
- SHRI P.D. NAIR,
Director of Agriculture.

**ABBREVIATIONS COMMON TO EXPERIMENTS ON ANNUAL AND PERENNIAL
CROPS AND EXPERIMENTS ON CULTIVATORS' FIELDS.**

Crops :- In the top left corner is given the name of the crop on which the experiment is conducted. Within brackets along side the crop is mentioned the season wherever the information is available.

Ref :- Against the sub-title 'reference' is mentioned the name of the State, the year in which the experiment is conducted and the serial number of the experiment for that year given in brackets.

Abbreviations adopted for States are as follows :-

- | | |
|---------------------------|------------------------|
| 1. A.P.—Andhra Pradesh | 9. M.—Madras |
| 2. As.—Assam | 10. Mh.—Maharashtra |
| 3. Bh.—Bihar | 11. Ms.—Mysore |
| 4. Gj.—Gujarat | 12. Or.—Orissa |
| 5. H.P.—Himachal Pradesh | 13. Pb.—Punjab |
| 6. J.K.—Jammu and Kashmir | 14. Rj.—Rajasthan |
| 7. K.—Kerala | 15. U.P.—Uttar Pradesh |
| 8. M.P.—Madhya Pradesh | 16. W.B.—West Bangal |

For the experiments conducted under the schemes sponsored by the Indian Council of Agricultural Research like the Model Agronomic Experiments or the Simple Fertilizer Trials scheme no serial numbers have been given at the source as the data of these experiments were collected at the Headquarters (New Delhi). In such cases the abbreviations MAE, SFT or TCM are given in the brackets against the year in which the experiment is conducted.

Site :- Name of the Research Station is mentioned along with the place where it is located, e.g. Agri. Res. Stn. for Agricultural Research Station.

For Central Institutes, the corresponding standard abbreviations have been adopted e.g. I.A.R.I. for the Indian Agricultural Research Institute.

In case of the experiments conducted on cultivators' fields whether under an Indian Council of Agricultural Research scheme or by the State Government, the abbreviation (c.f.) is given along with the site or centre as, for example, Cuttack (c.f.).

Type :- Abbreviations used against this item are one or more than one of the following :-

C—Cultural ; D—Control of Diseases and Pests ; I—Irrigational ; M—Manurial ; R—Rotational ; V—Varietal and X—Mixed cropping, e.g. CM is to be read as Cultural-cum-manurial.

Object :- A statement of the objective of the experiment is given indicating the main crop and type of the experiment. In case of M.A.E., S.F.T. and T.C.M. experiments, the type to which the experiment corresponds is also given, e.g. Type V, Type A or B or C etc.

Results :- Information under this heading should be read against the following items :-

(i) General mean. (ii) S.E. per plot. (iii) Results of test of significance. (iv) Summary table(s) with S.E. of comparison(s).

Other abbreviations used in the text of experiments :

- | | |
|----------------------------------|-----------------------|
| Nitro. Phos.—Nitro. Phosphate | A/N—Ammonium Nitrate |
| Ammo. Phos.—Ammonium Phosphate | A/C—Ammonium Chloride |
| A/S—Ammonium Sulphate | C/N—Chilean Nitrate |
| A/S/N.—Ammonium Sulphate Nitrate | N—Nitrogen |
| C/A/N—Calcium Ammonium Nitrate | P—Phosphate |

K.—Potash	F.M.—Fish Manure
B.M.—Bone meal	G.N.C.—Groundnut cake
Mur. Pot.—Muriate of Potash	M.C.—Municipal Compost
Pot. Sul.—Potassium Sulphate	T.C.—Town Compost
Super—Super Phosphate	lb.—Pounds
Zn. Sul.—Zinc Sulphate	Srs.—Seers
C/S—Copper Sulphate	B.D.—Basal dressing
G.M.—Green Manure	C.L.—Cart load
F.Y.M.—Farm Yard Manure	ac.—Acre
F.W.C.—Farm Waste Compost	Dical. Phos.—Dicalcium Phosphate

Under the item (ii) (b) of the sub-heading 'Basal conditions' in the text of the experiment, the respective farm/station at which the experiment was conducted has been referred to for the soil analysis. The soil analysis of the farm, with other details of the research station is given under the background information of each state. The information regarding the details of experimental stations may be obtained under the respective items as given below :

DETAILS OF EXPERIMENTAL STATIONS

A. General information :

(i) District and the nearest railway station with Latitude, Longitude and Altitude if available. General topography of the experimental area. (ii) Type of tract it represents. (iii) Year of establishment. (iv) Cropping pattern. (v) Programme of research.

B. Normal rainfall :

Average monthly rainfall specifying the period on which the figures are based.

C. Irrigation and drainage facilities :

(i) (a) Whether available, if so, since when. (b) Type of facilities available. (ii) Whether there is a proper drainage system.

D. Soil type and soil analysis :

(i) Broad soil type with depth, colour, and structure etc. (ii) Chemical analysis. (iii) Mechanical analysis.

E. No. of experiments :

No. of experiments conducted on different crops that have been included in the compendium.

Information under the following heads is to be read against the respective items as given below.

BASAL CONDITIONS

A. For experiments on annual crops :

(i) (a) Crop rotation if any. (b) Previous crop. (c) Manuring of previous crop. (State amount and kind). (ii) (a) Soil type. (b) Soil analysis. (iii) Date of sowing/planting. (iv) Cultural practices. (a) Preparatory cultivation. (b) Method of sowing/planting. (c) Seed-rate. (d) Spacing. (e) No. of seedlings per hole. (v) Basal manuring with time and method of application. (vi) Variety. (vii) Irrigated or Unirrigated. (viii) Post-sowing/planting cultural operations. (ix) Rainfall during crop season (x) Date of harvest.

B. For experiments on perennial crops :

(i) History of site including manuring and other operations. (ii) (a) Soil type. (b) Soil analysis. (iii) Method of propagation of plants. (iv) Variety. (v) Date and method of sowing/planting. (vi) Age of seedlings at the time of planting. (vii) Basal dressing with time and method of application. (viii) Cultural operations during the year. (ix) Inter cropping if any. (x) Irrigated or Unirrigated. (xi) Rainfall during crop season. (xii) Date of harvest.

C. For experiments on cultivators' fields :

(i) (a) Crop rotation, if any. (b) Previous crop. (c) Manuring of previous crop. (ii) Soil type in general. (iii) Basal manuring with time and method of application. (iv) Variety. (v) Cultural practices. (a) Preparatory cultivation. (b) Method of sowing. (c) Seed-rate. (d) Spacing. (e) No. of seedlings per hole. (vi) Period of sowing/planting. (vii) Irrigated or Unirrigated. (viii) Post-sowing/planting cultural operations. (ix) Rainfall during crop season. (x) Period of harvesting.

DESIGN

A. For experiments on annual crops :

(i) Abbreviations for design : C.R.D.—Completely Randomised Design. R.B.D.—Randomised Block Design, L. Sq.—Latin Square, Confd.—Confounded, Fact.—Factorial. (other designs and modifications of the above to be indicated in full.). (ii) (a) No. of plots per block. (b) Block dimensions. (iii) No. of replications. (iv) Plot size. (a) Gross (b) Net. (v) Border or guard rows kept. (vi) Whether treatments are randomised (separately in each block).

B. For experiments on perennial crops :

(i) Abbreviations for designs : C.R.D.—Completely Randomised Design ; R.B.D.—Randomised Block Design ; L.Sq.—Latin Square ; Confd.—Confounded. (other designs and modifications of the above indicated in full). (ii) (a) No. of plots per block. (b) Block dimensions. (iii) No. of replications. (iv) No. of trees/plot. (v) Border or guard rows kept. (vi) Are treatments randomised.

C. For experiments on cultivators' fields :

(i) Method of selection of experimental sites. (ii) No. and distribution of experiments. (iii) Plot size. (a) Gross. (b) Net. (iv) Whether treatments are randomised.

GENERAL

A. For experiments on annual crops :

(i) Crop conditions during growth with date of lodging, if any. (ii) Incidence of pests and diseases with control measures taken. (iii) Quantitative observations taken. (iv) In case of repetition in successive years—(a) from what year to what year, (b) whether treatments were assigned to the same plots in the same manner every year, (c) reference to combined analysis, if any. (v) In case of repetition in other places (a) names of the places along with reference and (b) reference to combined analysis, if any. (vi) Abnormal occurrences like heavy rains, frost, storm etc., if any. (vii) Any other important information.

B. For experiments on perennial crops :

(i) Crop condition during the year. (ii) Incidence of pests and diseases with control measures taken. (iii) Quantitative observations taken. (iv) In case of repetition in successive years—(a) from what year to what year, (b) reference to combined analysis, if any. (v) Abnormal occurrences like heavy rains, frost, storm etc., if any. (vi) Any other important information.

C. For experiments on cultivators' fields :

(i) Crop condition during growth. (ii) Incidence of pests and diseases with control measures taken. (iii) Quantitative observations taken. (iv) In case of repetition in successive years, (a) from what year to what year, (b) whether treatments were assigned to the same plots in the same manner every year, (c) reference to combined analysis, if any. (v) In case of repetition in other places names of places along with reference. (vi) Abnormal occurrences, like heavy rains, frost, storm etc., if any. (vii) Any other important information.

TABLE OF CONVERSIONS TO METRIC UNITS

1 foot	=	304.8 mm.
1 acre	=	0.404606 hectare.
1 gram	=	0.035274 ounce = 0.085735 tola = 0.017147 chatak
1 kg.	=	2.20462 pounds = 1.07169 seers.
1 metric tone	=	0.9842 ton = 26.7923 maunds.
1 maund	=	0.373242 quintal = 37.3242 kg.
1 lb./ac.	=	1.12085 kg./hectare.
1 md./ac.	=	92.23002 kg./hectare = 0.9223 quintal/hectare.
1 ton/ac.	=	2.51071 metric tones/hectare.
1 gallon (Imp.)	=	4.54596 litres.

GLOSSARY OF VERNACULAR NAMES OF CROPS

Sl. No.	Name of Crop	Botanical name	Assamese	Bengali	Oriya	Telugu	Tamil	Malayalam	Kannada	Marathi	Gujarati	Hindi	Punjabi
1.	Paddy	<i>Oryza sativa</i> L.	Dhan	Dhan	Dhano	Vadlu Biyyamu	Nel	Nellu	Bhatta	Bhat	Dangar	Dhan, Chawal	Chaul, Dhan
2.	Wheat	<i>Triticum sativum</i> Lamk. <i>Triticum aestivum</i> L.	Gaum, Ghehu	Gam	Gaham	Godumalu	Kothumai	Gothambu	Godhi	Gahu	Ghahu	Gehon	Kanak
3.	Jowar	<i>Andropogon sorghum</i> Brot.	—	Jowar	Juara	Jonra	Cholam	Cholam	Jola	Jowari Jondhla	Jowari, Juar	Jowar, Jaur	Jowar
4.	Bajra	<i>Pennisetum typhoideum</i> L.	—	Bajra	Bajra	Sajja	Kambu	Kambu	Sajje	Bajri	Bajri	Bajra	Bajra
5.	Maize	<i>Zea mays</i> L.	Gom dhan	Bhutta	Macca	Mokkajonna	Makka cholam	Cholam Makka-cholam	Musukina Jola	Makka	Makkai	Makka	Makki, Makayee
6.	Oats	<i>Avena sativa</i> L.	Oat	Jai	Jaie, Ota	Yavalu	Oat arisi	Oat	Thoke godhi	Jai	Jav	Jaie	Jaur, Jaec
7.	Tomato	<i>Lycopersicum esculentum</i> Mill.	Bilahi	Bilati begun	Bilati baigan hapatala-ghant	Tomato ; Ramamulaka ; Seema vankaya	Thakkali	Thakkali	Thoke godhi Tomato	Welwangi ; Tambati	Vilaiti wagan ; Tameta	Tamatter	Tamatar
8.	Pea	<i>Pisum arvense</i> L.	Motor	Chota ; Paya-matar	Bada Chana	Desavali Batani	Pattaani	—	Holada bataani	Vatana ; Matar	Vatana	Muttar	Mattri
9.	Cluster bean	<i>Cyamopsis psoraloides</i>	Thupi Urshi	Guar	Gunar chhuin	Goruchik-kudu	Kothavarnikai Seenia- varaikai	Kothavara	Gori kayi	Guwar	Gavar	Guar	Guara
10.	Bengal gram	<i>Cicer arietinum</i> L.	Butmah	Chola	Boot	Sanagalu	Kadalai, Sundal Kadalai	Kadala	Kadale	Harbara	Chana	Chana	Chhole, Chana
11.	Green gram	<i>Phaseolus aureus</i> Roxb.	Magum	Sonamug	Mung	Pachapesalu	Pachai payru, Pasipayaru	Cerupayaru, Payaru	Hesaru	Mug	Mag	Moong	Moong, Mug
12.	Potato	<i>Solanum tuberosum</i> L.	Alooguti	Alu	Bilati Alu	Bangaladumpa, Ulagadda	Uruzhai Kilangu	Urala-kizangu	Alu gedde	Batata	Aloo, Batata	Aaloo	Alu
13.	Carrot	<i>Daucus carota</i> L.	Gajor	Gajar	Gajar	Gajara gadda	Kaaret	Carrot	Kempu mulangi	Gajar	Gajar	Gajar	Gajjar
14.	Cauliflower	<i>Brassica oleracea</i> L. var. <i>botrytis</i> L.	Phool Kabi	Fulkabi	Fula kabi	Poogobi	Gospoovu	Cauliflower	Hukosu	Phul kabi, Fulvar	Fulkabi ; Fulvar	Phool Gobhy	Phul gobhi

GLOSSARY OF VERNACULAR NAMES OF CROPS

Sl. No.	Name of Crop	Botanical name	Assamese	Bengali	Oriya	Telugu	Tamil	Malayalam	Kannada	Marathi	Gujarati	Hindi	Punjabi
15.	Tur	<i>Cajanus cajan</i> Milsp ; <i>Cajanus indicus</i> Sprengl.	Arahar	Arahar	Harad	Kandulu	Thuvarai	Thuvaran payaru	Thogari	Tur	Tuver	Arhar	Harhar ; Arhar
16.	Sugarcane	<i>Saccharum officinarum</i> L.	Kuhiar	Akh	—	Cheruku	Karumbu	Karimbu	Kabbu	Oos	Sherdi	Ganna, Kamad, Naishakar	Kamad, Ganna, Eakh
17.	Cotton	<i>Gossypium</i> spp.	Kapah	Karpas, Tula	Kapa	Pratti	Paruthi	Paruthi	Hatti	Kapus	Kapas	Kapas	Kapah
18.	Tobacco	<i>Nicotiana tabacum</i> L.	Dhopat	Tamak	Uanpatra	Pogaku	Pugayilai	Pukayila	Hoge soppu	Tamb.ku	Tamaku	Tambaku	Tamaku Tambaku
19.	Groundnut	<i>Arachis hypogaea</i> L.	China Badam	Cheena badam	China- badam	Nelashanga	Nilakadalai	Nilakkadala	Kadale kayi	Bhuimug	Bhoising, Magafai	Mungphali	Mungfali
20.	Linseed	<i>Linum usitatissimum</i> L.	Tisi	Tishi	Peshi	Avise	Alivithai	Cherucha- navithu	Agase	Javas ; Alsi	Alsi	Alsi	Alsi
21.	Sesamum	<i>Sesamum indicum</i> L. <i>Sesamum orientale</i> L.	Til	Til	Rasi	Nuvvulu	Ellu	Ellu	Yellu	Til, Tili	Tal	Til	Til
22.	Jute	<i>Corchorus</i> spp.	Marapat	Shada pat, Tosha pat	Jhota	Janumu	Chanapai	Chanambu	Senabu	Joot	Moti	Jute	Patsan
23.	Rozelle	<i>Hibiscus sabdariffa</i> L.	Tenga Mora	Mesta	Khata Kaunria	Erragogu	Sivappu Kashmakai	—	Kempupun- drike	Tambdi ambadi	Lal sheria	Patua	—
24.	Berseem	<i>Trifolium alexandrinum</i> L.	—	Berseem	Gini ghasa	—	—	—	—	Bersim gavat	Barsim	Berseem	Berseem
25.	Cowpea	<i>Vigna catieng</i> Walp, <i>Vigna sinensis</i> Savi	—	Barbati	—	—	Thatapayaru	Mambayar	Alasande	Chavli	Chola, Choli	Lobia	Lobia
26.	Hubam clover	<i>Melilotus alba</i> var. <i>annua</i>	—	Swet banmethi	Nit krar	—	—	—	—	—	—	Hubbam clover	—
27.	Senji (Indian clover)	<i>Melilotus Parviflora</i> Desv.	—	Banmethi	Barsim	—	—	—	—	—	—	Senji	Senji

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Central Rice Research Institute
CUTTACK

CENTRAL RICE RESEARCH INSTITUTE, CUTTACK.

1. Name of the experimental station : Central Rice Research Institute.
2. Tehsil or Taluka : Cuttack
3. District : Cuttack.
4. Address : Director, C.R.R.I., Cuttack-6.
5. Year of establishment : 1946.
6. Latitude 20.5° North Longitude 86° East Altitude 23.48 metres
7. Whether research, multiplication or demonstration farm : Research farm
8. Whether State, University or private managed : Central Government (Now I.C.A.R.)
9. Programme of research : Fundamental and applied research with stress on latter on rice crop.
10. Normal cropping pattern : Green manure—Rice—Rice in irrigable lands. Rice—legume or vegetable or other *rabi* crop in high and medium lands.
11. Type of tract it represents : Mahanadi delta.
12. General description of the topography of the experimental area : Slightly high lands on the periphery with low lands in the centre, somewhat like a basin. Water stagnation is common in heavy monsoon months, all these years, but now drainage facilities are being improved.
13. Soils :
 - (a) Broad soil types : Alluvial delta soil
 - (i) Depth : Quite deep
 - (ii) Colour : Light grey to light brown.
 - (iii) Structure : Crumb to massive.
 - (b) Chemical analysis :

pH	5.7 to 6.9
C	0.41 to 1.12%
N	0.04 to 0.10%
CEC	0.40 m.e. to 16.0 m.e.%
 - (c) Mechanical analysis : Sandy loam to heavy clay. Other details—N.A.
14. Normal average rainfall in cm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
14.9	36.1	34.1	28.2	20.9	1.5	.1	1.1	3.1	1.7	2.8	6.5	151.0

(The period on which the figures are based is 1956-1965.)
15. Irrigation facilities available ; year from which the facilities were made available : Canal and tank irrigation ; since the inception of Institute.
16. Whether any proper drainage system exists : Now being improved.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 55(26).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :- To find out the effect of different levels of N, P, K and organic manures on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A./17.7.1955. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) 2 lb./ac. (d) 10"×9". (e) 2 to 3. (v) Nil. (vi) T-1145 (medium). (vii) Irrigated. (viii) Interculture and hand weeding. (ix) 72.71". (x) N.A.

2. TREATMENTS :

Main-plot treatments :

4 organic manures as basal dressing : M_0 =Control (no B.D.), M_1 =Compost, M_2 =G.N.C. and M_3 =G.M.

Sub-plot treatments :

All combinations of (1), (2) and (3)

(1) 3 levels of N : $N_0=0$, $N_1=40$ and $N_2=80$ lb./ac.

(2) 3 levels of P_2O_5 : $P_0=0$, $P_1=50$ and $P_2=100$ lb./ac.

(3) 3 levels of K_2O : $K_0=0$, $K_1=30$ and $K_2=60$ lb./ac.

3. DESIGN :

(i) 4×3^3 split-plot confd. (ii) (a) 4 main-plots/replication, 3 blocks/main-plot, each block consisting of 9 different combinations of NPK treatments confounding 2 d.f. of NPK interaction with blocks ; 9 sub-plots/block. (b) N.A. (iii) 2. (iv) (a) $12' \times 30' 10''$. (b) $10' 6'' \times 29' 2''$. (v) $9' \times 10'$. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Grain and straw yield, height and tiller counts. (iv) (a) 1949—contd. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1871 lb./ac. (ii) (a) 443.0 lb./ac. (b) 237.0 lb./ac. (iii) Main effect of N and interactions $N \times P$ and $N \times M$ are highly significant. (iv) Av. yield of grain in lb./ac.

	M_0	M_1	M_2	M_3	K_0	K_1	K_2	P_0	P_1	P_2	Mean
N_0	1901	2142	2149	2144	2153	2012	2087	2002	2133	2118	2084
N_1	2197	2089	1840	2001	1999	2072	2026	2130	1954	2010	2032
N_2	1783	1581	1288	1336	1517	1491	1483	1640	1482	1369	1497
Mean	1960	1937	1759	1827	1890	1858	1865	1924	1856	1832	1871
P_0	1959	2023	1788	1926	1990	1892	1891				
P_1	1944	1887	1761	1834	1856	1874	1839				
P_2	1979	1902	1728	1720	1824	1809	1864				
K_0	1995	1982	1768	1814							
K_1	1944	1917	1750	1823							
K_2	1941	1913	1760	1844							

S.E. of difference of two

1. M marginal means	= 85.3 lb./ac.
2. N, P or K marginal means	= 39.5 lb./ac.
3. N, P or K means at the same level of M	= 79.0 lb./ac.
4. M means at the same level of N, P or K	= 106.8 lb./ac.
S.E. of body of $N \times P$, $P \times K$ or $N \times K$ table	= 48.4 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 56(20).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :— To find out the effect of different levels of N, P, K and organic manures on the yield of Paddy.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 12 and 22.6.1956, 19.7.1956 and 1.8.1956. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) 25 lb./ac. (d) 10"×9". (e) 2 to 3. (v) Nil. (vi) T—1145 (medium). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 82.73". (x) N.A.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(26) on page 1.

5. RESULTS :

(i) 2079 lb./ac. (ii) (a) 738.0 lb./ac. (b) 240.0 lb./ac. (iii) Main effect of N and interaction N×M are highly significant. (iv) Av. yield of grain in lb./ac.

	M ₀	M ₁	M ₂	M ₃	K ₀	K ₁	K ₂	P ₀	P ₁	P ₂	Mean
N ₀	1838	2471	2370	2318	2212	2250	2285	2238	2245	2264	2249
N ₁	2148	2381	2245	2270	2225	2266	2294	2218	2293	2276	2261
N ₂	1842	1750	1682	1636	1745	1684	1755	1711	1746	1726	1728
Mean	1943	2201	2099	2075	2061	2066	2111	2055	2094	2089	2079
P ₀	1933	2197	2058	2034	2086	1977	2102				
P ₁	2006	2203	2092	2077	2064	2102	2217				
P ₂	1890	2203	2149	2113	2032	2120	2114				
K ₀	1881	2205	2047	2109							
K ₁	1925	2140	2185	2016							
K ₂	2022	2257	2066	2101							

S.E. of difference of two

- | | |
|---|-----------------|
| 1. M marginal means | = 142.0 lb./ac. |
| 2. N, P or K marginal means | = 40.0 lb./ac. |
| 3. N, P or K means at the same level of M | = 80.0 lb./ac. |
| 4. M means at the same level of N, P or K | = 156.3 lb./ac. |
| S.E. of body of N×P, P×K or N×K table | = 49.0 lb./ac. |

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 57(27).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :—To find out the effect of different levels of N, P, K and organic manures on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A. (iv) (a) 4 ploughings, laddering and levelling. (b) N.A. (c) 25 lb./ac. (d) 10"×9". (e) 2 to 3. (v) Nil. (vi) T—1145 (medium). (vii) Irrigated. (viii) 2 to 3 interculturing with Japanese weeder and 1 hand weeding. (ix) 29.47". (x) N.A.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(26) on page 1.

5. RESULTS :

(i) 2156 lb./ac. (ii) (a) 870.0 lb./ac. (b) 290.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	M ₀	M ₁	M ₂	M ₃	K ₀	K ₁	K ₂	P ₀	P ₁	P ₂	Mean
N ₀	1948	2468	1984	2117	2191	2070	2127	2122	2084	2182	2129
N ₁	2104	2422	2094	2153	2196	2206	2180	2089	2217	2276	2193
N ₂	1993	2390	1996	2205	2125	2171	2142	2210	2087	2141	2146
Mean	2015	2426	2025	2158	2171	2149	2150	2140	2129	2199	2156
P ₀	2016	2451	1955	2138	2143	2153	2125				
P ₁	2078	2382	1974	2084	2118	2084	2187				
P ₂	1951	2446	2145	2254	2251	2210	2137				
K ₀	2088	2403	2029	2162							
K ₁	1948	2500	2011	2135							
K ₂	2008	2377	2034	2178							

S.E. of difference of two

1. M marginal means = 167.4 lb./ac.
 2. N, P or K marginal means = 48.3 lb./ac.
 3. N, P or K means at the same level of M = 96.6 lb./ac.
 4. M means at the same level of N, P or K = 185.1 lb./ac.
- S.E. of body of N×P, P×K or N×K table = 59.2 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 54(6).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :- To compare the efficiencies of sub-surface, surface and deep application of A/S at different levels on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 19.6.1954 and 15.7.1954. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) and (d) N.A. (e) 2 to 3. (v) Nil. (vi) T₇-1242 (late). (vii) Irrigated. (viii) 2 weedings. (ix) 55.24%. (x) 22 and 23.12.1954.

2. TREATMENTS :

	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀
t ₁	—	—	—	—	—	½ s ₁	s ₁	—	—	—	—
t ₂	—	½ S	S	—	—	—	—	½ s ₂	s ₂	—	—
t ₃	—	—	—	½ S	S	—	—	—	—	½ s ₂	s ₂
t ₄	—	—	—	—	—	—	—	—	—	—	—
	M ₁₁	M ₁₂	M ₁₃	M ₁₄	M ₁₅	M ₁₆	M ₁₇	M ₁₈	M ₁₉	M ₂₀	M ₂₁
t ₁	½ s ₁	½ s ₁	½ s ₁	½ s ₁	—	—	—	—	—	½ s ₁	—
t ₂	—	—	½ s ₂	½ s ₂	½ S	½ S	½ S	½ S	½ S	—	½ s ₂
t ₃	½ S	½ S	—	—	½ S	½ S	½ s ₂	½ s ₂	½ S	½ S	½ s ₂
t ₄	—	—	—	—	—	—	—	—	½ S	½ S	½ s ₂

t₁=before planting, t₂=at planting, t₃=1 month after planting and t₄=before flowering.

S=Surface application of 40 lb./ac. of N as A/S, s₁=sub surface dry application of 40 lb./ac. of N as A/S and s₂=sub-surface pellet application of 40 lb./ac. of N as A/S.

3. DESIGN :

(i) R.B.D. (ii) (a) 22. (b) N.A. (iii) 4. (iv) (a) 22'6"×11'. (b) 20'10"×9'4". (v) 10" around (vi) Yes.

4. GENERAL :

(i) Satisfactory. Lodging on 22.11.1954. (ii) N.A. (iii) Yield of grain and straw, height, tiller counts and ear length measurements. (iv) (a) 1949—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2823 lb./ac. (ii) 269.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀
Av. yield	2243	2611	2842	2581	2958	2445	2874	2681	3308	2762	3168
Treatment	M ₁₁	M ₁₂	M ₁₃	M ₁₄	M ₁₅	M ₁₆	M ₁₇	M ₁₈	M ₁₉	M ₂₀	M ₂₁
Av. yield	2693	2965	2695	3140	2597	2779	2700	2811	3166	2714	3369

S.E./mean = 134.5 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 55(4).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :— To study the effect of different methods of application of different levels of N on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 14.7.1955/ N.A. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) and (d) N.A. (e) 2 to 3. (v) Nil. (vi) T—1242 (late). (vii) Irrigated. (viii) 1 interculture. (ix) 72.71". (x) N.A.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(6) on page 3.

5. RESULTS :

(i) 1941 lb./ac. (ii) 129.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀
Av. yield	1404	1707	1900	1790	1935	1743	2000	1938	2097	1895	1976
Treatment	M ₁₁	M ₁₂	M ₁₃	M ₁₄	M ₁₅	M ₁₆	M ₁₇	M ₁₈	M ₁₉	M ₂₀	M ₂₁
Av. yield	2023	2043	1976	2121	1767	1944	1911	1991	2032	1938	2578

S.E./mean = 65.0 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 56(4).

Site :- Central Rice Research Instt., Cuttack.

Type :- 'M'.

Object :— To compare the efficiencies of sub-surface, surface and deep application of A/S at different levels on Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 22.6.1956/ 24.7.1956. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 10" × 10". (e) 2 to 3. (v) Nil. (vi) T—1242 (late). (vii) Irrigated. (viii) 3 interculturalures with Japanese weeder and 1 hand weeding. (ix) 82.73". (x) 28 and 29.12.1956.

2. TREATMENTS :

	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀
t ₁	—	½ S	S	—	—	½ s	s	—	—	—	—
t ₂	—	—	—	½ S	S	—	—	½ s	s	—	—
t ₃	—	—	—	—	—	—	—	—	—	½ S	S
	M ₁₁	M ₁₂	M ₁₃	M ₁₄	M ₁₅	M ₁₆	M ₁₇	M ₁₈	M ₁₉	M ₂₀	
t ₁	—	—	½ S	½ S	—	½ s	½ s	—	½ S	½ s	
t ₂	—	—	½ S	—	½ S	½ s	—	½ s	½ S	½ s	
t ₃	½ s	s	—	½ S	½ S	—	½ s	½ s	½ s	½ s	

t₁=At planting, t₂=1 month after planting and t₃=before flowering.

S=Surface application of 40 lb./ac. of N as A/S and s=sub-surface application of 40 lb./ac. of N as A/S.

3. DESIGN :

(i) R.B.D. (ii) (a) 21. (b) N.A. (iii) 4. (iv) (a) 19'2"×14'2". (b) 17½'×12½'. (v) 10"×10". (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of stem borer. Sprayed with folidol. (iii) Yield of grain and straw, height, tiller counts and ear-length measurements. (iv) (a) 1949—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1583 lb./ac. (ii) 147.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀
Av. yield	1135	1332	1481	1281	1497	1554	1744	1360	1642	1291	1550
Treatment	M ₁₁	M ₁₂	M ₁₃	M ₁₄	M ₁₅	M ₁₆	M ₁₇	M ₁₈	M ₁₉	M ₂₀	
Av. yield	1481	1681	1659	1559	1724	1856	1899	1870	1688	1966	

S.E./mean = 73.9 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 57(1).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :—To assess the efficiency of split dose application of A/S and C/A/N against single dose application on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 21.6.1957/30.7.1957. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 10"×10". (e) 2 to 3. (v) Nil. (vi) T—1242 (late). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 29.47". (x) 23.12.1957.

2. TREATMENTS :

	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉
t ₁	—	½ S ₁	S ₁	½ S ₂	S ₂	½ S ₁	½ S ₁	—	½ S ₁	½ S ₁
t ₂	—	—	—	—	—	½ S ₁	—	½ S ₁	½ S ₁	½ S ₁
t ₃	—	—	—	—	—	—	½ S ₁	½ S ₁	½ S ₁	½ S ₁
	M ₁₀	M ₁₁	M ₁₂	M ₁₃	M ₁₄	M ₁₅	M ₁₆	M ₁₇	M ₁₈	M ₁₉
t ₁	½ S ₂	½ S ₂	—	½ S ₂	½ S ₂	½ S ₁ +½ S ₂	½ S ₁	½ S ₂	½ S ₁ +½ S ₂	½ S ₁ +½ S ₂
t ₂	½ S ₂	—	½ S ₂	½ S ₂	½ S ₂	—	½ S ₂	½ S ₁	½ S ₂	½ S ₁ +½ S ₂
t ₃	—	½ S ₂	½ S ₂	½ S ₂	½ S ₂	—	—	—	—	—

t₁=at planting, t₂=1 month after planting and t₃=before flowering.

S₁=40 lb./ac. of N as A/S and S₂=40 lb./ac. of N as C/A/N.

3. DESIGN :

(i) R.B.D. (ii) (a) 20. (b) N.A. (iii) 4. (iv) (a) 20'10"×11'8". (b) 19'2"×10'. (v) 1 row around. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw, height, tiller counts and ear length measurements. (iv) (a) 1949—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2739 lb./ac. (ii) 201.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉
Av. yield	1931	2370	2566	2145	2458	2921	2930	2938	3094	3279
Treatment	M ₁₀	M ₁₁	M ₁₂	M ₁₃	M ₁₄	M ₁₅	M ₁₆	M ₁₇	M ₁₈	M ₁₉
Av. yield	2565	2633	2807	2842	2727	2883	2871	3015	2973	2830

S.E./mean = 100.9 lb./ac.

Crop :- Paddy.**Ref :- C.R.R.I. 58(26).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'M'.**

Object :— To study the direct, residual and cumulative effects of compost on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 24.6.1958/14.8.1958. (iv) (a) 4 ploughings. (b) Transplanting. (c) 25 lb./ac. (d) 9"×9". (e) 2 to 3. (v) Nil. (vi) T-1242. (vii) Irrigated. (viii) 2 weedings. (ix) 56.7". (x) 23.12.1958.

2. TREATMENTS :

	1958-59	1959-60	1960-61	1961-62	1962-63
T ₁	Control	Control	Control	Control	Control
T ₂	Compost	No compost	Compost	No compost	Compost
T ₃	Compost	Compost	No compost	Compost	Compost
T ₄	Compost	Compost	Compost	No compost	Compost
T ₅	Compost	Compost	Compost	Compost	No compost
T ₆	A/S at 40 lb./ac. of N	A/S at 40 lb./ac. of N	A/S at 40 lb./ac. of N	A/S at 40 lb./ac. of N	A/S at 40 lb./ac. of N

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 30'×20'. (b) 28.5'×18.5'. (v) 0.75'×0.75'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height, tillers measurements and yield of grain. (iv) (a) 1958—1962. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2104 lb./ac. (ii) 95.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₁	(T ₂ +T ₃ +T ₄ +T ₅)	T ₆
Av. yield	2108	2092	2152
	S.E. of T ₁ or T ₆ mean		= 47.5 lb./ac.
	S.E. of (T ₂ +T ₃ +T ₄ +T ₅) mean		= 23.8 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 59(12).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'M'.**

Object :—To study the direct, residual and cumulative effects of compost on Paddy.

1. BASAL CONDITIONS :

(i) (a) Fallow—Paddy. (b) Fallow. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 24.6.1959/14.8.1959. (iv) (a) 3 ploughings, laddering and running of puddler. (b) Transplanting. (c) 25 lb./ac. (d) 9"×9". (e) 2 to 3. (v) Nil. (vi) T-1242. (vii) Irrigated. (viii) Interculturing and weeding. (ix) 49.35". (x) 19.12.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 58(26) above.

4. GENERAL :

(i) Poor. (ii) Severe attack of blast towards the end of October when the crop was about to flower. (iii) Height, tillers and yield of grain. (iv) (a) 1958—1962. (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) Low rainfall in September and high rainfall in October. (vii) Severe blast at the time of flowering and untimely rains resulted in poor yield.

5. RESULTS :

(i) 1650 lb./ac. (ii) 233.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₁	T ₂	(T ₃ +T ₄ +T ₅)	T ₆
Av. yield	1585	1494	1697	1727
	S.E. of T ₁ , T ₂ or T ₆ mean = 116.7 lb./ac.			
	S.E. of (T ₃ +T ₄ +T ₅) mean = 67.4 lb./ac.			

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 59(11).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :—To study the direct, residual and cumulative effects of compost on Paddy.

1. BASAL CONDITIONS :

(i) (a) Fallow—Paddy. (b) Fallow. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 19.8.1959. (iv) (a) 2 ploughings by tractor. (b) Transplanting. (c) 25 lb./ac. (d) 9"×6". (e) 2 to 3. (v) Nil. (vi) T—1242. (vii) Irrigated. (viii) Interculturing and weeding. (ix) 36.49". (x) 15.12.1959.

2. TREATMENTS :

T₀=Control, T₁=A/S at 20 lb./ac. of N every year, T₂=Compost at 10 lb./ac. of N to be applied every year starting from 1959, T₃=Compost at 20 lb./ac. of N to be applied in alternate years starting from 1959 and T₄=Compost at 40 lb./ac. of N to be applied once in every four years starting from 1959.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 30'×24'. (b) 28'×22½'. (v) 1'×9". (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Attack of blast towards the end of October when the crop was about to flower. (iii) Height, tillers and yield of grain. (iv) (a) 1959—1963. (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) Low rainfall in September and high rainfall in October. (vii) Attack of blast at the time of flowering and untimely rains resulted in poor yield.

5. RESULTS :

(i) 2117 lb./ac. (ii) 980 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Av. yield	1672	2520	1971	2230	2191
	S.E./mean = 49.0 lb./ac.				

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 58(1).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :—To assess the efficiencies of single and fractional placement of different forms of nitrogenous fertilizers on Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 17.6.1958/4.8.1958. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9"×9". (e) 2 to 3. (v) Nil. (vi) T—1242 (late). (vii) Irrigated. (viii) 3 intercultures. (ix) 57.94". (x) 24.12.1958.

2. TREATMENTS :

All combinations of (1) and (2)+2 extra treatments

(1) 3 sources of 40 lb./ac. of N : $S_1=A/S$, $S_2=C/A/N$ and $S_3=Complexal\ supra$.

(2) 10 methods of application of N : $M_1=$ Sub-surface application at planting, $M_2=$ Sub-surface application one month after planting, $M_3=$ Sub-surface application 3 weeks before flowering, $M_4=$ Sub-surface application $\frac{1}{2}$ at planting and $\frac{1}{2}$ one month after planting, $M_5=$ Sub-surface application $\frac{1}{2}$ at planting and $\frac{1}{2}$ 3 weeks before flowering, $M_6=$ Sub-surface application $\frac{1}{2}$ 1 month after planting and $\frac{1}{2}$ 3 weeks before flowering, $M_7=$ Sub-surface application $\frac{1}{2}$ at planting, $\frac{1}{2}$ one month after planting and $\frac{1}{2}$ 3 weeks before flowering, $M_8=$ Sub-surface application $\frac{1}{2}$ at planting, $\frac{1}{2}$ one month after planting and $\frac{1}{2}$ 3 weeks before flowering, $M_9=$ Sub-surface application $\frac{1}{2}$ at planting, $\frac{1}{2}$ 1 month after planting and $\frac{1}{2}$ 3 weeks before flowering and $M_{10}=$ Surface application at planting.

Extra treatments : $T_0=$ Control and $T_1=40$ lb./ac. of P_2O_5 .

Application of manures at planting on 23.8.1958, 1 month after planting on 13.9.1958 and 3 weeks before flowering on 14.10.1958.

3. DESIGN :

(i) R.B.D. (ii) (a) 32. (b) N.A. (iii) 3. (iv) (a) 21'×9'9". (b) 19'6"×8'3". (v) 0.75'×0.75'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1958—1960. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1738 lb./ac. (ii) 234.2 lb./ac. (iii) S effect is highly significant. ' T_0+T_1 ' vs. others' is significant. (iv) Av. yield of grain in lb./ac.

$$(T_0+T_1) = 1492 \text{ lb./ac.}$$

	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8	M_9	M_{10}	Mean
S_1	1884	1704	1845	1729	2013	2005	2037	1915	2031	1569	1873
S_2	1560	1469	1622	1542	1644	1726	1740	1709	1695	1571	1628
S_3	1797	1657	1709	1836	1754	1678	1712	1867	1991	1605	1761
Mean	1747	1610	1725	1702	1804	1803	1830	1830	1906	1582	1754

S.E. of M marginal mean = 78.1 lb./ac.

S.E. of S marginal mean = 42.8 lb./ac.

S.E. of body of table = 135.2 lb./ac.

S.E. of (T_0+T_1) mean = 95.6 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- C.R.R.I. 59(6).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :—To assess the efficiency of single and fractional sub-surface application of different forms of nitrogenous fertilizers on Paddy.

1. BASAL CONDITIONS :

(i) (a) Fallow—Paddy. (b) Fallow. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 24.6.1959/7.8.1959. (iv) (a) Tractor ploughing followed by iron plough. (b) Transplanting. (c) 25 lb./ac. (d) 5"×6". (e) 2 to 3. (v) Nil. (vi) T—1242 (160 days duration). (vii) Irrigated. (viii) Interculture and hand weeding. (ix) 49.35". (x) 15.12.1959.

2. TREATMENTS :

Same as in expt. no. 58(1) on page 7.

3. DESIGN :

(i) R.B.D. (ii) (a) 32. (b) N.A. (iii) 3. (iv) (a) 18'×11'. (b) 16½'×9'. (v) 0.75'×1'. (vi) Yes.

4. GENERAL :

(i) Poor, lodging at pre-flowering time. (ii) Leaf roller towards beginning of October. Stem borer incidence in November. Spraying with Folidol for leaf roller. (iii) Height and tiller counts. (iv) (a) 1958—1960. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Low rainfall in September and high rainfall in October. (vii) Untimely rainfall in October is responsible for poor yield as a result of lodging at pre-flowering time.

5. RESULTS :

(i) 1620 lb./ac. (ii) 103.0 lb./ac. (iii) Main effects of M, S, interaction M×S and '(T₀+T₁) vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

$$(T_0 + T_1) = 1067 \text{ lb./ac.}$$

	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀	Mean
S ₁	1971	1803	1614	2133	1748	1705	2024	1968	2010	1648	1862
S ₂	1571	1846	1400	1904	1448	1825	1849	1831	2103	1421	1720
S ₃	1333	1455	1382	1446	1247	1382	1468	1406	1482	1284	1388
Mean	1625	1701	1465	1827	1481	1637	1780	1735	1865	1451	1657

S.E. of M marginal mean = 34.3 lb./ac.

S.E. of S marginal mean = 18.8 lb./ac.

S.E. of body of table = 59.4 lb./ac.

S.E. of (T₀+T₁) mean = 42.0 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 58(24).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :- To study the effect of application of N in split doses on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 7.7.1958/9.8.1958. (iv) (a) 2 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9'×6". (e) 2 to 3. (v) Nil. (vi) CO—13 (early). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 57.94". (x) 5 and 6.11.1958.

2. TREATMENTS :

12 stages of application of N : S₀=Control, S₁=20 lb./ac. of N at puddling, S₂=40 lb./ac. of N at puddling, S₃=60 lb./ac. of N at puddling, S₄=20 lb./ac. of N at puddling+20 lb./ac. of N at ear initiation, S₅=40 lb./ac. of N at puddling+20 lb./ac. of N at ear initiation, S₆=20 lb./ac. of N 15 days after transplanting, S₇=40 lb./ac. of N 15 days after transplanting, S₈=20 lb./ac. of N 15 days after transplanting+20 lb./ac. of N at ear initiation, S₉=40 lb./ac. of N 15 days after transplanting+20 lb./ac. of N at ear initiation, S₁₀=20 lb./ac. of N applied at all the three stages and S₁₁=40 lb./ac. of N at puddling+20 lb./ac. of N 15 days after transplanting.

2. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 30'×9'. (b) 28.5'×8'. (v) 0.75'×0.5'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Grain yield and neck-infected tiller counts. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 14.2 lb./ac. (ii) 95.5 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	S ₉	S ₁₀	S ₁₁
Av. yield	1400	1513	1433	1559	1544	1400	1488	1525	1381	1167	1297	1238
S.E./mean = 47.8 lb./ac.												

Crop :- Paddy (Kharif).

Ref. :- C.R.R.I. 59(19).

Site :- Central Rice Res. Instt., Cuttack

Type :- 'M'.

Object :—To study the effect of different levels of N and P on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Alluvial sandy loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 22.6.1959. (iv) (a) 3 to 4 ploughings followed by laddering. (b) Broadcast. (c) 54 lb./ac. (d) and (e) N.A. (v) K₂O at 27 lb./ac. (vi) PTB-10. (vii) Unirrigated. (viii) Hand weeding. (ix) N.A. (x) 12.10.1959.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N as A/S : N₀=0, N₁=27, N₂=54 and N₃=81 lb./ac.

(2) 3 levels of P₂O₅ as Super : P₀=0, P₁=45 and P₂=90 lb./ac.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 13.1'×18.0'. (b) 12.1'×17.4'. (v) 0.5'×0.3'. (vi) Yes.

4. GENERAL :

(i) Fairly good. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1356 lb./ac. (ii) 216.8 lb./ac. (iii) N effect is highly significant. (iv) Av. yield of grain in lb./ac.

	N ₀	N ₁	N ₂	N ₃	Mean
P ₀	853	1295	1609	2048	1451
P ₁	930	1262	1366	1708	1316
P ₂	866	1312	1502	1508	1297
Mean	883	1290	1493	1755	1356

S.E. of P marginal mean = 54.2 lb./ac.

S.E. of N marginal mean = 62.6 lb./ac.

S.E. of body of table = 108.4 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 59(20)

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'

Object :—To study the effect of different levels of N and P on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow in *rabi*. (c) Nil. (ii) (a) Alluvial loam. (b) Refer soil analysis, C.R.R.I., Cuttack (iii) 12.6.1959/31.7.1959. (iv) (a) 2 summer ploughings and 1 puddling. (b) Transplanting. (c) N.A. (d). 10"×6". (e) 2 to 3. (v) K₂O at 26.8 lb./ac. (vi) PTB-10. (vii) Irrigated. (viii) 2 intercultures. (ix) N.A. (x) 17.10.1959.

2. TREATMENTS :

Same as in expt. no. 59(19) above.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 18.7'×8.2'. (b) 17.7'×6.6' (v) One row all-round. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1712 lb./ac. (ii) 442.5 lb./ac. (iii) N effect is highly significant. (iv) Av. yield of grain in lb./ac.

	N ₀	N ₁	N ₂	N ₃	Mean
P ₀	1085	1693	1321	2362	1615
P ₁	1255	1842	2195	2365	1914
P ₂	986	1834	1927	1677	1606
Mean	1109	1790	1814	2135	1712

S.E. of N marginal mean = 127.6 lb./ac.

S.E. of P marginal mean = 110.6 lb./ac.

S.E. of body of table = 221.2 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 58(25).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :— To study the effect of different levels of N, P and K with and without a basal dressing of compost on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 17.6.1958/21.8.1958. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) 25 lb./ac. (d) 9"×9". (e) 2 to 3. (v) Nil. (vi) T—1145 (145 days duration). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 57.94". (x) 1 and 2.12.1958.

2. TREATMENTS :

Main-plot treatments :

2 levels of organic manure: C₀=No compost and C₁=Compost.

Sub-plot treatments :

All combinations of (1), (2) and (3)

(1) 3 levels of N : N₀=0, N₁=40 and N₂=80 lb./ac.

(2) 3 levels of P₂O₅ : P₀=0, P₁=50 and P₂=100 lb./ac.

(3) 3 levels of K₂O : K₀=0, K₁=30 and K₂=60 lb./ac.

3. DESIGN :

(i) 2×3³ split-plot confd. (ii) (a) 2 main-plots/replication; 3 blocks/main-plot each block consisting of 9 different combinations of NPK treatments. Confounding 2 d.f. of NPK interaction with blocks; 9 sub-plots/block. (b) N.A. (iii) 2. (iv) (a) 30' 9"×12'. (b) 29' 3"×10' 6". (v) 0.75'×0.75'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1958—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1958 lb./ac. (ii) (a) 297.0 lb./ac. (b) 184.7 lb./ac. (iii) Main effect of N and interactions C×N and C×K are highly significant. K effect is significant. (iv) Av. yield of grain in lb./ac.

	K ₀	K ₁	K ₂	P ₀	P ₁	P ₂	N ₀	N ₁	N ₂	Mean
C ₀	1975	1867	2006	1941	1945	1963	1682	2088	2078	1949
C ₁	1996	1977	1926	1967	1932	1999	1831	2004	2061	1966
Mean	1985	1922	1966	1954	1938	1981	1756	2046	2070	1958
N ₀	1787	1701	1781	1756	1738	1776				
N ₁	2078	1952	2068	2009	2030	2099				
N ₂	2091	2072	2050	2097	2048	2068				
P ₀	1990	1927	1945							
P ₁	1990	1859	1966							
P ₂	1975	1980	1939							

S.E. of difference of two

1. C marginal means = 57.2 lb./ac.
 2. N, P or K marginal means = 43.5 lb./ac.
 3. N, P or K means at the same level of C = 61.6 lb./ac.
 4. C means at the same level of N, P or K = 76.1 lb./ac.
- S.E. of body of N×P, P×K or N×K table = 53.3 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- C.R.R.I. 59(17).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :- To study the effect of different levels of N, P and K with and without a basal dressing of compost on Paddy.

1. BASAL CONDITIONS ;

(i) (a) Paddy—Fallow. (b) Paddy. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 1.7.1959/25.8.1959. (iv) (a) 1 summer ploughing, 2 puddlings, laddering and bund-making. (b) Transplanting. (c) 52 lb./ac. (d) 9"×9". (e) 2 to 3. (v) Nil. (vi) T—1145 (145 days). (vii) Irrigated. (viii) Intercultures. (ix) 45.04". (x) 27.11.1959.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(25) on page 11.

5. RESULTS :

(i) 2000 lb./ac. (ii) (a) 433.5 lb./ac. (b) 291.7 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	K ₀	K ₁	K ₂	P ₀	P ₁	P ₂	N ₀	N ₁	N ₂	Mean
C ₀	1968	1919	1994	1934	1962	1986	1520	2123	2238	1961
C ₁	1924	2075	2118	2080	2091	1945	1775	2100	2242	2039
Mean	1946	1997	2056	2007	2026	1966	1648	2112	2240	2000
N ₀	1552	1600	1791	1634	1642	1667				
N ₁	2056	2101	2178	2106	2112	2117				
N ₂	2230	2290	2199	2283	2325	2114				
P ₀	1984	1941	2097							
P ₁	1925	2058	2096							
P ₂	1929	1991	1976							

S.E. of difference of two

1. C marginal means	= 83.4 lb./ac.
2. N, P or K marginal means	= 68.8 lb./ac.
3. N, P or K means at the same level of C	= 97.2 lb./ac.
4. C means at the same level of N, P or K	= 115.2 lb./ac.
S.E. of body of $N \times P$, $P \times K$ or $N \times K$ table	= 84.2 lb./ac.

Crop :- Paddy (2nd season).

Ref :- C.R.R.I. 54(2)

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :- To study the effect of different levels and sources of N on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 12.12.1954/7 and 8.2.1955. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting (c) N.A. (d) $9'' \times 6''$. (e) 2 to 3. (v) Nil. (vi) PTB-10. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding (ix) 55.24". (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)+control (2 plots)

(1) 2 levels of N : $N_1=20$ and $N_2=40$ lb./ac.

(2) 8 sources of N : $S_1=AIS/N$, $S_2=A/N$, $S_3=A/S$, $S_4=Ammo. Phos.$, $S_5=A/C$, $S_6=C/N$, $S_7=Cal. Cynamide$ and $S_8=Urea$.

3. DESIGN :

(i) R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a) $20' \times 9'$. (b) $19' \times 7'6''$. (v) $6'' \times 9''$. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of blast. (iii) Height and ear-length measurements, number of tillers, grain and straw yield. (iv) (a) 1954-1955. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 758 lb./ac. (ii) 100.9 lb./ac. (iii) Main effects of S, N and 'control vs. others' are highly significant. $N \times S$ interaction is significant. (iv) Av. yield of grain in lb./ac.

Control = 584 lb./ac.

	S_1	S_2	S_3	S_4	S_5	S_6	S_7	S_8	Mean
N_1	880	761	788	666	662	568	678	732	717
N_2	910	854	851	919	938	549	682	594	842
Mean	895	808	840	792	800	558	680	863	780

S.E. of S marginal mean = 35.7 lb./ac.

S.E. of N marginal mean = 17.8 lb./ac.

S.E. of body of table = 50.5 lb./ac.

S.E. of control mean = 35.7 lb./ac.

Crop :- Rice (Rabi).

Ref :- C.R.R.I. 55(28).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :- To study the effect of different levels and sources of N on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis C.R.R.I., Cuttack. (iii) 10.12.1955/31.1.1956 and 1.2.1956. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) 25 lb./ac. (d) 6"×9". (e) 2 to 3. (v) Nil. (vi) PFB-10. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and one hand weeding. (ix) and (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54 (2) on page 13.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw, height and tiller counts. (iv) (a) 1954-1955. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1297 lb./ac. (ii) 166.0 lb./ac. (iii) Main effects of N, S and 'control vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

Control = 925 lb./ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	Mean
N ₁	1214	1241	1346	1437	1256	911	1015	1198	1207
N ₂	1538	1434	1605	1877	1608	1085	954	1739	1480
Mean	1376	1338	1476	1657	1452	998	985	1469	1344

S.E. of N marginal mean = 29.3 lb./ac.

S.E. of S marginal mean or control mean = 58.7 lb./ac.

S.E. of body of table = 83.0 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 54(3).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :-To study the effect of different levels and sources of N on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 11.6.1954/17.7.1954. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 10"×9". (e) 2 to 3. (iv) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 3 hand weedings. (ix) 55.24". (x) 2.12.1954.

2. TREATMENTS :

All combinations of (1) and (2)+a control

(1) 2 levels of N : N₁=20 and N₂=40 lb./ac.

(2) 8 sources of N : S₁=A/S/N, S₂=A/N, S₃=A/S, S₄=Ammo. Phos., S₅=A/C, S₆=C/N, S₇=Cal. Cynamide and S₈=Urea.

3. DESIGN :

(i) R B.D. (ii) (a) 17. (b) N.A. (iii) 4. (iv) (a) 49' 6"×5' 10". (b) 48'×4' 2". (v) 9"×10". (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Stray incidence of stem borer. (iii) Height and ear-length measurements, number of tillers, straw and grain yield. (iv) (a) 1949—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2289 lb./ac. (ii) 193.4 lb./ac. (iii) Main effects of S, N and 'control vs. others' are highly significant. Interaction S×N is significant. (iv) Av. yield of grain in lb./ac.

Control = 1699 lb./ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	Mean
N ₁	2261	2161	2407	2358	2568	1606	1773	2135	2159
N ₂	2467	2178	2956	2980	3037	1740	2079	2503	2493
Mean	2364	2170	2682	2669	2802	1673	1926	2319	2326

S.E. of S marginal mean = 68.4 lb./ac.

S.E. of N marginal mean = 34.2 lb./ac.

S.E. of body of table or control mean = 96.7 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 55(25).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'M'.**

Object :—To study the residual effect of different levels and sources of N applied to previous Paddy crop on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 10.6.1955/20.7.1955. (iv) (a) 2 ploughings and 2 puddlings. (b) Transplanting. (c) 25 lb./ac. (d) N.A. (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) Interculture and hand weeding. (ix) 71.35%. (x) 1st. week of December, 1955.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(3) on page 14.

Treatments applied to the previous paddy crop.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height and tiller counts, grain and straw yield. (iv) (a) Residual effect studied only in 1955. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1635 lb./ac. (ii) 66.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 1616 lb./ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	Mean
N ₁	1594	1660	1701	1623	1694	1601	1599	1566	1630
N ₂	1612	1629	1588	1579	1644	1683	1742	1664	1643
Mean	1603	1645	1645	1601	1669	1642	1670	1610	1636

S.E. of S marginal mean = 23.6 lb./ac.

S.E. of N marginal mean = 11.8 lb./ac.

S.E. of body of table or control mean = 33.4 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 55(2).****Site :- Central Rice Research Instt., Cuttack.****Type :- 'M'.**

Object :—To study the effect of different levels and sources of N on the yield of Paddy,

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A./ 19.7.1955. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 10"×9". (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 2 hand weedings. (ix) 72.71". (x) N.A.

2. TREATMENTS :

Same as in expt. no. 54(3) on page 14.

3. DESIGN :

(i) R.B.D. (ii) (a) 17. (b) N.A. (iii) 4. (iv) (a) 45'×5.83'. (b) 43.33'×3.75' (v) N.A. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Stray incidence of stem borer. (iii) Height and ear-length measurements, number of tillers, straw and grain yield. (iv) (a) 1949—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2082 lb./ac. (ii) 140.5 lb./ac. (iii) Main effects of N, S and 'control vs. others' are highly significant (iv) Av. yield of grain in lb/ac.

Control = 1608 lb./ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	Mean
N ₁	1965	1804	2230	2150	2075	1616	1678	1860	1922
N ₂	2284	2254	2721	2498	2608	1742	1898	2402	2301
Mean	2125	2029	2476	2324	2342	1679	1788	2131	2112

S.E. of S marginal mean = 49.7 lb./ac.
 S.E. of N marginal mean = 24.8 lb./ac.
 S.E. of body of table or control mean = 70.2 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 56(2).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :- To study the effect of different levels and sources of N on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 22.6.1956/28.7.1956. (iv) (a) 3 to 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9"×10". (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding before flowering. (ix) 82.73". (x) 9 and 10.12.1956.

2. TREATMENTS :

Same as in expt. no. 54(3) on page 14.

3. DESIGN :

(i) R.B.D. (ii) (a) 17. (b) N.A. (iii) 4. (iv) (a) 45'×5'10". (b) 43'6"×4'2". (v) 1 row around. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Attacked by stem borer. Spraying with Folidol on 1.10.1956. (iii) Grain and straw yield. (iv) (a) 1949—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3065 lb./ac. (ii) 257.2 lb./ac. (iii) Main effects of S, N and 'control vs. others' are significant. (iv) Av. yield of grain in lb./ac.

Control = 2572 lb./ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	Mean
N ₁	2935	2713	3318	2918	3215	2706	2741	3004	2944
N ₂	3370	3117	3517	3481	3451	2638	3079	3331	3248
Mean	3153	2915	3418	3199	3333	2672	2910	3168	3096

S.E. of S marginal mean = 90.9 lb./ac.
 S.E. of N marginal mean = 45.5 lb./ac.
 S.E. of body of table or control mean = 128.6 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 57(15).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'M'.**

Object :— To study the effect of different levels and sources of N on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 20.6.1957/31.7.1957. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 10" × 9". (e) 2 to 3. (v) Nil. (vi) T- 141 (medium). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 29.47". (x) N A.

2. TREATMENTS :

Same as in expt. no. 54(3) on page 14.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 17. (b) N.A. (iii) 4. (iv) (a) 45' × 5'10". (b) 43'6" × 4'2". (v) 1 row around. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Height and ear-length measurements, no. of tillers, grain and straw yield. (iv) (a) 1949—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2213 lb./ac. (ii) 264.0 lb./ac. (iii) Main effects of S, N and 'control vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

Control = 1626 lb./ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	Mean
N ₁	2000	1888	2201	2534	2250	1543	1978	1998	2049
N ₂	2367	2167	2774	3324	2584	1625	2244	2517	2450
Mean	2184	2028	2488	2929	2417	1584	2111	2258	2250

S.E. of N marginal mean = 46.7 lb./ac.
 S.E. of S marginal mean = 93.4 lb./ac.
 S.E. of body of table or control mean = 132.0 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 58(2).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'M'.**

Object :— To study the effect of different levels and sources of N on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 17.6.1958/26.7.58. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9"×9". (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 57.94". (x) 5.12.1958.

2. TREATMENTS :

All combinations of (1) and (2)+control (2 plots)

(1) 2 levels of N : $N_1=30$ and $N_2=60$ lb./ac.

(2) 9 sources of N : $S_1=A/S$, $S_2=A/C$, $S_3=Ammo. Phos.$, $S_4=A/N$, $S_5=A/S/N$, $S_6=C/A/N$, $S_7=Urea$, $S_8=C/N$ and $S_9=Complezal$.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 20. (b) N.A. (iii) 4. (iv) (a) 24'×9'. (b) 22'6"×7'6". (v) 1 row around. (vi) Yes.

4. GENERAL :

(i) Satisfactory. Lodging on 10.11.1958. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2796 lb./ac. (ii) 189.2 lb./ac. (iii) Main effects of S and N are highly significant. (iv) Av. yield of grain in lb./ac.

Control = 1979 lb./ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	S ₉	Mean
N ₁	2874	2888	2936	2483	2610	2565	2987	2501	2624	2719
N ₂	3316	3245	3344	2976	3293	2876	3182	2404	2858	3055
Mean	3095	3067	3140	2730	2952	2721	3085	2453	2741	2887

S.E. of S marginal mean = 66.9 lb./ac.

S.E. of N marginal mean = 31.5 lb./ac.

S.E. of body of table = 94.6 lb./ac.

S.E. of control mean = 66.9 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 59(7).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :—To assess the efficiency of various nitrogenous fertilizers and complex fertilizers on Paddy.

1. BASAL CONDITIONS :

(i) (a) Fallow—Paddy. (b) Fallow. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 24.6.1959/18.8.1959. (iv) (a) 3 ploughings and 1 puddling. (b) Transplanting. (c) 25 lb./ac. (d) 9"×6". (e) 2 to 3. (v) Nil. (vi) T-141 (150 days duration). (vii) Irrigated. (viii) Interculture and hand weeding. (ix) 49.4". (x) 4.12.1959.

2. TREATMENTS :

All combinations of (1) and (2) +5 extra treatments

(1) 2 levels of N : $N_1=30$ and $N_2=60$ lb./ac.

(2) 10 sources of N : $S_1=A/S$, $S_2=A/C$, $S_3=A/S/N$, $S_4=C/A/N$, $S_5=Urea$, $S_6=Urea$ formaldehyde, $S_7=Ammo. Phos.$, $S_8=Complezal$, $S_9=Nitrophoska$ green and $S_{10}=Nitrophoska$ blue.

* Extra treatments : $T_0=Control$, $T_1=30$ lb./ac. of N as A/S+30 lb./ac. of P_2O_5 as Super, $T_2=60$ lb./ac. of N as A/S+60 lb./ac. of P_2O_5 as Super, $T_3=T_1+30$ lb./ac. of K_2O and $T_4=T_2+60$ lb./ac. of K_2O .

3. DESIGN :

(i) R.B.D. (ii) (a) 25. (b) N.A. (iii) 3. (iv) (a) 22'6"×15'. (b) 21'×13'. (v) 9"×1'. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Tiller count, yield of grain and straw. (iv) (a) 1949—contd. (modified in 1959). (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Low rain in Sept. and heavy rain in Oct. (vii) Nil.

5. RESULTS :

(i) 2232 lb./ac. (ii) 151 lb./ac. (iii) Main effect of S, N and S×N interaction and 'control vs others' are highly significant. (iv) Av. yield of grain in lb./ac.

$T_0 = 1486$ lb./ac., $T_1 = 2139$ lb./ac., $T_2 = 2799$ lb./ac., $T_3 = 2377$ lb./ac. and $T_4 = 2709$ lb./ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	S ₉	S ₁₀	Mean
N ₁	2264	2244	2178	2121	2085	1820	2252	1805	1792	1965	2053
N ₂	2766	2789	2503	2290	2300	1789	2990	1995	2064	2287	2377
Mean	2515	2517	2341	2206	2193	1805	2621	1900	1928	2126	2215

S.E. of N marginal mean = 27.6 lb./ac.
 S.E. of S marginal mean = 61.6 lb./ac.,
 S.E. of body of table or any extra treatment mean = 87.2 lb./ac.

Crop :- Paddy (Kharif and 2nd crop).
Site :- Central Rice Res. Instt., Cuttack.

Ref :- C.R.R.I. 57(21).
Type :- 'M'.

Object :—To determine the effects of different levels of N and their combination with P and K on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) and (d) N.A. (e) 2 to 3. (v) Nil. (vi) BAM. 9 (late kharif crop and MTU. 15 (early) second crop. (vii) Irrigated. (viii) 2 to 3 interculturalures with Japanese weeder and 1 hand weeding. (ix) 29.47". (x) N.A.

2. TREATMENTS :

6 manurial treatments : T_0 =Control, T_1 =30 lb./ac. of N, T_2 =30 lb./ac. of N+30 lb./ac. of P_2O_5 , T_3 = T_2 +30 lb./ac. of K_2O , T_4 =45 lb./ac. of N+60 lb./ac. of P_2O_5 and T_5 = T_4 +0 lb./ac. of K_2O .

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 66'×20'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain. (iv) (a) 1957—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Yield of kharif crop

(i) 3188 lb./ac. (ii) 181.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	3204	3247	3227	3119	3293	3036

S.E./mean = 90.8 lb./ac.

Yield of 2nd crop

(i) 2164 lb./ac. (ii) 169.6 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Av. yield	1876	2142	2160	2327	2208	2273

S.E./mean = 84.8 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 58(20).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :- To study the effect of different levels of N and their combinations with P and K on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) and (d) N.A. (e) 2 to 3. (v) Nil. (vi) BAM-9 (late). (vii) Irrigated. (viii) 2-3 intercultures with Japanese weeder and one hand weeding. (ix) 57.94". (x) N.A.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(21) on page 19.

5. RESULTS :

(i) 2532 lb./ac. (ii) 248.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Av. yield	2368	2285	2657	2558	2714	2607

S.E./mean = 124.0 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 57(20).

Site :- Central Rice Research Instt., Cuttack.

Type :- 'M'.

Object :- To study the effect of different levels of N and their combinations with P and K on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) and (d) N.A. (e) 2 to 3. (v) Nil. (vi) T 141-89. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 29.47". (x) N.A.

2. TREATMENTS :

Same as in expt. no. 57(21) on page 19.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 99' x 10'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain. (iv) (a) N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2578 lb./ac. (ii) 212.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Av. yield	2257	2719	2666	2543	2741	2539

S.E./mean = 86.7 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 58(19).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :- To study the effect of different levels of N and their combinations with P and K on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) and (d) N.A. (e) 2 to 3. (v) Nil. (vi) T 141—89. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 57.94". (x) N.A.

2. TREATMENTS :

Same as in expt. no. 57(21) on page 19.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 99' × 10'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain. (iv) (a) N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1730 lb./ac. (ii) 165.2 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Av. yield	1494	1679	1778	1787	1835	1805

S.E./mean = 67.4 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 54(8).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :- To study the effect of growing Dhaincha with broadcast Paddy and incorporation of Dhaincha in the field 6 to 8 weeks later at the time of beushenning with and without P and N.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 22.6.1954. (iv) (a) 4 ploughings, laddering and levelling. (b) Broadcast. (c) Paddy at 80 lb./ac and dhaincha at 25 lb./ac. (d) and (e) N.A. (v) Nil. (vi) T—1242 (late). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 55.24". (x) 24 to 26.12.1954.

2. TREATMENTS :

12 manurial treatments : T₁=Paddy unmanured, T₂=Growing dhaincha with Paddy, T₃=Paddy with top-dressing of 20 lb./ac. of N, T₄=T₂ with basal dressing of 20 lb./ac. of N, T₅=T₂ with top dressing of 20 lb./ac. of N, T₆=T₂ with top dressing of 10 lb./ac. of N and basal dressing of 10 lb./ac. of N, T₇=T₂ with basal dressing of 10 lb./ac. of N, T₈=T₂ with 50 lb./ac. of P₂O₅, T₉=T₂ with 50 lb./ac. of P₂O₅ and basal dressing of 20 lb./ac. of N, T₁₀=T₂ with 50 lb./ac. of P₂O₅ and top dressing of 20 lb./ac. of N, T₁₁=T₂ with 50 lb./ac. of P₂O₅, basal dressing of 10 lb./ac. of N and top dressing of 10 lb./ac. of N and T₁₂=T₂ with 50 lb./ac. of P₂O₅ and top dressing of 10 lb./ac. of N.

N applied as A/S and P₂O₅ as Super. Dhaincha broadcast with paddy and applied as G.M. after 6 to 8 weeks.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 31'×20'. (b) 29'×18'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain and straw, height, tiller counts and ear-length measurements. (iv) (a) 1953—1957 (not conducted during 1956). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2742 lb./ac. (ii) 315.0 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂
Av. yield	2122	2681	2832	2578	2945	2549	3037	2852	2576	2850	2748	3133

S.E./mean = 158.0 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 55(10).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :- To study the effect of growing dhaincha with broadcast Paddy and incorporation of dhaincha in the field 6 to 8 weeks later at the time of beushenning with and without P and N.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 10.6.1955/2.8.1955. (iv) (a) 4 ploughings, laddering and levelling. (b) Broadcast. (c) 60 lb./ac. (d) and (e) Nil. (v) Nil. (vi) T—1242 (late). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 72.71". (x) 19.12.1955.

2. TREATMENTS :

12 manurial treatments : T₁=Paddy unmanured, T₂=Paddy beushenned, T₃=Paddy with top dressing of 10 lb./ac. of N, T₄=Paddy with top dressing of 20 lb./ac. of N, T₅=Paddy with 15 lb./ac. of P₂O₅ and top dressing of 20 lb./ac. of N, T₆=Growing dhaincha with paddy, T₇=T₆ with top dressing of 10 lb./ac. of N, T₈=T₆ with top dressing of 20 lb./ac. of N, T₉=T₆ with 15 lb./ac. of P₂O₅ and top dressing of 20 lb./ac. of N, T₁₀=T₆ with 50 lb./ac. of P₂O₅, T₁₁=T₆ with 50 lb./ac. of P₂O₅ and top dressing of 10 lb./ac. of N and T₁₂=T₆ with 50 lb./ac. of P₂O₅ and top dressing of 20 lb./ac. of N.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 30'×20'. (b) 28'×18'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height, tiller and ear-length measurements and yield of straw and grain. (iv) (a) 1953—contd (not conducted during 1956). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1988 lb./ac. (ii) 249.0 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂
Av. yield	1802	1791	1838	2083	2156	2029	2210	2095	2116	1969	2109	2156

S.E./mean = 124.5 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 57(7).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'M'.**

Object :— To study the effect of growing dhaincha with broadcast paddy and incorporation of dhaincha in the field 6 to 8 week later at the time of beushenning with and without P and N.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 12.6.1957/N.A. (iv) (a) 4 ploughings, laddering and levelling. (b) Broadcast. (c) 60 lb./ac. (d) N.A. (e) 2 to 3. (v) Nil. (vi) T—1242 (late). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 29.47". (x) 30.12.1957.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(10) on page 22.

5. RESULTS :

(i) 1759 lb./ac. (ii) 177.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂
Av. yie'd	1268	1433	1680	1705	1743	1721	1749	2078	1941	1717	1982	2089

S.E./mean = 88.6 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 57(26).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'M'.**

Object :—To assess the relative efficiency of different nitrogeous fertilizers on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 25.11.1957./18.1.1958. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9" × 6". (e) 2 to 3. (v) Nil. (vi) MTU—15. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 29 47". (x) 20 4.1958.

2. TREATMENTS :

All combinations of (1), (2) and (3)+3 extra treatments

(1) 3 levels of N : N₀=0, N₁=40 and N₂=80 lb./ac.

(2) 3 levels of P₂O₅ : P₀=0, P₁=50 and P₂=100 lb./ac.

(3) 3 sources of N : S₁=A/S, S₂=C/A/N and S₃=Urea.

3 extra treatments : T₁=40 lb./ac. of N+50 lb./ac. of P₂O₅+20 lb./ac. of K₂O, T₂=40 lb./ac. of N+50 lb./ac. of P₂O₅+40 lb./ac. of K₂O and T₃=40 lb./ac. of N+50 lb./ac. of P₂O₅+60 lb./ac. of K₂O.

N, P and K applied as A/S, Super and Pot. Sul. respectively.

3. DESIGN :

(i) 3³ confd.+3 extra treatments/block. (ii) (a) 12 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 20' × 15'. (b) 18' × 13.5'. (v) 1' × 9". (vi) Yes.

4. GENERAL :

(i) Satisfactory. Lodging on 30.3.1958. (ii) Attack of stem borer. Spraying with Endrin. (iii) Straw height, tiller and ear-length measurements and yield of grain. (iv) (a) and (b) N.A. (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 2143 lb./ac. (ii) 1560 lb./ac. (iii) N effect is highly significant. S effect is significant. (iv) Av. yield of grain in lb./ac.

$T_1 = 2244$ lb./ac., $T_2 = 2160$ lb./ac. and $T_3 = 2201$ lb./ac.

	P ₀	P ₁	P ₂	μMean	S ₁	S ₂	S ₃
N ₀	1420	1524	1473	1472	—	—	—
N ₁	2116	2165	2116	2132	2226	1925	1246
N ₂	2388	2300	2208	2299	2409	2120	2368
Mean	1975	1996	1932	—	2318	2022	2307
S ₁	2099	2004	1970				
S ₂	1873	1897	1792				
S ₃	1952	2087	2035				

S.E. of N or P marginal mean = 36.8 lb./ac.
 S.E. of body of any table or extra treatment mean = 63.7 lb./ac.
 S.E. of S marginal mean in the body of S×N table = 45.0 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 57(22).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :—To determine the effect of N, P and K on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A.
 (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) and (d) N.A. (e) 2 to 3. (v) Nil.
 (vi) T 141—89. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix)
 29.47". (x) N.A.

2. TREATMENTS :

3 sources of N : N₀=Control, N₁=A/S/N and N₂= $\frac{1}{2}$ dhaincha + $\frac{1}{2}$ A/S/N.
 P₂O₅ and K₂O are also applied to N₁ and N₂ plots. The quantities of N, P₂O₅ and K₂O are N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 99'×21'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2449 lb./ac. (ii) 123.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain
 in lb./ac.

Treatment	N ₀	N ₁	N ₂
Av. yield	2470	2487	2391

S.E./mean = 50.3 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 58(21).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :—To determine the effects of N, P and K on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) and (d) N.A. (e) 2 to 3. (v) Nil. (vi) T 141-89. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 57.94". (x) N.A.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(22) on page 24.

5. RESULTS :

(i) 2031 lb./ac. (ii) 315.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	N ₀	N ₁	N ₂
Av. yield	1823	2148	2122
S.E./mean = 128.7 lb./ac.			

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 54(4).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :—To study the effect of continuous application of A/S with different levels of lime and compost on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) Clay loam. (b) N.A. (iii) 23.6.1954/7.8.1954. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10' × 6'. (e) 2 to 3. (v) Nil. (vi) T-1145 (medium). (vii) Irrigated. (viii) 2 weedings. (ix) 55.24". (x) 23.11.1954.

2. TREATMENTS :

Treatments in one direction :

2 levels of compost : C₀=0 and C₁=100 mds./ac.

Treatments in perpendicular direction :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N₀=0, N₁=20 and N₂=40 lb./ac.

(2) 3 levels of lime : L₀=0, L₁=4 and L₂=8 cwt/ac.

Manures applied on 24.8.1954.

3. DESIGN :

(i) Strip-plot. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a) 30' × 12'. (b) 28½' × 10'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw; height, tiller count and ear-length measurements. (iv) (a) 1948—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2696 lb./ac. (ii) (a) 85 lb./ac. for (C). (b) 188 lb./ac. for (NL). (c) 168 lb./ac. for (C × NL). (iii) [Main effects of N and C are highly significant. Interaction N × C is significant. (iv) Av. yield of grain in lb./ac.

	L ₀	L ₁	L ₂	Mean	C ₀	C ₁
N ₀	2233	2330	2350	2304	1990	2618
N ₁	2779	2820	2811	2803	2639	2967
N ₂	2970	2924	3047	2980	2785	3176
Mean	2660	2691	27.6	2696	2471	2920
C ₀	2462	2470	2482			
C ₁	2859	2912	2590			

S.E. of difference of two

1. C marginal means	= 20.0 lb./ac.
2. N or L marginal means	= 54.3 lb./ac.
3. N or L means at the same level of C	= 72.8 lb./ac.
4. C means at the same level of N or L	= 59.5 lb./ac.
S.E. of body of N×L table	= 66.5 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 55(3).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'M'.**

Object :—To study the effect of continuous application of A/S with different levels of lime and compost on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 10.6.1955/4.8.1955. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10"×6". (e) 2 to 3. (v) Nil. (vi) T—1145 (medium). (vii) Irrigated. (viii) 2 intercultures. (ix) 72.71". (x) 24/25.11.1955.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(4) on page 24.

4. GENERAL :

(i) Good. Lodging on 20.10.1955. (ii) Incidence of leaf roller. (iii) Yield of grain and straw, height, tiller and ear-length measurements. (iv) (a) 1948—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2066 lb./ac. (ii) (a) 31.0 lb./ac. for (C). (b) 133.0 lb./ac. for (NL). (c) 91.0 lb./ac. for (C×NL). (iii) Main effects of C, N and interaction C×N are highly significant. (iv) Av. yield of grain in lb./ac.

	L ₀	L ₁	L ₂	Mean	C ₀	C ₁
N ₀	1756	1783	1722	1753	1489	2018
N ₁	2170	2172	2208	2183	1989	2378
N ₂	2258	2237	2286	2260	2239	2281
Mean	2061	2064	2072	2066	1906	2226
C ₀	1926	1874	1918			
C ₁	2197	2254	2226			

S.E. of difference of two

1. C marginal means	= 7.3 lb./ac.
2. N or L marginal means	= 38.4 lb./ac.
3. N or L means at the same level of C	= 46.5 lb./ac.
4. C means at the same level of N or L	= 31.2 lb./ac.
S.E. of body of N×L table	= 47.0 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 56(3).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'M'.**

Object :—To study the effect of continuous application of A/S with different levels of lime and compost on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 25.6.1956/4.8.1956. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10"×6". (e) 2 to 3. (v) Nil. (vi) T-1145 (medium). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 82.73". (x) 26 to 28.11.1956.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(4) on page 24.

4. GENERAL :

(i) Satisfactory. Lodging in heavily manured plots. (ii) Mild attack of blast. Sprayed with Folidol. (iii) Yield of grain and straw, height, tiller counts and ear-length measurements. (iv) (a) 1948—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2579 lb./ac. (ii) (a) 267 lb./ac. for (C). (b) 151 lb./ac. for (NL). (c) 141 lb./ac. for (C×NL). (iii) Main effects of C, N and interaction C×N are highly significant. (iv) Av. yield of grain in lb./ac.

	L ₀	L ₁	L ₂	Mean	C ₀	C ₁
N ₀	2286	2201	2180	2222	1866	2578
N ₁	2729	2679	2666	2691	2470	2912
N ₂	2830	2824	2822	2825	2742	2908
Mean	2615	2568	2556	2579	2359	2799
C ₀	2382	2352	2344			
C ₁	2847	2784	2768			

S.E. of difference of two

- | | |
|--|----------------|
| 1. C marginal means | = 62.9 lb./ac. |
| 2. N or L marginal means | = 43.6 lb./ac. |
| 3. N or L means at the same level of C | = 59.6 lb./ac. |
| 4. C means at the same level of N or L | = 78.5 lb./ac. |
| S.E. of body of N×L table | = 53.4 lb./ac. |

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 57(18).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :- To study the effect of continuous application of A/S with different levels of lime and compost on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 27.6.1957/14.8.1957. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 10"×6". (e) 2 to 3. (v) Nil. (vi) T-1145 (medium). (vii) Irrigated. (viii) 1 interculturing and 1 hand weeding. (ix) 29.47". (x) 30.11.1957.

2. TREATMENTS :

Same as in expt. no. 54(4) on page 24.

3. DESIGN :

(i) Strip-plot. (ii) (a) 2 strips in one direction and 9 strips in the perpendicular direction. (b) N.A. (iii) 4. (iv) (a) 30'×11'8". (b) 28'×10". (v) 1'×10". (vi) Yes.

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4. GENERAL :

(i) Satisfactory. Lodging occurred in some plots. (ii) Attack of leaf roller on 9.10.1957. Spraying with Endrin. (iii) Yield of straw and grain, height, tiller count and ear-length measurements. (iv) (a) 1949—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2733 lb./ac. (ii) (a) 117 lb./ac. for (C). (b) 243 lb./ac. for (NL). (c) 250 lb./ac. for (C×NL). (iii) Main effects of C, N and interaction C×N are highly significant. (iv) Av. yield of grain in lb./ac.

	L ₀	L ₁	L ₂	Mean	C ₀	C ₁
N ₀	2277	2356	2251	2308	1994	2622
N ₁	2849	2671	2892	2804	2614	2994
N ₂	3170	3009	3081	3087	3125	3048
Mean	2765	2692	2741	2733	2578	2888
C ₀	2597	2576	2561			
C ₁	2933	2806	2922			

S.E. of difference of two

1. C marginal means = 27.6 lb./ac.
2. N or L marginal means = 70.1 lb./ac.
3. N or L means at the same level of C = 122.7 lb./ac.
4. C means at the same level of N or L = 87.8 lb./ac.
- S.E. of body of N×L table = 85.9 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 58(23).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :—To study the effect of continuous application of A/S with different levels of lime and compost on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 24.6.1958/11.8.1958. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) 25 lb./ac. (d) 10"×6". (e) 2 to 3. (v) Nil. (vi) T—1145 (medium). (vii) Irrigated. (viii) Interculture and hand weeding. (ix) 57.94". (x) 24 and 25.11.1958.

2. TREATMENTS :

Same as in expt. no. 54(4) on page 24.

3. DESIGN :

(i) Strip-plot. (ii) (a) 2 strips in one direction and 9 strips in the perpendicular direction. (b) N.A. (iii) 4. (iv) (a) 30'×11'8". (b) 28'×10". (v) 1'×10". (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Attack of mealy bugs. Controlled by spraying Folidol on 29.9.1958. (iii) Yield of straw, grain, height, tiller count and ear-length measurements. (iv) (a) 1948—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2352 lb./ac. (ii) (a) 117.6 lb./ac. for C. (b) 201.0 lb./ac. for (NL). (c) 122.4 lb./ac. for (C×NL). (iii) Main effects of N, C, and interaction N×C are highly significant. (iv) Av. yield of grain in lb./ac.

	N ₀	N ₁	N ₂	Mean	C ₀	C ₁
L ₀	2102	2388	2468	2319	2273	2366
L ₁	2092	2343	2542	2326	2217	2435
L ₂	2197	2476	2564	2412	2297	2527
Mean	2130	2402	2525	2352	2262	2443
C ₀	1893	2255	2638			
C ₁	2367	2549	2411			

S.E. of difference of two

- | | |
|--|----------------|
| 1. C marginal means | = 27.7 lb./ac. |
| 2. N or L marginal means | = 58.0 lb./ac. |
| 3. N or L means at the same level of C | = 67.9 lb./ac. |
| 4. C means at the same level of N or L | = 49.3 lb./ac. |
| S.E. of body of N×L table | = 71.1 lb./ac. |

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 59(33).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :- To study the effect of continuous application of A/S with different levels of lime and compost on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 2.7.1959/5.8.1959. (iv) (a) 2 puddlings and laddering. (b) Transplanted (c) 25 lb./ac. (d) 10"×6". (e) 2 to 3. (v) Nil. (vi) T-1145 (medium). (vii) Irrigated. (viii) 2 weedings by Japanese weeder. (ix) 45.05". (x) 21.11.1959.

2. TREATMENTS :

Same as in expt. no. 54(4) on page 24.

3. DESIGN :

(i) Strip-plot. (ii) (a) 2 strips in one direction and 9 strips in the perpendicular direction. (b) N.A. (iii) 4. (iv) (a) 30'×11'8". (b) 28'×10'. (v) 1'×10'. (vi) Yes.

4. GENERAL :

(i) Fairly good. (ii) Blast disease in heavily manured plots. (iii) Height, tiller count and yield of grain. (iv) (a) 1948 - contd. (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) Abnormally heavy rains in October. (vii) Nil.

5. RESULTS :

(i) 2165 lb./ac. (ii) (a) 490 lb./ac. for (C). (b) 198 lb./ac. for (NL). (c) 237 lb./ac. for (C×NL). (iii) N effect is highly significant. L effect and interaction C×N are significant. (iv) Av. yield of grain in lb./ac.

	N ₀	N ₁	N ₂	Mean	L ₀	L ₁	L ₂
C ₀	1529	2026	2410	1988	1903	1973	2089
C ₁	2028	2466	2530	2341	2303	2308	2414
Mean	1778	2246	2470	2165	2103	2140	2252
L ₀	1753	2198	2356				
L ₁	1700	2274	2446				
L ₂	1880	2265	2607				

S.E. of difference of two

1. C marginal means	= 115.5 lb./ac.
2. N or L marginal means	= 57.2 lb./ac.
3. N or L means at the same level of C	= 105.9 lb./ac.
4. C means at the same level of N or L	= 139.9 lb./ac.
S.E. of body of N×L table	= 70.0 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- C.R.R.I. 54(20).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :— To study the influence of deep placement of A/S in combination with P with or without lime on the yield of Paddy in low land soil.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 19.6.1954/16.7.1954. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10'×10". (e) 2 to 3. (v) Nil. (vi) T-1242 (late). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 55.24". (x) 22.12.1954.

2. TREATMENTS :

Main-plot treatments :

2 levels of lime : $L_0=0$ and $L_1=2000$ lb./ac.

Sub-plot treatments :

3 levels of P_2O_5 as Super : $P_0=0$, $P_1=50$ and $P_2=100$ lb./ac.

Sub-sub-plot treatments :

3 levels of N as A/S : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.

Lime and Super applied on 16.7.1954 and 25.6.1954 respectively.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 3 sub-plots/main-plot and 3 sub-sub-plots/sub-plot. (b) 135'×47'6". (iii) 4. (iv) (a) 21'8"×15'10". (b) 17'6"×14'2". (v) 2'1"×10". (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Height, tiller counts, grain and straw yield. (iv) (a) N.A. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2650 lb./ac. (ii) (a) 394 lb./ac. (b) 479 lb./ac. (c) 176 lb./ac. (iii) Main effects of N and L are highly significant. (iv) Av. yield of grain in lb./ac.

	P_0	P_1	P_2	Mean	L_0	L_1
N_0	2201	2412	2352	2322	2069	2575
N_1	2563	2730	2682	2660	2401	2918
N_2	2907	3025	2972	2968	2789	3146
Mean	2559	2722	2669	2650	2420	2880
L_0	2385	2435	2441			
L_1	2732	3009	2897			

S.E. of difference of two

1. L marginal means	= 92.9 lb./ac.	6. N means at the same level of L	= 71.7 lb./ac.
2. P marginal means	= 138.3 lb./ac.	7. L means at the same level of N	= 109.8 lb./ac.
3. N marginal means	= 50.8 lb./ac.	8. N means at the same level of P	= 87.8 lb./ac.
4. P means at the same level of L	= 195.6 lb./ac.	9. P means at the same level of N	= 155.8 lb./ac.
5. L means at the same level of P	= 184.7 lb./ac.		

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 55(19).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'M'.**

Object :— To compare the efficiency of surface and sub-surface application of different sources of N at planting and one month after planting on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 10.6.1955/31.7.1955. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10" × 9". (e) 2 to 3. (v) Nil. (vi) BAM—9 (late). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding (ix) 72.71". (x) 25.12.1955.

2. TREATMENTS :

All combinations of (1) and (2) + a control

(1) 4 sources of 30 lb./ac. of N : S₁=A/S, S₂=Ammono. Phos, S₃=A/C and S₄=Urea.

(2) 5 methods of application of fertilizers : M₁=Dry sub-surface, M₂=Sub-surface at planting, M₃=Sub-surface (pellet) at planting, M₄=Surface application one month after planting and M₅=Sub-surface (pellet) one month after planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 21. (b) 132' × 64.5'. (iii) 4. (iv) (a) 42.5' × 7.5'. (b) 40.83' × 6.0'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (b) N.A. (iii) Yield of grain and straw, height and tiller counts. (iv) (a) N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2539 lb./ac. (ii) 111.1 lb./ac. (iii) 'Control vs. others' is highly significant. (iv) Av. yield of grain in lb./ac.

Control = 2181 lb./ac.

	M ₁	M ₂	M ₃	M ₄	M ₅	Mean
S ₁	2639	2686	2670	2526	2695	2643
S ₂	2423	2495	2562	2478	2506	2493
S ₃	2614	2612	2548	2381	2626	2556
S ₄	2461	2490	2659	2406	2662	2536
Mean	2534	2571	2610	2448	2622	2557

S.E. of S marginal mean = 24.8 lb./ac.

S.E. of M marginal mean = 27.8 lb./ac.

S.E. of body of table or control mean = 55.6 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 56(18).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'M'.**

Object :— To compare the efficiency of sub-surface and surface application of different sources of N at planting and one month after planting on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 25.6.1956/16.8.1956. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10" × 9". (e) 2 to 3. (v) Nil. (vi) BAM—9. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 82.73". (x) N.A.

2. TREATMENTS

All combinations of (1) and (2)+control

(1) 4 sources of 30 lb./ac. of N : $S_1=A/S$, $S_2=Ammono. Phos$, $S_3=A/C$ and $S_4=Urea$.

(2) 5 methods of application of N : $M_1=Surface$ application one month after planting, $M_2=Sub-surface$ (pellet) at planting, $M_3=Sub-surface$ (pellet) one month after planting, $M_4=Sub-surface \frac{1}{2}$ at planting + $\frac{1}{2}$ one month after planting and $M_5=Sub-surface \frac{1}{2}$ at planting + $\frac{1}{2}$ at flowering.

3. DESIGN :

(i) R.B.D. (ii) (a) 21. (b) $132' \times 64.5'$. (iii) 4. (iv) (a) $42.5' \times 7.5'$. (b) $40.83' \times 5.83'$. (v) 1 row around. (vi) Yes.

4. GENERAL :

Same as in expt. no. 55(19) on page 29.

5. RESULTS :

(i) 1946 lb./ac. (ii) 194.4 lb./ac. (iii) Main effects of M and S are significant. (iv) Av. yield of grain in lb./ac.

Control = 1513 lb./ac.

	M_1	M_2	M_3	M_4	M_5	Mean
S_1	1829	1992	1941	2146	2320	2046
S_2	1786	1884	1904	2069	2229	1974
S_3	1812	1949	1947	2020	2241	1994
S_4	1680	1853	1776	1968	2013	1858
Mean	1777	1920	1892	2050	2201	1968

S.E. of S marginal mean = 48.6 lb./ac.
 S.E. of M marginal mean = 43.5 lb./ac.
 S.E. of body of table or control mean = 97.2 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 54(19).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :- To study the response of Paddy to organic and inorganic manures.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 19.6.1954/16.7.1954. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) $10'' \times 10''$. (e) 2 to 3. (v) Nil. (vi) T-1242 (late). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 55.24". (x) 13.12.1954.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N as compost : $C_0=0$, $C_1=30$, $C_2=60$ and $C_3=90$ lb./ac.

(2) 3 levels of N as A/S : $N_0=0$, $N_1=15$ and $N_2=30$ lb./ac.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) $19'2'' \times 30'$. (b) $17'6'' \times 28'4''$. (v) $10'' \times 10''$. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain and straw, height, tiller count and ear-length measurements. (iv) (a) 1951—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3164 lb./ac. (ii) 727.0 lb./ac. (iii) Main effects of C and N are highly significant. (iv) Av. yield of grain in lb./ac.

	N ₀	N ₁	N ₂	Mean
C ₀	2596	2948	3245	2930
C ₁	3069	3125	3100	3078
C ₂	3211	3094	3480	3262
C ₃	3000	3352	3807	3386
Mean	2954	3130	3408	3164

S.E. of N marginal mean = 181.7 lb./ac.
 S.E. of C marginal mean = 209.9 lb./ac.
 S.E. of body of table = 363.5 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 58(12).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :- To study the effect of application of fertilizers to the nursery and different levels of N to the field on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 23.6.1958/5.8.1958. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10"×10". (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 57.94". (x) 11.12.1958.

2. TREATMENTS :

Main-plot treatments :

3 levels of N : N₀=0, N₁=26.7 and N₂=53.5 lb./ac.

Sub-plot treatments :

2 seed treatments : S₁=Seedlings unfertilized given compost at 25 lb./plot and S₂=Seedlings fertilized with 15 lb./plot of N + 10 lb./plot of P₂O₅ and K₂O each.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 30'4"×8'2". (b) 28'8"×6'6". (v) 10"×10". (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Height, tiller counts, grain and straw yield. (iv) N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3139 lb./ac. (ii) (a) 751.5 lb./ac. (b) 284.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	N ₀	N ₁	N ₂	Mean
S ₁	2417	3461	3254	3044
S ₂	2683	3550	3467	3233
Mean	2550	3506	3360	3139

S.E. of difference of two

1. N marginal means = 375.8 lb./ac.
2. S marginal means = 116.1 lb./ac.
3. S means at the same level of N = 201.2 lb./ac.
4. N means at the same level of S = 401.7 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 58(16).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'M'.**

Object :—To study the growth and uptake of nutrients by Paddy crop under field conditions under different manurial treatments.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 23.6.1958/18.7.1958. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 9.8" × 9.8". (e) 2 to 3. (v) Nil. (vi) T—1242 (late). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 57.94". (x) N.A.

2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 4 levels of N as A/S : $N_0=0$, $N_1=17.8$, $N_2=35.7$ and $N_3=53.5$ lb./ac.
 (2) 2 levels of P_2O_5 : $P_0=0$ and $P_1=26.8$ lb./ac.
 (3) 2 levels of K_2O : $K_0=0$ and $K_1=26.8$ lb./ac.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 2. (iv) (a) 32.8' × 23.0'. (b) 31.2' × 21.3'. (v) One row around the experimental unit. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw, height, tiller counts and ear-length. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2589 lb./ac. (ii) 189.0 lb./ac. (iii) N effect is highly significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	N_3	Mean	K_0	K_1
P_0	2048	2529	2828	2890	2574	2589	2559
P_1	1929	2569	2984	2933	2604	2573	2634
Mean	1988	2549	2906	2912	2589	2581	2597
K_0	1865	2581	2858	3022			
K_1	2114	2518	2955	2802			

S.E. of N marginal mean = 66.8 lb./ac.
 S.E. of P or K marginal mean = 47.2 lb./ac.
 S.E. of body of N × P or N × K table = 94.5 lb./ac.
 S.E. of body of P × K table = 66.8 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 58(11).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'M'.**

Object :—To study the effect of N and its time of application on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 23.6.1958/29.7.1958. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 9.8" × 9.8". (e) 2 to 3. (v) P_2O_5 and K_2O each at 26.8 lb./ac. at puddling. (vi) T—141 (medium). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 57.94". (x) 8 and 9.12.1958.

2. TREATMENTS :

8 levels of N : $T_0=0$, $T_1=17.8$, $T_2=35.7$, $T_3=53.5$, $T_4=71.4$, $T_5=89.2$ lb./ac., $T_6=17.8$ lb./ac. as basal + 17.8 lb./ac. as top dressing and $T_7=35.7$ lb./ac. as basal + 17.8 lb./ac. as top dressing.
 Treatments T_1 to T_5 applied as basal dressing. Top dressing done at boot stage.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 60.7'×8.2'. (b) 59.0'×7.4'. (v) One row around. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw, height, tiller counts and ear-length measurements. (iv) (a) 1958—1959. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2518 lb./ac. (ii) 103.5 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Av. yield	1848	2084	2637	2850	3031	2701	2485	2511

S.E./mean = 51.8 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 59(22).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :—To study the effect of N and its time of application on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Aluvial clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 12.6.1959/10.8.1959. (iv) (a) Summer ploughing and puddling just before planting. (b) Transplanted. (c) N.A. (d) 9 8"×9.8". (e) 2 to 3. (v) Uniform basal application of 26.8 lb./ac. of each P₂O₅ and K₂O. (vi) T—141. (vii) Irrigated. (viii) 3 intercultures. (ix) N.A. (x) 4.12.1959.

2. TREATMENTS :

Same as in expt. no. 58(11) on page 34.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 59.0'×8.2'. (b) 57.4'×6 6'. (v) One row around. (vi) Yes.

4. GENERAL :

(i) Good. Some lodging occurred. (ii) N.A. (iii) Flowering dates, tiller counts, grain and straw yield. (iv) (a) 1958—1959. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2387 lb./ac. (ii) 174.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Av. yield	1178	1774	2383	2892	3208	2750	2307	2604

S.E./mean = 87.0 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 58(13).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :—To study the growth and uptake of nutrients by Paddy grown under irrigated, transplanted conditions with different manurial treatments.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis C.R.R.I., Cuttack. (iii) 12.6.1959/31.7.1959. (iv) (a) 4 ploughings, laddering, and levelling. (b) Transplanted. (c) N.A. (d) 9 8"×5.9". (e) 2 to 3. (v) Nil. (vi) PTB 10 (early). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 57.94". (x) 17.10.1959.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : $N_0=0$, $N_1=26.8$, $N_2=53.5$ and $N_3=80.3$ lb./ac.

(2) 3 levels of P_2O_5 : $P_0=0$, $P_1=44.6$ and $P_2=89.2$ lb./ac.

Manures applied on 30.7.1959.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 18.7'×8.2'. (b) 17.7'×6.6' (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw, height measurements and tiller counts. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1712 lb./ac. (ii) 383.6 lb./ac. (iii) N effect alone is highly significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	N_3	Mean
P_0	1085	1693	1321	2362	1615
P_1	1255	1842	2195	2365	1914
P_2	986	1834	1927	1677	1606
Mean	1109	1790	1814	2135	1712

S.E. of N marginal mean = 127.9 lb./ac.

S.E. of P marginal mean = 110.7 lb./ac.

SE of body of table = 221.5 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 54(5).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :- To study the response of Paddy to dhanicha and A/S.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 19.6.1954/26.7.1954. (iv) (a) 4 ploughings, lagging and levelling. (b) Transplanted. (c) and (d) N.A. (e) 2 to 3. (v) Nil. (vi) T-90 (late). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 55.24". (x) 13 and 14.12.1954.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N as A/S : $N_0=0$, $N_1=10$, $N_2=20$ and $N_3=30$ lb./ac.

(2) 4 levels of N as dhanicha : $D_0=0$, $D_1=10$, $D_2=20$ and $D_3=30$ lb./ac.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 14'2"×20'10". (b) 11'8"×18'4". (v) 1 row around. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain and straw, height, tiller counts and ear-length measurements. (iv) (a) 1950-1954. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3032 lb./ac. (ii) 185.3 lb./ac. (iii) Main effects of D and N are highly significant. (iv) Av. yield of grain in lb./ac.

	D ₀	D ₁	D ₂	D ₃	Mean
N ₀	2180	2664	3238	3395	2869
N ₁	2181	2864	3277	3563	2971
N ₂	2456	3075	3453	3406	3098
N ₃	2590	3201	3450	3510	3188
Mean	2352	2951	3355	3468	3032

S.E. of any marginal mean = 46.3 lb./ac.
S.E. of body of table = 92.6 lb./ac.

Crop :- Paddy.

Ref :- C.R.R.I. 54(18).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :— To study the efficiency of mung grown as such with pillipesara and P for seed and as G.M. to Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loom. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 17.6.1954/18.7.1954. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 9" × 6". (e) 2 to 3. (v) Nil. (vi) PTB—10. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 55.24". (x) 12.10.1954.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 treatments applied to the previous crop : T₀=Fallow, T₁=Mung as G.M., T₂=Mung for seed and T₃=Mung for seed + pillipesara.

(2) 3 levels of P₂O₅ : P₀=Control, P₁=30 lb./ac. of P₂O₅ applied to previous crop and P₂=30 lb./ac. of P₂O₅ applied to paddy crop.

3. DESIGN :

(i) Fact in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 14' × 13'. (b) 12' × 11.5'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw, height, tiller counts and ear-length measurements. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2874 lb./ac. (ii) 192.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	T ₀	T ₁	T ₂	T ₃	Mean
P ₀	2730	2995	2844	2766	2834
P ₁	2892	2949	2817	2822	2870
P ₂	2872	2982	2825	2789	2917
Mean	2831	2975	2829	2859	2874

S.E. of T marginal mean = 55.6 lb./ac.
S.E. of P marginal mean = 48.2 lb./ac.
S.E. of body of table = 96.3 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 55(14)****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'M'.**

Object :- To study the efficiency of mung grown as such and with pillipesara for seed and as G.M. to Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 13.6.1955/25.7.1955. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted (c) N.A. (d) 9" x 6". (e) 3 to 3. (v) Nil. (vi) PTB-10 (early). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding (ix) 72.71". (x) 13.10.1955.

2. TREATMENTS :

Same as in expt. no. 54(18) on page 37.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 15' x 14'. (b) 13½' x 13'. (v) 1 row around. (vi) Yes.

4. GENERAL :

Same as in expt. no. 54(18) on page 37.

5. RESULTS :

(i) 2382 lb./ac. (ii) 159.2 lb./ac. (iii) Main effect of T alone is significant. (iv) Av. yield of grain in lb./ac.

	T ₀	T ₁	T ₂	T ₃	Mean
P ₀	2247	2579	2257	2377	2365
P ₁	2377	2458	2316	2298	2362
P ₂	2345	2487	2373	2473	2420
Mean	2323	2508	2315	2383	2382

S.E. of T marginal mean = 45.9 lb./ac.

S.E. of P marginal mean = 39.8 lb./ac.

S.E. of body of table = 79.6 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 56(8).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'M'.**

Object :- To study the efficiency of mung grown as such and with pillipesara for seed and as G.M. to Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) N.A. (iii) 28.6.1956/1 and 2.8.1956. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10" x 6". (e) 2 to 3. (v) Nil. (vi) T-1145 (medium). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and one hand-weeding. (ix) 82.73". (x) 20.11.1956.

2. TREATMENTS :

Same as in expt. no. 54(18) on page 37.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 22' x 20'. (b) 20' x 18½'. (v) 1' x 10". (vi) Yes.

4. GENERAL :

Same as in expt. no. 54(18) on page 37.

5. RESULTS :

(i) 2217 lb./ac. (ii) 393.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	T ₀	T ₁	T ₂	T ₃	Mean
P ₀	2161	2464	2083	2353	2265
P ₁	2072	2315	2193	2334	2228
P ₂	2163	2236	2064	2166	2157
Mean	2132	2338	2113	2284	2217

S.E. of T marginal mean = 113.5 lb./ac.
 S.E. of P marginal mean = 98.3 lb./ac.
 S.E. of body of table = 196.6 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 57(5).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object:--To study the efficiency of mung grown as such and with pillipesara and P for seed and as G.M. to Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 28.6.1957/13.8.1957. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10"×6". (e) 2 to 3. (v) Nil. (vi) T-1145 (medium). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and one hand weeding. (ix) 29.47". (x) 29.11.1957.

2. TREATMENTS :

Same as in expt. no. 54(18) on page 37.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 22'×20'. (b) 20'×18'4". (v) 1'×10". (vi) Yes.

4. GENERAL :

Same as in expt. no. 54(18) on page 37.

5. RESULTS :

(i) 2921 lb./ac. (ii) 116.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	T ₀	T ₁	T ₂	T ₃	Mean
P ₀	2842	3018	2997	2803	2915
P ₁	2860	2994	2951	2996	2950
P ₂	2983	2911	2866	2829	2898
Mean	2897	2974	2938	2876	2921

S.E. of T marginal mean = 33.6 lb./ac.
 S.E. of P marginal mean = 29.1 lb./ac.
 S.E. of body of table = 58.2 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 55(6).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'M'.**

Object :—To find out the efficiency of different G.M. brought from outside on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 17.6.1955/21.7.1955. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10"×10". (e) 2 to 3. (v) Nil. (vi) T - 1242 (late). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and one hand weeding. (ix) 72.71". (x) 13.12.1955.

2. TREATMENTS :

16 G.M. treatments : G₀=Control (no G.M.), G₁=*Dhaincha*, G₂=*Sesbania speciosa*, G₃=*Sannhemp*, G₄=*Phaseolus Semirectus*, G₅=*Cassia Li Shenaultiana*, G₆=*Wild Cassia*, G₇=*Crotalaria Skiata*, G₈=*Crotalaria Usarmeonsis*, G₉=*Crotalaria Brownei*, G₁₀=*Tephrosia Candida*, G₁₁=*Tephrosia Purpurea*, G₁₂=*Aescopnomena Americana*, G₁₃=*Glyricidia Maculata*, G₁₄=*Desmodium Gyroids*, and G₁₅=A/S at 20 lb./ac. of N.

3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 15'×11'8". (b) 1/326.7 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain and straw, height, tiller counts, and ear-length measurements. (iv) (a) 1955—1957. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2562 lb./ac. (ii) 272.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	G ₀	G ₁	G ₂	G ₃	G ₄	G ₅	G ₆	G ₇
Av. yield	2323	2562	2535	2544	2646	2787	2516	2738
Treatment	G ₈	G ₉	G ₁₀	G ₁₁	G ₁₂	G ₁₃	G ₁₄	G ₁₅
Av. yield	2643	2710	2424	2413	2400	2532	2452	2763

S.E./mean = 136.1 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 56(6).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'M'.**

Object :—To find out the efficiency of different G.M. brought from outside on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 22.6.1956./26.7.1956. (iv) (a) 4 ploughings laddering and levelling. (b) Transplanted. (c) N.A. (d) 10"×10". (e) 2 to 3. (v) Nil. (vi) T—1242 (late). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 82.73". (x) 27.12.1956.

2. TREATMENTS :

Same as in expt. no. 55(6) on page above.

3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 23'4"×14'2". (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

Same as in expt. no. 55(6) on page above.

5. RESULTS :

(i) 2131 lb./ac. (ii) 223.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	G ₀	G ₁	G ₂	G ₃	G ₄	G ₅	G ₆	G ₇
Av. yield	1983	2137	2123	2107	2230	2185	2085	2174
Treatment	G ₈	G ₉	G ₁₀	G ₁₁	G ₁₂	G ₁₃	G ₁₄	G ₁₅
Av. yield	2091	2243	2139	2021	2114	2066	1999	2400

S.E./mean = 111.7 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 57(8).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :- To find out the efficiency of different G.M. brought from outside on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 26.6.1957./1.8.1957. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10" x 10". (e) 2 to 3. (v) Nil. (vi) T-1242 (late). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 29.47". (x) 25.12.1957.

2. TREATMENTS :

Same as in expt. no. 55(6) on page 40.

3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 23'4" x 14'2". (b) 21'8" x 12'6". (v) 1 row around. (vi) Yes.

4. GENERAL :

Same as in expt. no. 55(6) on page 40.

5. RESULTS :

(i) 2173 lb./ac. (ii) 219.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	G ₀	G ₁	G ₂	G ₃	G ₄	G ₅	G ₆	G ₇
Av. yield	1882	2076	2015	2208	2283	2322	2070	2471
Treatment	G ₈	G ₉	G ₁₀	G ₁₁	G ₁₂	G ₁₃	G ₁₄	G ₁₅
Av. yield	2211	2311	1917	2424	2112	2374	1932	2158

S.E./mean = 109.6 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 54(21).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :- To study different methods of application of A/S on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 11.6.1954/17.7.1954. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10" x 6". (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and one hand weeding. (ix) 55.24". (x) 29.11.1954.

2. TREATMENTS :

5 methods of applications of A/S : M₀=Control, M₁=20 lb./ac. of N as A/S applied before planting and puddled in, M₂=M₁ + 10 lb./ac. of N as pellets 3 weeks after planting, M₃=20 lb./ac. of N as pellets 3 weeks after planting and M₄=20 lb./ac. of N broadcast 3 weeks after planting.

A/S applied on 16.8.1954 and 17.7.1954.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 15'×4.2'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Height, tiller counts and yield of grain. (iv) (a) 1953—contd. (b) Yes (c) Nil. (v) to (vii) Nil

5. RESULTS :

(i) 3125 lb./ac. (ii) 348.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄
Av. yield	2932	3196	3190	3203	3165

S.E./mean = 142.2 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 54(15).

Site :- Central Rice Res. Instt, Cuttack.

Type :- 'M'.

Object :-To compare the efficiency of dhaincha as G.M. buried on different dates.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 20.6.1954/3.8.1954. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 9"×10". (e) 2 to 3. (v) Nil. (vi) T-11 (medium). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 55.24". (x) 9 and 10.12.1954.

2. TREATMENTS :

12 manurial treatments : T₀=Control (no manure), T₁=20 lb./ac. of N as A/S, T₂=53 days old *dhaincha* buried on 18.6.1954, T₃=83 days old *dhaincha* buried on 18.6.1954, T₄=53 days old *dhaincha* buried on 8.7.1954, T₅=83 days old *dhaincha* buried on 8.7.1954, T₆=53 days old *dhaincha* buried on 28.7.1954, T₇=83 days old *dhaincha* buried on 28.7.1954, T₈=40 days old compost made on 18.6.1954 from 53 days old *dhaincha* buried on 28.7.1954, T₉=40 days old compost made on 18.6.1954, from 83 days old *dhaincha* buried on 28.7.1954, T₁₀=20 days old compost made on 8th July from 83 days old *dhaincha* buried on 28.7.1954 and T₁₁=20 days old compost on 8.7.1954 from 33 days old *dhaincha* buried on 28.7.1954.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 30'×30'. (b) 23'6"×18'4". (v) 1 row around. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain, straw, height, tiller counts and ear-length measurements. (iv) (a) 1953—contd. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3299 lb./ac. (ii) 240.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁
Av. yield	3196	3244	3365	3506	3305	3334	3326	3188	3159	3375	3352	3435

S.E./mean = 120.0 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 55(9).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :— To study the effect of time and method of incorporating G.M. crop in the soil on the yield of subsequent Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 17.6.1955/5.8.1955. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) and (d) N.A. (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) 2 intercultures with Japanese weeder and one hand weeding. (ix) 72.71". (x) 3 and 4.12.1959.

2. TREATMENTS :

All combinations of (1) and (2) + 2 extra treatments

(1) 2 ages of *dhaincha* at burying : $A_1=60$ and $A_2=90$ days.

(2) 6 green manurial treatments : $M_1= Dhaincha$ buried on 1st June, $M_2= Dhaincha$ buried on 1st July, $M_3= Dhaincha$ buried on 15th July, $M_4= Dhaincha$ grown *in situ* and buried on 1st June, $M_5= Dhaincha$ composted and buried on 1st June and $M_6= Dhaincha$ composted and buried on 1st July.

Extra treatments : $T_0=Control$ and $T_1=20$ lb./ac. of N as A/S.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) $16'8'' \times 30'$. (b) $15' \times 28'$. (v) $10'' \times 1'$. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain, straw, height, tiller and ear-length measurements. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2640 lb./ac. (ii) 155.0 lb./ac. (iii) " T_0 vs. T_1 " and "extra treatments vs. others" are significant. (iv) Av. yield of grain in lb./ac.

$T_0 = 2414$ lb./ac. and $T_1 = 2667$ lb./ac.

	M_1	M_2	M_3	M_4	M_5	M_6	Mean
A_1	2669	2744	2877	2838	2645	2523	2716
A_2	2775	2596	2571	2679	2586	2574	2630
Mean	2722	2670	2724	2758	2615	2549	2673

S.E. of A marginal mean = 31.6 lb./ac.

S.E. of M marginal mean = 54.8 lb./ac.

S.E. of body of table or extra treatment mean = 77.5 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 56(19).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :— To study the effect of time and method of incorporating G.M. crop in the soil on the yield of subsequent Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 5.7.1956/7.8.1956. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted after dry nursery. (c) 25 lb./ac. (d) $10'' \times 1'$. (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and one hand weeding. (ix) 82.73". (x) 18.12.1956.

2. TREATMENTS :

All combinations of (1) and (2) + 2 extra treatments

(1) 2 ages of *dhaincha* at burrying : $A_1=8$ and $A_2=12$ weeks.

(2) 7 green manurial treatments : $M_1=$ *Dhaincha* buried 8 weeks before planting, $M_2=$ *Dhaincha* buried 4 weeks before planting, $M_3=$ *Dhaincha* buried 2 weeks before planting, $M_4=$ *Dhaincha* buried just before planting, $M_5=$ *Dhaincha* composted 8 weeks before planting, $M_6=$ *Dhaincha* composted 4 weeks before planting and $M_7=$ *Dhaincha* grown *in situ* and buried 2 weeks before planting.

Extra treatments : $T_0=$ Control and $T_1=20$ lb./ac. of N as A/S.

3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) $30' \times 15'$. (b) $28' \times 13'4''$. (v) $12'' \times 10''$. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain and straw, height, tiller counts and ear-length measurements. (iv) (a) 1953—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2094 lb./ac. (ii) 291.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

$$T_0 = 1913 \text{ lb./ac. and } T_1 = 1959 \text{ lb./ac.}$$

	M_1	M_2	M_3	M_4	M_5	M_6	M_7	Mean
A_1	2062	2125	2188	2234	1919	1862	2432	2117
A_2	2241	2230	2000	2074	1975	1936	2257	2115
Mean	2152	2177	2139	2154	1947	1899	2344	2116

S E. of A marginal mean = 55.1 lb./ac.
 S.E. of M marginal mean = 103.2 lb./ac.
 S E. of body of table or Extra treatment mean = 145.9 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- C.R.R.I. 57(9).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :— To study the effect of time and method of incorporation of G.M. in the soil on the yield of Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 28.6.1957/8.8.1957. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) $10'' \times 6''$. (e) 2 to 3. (v) Nil. (vi) T—141 (medium). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 29.47". (x) 7.12.1957.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(19) on page 43.

5. RESULTS :

(i) 3109 lb./ac. (ii) 262.1 lb./ac. (iii) M effect and 'control vs. others' are significant. (iv) Av. yield of grain in lb./ac.

$$T_0 = 2825 \text{ lb./ac. and } T_1 = 3181 \text{ lb./ac.}$$

	M_1	M_2	M_3	M_4	M_5	M_6	M_7	Mean
A_1	2862	10	3113	3349	2906	3018	3484	3106
A_2	3313	189	3202	2977	3109	2887	3322	3143
Mean	3087	3100	3157	3163	3007	2952	3403	3124

S.E. of A marginal mean	= 49.5 lb./ac.
S.E. of M marginal mean	= 92.6 lb./ac.
S.E. of body of table	= 131.0 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 54(11).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :- To study the efficiency of dhaincha and sannhemp grown within plot and brought from outside applied alone and in combinations with inorganic fertilizers.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (b) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 20.6.1954/29.7.1954. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10" x 9". (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 5.1.24". (x) 4 and 5.12.1954.

2. TREATMENTS :

All combinations of (1) (2), (3), (4), (5) and (6)

- (1) 2 types of G.M. : A_0 =Sannhemp and A_1 =Dhaincha.
- (2) 2 methods of application : B_0 =Brought from outside and B_1 =Grown in situ.
- (3) 2 levels of lime : C_0 =0 and C_1 = $\frac{1}{2}$ tons/ac.
- (4) 2 levels of P_2O_5 as Super to G.M. : D_0 =0 and D_1 =50 lb./ac.
- (5) 2 levels on N as A/S : E_0 =0 and E_1 =30 lb./ac.
- (6) 2 levels of P_2O_5 to paddy : F_0 =0 and F_1 =50 lb./ac.

3. DESIGN :

(i) 2⁶ confd. (ii) (a) 16 plots/block ; 4 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 30' x 15'. (b) 28.33' x 13.5'. (v) 1 row around. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Straw and grain yields, height, tiller and ear-length measurements. (iv) (a) 1953—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3731 lb./ac. (ii) 245.0 lb./ac. (iii) None of the effects is significant. (iv) Mean and differential response table of grain in lb./ac.

		Differential response											
Mean response		A		B		C		D		E		F	
		A_0	A_1	B_0	B_1	C_0	C_1	D_0	D_1	E_0	E_1	F_0	F_1
A	-60.8	—	—	-145.6	24.1	-73.1	-48.4	-75.3	-46.2	-32.0	-89.5	-35.8	-85.8
B	-4.2	-89.1	80.6	—	—	-32.8	-41.2	4.6	-13.1	132.8	-142.4	118.9	-127.4
C	-18.1	5.8	30.5	55.1	-18.9	—	—	45.4	-9.2	39.4	-3.1	53.8	-17.5
D	-76.7	-94.2	-65.1	-70.8	-88.5	-52.4	-107.0	—	—	-68.4	-91.0	-100.1	-59.2
E	-671.9	-643.1	-700.6	-533.8	-810.0	-650.6	-693.1	-660.6	-683.2	—	—	-762.9	-580.9
F	-30.5	-5.5	-55.5	92.6	-153.6	+5.1	-66.1	-50.9	-10.1	-121.5	60.5	—	—

S.E. of mean response = 61.2 lb./ac. S.E. of differential response = 43.3 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 54(11).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'M'.**

Object :— To study the efficiency of dhaincha and sannhemp grown in situ and brought from outside applied alone and in combinations with inorganic fertilizers.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (i) 20.6.1955/7.8.1955. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10" x 6". (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and one hand weeding. (ix) 72.71". (x) 28 to 30.11.1955.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(11) on page 45.

5. RESULTS :

(i) 2428 lb./ac. (ii) 212.0 lb./ac. (iii) Main effects of B, D and E are significant. Interaction A x C is significant. (iv) Mean and differential responses table of grain in lb./ac.

		Differential response											
	Mean response	A		B		C		D		E		F	
		A ₀	A ₁	B ₀	B ₁	C ₀	C ₁	D ₀	D ₁	E ₀	E ₁	F ₀	F ₁
A	-16.8	—	—	-28.3	-61.9	-136.8	103.2	38.1	-71.7	38.4	-72.1	-45.1	11.4
B	-262.8	-217.6	-307.9	—	—	-213.3	-309.7	-263.3	-262.2	-324.9	-200.6	-187.1	-338.4
C	26.6	-93.4	146.6	73.6	-20.3	—	—	83.1	-29.8	39.1	14.2	48.2	5.1
D	-60.2	-5.4	-115.1	-60.8	-59.7	-3.8	-116.7	—	—	-68.1	-51.6	-52.7	-67.8
E	-554.0	-498.8	-609.2	-606.2	-491.8	-541.6	-587.7	-562.7	-545.3	—	—	-492.2	-605.8
F	117.8	89.5	146.0	193.4	42.1	139.3	96.2	125.3	110.2	179.7	55.9	—	—

S.E. of mean response = 53.0 lb./ac. S.E. of differential response = 37.5 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 56(7).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'M'.**

Object :— To study the efficiency of dhaincha and sannhemp grown in situ and brought from outside, applied alone and in combinations with inorganic fertilizers.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 22.6.1956/21.7.1956. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10" x 6". (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 82.73". (x) 8.12.1956.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(11) on page 45.

5. RESULTS :

(i) 2790 lb./ac. (ii) 313.3 lb./ac. (iii) Interactions A x F and D x E are significant. (iv) Mean and differential response table of grain in lb./ac.

Differential response

	Mean response	A		B		C		D		E		F	
		A ₀	A ₁	B ₀	B ₁	C ₀	C ₁	D ₀	D ₁	E ₀	E ₁	F ₀	F ₁
A	33.6	—	—	-59.4	126.6	-48.8	115.9	-49.4	117.0	78.2	-11.0	-29.3	96.5
B	31.3	-59.8	126.3	—	—	67.8	-1.2	136.7	-70.1	79.3	-12.8	-14.8	81.4
C	126.8	41.5	209.2	161.3	92.4	—	—	225.8	27.9	150.6	103.1	41.7	212.0
D	142.8	59.4	226.2	246.2	39.4	241.8	43.8	—	—	-51.4	337.2	141.4	144.1
E	-101.6	-57.0	-146.2	-55.6	-147.6	-77.9	-125.3	-296.1	92.9	—	—	-86.4	-116.8
F	3.8	-59.1	+66.7	44.3	-36.8	-81.4	89.0	2.4	5.1	18.9	-11.4	—	—

S.E. of mean response = 78.3 lb./ac. S.E. of differential response = 55.4 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 57(6).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object:—To study the efficiency of dhaincha and sannhamp, grown in situ and brought from outside applied alone and in combinations with inorganic fertilizers.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 21.6.1957/6.8.1957. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10" x 6". (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 29.47". (x) 12.12.1957.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(11) on page 45.

5. RESULTS :

(i) 2800 lb./ac. (ii) 403.8 lb./ac. (iii) Main effect of E is significant. (iv) Mean and differential response of grain in lb./ac.

Differential response

	Mean response	A		B		C		D		E		F	
		A ₀	A ₁	B ₀	B ₁	C ₀	C ₁	D ₀	D ₁	E ₀	E ₁	F ₀	F ₁
A	145.1	—	—	142.8	147.5	9.4	280.8	35.4	254.8	37.8	252.5	152.9	137.4
B	113.8	111.4	116.1	—	—	148.8	78.7	32.0	195.6	124.0	103.5	121.4	106.1
C	0.4	-135.2	136.1	35.5	-34.6	—	—	85.9	-85.1	11.2	-10.4	-25.1	26.0
D	-44.9	-154.6	64.8	-126.8	36.9	40.6	-130.4	—	—	-190.2	100.4	-58.9	-31.0
E	347.1	454.5	239.7	357.4	336.9	357.9	336.3	201.7	492.4	—	—	379.6	314.6
F	-29.2	-21.5	-37.0	-21.6	-36.9	-54.8	-3.7	-43.2	-15.3	3.2	-62.1	—	—

S.E. of mean response = 100.9 lb./ac. S.E. of differential response = 70.8 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 54(12).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :-To find out the effect of various G.M. crops grown in situ on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 11.6.1954/24.7.1954. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10"×9". (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 55.2%. (x) 24 and 25.11.1954.

2. TREATMENTS :

15 manurial treatments : T₀=Control, T₁=*Dhaincha*, T₂=*Sesbania speciosa*, T₃=*Sannhemp*, T₄=*P. semirectus*, T₅=*Pillipesara*, T₆=*C. striata*, T₇=*C. leaschenaurtiana*, T₈=*Wild cassia*, T₉=*Mung* type 1, T₁₀=*S. Grandiflora*, T₁₁=*T. candida*, T₁₂=*Jowar*, T₁₃=Compost and T₁₄=20 lb./ac. of N as A/S.

3. DESIGN :

(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) 24'×20'. (b) 22.5"×19'2". (v) 1 row around. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw, height, tiller and ear-length measurements. (iv) (a) 1953—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3904 lb./ac. (ii) 320.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Av. yield	3555	4191	4049	3659	3986	3882	3849	3771
Treatment	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂	T ₁₃	T ₁₄	
Av. yield	3989	3877	3905	3741	3890	4169	4040	

S.E./mean = 160.3 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 55(7).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :-To find out the effect of various G.M. crops grown in situ on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 22.6.1965/9.8.1955. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10"×6". (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 72.73%. (x) 10.12.1955.

2. TREATMENTS :

16 manurial treatments : T₀=Control, T₁=*Dhaincha*, T₂=*Sesbania speciosa*, T₃=*Sannhemp*, T₄=*C. leaschenaurtiana*, T₅=*P. Semirectus*, T₆=*Mung* (local), T₇=*Pillipesara*, T₈=*Crotolaria striata*, T₉=*Wild cassia*, T₁₀=*T. Candida*, T₁₁=*Cowpea*, T₁₂=*Crotolaria usermoensis*, T₁₃=*Jowar*. T₁₄=Compost and T₁₅=20 lb./ac. of N as A/S.

3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 30'×15'. (b) 28'×13'4". (v) 1'×10". (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw, height, tillers and ear-length measurements. (iv) (a) 1953—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2796 lb./ac. (ii) 134.2 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Av. yield	2719	2835	2917	2585	3007	2832	2834	2783
Treatment	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂	T ₁₃	T ₁₄	T ₁₅
Av. yield	2922	2869	2838	2782	2643	2699	2739	2734

S.E./mean = 67.1 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 56(5).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :—To find out the effect of various G.M. crops grown in situ on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 5.7.1956/9 and 10.8.1956. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10"×6". (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 82.73". (x) 13 and 14.12.1956.

2. TREATMENTS :

16 manurial treatments : T₁=*Dhaincha*, T₂=*Sesbania speciosa*, T₃=*Sannhemp*, T₄=*P. semirectus*, T₅=*C. leschenaurtiana*, T₆=*Mung* (local), T₇=*Aeschynomene americana*, T₈=*Crotolaria*, T₉=*Wild cassia*, T₁₀=*Tephrosia candida*, T₁₁=*Cowpea* (local), T₁₂=*Crotolaria usermoensis*, T₁₃=*Jute*, T₁₄=*Compost* and T₁₅=20 lb./ac. of N as A/S.

3. DESIGN and 4. GENERAL :

Same as in expt. no 55(7) on page 48.

5. RESULTS :

(i) 2936 lb./ac. (ii) 176.2 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Av. yield	2719	3028	3041	2866	3079	3073	2821	2772
Treatment	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂	T ₁₃	T ₁₄	T ₁₅
Av. yield	3003	2873	2814	2963	2935	2961	2951	3079

S.E./mean = 88.1 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 57(10).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :—To find out the relative efficiency of various green manures grown in situ in comparison with compost and A/S for Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 28.6.1957/23.8.1957. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10"×6". (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 29.47". (x) 20.12.1957.

2. TREATMENTS :

16 manurial treatments : T₀=Control, T₁=*Dhaincha*, T₂=*Sesbania speciosa*, T₃=*Sannhemp*, T₄=*P. Semi-rectus*, T₅=*C. leschenaurtiana*, T₆=*Mung*, T₇=*Aeschynomene americana*, T₈=*Crotolaria striata*, T₉=*Wild cassia*, T₁₀=*Pillipesara*, T₁₁=*Cowpea*, T₁₂=*Crotolaria usermoensis*, T₁₃=*Sesamum*, T₁₄=Compost and T₁₅=20 lb/ac. of N as A/S.

3. DESIGN and 4. GENERAL :

Same as in expt. no. 55(7) on page 48.

5. RESULTS :

(i) 2268 lb./ac. (ii) 259.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Av. yield	1852	2397	2389	1944	2359	2440	2101	2440
Treatment	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂	T ₁₃	T ₁₄	T ₁₅
Av. yield	2476	2398	2281	2418	1964	1963	2264	2599

S.E /mean = 130.0 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- C.R.R.I. 54(1).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :—To study the effect of continuous application of A/S with and without compost on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 23.6.1954/6.8.1954. (iv) (a) 4 ploughings, 1 laddering and levelling. (b) Transplanted. (c) N.A. (d) 10"×6". (e) 2 to 3. (v) Nil. (vi) T-1145 (medium). (vii) Irrigated. (viii) 3 weedings (ix) 55.24". (x) 20 and 23.11.1954.

2. TREATMENTS :

Main-plot treatments :

2 levels of compost : C₀=0 and C₁=100 mds./ac.

Sub-plot treatments :

5 levels of N as A/S : N₀=0, N₁=20, N₂=40, N₃=60 and N₄=80 lb./ac.

Fertilizer applied on 24.8.1954.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 60'×10.8'. (b) 58'×9.2'. (v) 1 row around. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw, height, tillers and ear-length measurements. (iv) (a) 1949—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2755 lb./ac. (ii) (a) 198.6 lb./ac. (b) 134.7 lb./ac. (iii) Main effect of C is significant. Main effect of N and interaction N×C are highly significant. (iv) Av. yield of grain in lb./ac.

	N ₀	N ₁	N ₂	N ₃	N ₄	Mean
C ₀	1982	2261	2718	3020	2961	2589
C ₁	2519	2792	3110	3193	2997	2922
Mean	2250	2527	2914	3107	2979	2755

S.E. of difference of two

1. C marginal means	= 62.8 lb./ac.
2. N marginal means	= 67.4 lb./ac.
3. N means at the same level of C	= 95.3 lb./ac.
4. C means at the same level of N	= 105.9 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 55(1).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :— To study the effect of continuous application of A/S with and without compost on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 10.6.1955 /1.8.1955. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10' × 6'. (e) 2 to 3. (v) Nil. (vi) T—1145 (medium). (vii) Irrigated. (viii) 2 to 3 weedings with Japanese weeder and hand weeder. (ix) 72.71°. (x) 23 and 24.11.1955.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(1) on page 50.

Fertilizer applied on 17.8.1955.

4. GENERAL :

(i) Satisfactory. Lodging on 11.10.1955 and 31.10.1955. (ii) N.A. (iii) Yield of grain and straw, height, tillers and ear-length measurements. (iv) (a) 1949—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1948 lb./ac. (ii) (a) 120.2 lb./ac. (b) 73.0 lb./ac. (iii) C effect is significant. Main effects of N and interaction N × C are highly significant. (iv) Av. yield of grain in lb./ac.

	N ₀	N ₁	N ₂	N ₃	N ₄	Mean
C ₀	1653	2085	2296	2251	1956	2048
C ₁	2144	2374	2108	1635	1338	1920
Mean	1898	2229	2202	1943	1647	1984

S.E. of difference of two

1. C marginal means	= 38.0 lb./ac.
2. N marginal means	= 36.6 lb./ac.
3. N means at the same level of C	= 51.6 lb./ac.
4. C means at the same level of N	= 59.8 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 56(1).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :—To study the effect of continuous application of A/S with and without compost on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 25.6.1956/8.8.1956. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10"×6". (e) 2 to 3. (v) Nil. (vi) T—1145 (medium). (vii) Irrigated. (viii) 2 to 3 weedings with Japanese weeder and hand weeder. (ix) 82.73". (x) 4 and 5.12.1956.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(1) on page 50.
Fertilizers applied on 22.8.1956.

4. GENERAL :

(i) Satisfactory. Lodging on 1.11.1956. (ii) Nil. (iii) Yield of grain and straw, height, tiller counts and ear-length measurements. (iv) (a) 1949—contd. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2420 lb./ac. (ii) (a) 213.0 lb./ac. (b) 154.2 lb./ac. (iii) Main effect of C is significant. Main effect of N and interaction C×N are highly significant. (iv) Av. yield of grain in lb./ac.

	N ₀	N ₁	N ₂	N ₃	N ₄	Mean
C ₀	1743	2151	2487	2608	2503	2298
C ₁	2420	2730	2892	2499	2169	2542
Mean	2082	2441	2689	2554	2336	2420

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. C marginal means | = 67.0 lb./ac. |
| 2. N marginal means | = 77.0 lb./ac. |
| 3. N means at the same level of C | = 109.0 lb./ac. |
| 4. C means at the same level of N | = 118.9 lb./ac. |

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 59(21).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'M'.

Object :- To study the comparative efficiency of Urea and A/S as fertilizer for low land Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Heavy loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 12.6.1959/28.7.1959. (iv) (a) 2 summer ploughings and puddling. (b) Transplanted. (c) N.A. (d) 10"×10". (e) 2 to 3. (v) Nil. (vi) T—1242. (vii) Irrigated. (viii) 2 intercultures. (ix) N.A. (x) 18.12.1959.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 sources of 35.7 lb./ac. of N : S₁=A/S and S₂=Urea.

(2) 4 times of application of N : T₁=At preliminary puddling (24.7.1959), T₂=At final puddling (27.7.1959), T₃=At planting (28.7.1959) and T₄=At post planting (29.8.1959).

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 32.8'×23'. (b) 31.2'×19.7'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good ; lodging. (ii) N.A. (iii) Flowering dates and yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Heavy rainfall on planting date. (vii) Drainage system was defective.

5. RESULTS :

(i) 2776 lb./ac. (ii) 226.9 lb./ac. (iii) T effect alone is significant. (iv) Av. yield of grain in lb./ac.

	T ₁	T ₂	T ₃	T ₄	Mean
S ₁	3033	2720	2597	2812	2790
S ₂	2909	2753	2554	2832	2762
Mean	2971	2736	2576	2822	2776

S.E. of T marginal mean = 80.2 lb./ac.
 S.E. of S marginal mean = 56.7 lb./ac.
 S.E. of body of table = 113.5 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 56(11).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'MV'.

Object :—To study the effect of fertilizers on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 19.6.1956/13.8.1956. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9" × 9". (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 82.73". (x) 3.1.1957.

2. TREATMENTS :

Main-plot treatments :

2 levels of manures : M₀=No manure (control) and M₁=30 lb./ac. of P₂O₅ as Super+20 lb./ac. of N as A/S as basal dressing+20 lb./ac. of N as A/S as top dressing.

Sub-plot treatments :

30 late duration varieties : V₁=T-1242, V₂=BAM-9, V₃=T-335-a, V₄=T-90, V₅=T-165, V₆=SLO-14, V₇=T-859, V₈=Y-5109, V₉=HR-35, V₁₀=HR-38, V₁₁=Eb-2704, V₁₂=Eb-2705, V₁₃=Eb-2706, V₁₄=Ab-2589, V₁₅=BAM-6, V₁₆=MTU-10, V₁₇=MTU-2, V₁₈=J-175, V₁₉=J-192, V₂₀=SR-26 B, V₂₁=AC-2732, V₂₂=T-2095, V₂₃=SM-3, V₂₄=Triple-cross, V₂₅=GEB-24, V₂₆=S-624, V₂₇=AKP-8, V₂₈=AKP-9, V₂₉=T 498-2A and V₃₀=S-67.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 30 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 12' × 10'. (b) 10'6" × 8'6". (v) 9" × 9". (vi) Yes.

4. GENERAL :

(i) Good (ii) N.A. (iii) Yield of grain and straw, height, tiller and ear-length measurements. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1596 lb./ac. (ii) (a) 886.3 lb./ac. (b) 288.7 lb./ac. (iii) Only V effect is highly significant. (iv) Av. yield of grain in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈	V ₉	V ₁₀
M ₀	1464	2148	1611	1625	1386	1692	1210	1210	1816	1469
M ₁	1791	2460	1791	1836	1757	1824	1415	1528	2045	1884
Mean	1628	2304	1701	1730	1572	1758	1312	1369	1930	1676

Contd. on page 54.

	V ₁₁	V ₁₂	V ₁₃	V ₁₄	V ₁₅	V ₁₆	V ₁₇	V ₁₈	V ₁₉	V ₂₀
M ₀	1567	1596	1464	1445	1850	1249	1445	1694	1703	1146
M ₁	2133	2172	1674	1942	1825	1708	2084	2138	2187	1596
Mean	1850	1884	1569	1694	1838	1478	1764	1916	1945	1371

Contd.

	V ₂₁	V ₂₂	V ₂₃	V ₂₄	V ₂₅	V ₂₆	V ₂₇	V ₂₈	V ₂₉	V ₃₀	Mean
M ₀	1713	1537	395	1581	1928	864	527	1127	1107	1254	1427
M ₁	2333	1928	512	2104	2079	932	708	1684	1342	1547	1765
Mean	2023	1732	454	1842	2004	898	618	1406	1224	1400	1596

S.E. of difference of two

1. M marginal means = 114.4 lb./ac.
2. V marginal means = 144.4 lb./ac.
3. V means at the same level of M = 204.2 lb./ac.
4. M means at the same level of V = 231.0 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 57(2).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'MV'.**

Object :- To study the effect of fertilizers on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 29.6.1957/26 and 27.8.1957. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10"×10". (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 2 intercultures and 1 hand weeding. (ix) 29.47". (x) N.A.

2. TREATMENTS :**Main-plot treatments :**

4 manurial treatments : M₀=Control, M₁=10 lb./ac. of N as G.L.+20 lb./ac. of N as A/S, M₂=20 lb./ac. of N as G.L.+40 lb./ac. of N as A/S and M₃=30 lb./ac. of N as G.L.+60 lb./ac. of N as A/S.

Sub-plot treatments :

24 late duration varieties : V₁=T-4450, V₂=BAM-9, V₃=T-90, V₄=AC-2589, V₅=AC-2732, V₆=AC-3051, V₇=Triple-cross, V₈=SR-26 B, V₉=S-67, V₁₀=S-624, V₁₁=AKP-8, V₁₂=AKP-9, V₁₃=MTU-5, V₁₄=SM-6, V₁₅=MTU-19, V₁₆=SLO-14, V₁₇=OR 4-10, V₁₈=T 109-9, V₁₉=T-2095, V₂₀=EC-2705, V₂₁=T 498-2A, V₂₂=MTU-16, V₂₃=C 30-28 and V₂₄=AKP-4.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 24 sub-plots/main-plot. (iii) 3. (iv) (a) 15'×9'2". (b) 13'4"×7'6". (v) 10"×10". (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw, height, tiller counts and ear-length measurements. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2387 lb./ac. (ii) (a) 722.6 lb./ac. (b) 277.5 lb./ac. (iii) M effect is significant. V effect and M×V interaction are highly significant. (iv) Av. yield of grain in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈	V ₉	V ₁₀	V ₁₁	V ₁₂
M ₀	2213	2431	2723	2880	2209	2318	2789	2179	2017	1808	2043	2279
M ₁	2557	2962	3028	2754	2597	2584	2928	2606	2266	1926	1804	2248
M ₂	2623	3002	3250	3224	2911	3028	3189	2945	2291	1913	1948	2457
M ₃	2047	2648	2002	3098	2444	2344	2723	2932	1516	1432	1612	1778
Mean	2360	2761	2751	2989	2540	2568	2908	2666	2022	1770	1852	2190

Contd.

	V ₁₃	V ₁₄	V ₁₅	V ₁₆	V ₁₇	V ₁₈	V ₁₉	V ₂₀	V ₂₁	V ₂₂	V ₂₃	V ₂₄	Mean
M ₀	2013	1259	2301	2409	2636	1943	2414	2418	1991	1560	2331	2052	2217
M ₁	2135	1359	2497	2575	3110	1996	2632	2876	2244	1961	2653	2632	2455
M ₂	2335	1786	2854	2745	3233	2231	2945	2684	2296	2362	3054	2640	2664
M ₃	2091	1325	2157	2479	3106	1878	2741	2314	2144	1817	2614	1817	2211
Mean	2144	1432	2452	2552	3021	2012	2683	2573	2169	1925	2663	2285	2387

S E. of difference of two

1. M marginal means = 120.4 lb./ac.
2. V marginal means = 113.3 lb./ac.
3. V means at the same level of M = 226.6 lb./ac.
4. M means at the same level of V = 252.4 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 58(14).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'MV'.**

Object :— To study the effect of N on the yield of different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A./7.8.1959. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 10'×10'. (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 57.94'. (x) 28.12.1959.

2. TREATMENTS :

Main-plot treatments :

6 levels of N : M₀=Control, M₁=30 lb./ac. N as basal dressing, M₂=M₁+30 lb./ac. of N as top dressing, M₃=60 lb./ac. of N as basal dressing M₄=M₃+30 lb./ac. of N as top dressing and M₅=90 lb./ac. of N as basal dressing.

Sub-plot treatments :

8 varieties : V₁=AC-1951, V₂=T-1242, V₃=BAM-9, V₄=BAM-6, V₅=T-90, V₆=Salak, V₇=Untung and V₈=W-24.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 8 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) and (b) 18'×6.6'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw, height and tiller measurements. (iv) (a) 1958-1959. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1809 lb./ac. (ii) (a) 280.9 lb./ac. (b) 190.2 lb./ac. (iii) Main effect of V is highly significant. Main effect of M and M×V interaction are significant. (iv) Av. yield of grain in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈	Mean
M ₀	1504	1521	1139	1687	1869	997	1436	1452	1451
M ₁	1950	1824	2031	1744	2003	1220	1537	1744	1757
M ₂	2437	1987	1663	1780	2441	1204	1338	2137	1873
M ₃	2178	2064	1886	1849	2348	1200	1703	1878	1888
M ₄	2028	1700	1898	2060	2441	1289	1484	2296	1900
M ₅	2254	2246	1886	1626	2417	1509	1695	2270	1988
Mean	2058	1890	1751	1791	2253	1236	1532	1963	1809

S.E. of difference of two

1. M marginal means = 99.3 lb./ac.
2. V marginal means = 77.6 lb./ac.
3. V means at the same level of M = 190.2 lb./ac.
4. M means at the same level of V = 203.8 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 59(18).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'MV'.

Object :- To study the effect of N on the yield of different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 23.6.1959/7.8.1959. (iv) (a) Summer ploughings followed by puddlings. (b) Transplanting. (c) N.A. (d) 10' × 10'. (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 2 intercultures. (ix) N.A. (x) 28 to 30.12.1959.

2. TREATMENTS :

Main-plot treatments:

6 levels of N : M₀=Control, M₁=26.8 lb./ac. of N as basal dressing, M₂=M₁+26.8 lb./ac. of N as top dressing, M₃=53.5 lb./ac. of N as basal dressing, M₄=M₃+26.8 lb./ac. of N as top dressing and M₅=80.3 lb./ac. of N as basal dressing.

Sub-plot treatments :

8 late duration varieties : V₁=AC-1951, V₂=T-1242, V₃=T-90, V₄=BAM-9, V₅=BAM-6, V₆=Salak, V₇=Untung and V₈=W-24.

Basal dressing of N on 6.8.1959 and top dressing on 21.10.1959.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 8 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 8.2' × 19.7'. (b) 6.6' × 18.0'. (v) One row around. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of grain. (iv) (a) 1958-1959. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1828 lb./ac. (ii) (a) 281.0 lb./ac. (b) 1900 lb./ac. (iii) Main effects of M and V are highly significant. Interaction M × V is significant. (iv) Av. yield of grain in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈	Mean
M ₀	1504	1521	1139	1687	1869	997	1436	1452	1451
M ₁	1950	1824	2031	1744	2003	1220	1537	1744	1757
M ₂	2437	1987	1663	1780	2441	1204	1338	2137	1873
M ₃	2178	2064	1886	1849	2348	1200	1703	1878	1888
M ₄	2028	2592	1898	2060	2441	1289	1484	2296	2011
M ₅	2254	2246	1886	1626	2417	1509	1695	2270	1988
Mean	2058	2039	1751	1791	2253	1236	1532	1963	1828

S.E. of difference of two

1. M marginal means	=	99.3 lb./ac.
2. V marginal means	=	77.6 lb./ac.
3. V means at the same level of M	=	150.0 lb./ac.
4. M means at the same level of V	=	203.6 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 59(4).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'MV'.

Object :- To study the effect of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) Fallow—Paddy. (b) Fallow. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. Tractor ploughing followed by ploughing with bullock drawn iron plough. (iii) 6.7.1959/25.8.1957. (iv) (a) (b) Transplanting. (c) 25 lb/ac. (d) 9' × 6". (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Interculture and weeding. (ix) 45.30". (x) 17.12.1959.

2. TREATMENTS :

Main-plot treatments :

3 levels of N : $N_0=0$, $N_1=30$ and $N_2=60$ lb./ac.

Sub-plot treatments :

8 late duration varieties : $V_1=T-1242$, $V_2=T-90$, $V_3=BAM-9$, $V_4=SR-26 B$, $V_5=BAM-6$, $V_6=EC-2705$, $V_7=AC-2589$ and $V_8=AC-2732$.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 8 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 20' × 15'. (b) 18' × 13.6". (v) 1' × 9". (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Leaf roller, blast and helminthosporium towards the end of September, spraying with Folidol and other fungicides. (iii) Height and tiller measurements and yield of grain. (iv) (a) 1959—1960. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Low rainfall in September resulted in heavy weed growth and high rainfall in October was responsible for high sterility. (vii) Nil.

5. RESULTS :

(i) 154 lb./ac. (ii) (a) 753.0 lb./ac. (b) 279.0 lb./ac. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in lb./ac.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8	Mean
N_0	1083	975	1587	1434	1348	1102	1135	1258	1240
N_1	1605	1195	1710	2017	1325	1785	1418	1793	1606
N_2	1610	1804	1908	1949	1673	1968	1706	1904	1815
Mean	1433	1325	1735	1800	1449	1618	1420	1652	1554

S.E. of difference of two

1. N marginal means	=	217.4 lb./ac.
2. V marginal means	=	131.5 lb./ac.
3. V means at the same level of N	=	227.8 lb./ac.
4. N means at the same level of V	=	304.4 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 59(13).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'MV'.

Object :- To study the effect of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Fallow—Paddy. (b) Fallow. (c) Nil. (ii) (a) Light clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 30.6.1959/29.7.1959. (iv) (a) Ploughing by tractor, 2 puddlings and ladderings. (b) Transplanting. (c) 25 lb./ac. (d) 9"×6". (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Interculture and weeding. (ix) 49.4". (x) 13.11.1959 to 12.12.1959.

2. TREATMENTS :**Main-plot treatments :**

5 levels of N : $N_0=0$, $N_1=20$, $N_2=40$, $N_3=60$ and $N_4=80$ lb./ac.

Sub-plot treatments :

6 medium durations varieties : $V_1=T-535$, $V_2=PTB-13$, $V_3=EHM-112-241-2-68$, $V_4=T-141$, $V_5=T-1850$ and $V_6=J 1-148-76$.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 10'×24'. (b) 8.5'×22'. (v) 9"×1'. (vi) Yes.

4. GENERAL :

(i) Fairly good. (ii) Mild attack of pests and blast. Spraying with Folidol and Coppesan. (iii) Yield of grain, height and tiller counts. (iv) (a) 1958—1960. (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) Low rainfall in September and high rainfall in October. (vii) Suffered to some extent due to untimely rainfall.

5. RESULTS :

(i) 2087 lb./ac. (ii) (a) 193.0 lb./ac. (b) 329.0 lb./ac. (iii) Main effects of N and V are highly significant. (iv) Av. yield of grain in lb./ac.

	V_1	V_2	V_3	V_4	V_5	V_6	Mean
N_0	1031	1359	1908	2003	2267	1840	1735
N_1	1203	1920	1814	2212	2653	2640	2074
N_2	1342	1641	2477	2319	3062	2475	2219
N_3	1184	1796	1965	2404	3108	2538	2166
N_4	1172	1885	2028	2698	3196	2466	2241
Mean	1186	1720	2038	2327	2857	2392	2087

S.E. of difference of two

1. N marginal means = 70.5 lb./ac.
2. V marginal means = 109.7 lb./ac.
3. V means at the same level of N = 268.6 lb./ac.
4. N means at the same level of V = 253.5 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 59(15).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'MV'.

Object :-To study the effect of different levels of N and P on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Fallow—Paddy. (b) Fallow. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 6.7.1959. (iv) (a) 4 ploughings with iron plough. (b) Transplanting. (c) 25 lb./ac. (d) 9"×6". (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Interculture and weeding. (ix) 45.04". (x) 30.11.1959.

2. TREATMENTS :**Main-plot treatments :**

All combinations of (1) and (2)

(1) 4 levels of N : $N_0=0$, $N_1=30$, $N_2=60$ and $N_3=90$ lb./ac.

(2) 2 levels of P_2O_5 : $P_0=0$ and $P_1=50$ lb./ac.

Sub-plot treatments :

6 medium duration varieties : $V_1=T-141$, $V_2=BK-6$, $V_3=T-1233$, $V_4=T-874-1-9-2$, $V_5=T-588$ and $V_6=BR-6$.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) N.A. (b) $17'3'' \times 12'$. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Tiller counts, height of the plants and yield of grain. (iv) (a) 1958—1960. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Low rainfall in September and high rainfall in October. (vii) Low yield due to untimely rainfall.

5. RESULTS :

(i) 1978 lb./ac. (ii) (a) 355.0 lb./ac. (b) 231.0 lb./ac. (iii) Main effects of N and P are highly significant. Interaction $N \times P \times V$ is highly significant. Interaction $N \times V$ and $V \times P$ are significant. (iv) Av. yield of grain in lb./ac.

	V_1	V_2	V_3	V_4	V_5	V_6	Mean	P_0	P_1
N_0	1463	1022	1596	1509	1717	954	1377	1415	1338
N_1	2296	1555	2176	2282	2427	1496	2038	2163	1914
N_2	2834	1539	2575	2742	2587	1625	2317	2387	2247
N_3	2479	1733	1999	2749	2504	1612	2179	2388	1971
Mean	2268	1462	2087	2320	2309	1421	1978	2088	1868
P_0	2398	1430	2331	2461	2419	1488			
P_1	2138	1495	1841	2180	2198	1354			

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|------------------------------------|-----------------|
| 1. N marginal mean : | = 112.3 lb./ac. | 5. N means at the same level of V | = 184.2 lb./ac. |
| 2. P marginal means | = 79.4 lb./ac. | 6. V means at the same level of P | = 115.5 lb./ac. |
| 3. V marginal means | = 81.7 lb./ac. | 7. P means at the same level of V | = 130.2 lb./ac. |
| 4. V means at the same level of N | = 163.3 lb./ac. | S.E. of body of $N \times P$ table | = 112.3 lb./ac. |

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 54(10).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'C'.

Object :- To study the effect of growing different crops in the previous season on the yield of succeeding Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 17.6.1954/13.7.1954. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) and (d) N.A. (e) 2 to 3. (v) Nil. (vi) PTB—10 (early). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 55.24%. (x) 13.10.1954.

2. TREATMENTS :

12 previous crops : C_0 =Fallow, C_1 =Paddy, C_2 =*Dhaincha* for G.M., C_3 =Wheat, C_4 =Cotton, C_5 =Groundnut, C_6 =Linseed, C_7 =Mustard, C_8 =Gram, C_9 =*Mung* for G.M., C_{10} =*Mung* for seed and C_{11} =*Mung + Pillesara*.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) $30' \times 20'$. (b) $28' \times 18.5'$. (v) $1' \times 9'$. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw, tiller counts and ear-length measurements. (iv) (a) 1951—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3305 lb./ac. (ii) 121.3 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	C ₀	C ₁	C ₂	C ₃	C ₄	C ₅	C ₆	C ₇	C ₈	C ₉	C ₁₀	C ₁₁
Av. yield	3414	3116	2814	3301	3032	3604	3170	3352	3296	3570	3332	3555

S.E./mean = 70.0 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 55(15).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'C'.

Object :— To study the effect of growing different crops in the previous season on the yield of succeeding Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 11.6.1955/20.7.1955. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9"×6". (e) 2 to 3. (v) Nil. (vi) PTB—10 (early). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 2 hand weedings. (ix) 72 71". (x) 12 and 13.10.1955.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(10) on page 59.

5. RESULTS :

(i) 2347 lb./ac. (ii) 117.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	C ₀	C ₁	C ₂	C ₃	C ₄	C ₅	C ₆	C ₇	C ₈	C ₉	C ₁₀	C ₁₁
Av. yield	2282	1984	2246	2331	2129	2566	2350	2572	2430	2207	2533	2529

S.E./mean = 68.0 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 56(9).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'C'.

Object :— To study the effect of growing different crops in the previous season on the yield of succeeding Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 12.6.1956/20.7.1956. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 9"×6". (e) 2 to 3. (v) Nil. (vi) PTB—10 (early). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 82.73". (x) 14 and 15.10.1956.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(10) on page 59.

5. RESULTS :

(i) 1905 lb./ac. (ii) 171.5 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	C ₀	C ₁	C ₂	C ₃	C ₄	C ₅	C ₆	C ₇	C ₈	C ₉	C ₁₀	C ₁₁
Av. yield	1942	1424	1566	1851	1942	2274	1955	2027	2136	1569	1974	2201

S.E./mean = 99.0 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 57(4).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'C'.**

Object :- To study the effect of growing different crops in the previous season on the yield of succeeding Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 9"×6". (e) 2 to 3. (v) Nil. (vi) T-141 (medium) and PTB-10 (early). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 29.47". (x) N.A.

2. TREATMENTS :

9 previous crops : C₀=Fallow, C₁=Paddy, C₂=Gram/paddy, C₃=Gram, C₄=Groundnut, C₅=Cotton, C₆=Wheat/gram, C₇=Linseed/gram and C₈=Berseem.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 30'×20'. (b) 28'×18.5'. (v) 1'×9". (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw, height, tillers and ear-length measurements. (iv) (a) 1951—contd. (b) No. (c) Nil. (v) and (vi) Nil. (vii) The expt. was modified in 1957.

5. RESULTS :

(i) 2632 lb./ac. (ii) 261.5 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	C ₀	C ₁	C ₂	C ₃	C ₄	C ₅	C ₆	C ₇	C ₈
Av. yield	2866	2846	2623	2605	2569	2265	2568	2687	2656

S.E./mean = 130.8 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 58(4).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'C'.**

Object :- To study the effect of growing different crops in the previous season on the yield of succeeding Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 24.6.1958/6.8.1958. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 9"×6". (e) 2 to 3. (v) Nil. (vi) T-141 (medium) and PTB-10 (early). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 57.94". (x) 24.10.1958 (PTB-10) and 8.12.1958 (T-141).

2. TREATMENTS :

Same as in expt. no. 57(4) above.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 30'×20'. (b) 1/82.97 ac. (v) N.A. (vi) Yes.

4. GENERAL :

Same as in expt. no. 57(4) above.

5. RESULTS :

(i) 1885 lb./ac. (ii) 245.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	C ₀	C ₁	C ₂	C ₃	C ₄	C ₅	C ₆	C ₇	C ₈
Av. yield	2588	2093	1790	1762	1775	1377	2004	1561	1618

S.E./mean = 122.8 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 59(34).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'C'.**

Object :— To study the effect of different crops on the yield of succeeding Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 25.6.1959/1.8.1959. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) 25 lb./ac. (d) 9"×6". (e) 2 to 3. (v) Nil. (vi) PTB--10. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and one hand weeding. (ix) N.A. (x) 9 and 10.11.1959.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(4) on page 61.

5. RESULTS:

(i) 1404 lb./ac. (ii) 401 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C ₀	C ₁	C ₂	C ₃	C ₄	C ₅	C ₆	C ₇	C ₈
Av. yield	1566	1359	1475	1804	1779	1453	1781	1444	1493

S.E./mean = 200.5 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 54(22).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'C'.**

Object :—To determine the effect of lodging on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10"×6". (e) 2. (v) Nil. (vi) T-1242 (late). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 55.24". (x) N.A.

2. TREATMENTS :

6 dates of lodging the crop artificially : S₀=No artificial lodging, S₁=15.10.1954 (pre-flowering), S₂=25.10.1954 (pre-flowering), S₃=4.11.1954 (flowering), S₄=14.11.1954 (post-flowering) and S₅=24.11.1954 (post-flowering).

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 40'×4'. (b) 39'2"×3'×10". (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2087 lb./ac. (ii) 196.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅
Av. yield	3184	1274	1268	1599	2585	2611

S.E./mean = 80.3 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 55(23).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'C'.**

Object :—To determine the effect of lodging on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 9"×6". (e) 2. (v) Nil. (vi) T-1242 (late). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 72.71". (x) N.A.

2. TREATMENTS :

6 dates of lodging the crop artificially : S_0 =Control, S_1 =15.10.1955 (pre-flowering), S_2 =25.10.1955 (pre-flowering), S_3 =4.11.1955 (flowering), S_4 =14.11.1955 (post-flowering) and S_5 =24.11.1955 (post-flowering).

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 40'.5×4'. (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) and (iii) N.A. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1910 lb./ac. (ii) 141.0 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5
Av. yield	2513	1567	1354	1637	2108	2282

S.E./mean = 57.6 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 55(24).

Site :- Central Rice Research Instt., Cuttack.

Type :- 'C'.

Object :—To compare the effect of different methods of interculturing on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 12"×6". (e) 2 to 3. (v) Nil. (vi) T-1242 (late). (vii) Irrigated. (viii) As per treatments. (ix) 72.71". (x) N.A.

2. TREATMENTS :

4 cultural treatments : C_0 =Control (no operation), C_1 =Interculturing with country plough between the rows, C_2 =Interculturing with Japanese weeder and C_3 =Hand weeding.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 8. (iv) (a) 30'×15'. (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2102 lb./ac. (ii) 101.8 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	C_0	C_1	C_2	C_3
Av. yield	2188	2100	2011	2108

S.E./mean = 36.0 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 57(25).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'C'.

Object :—To compare the effect of different methods of interculturing on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) and (d) N.A. (e) 2 to 3. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) As per treatments. (ix) 29.47". (x) N.A.

2. TREATMENTS :

Same as in expt. no. 55(24) on page 63.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 32'×14'. (v) N.A. (vi) Yes.

4. GENERAL :

Same as in expt. no. 55(24) on page 63.

5. RESULTS :

(i) 2060 lb./ac. (ii) 435.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C ₀	C ₁	C ₂	C ₃
Av. yield	1900	1966	2107	2268

S.E./mean = 177.9 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 58(18).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'C'.

Object :-To compare the effect of different methods of interculturing on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) and (d) N.A. (e) 2 to 3. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 57.94". (x) N.A.

2. TREATMENTS:

Same as in expt. no. 55(24) on page 63.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 32'×14'. (v) N.A. (vi) Yes.

4. GENERAL :

Same as in expt. no. 55(24) on page 63.

5. RESULTS :

(i) 1744 lb./ac. (ii) 159.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C ₀	C ₁	C ₂	C ₃
Av. yield	1727	1763	1785	1700

S.E./mean = 56.4 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 54(23).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'C'.

Object :-To study the effect of ridging on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rice. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) 40 lb./ac. (d) As per treatments. (e) 2 to 3. (v) Nil. (vi) T—1242 (late). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 55.24". (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 levels of ridging : R_0 =No ridging and R_1 =Ridging.

Sub-plot treatments :

4 methods of sowing : M_1 =Behind the country plough with 12"×5" spacing, M_2 =Behind the Cooper plough with 15"×4" spacing, M_3 =Behind the Cooper plough with 12"×5" spacing and M_4 =Transplanted with 12"×5" spacing.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 8. (iv) (a) 60'×24'. (b) 43.5'×23'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2544 lb./ac. (ii) (a) 184.0 lb./ac. (b) 251.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	M_1	M_2	M_3	M_4	Mean
R_0	2450	2579	2573	2489	2523
R_1	2673	2573	2698	2313	2564
Mean	2562	2576	2636	2401	2544

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. R marginal means | = 46.0 lb./ac. |
| 2. M marginal means | = 88.7 lb./ac. |
| 3. M means at the same level of R | = 125.5 lb./ac. |
| 4. R means at the same level of M | = 118.0 lb./ac. |

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 55(20).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'C'.

Object :—To determine the effect of ridging on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) 40 lb./ac. (d) As per treatments. (e) 2 to 3. (v) Nil. (vi) T—1242 (late). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 72.71". (x) N.A.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(25) on page 64.

5. RESULTS :

(i) 2118 lb./ac. (ii) (a) and (b) N.A. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	M ₁	M ₂	M ₃	M ₄	Mean
R ₀	2154	2143	2149	1991	2109
R ₁	2160	2214	2198	1937	2127
Mean	2157	2179	2173	1964	2118

S.E's—N.A.

Crop :- Paddy.**Ref :- C.R.R.I. 59(23).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'C'.**

Object :—To study the effect of different spacings on the incidence of stem borer and yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Alluvial clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A. (iv) (a) 2 ploughings. (b) Transplanted. (c) 20 lb./ac. (d) As per treatments. (e) 1. (v) 20 lb./ac. of N as A/S. (vi) PTB—10. (vii) Irrigated. (viii) Hand weeding. (ix) and (x) N.A.

2. TREATMENTS :

4 spacing treatments : S₁=6"×3", S₂=6"×6", S₃=12"×3" and S₄=12"×12".

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9'×14'. (v) 2 rows around. (vi) Yes.

4. GENERAL :

(i) Moderate. (ii) Stem-borer. (iii) Nil. (iv) (a) 1950—only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 4192 lb./ac. (ii) 700.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S ₁	S ₂	S ₃	S ₄
Av. yield	4089	4397	2776	5505

S.E./mean = 350.2 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 59(5).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'C'.**

Object :—To study the effect of different spacings and number of seedlings per hill on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) G.M.—Paddy. (b) G.M. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 17.7.1959/31.8.1959. (iv) (a) 3 ploughings, discing and puddling. (b) Transplanted. (c) 25 lb./ac. (d) and (e) As per treatments. (v) A/C at 30 lb./ac. of N applied at the time of planting. (vi) T—141 (medium). (vii) Irrigated. (viii) Interculture and weeding. (ix) 45.3". (x) 1st. week of December, 1959.

2. TREATMENTS :

Main-plot treatments :

4 spacings : $S_1=6'' \times 3''$, $S_2=6'' \times 6''$, $S_3=6'' \times 9''$ and $S_4=6'' \times 12''$.

Sub-plot treatments :

Number of seedlings/hill : $R_1=2$, $R_2=5$ and $R_3=8$.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) $12' \times 10'$. (b) $9' \times 8'$. (v) $1\frac{1}{2}' \times 1'$. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Heavy chaff. (iii) Tiller counts, grain and straw yield. (iv) (a) 1959—1961. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Heavy rains in October. (vii) Nil.

5. RESULTS :

(i) 1624 lb./ac. (ii) (a) 131 lb./ac. (b) 274 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	S_4	Mean
R_1	1755	1395	1401	1519	1518
R_2	1966	1764	1597	1525	1713
R_3	1419	1637	1788	1721	1641
Mean	1713	1599	1595	1588	1624

S.E. of difference of two

1. S marginal means	= 75.6 lb./ac.
2. R marginal means	= 137.0 lb./ac.
3. R means at the same level of S	= 274.0 lb./ac.
4. S means at the same level of R	= 236.1 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 58(30).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'C'.

Object :- To study the effect of different pulse crops on the succeeding Paddy crops.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) N.A. (ii) (a) Clay loam (low-land). (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 7.7.1958/29.8.1958. (iv) (a) Ploughing and laddering. (b) Transplanted. (c) 25 lb./ac. (d) $6'' \times 6''$. (e) 2 to 3. (v) 30 lb./ac. of P_2O_5 as Super. (vi) T—141. (vii) Irrigated. (viii) 2 to 3 interculturalures and hand weeding. (ix) N.A. (x) 16.12.1958.

2. TREATMENTS :

6 pulse crops preceding paddy crop : C_0 =Fallow, C_1 =Mung for seed, C_2 =Gram, C_3 =Kulthi, C_4 =Cowpea and C_5 =Black gram.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) $32' \times 19.5'$. (b) $30' \times 17.5'$. (v) Two rows around. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Spraying with folidol against beetle. (iii) Nil. (iv) (a) 1958—1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1569 lb./ac. (ii) 253 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C ₀	C ₁	C ₂	C ₃	C ₄	C ₅
Av. yield	1599	1445	1507	1535	1613	1713

S.E./mean = 126.5 lb./ac.

Crop :- Paddy.

Ref :- C.R.R.I. 59(9).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'C'.

Object :- To study the effect of different pulse crops on the succeeding Paddy crop

1. BASAL CONDITIONS :

(i) (a) Paddy—Pulses. (b) As per treatments. (c) 30 lb./ac. of P₂O₅. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 26.6.1959/24.8.1959. (iv) (a) 2 discings puddling and laddering. (b) Transplanted after dry nursery. (c) 25 lb./ac. (d) 6"×6". (e) 2 to 3. (v) 20 lb./ac. of N. (vi) T—141. (vii) Irrigated. (viii) Interculture and weeding. (ix) 59.00". (x) 7.12.1959.

2. TREATMENTS :

6 pulse crops preceding Paddy : C₀=Fallow, C₁=Mung, C₂=Gram, C₃=Kulthi, C₄=Cowpea and C₅=Biri.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 32'×19.5'. (b) 30'×17.5'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1958—1959. (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) Heavy rains in October, 1959. (vii) Nil.

5. RESULTS :

(i) 1621 lb./ac. (ii) 213.75 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	C ₀	C ₁	C ₂	C ₃	C ₄	C ₅
Av. yield	1827	1412	1353	1617	1591	1924

S.E./mean = 111.88 lb./ac.

Crop :- Rice (Kharif).

Ref :- C.R.R.I. 56(23).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'C'.

Object :- To find out a suitable rotation system for lands with irrigation facilities.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rice. (c) A/C at 20 lb./ac. of N. (ii) (a) Light soil. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 23.7.1956. (iv) (a) 3 to 4 ploughings followed by puddling and laddering. (b) Transplanted (c) 25 lb./ac. (d) 6"×9" for PTB—10 and 10"×6" for T—141. (e) 2 to 3 (v) 20 lb./ac. of N as A/C. (vi) T—141 (main). (vii) Irrigated. (viii) Interculture and weeding. (ix) N.A. (x) 5.12.1956.

2. TREATMENTS :

4 rotational treatments : R₁=Paddy (July to December)—G.M. (January—March)—Paddy (April—July), R₂=Paddy—Paddy—Paddy, R₃=Paddy—Paddy—G.M., and R₄=Paddy—Paddy—Jute.

3. DESIGN :

(i) L. Sq. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 50'×14½'. (b) 48½'×12½'. (v) 10"×12". (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Tiller counts, height, yield of grain and straw. (iv) (a) 1956—1960. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2406 lb./ac. (ii) 108.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	R ₁	R ₂	R ₃	R ₄
Av. yield	2845	2574	2024	2180

S.E./mean = 54.0 lb./ac.

Crop :- Rice.

Ref :- C.R.R.I. 57(29).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'C'.

Object :—To find out a suitable rotation system for lands with irrigation facilities.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) 20 lb./ac. of N as A/C. (ii) (a) Light soil. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 23.7.1957/31.8.1957. (iv) (a) 3 to 4 ploughings followed by puddling and laddering. (b) Transplanted. (c) 25 lb./ac. (d) 10" × 6". (e) 2 to 3. (v) 20 lb./ac. of N as A/C. (vi) T—141 (main). (vii) Irrigated. (viii) Interculture and weeding. (ix) N.A. (x) 21.12.1957.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(23) on page 68.

5. RESULTS :

(i) 2761 lb./ac. (ii) 152 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	R ₁	R ₂	R ₃	R ₄
Av. yield	3010	2862	2379	2794

S.E./mean = 76.0 lb./ac.

Crop :- Rice (Kharif and Rabi).

Ref :- C.R.R.I. 58(29).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'C'.

Object :—To find out a suitable rotation system for lands with irrigation facilities.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) 20 lb./ac. of N as A/C. (ii) (a) Light loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 2.7.1958/1.9.1958. (iv) (a) 3 to 4 ploughings followed by puddling and laddering. (b) Transplanted. (c) 25 lb./ac. (d) 10" × 6". (e) 2 to 3. (v) 20 lb./ac. of N as A/C. (vi) T—141. (vii) Irrigated. (viii) Interculture and weeding. (ix) N.A. (x) 2.12.1958.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(23) on page 68.

5. RESULTS :

(i) 2473 lb./ac. (ii) 164.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	R ₁	R ₂	R ₃	R ₄
Av. yield	2575	2476	2355	2485

S.E./mean = 82.0 lb./ac.

Crop :- Paddy.**Ref :- C.R.R.I. 59(16).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'C'**

Object :- To find out a suitable rotation system for lands with irrigation facilities.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) 20 lb./ac. of N as A/S for treatments R₁, R₂ and R₄. (ii) (a) Light soil. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 17.7.1959/29.8.1959. (iv) (a) 3 to 4 ploughings followed by puddlings and laddering. (b) We nursery. (c) 25 lb./ac. (d) 9"×6" and 6"×6". (e) 2 to 3. (v) Nil. (vi) T-141 and PTB-10. (vii) Irrigated. (viii) Interculture and weeding. (ix) 48.55". (x) 24.12.1959.

2. TREATMENTS :

4 rotational treatments : R₁=Paddy (July to Dec).—G.M. (Jan. to March)—Paddy (April to July) R₂=Paddy—Paddy—Paddy, R₃=Paddy—Paddy—G.M. and R₄=Paddy—Paddy—Jute.

3. DESIGN :

(i) L. Sq. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 50'×15'. (b) 48'×13'6". (v) 1'×9". (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Tiller Counts height, grain and straw weight. (iv) (a) 1956—1960. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2671 lb./ac. (ii) 93.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	R ₁	R ₂	R ₃	R ₄
Av. yield	2803	2791	2595	2495

S.E./mean = 46.6 lb./ac.

Crop :- Paddy (Kharif).**Ref. :- C.R.R.I. 54(23).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'CV'.**

Object :- To study the effect of different sowing practices on the yield of different Paddy varieties.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) As per treatments. (iv) (a) 4 ploughings, laddering and levelling. (b) As per treatments. (c) N.A. (d) 12"×5". (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 55.24". (x) N.A.

2. TREATMENTS :**Main-plot treatments**

2 varieties : V₁=T-411 (medium) and V₂=T-1242 (late).

Sub-plot treatments

3 methods of planting : M₁=Transplanting on 8.8.1954. M₂=Dibble sown on 19.6.1954 and M₃=Broadcast in puddle on 20.7.1954.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 8. (iv) (a) 30'×20'. (b) 28'×18'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain. (iv) (a) 1953—contd. (b) No. (c) Nil (v) to (vii) Nil.

5. RESULTS :

(i) 3404 lb./ac. (ii) (a) 128.5 lb./ac. (b) 238.3 lb./ac. (iii) M effect and M×V interaction are highly significant. (iv) Av. yield of grain in lb./ac.

	M ₁	M ₂	M ₃	Mean
V ₁	2600	3211	3403	3435
V ₂	3742	3699	2679	3373
Mean	3716	3455	3041	3404

S.E. of difference of two

1. V marginal means = 37.1 lb./ac.
2. M marginal means = 84.3 lb./ac.
3. M means at the same level of V = 119.1 lb./ac.
4. V means at the same level of M = 104.1 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 55(22).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'CV'.

Object :—To assess the merits of different sowing practices for Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I. Cuttack. (iii) As per treatments. (iv) (a) 4 ploughings, laddering and levelling. (b) As per treatments. (c) 60 lb./ac. (d) 12"×5". (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 72.71". (x) N.A.

2. TREATMENTS:

Main-plot treatments :

2 varieties: V₁=T—141 (medium) and V₂=T—1242 (late)

Sub-plot treatments :

3 methods of sowing : M₁=Transplanting on 24.7.1955, M₂=Dibble sown dry on 21.6.1955, and M₃=Dibble sown in puddle on 21.7.1955.

3. DESIGN and 4. GENERAL :

Same as in expt. no. 54(23) on page 70.

5. RESULTS :

(i) 2072 lb./ac. (ii) (a) 182.4 lb./ac. (b) 167.8 lb./ac. (iii) All effects are highly significant. (iv) Av. yield of grain in lb./ac.

	M ₁	M ₂	M ₃	Mean
V ₁	2363	1654	2478	2165
V ₂	2196	1831	1911	1979
Mean	2280	1742	2194	2072

S.E. of difference of two

1. V marginal means = 52.6 lb./ac.
2. M marginal means = 59.3 lb./ac.
3. M means at the same level of V = 83.9 lb./ac.
4. V means at the same level of M = 86.4 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- C.R.R.I. 57(23).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'CV'.

Object :- To determine the effect of different dates of planting on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I. Cuttack. (iii) N.A. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) and (d) N.A. (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 29.47". (v) N.A.

2. TREATMENTS :

All combinations of (1) and (2)

- (1) 7 dates of planting : $D_1=28.7.1957$, $D_2=7.8.1957$, $D_3=17.8.1957$, $D_4=27.8.1957$, $D_5=6.9.1957$, $D_6=16.9.1957$ and $D_7=26.9.1957$.
 (2) 2 varieties : $V_1=T-1242$ (late) and $V_2=BAM-9$ (late) for one experiment and $V'_1=T-141$ (medium) and $V'_2=J-192$ (medium) for another experiment.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 14. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/744.6 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Two separate experiments were conducted in factorial design, one with late varieties and the other with medium varieties.

5. RESULTS :

For late varieties

(i) 2473 lb./ac. (ii) 415.6 lb./ac. (iii) Main effect of D is highly significant and interaction $D \times V$ is significant. (iv) Av. yield of grain in lb./ac.

	D_1	D_2	D_3	D_4	D_5	D_6	D_7	Mean
V_1	3770	3281	2895	2513	2499	2006	642	2515
V_2	3513	3553	3188	2820	1894	1517	535	2431
Mean	3641	3417	3041	2667	2197	1762	589	2473

S.E. of D marginal mean = 120.0 lb./ac.
 S.E. of V marginal mean = 64.1 lb./ac.
 S.E. of body of table = 169.7 lb./ac.

For medium varieties

(i) 2694 lb./ac. (ii) 419.0 lb./ac. (iii) Main effects of V' and D are highly significant. (iv) Av. yield of grain in lb./ac.

	D_1	D_2	D_3	D_4	D_5	D_6	D_7	Mean
V'_1	3528	3612	2718	2778	2234	1922	1210	2572
V'_2	3318	3649	3295	3016	2690	2336	1410	2816
Mean	3423	3630	3006	2897	2462	2129	1310	2694

S.E. of D marginal mean = 120.9 lb./ac.
 S.E. of V' marginal mean = 64.7 lb./ac.
 S.E. of body of table = 171.1 lb./ac.

Crop :- Paddy (Kharif).

Ref. :- C.R.R.I. 58(17).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'CV'.

Object :- To determine the effect of different dates of planting on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I. Cuttack. (iii) As per treatments. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 9" x 6". (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and one hand weeding. (ix) 57.94". (x) N.A.

2. TREATMENTS :

Main-plot treatments

2 varieties : $V_1 = T-141$ and $V_2 = J-192$ for medium varieties and $V'_1 = T-1242$ and $V'_2 = BAM-9$ for late varieties.

Sub-plot treatments

7 dates of transplanting : $D_1 = 28.7.1958$, $D_2 = 7.8.1958$, $D_3 = 17.8.1958$, $D_4 = 27.8.1958$, $D_5 = 6.9.1958$, $D_6 = 16.9.1958$ and $D_7 = 26.9.1958$.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 7 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 20' x 3.75'. (b) 1/744.62 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) and (vi) Nil. (vii) 2 separate experiments were conducted one with late varieties and another with medium varieties.

5. RESULTS :

For medium varieties

(i) 1611 lb./ac. (ii) (a) 299.6 lb./ac. (b) 322.3 lb./ac. (iii) D effect is highly significant. Interaction $V \times D$ is significant. (iv) Av. yield of grain in lb./ac.

	D_1	D_2	D_3	D_4	D_5	D_6	D_7	Mean
V_1	2622	2591	2094	2179	1641	1195	931	1893
V_2	2408	2187	1656	1807	1691	1346	1280	1768
Mean	2515	2389	1875	1993	1666	1270	1105	1830

S.E. of difference of two

1. V marginal means = 65.4 lb./ac.
2. D marginal means = 131.6 lb./ac.
3. D means at the same level of V = 186.1 lb./ac.
4. V means at the same level of D = 184.3 lb./ac.

For late varieties

(i) 1611 lb./ac. (ii) (a) 258.0 lb./ac. (b) 261.6 lb./ac. (iii) D effect alone is highly significant. (iv) Av. yield of grain in lb./ac.

	D_1	D_2	D_3	D_4	D_5	D_6	D_7	Mean
V'_1	2723	2412	1718	1699	1340	1078	760	1676
V'_2	2536	2331	1827	1381	1140	962	652	1547
Mean	2629	2371	1772	1540	1240	1020	706	1611

S.E. of difference of two

1. V' marginal means	= 56.3 lb./ac.
2. D marginal means	= 106.8 lb./ac.
3. D means at the same level of V'	= 151.0 lb./ac.
4. V' means at the same level of D	= 150.7 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 54(24).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'CV'.

Object :- To compare the yielding capacity of seedlings raised under different methods for Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I. Cuttack. (iii) N.A. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 9"×6". (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 55.24". (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties : V₁=BAM-9 and V₂=T-1242.

(2) 3 methods of sowing : M₁=Seedlings raised under Japanese method, M₂=Dibbled in country plough furrows and M₃=Sown by broadcast method and covered by country plough.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 12. (iv) (a) 20'×9'. (b) 19½'×8½'. (v) 1 row around. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3358 lb./ac. (ii) 229.0 lb./ac. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in lb./ac.

	M ₁	M ₂	M ₃	Mean
V ₁	3745	3795	3786	3775
V ₂	3115	3219	3185	3173
Mean	3430	3507	3486	3474

S.E. of V marginal mean = 38.2 lb./ac.

S.E. of M marginal mean = 46.7 lb./ac.

S.E. of body of table = 66.1 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 55(21).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'CV'.

Object :- To compare the yielding capacity of seedlings raised under different methods for Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I. Cuttack. (iii) 5.8.1955. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 9"×6". (e) 2. (v) Nil. (vi) BAM-9 and T-1242 (late). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 72.71". (x) Nil.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(24) on page 74.

5. RESULTS :

(i) 2342 lb./ac. (ii) 134.0 lb./ac. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in lb./ac.

	M ₁	M ₂	M ₃	Mean
V ₁	2496	2499	2466	2487
V ₂	2187	2212	2193	2197
Mean	2341	2355	2329	2342

S.E. of V marginal mean = 22.3 lb./ac.
 S.E. of M marginal mean = 27.4 lb./ac.
 S.E. of body of table = 38.7 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 58(28).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'MV'.

Object :- To study the differential response of different varieties of Paddy to the various times of application of N.

1. BASAL CONDITIONS :

(i) (a) Fallow—Rice. (b) Fallow. (c) Nil. (ii) (a) Clay loam, (b) Refer soil analysis, C.R.R.I. Cuttacks (iii) 5.7.1958/22.8.1958. (iv) (a) Summer ploughing once, tractor ploughing once, bullock ploughing and laddering. (b) Transplanted. (c) 25 lb./ac. (d) 9" × 9". (e) 2 to 3. (v) Nil. (vi) As per treatment. (vii) Irrigated. (viii) Weeding by Japanese weeder. (ix) N.A. (x) 22 and 23.12.1958.

2. TREATMENTS :

Main-plot treatments :

8 split applications of N at 40 lb./ac. : T₀=Control (No nitrogen), T₁=At planting, T₂=One month after planting, T₃=One month before flowering, T₄=Half at planting+half one month later, T₅=Half at planting+half one month before flowering, T₆=Half one month after planting+half one month before flowering and T₇=½ at planting+½ one month later+½ one month before flowering.

Sub-plot treatments :

5 varieties : V₁=T—1247, V₂=AKP—4, V₃=CR. 4—10, V₄=BAM—9 and V₅=PTB—16.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 12' × 14½'. (b) 10½' × 13'. (v) One row around. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Nil. (iii) Height, tiller counts and yield of grain. (iv) (a) 1958—1960, (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1866 lb./ac. (ii) (a) 384.0 lb./ac. (b) 318.0 lb./ac. (iii) Main effects of V and T are highly significant. (iv) Av. yield of grain in lb./ac.

	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	Mean
V ₁	2010	2218	2406	2598	2365	2470	2310	2722	2387
V ₂	1190	1411	1554	1592	1624	1873	1478	1532	1532
V ₃	1586	1848	2119	2568	2090	2272	1940	2055	2060
V ₄	2173	2253	2301	2330	2199	2563	2349	2355	2315
V ₅	769	1091	1031	1034	1133	1117	1063	1059	1037
Mean	1764	1882	2024	1882	2059	1828	1945	1546	1866

S.E. of difference of two

1. T marginal means = 123.0 lb./ac.
2. V marginal means = 156.0 lb./ac.
3. V means at the same level of T = 225.0 lb./ac.
4. T means at the same level of V = 235.0 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 59(14).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'MV'.

Object :—To study the effect of different times of application of N on the yield of different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Fallow—Paddy. (b) Fallow. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 6.7.1959/20.8.1959. (iv) (a) Tractor ploughing followed by bullock drawn iron-plough. (b) Transplanted after dry nursery. (c) 25 lb./ac. (d) 9"×6". (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Interculture and weeding. (ix) 47". (x) V₁ to V₄ on 23.12.1959 and V₅ on 8.1.1960.

2. TREATMENTS :

Same as in expt. no. 58(28) on page 75.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 12'×14.5'. (b) 10'×13'. (v) 12"×9". (vi) Yes.

4. GENERAL :

(i) Poor. (ii) No. (iii) Height, tiller counts and yield of grain. (iv) (a) 1958—1960. (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) Low rainfall in September and heavy rains in October affected the crop. (vii) Nil.

5. RESULTS :

(i) 1489 lb./ac. (ii) (a) 436 lb./ac. (b) 298 lb./ac. (iii) V effect is highly significant. T effect is significant. (iv) Av. yield of grain in lb/ac.

	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	Mean
V ₁	1534	2000	1420	1801	1833	1969	1650	1776	1748
V ₂	1018	1814	1545	1534	1665	1755	1786	1691	1604
V ₃	1148	1717	1587	1806	1624	1780	1780	1414	1598
V ₄	1566	1880	2105	2047	2262	2059	2419	2100	2057
V ₅	390	402	430	296	603	560	474	356	439
Mean	1138	1563	1417	1497	1598	1611	1622	1470	1489

S.E. of difference of two

1. T marginal means	= 137.9 lb./ac.
2. V marginal means	= 74.5 lb./ac.
3. V means at the same level of T	= 210.7 lb./ac.
4. T means at the same level of V	= 233.5 lb./ac.

Crop :- Paddy.

Ref :- CR.R.I. 56(21).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'CV'.

Object :—To study the optimum time of planting of different varieties in second crop season.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) As per treatments. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) 25 lb./ac. (d) 6" x 6". (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 82.73°. (x) N.A.

2. TREATMENTS :

Main-plot treatments :

4 dates of sowing/planting : $D_1=5.11.1956/5.12.1956$, $D_2=23.11.1956/23.12.1956$, $D_3=11.12.1956/11.1.1957$ and $D_4=29.12.1956/29.1.1957$.

Sub-plot treatments :

6 varieties : $V_1=PTB-10$, $V_2=CH-62$, $V_3=CH-63$, $V_4=MTU-15$, $V_5=CB_0-1$ and $V_6=Tepa-1$.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 20' x 8.5'. (b) 18' x 6.5'. (v) 1' x 1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain and straw yield, height and ear-length measurements. (iv) (a) 1949—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1699 lb./ac. (ii) (a) 185.0 lb./ac. (b) 167.0 lb./ac. (iii) All effects are highly significant. (iv) Av. yield of grain in lb/ac.

	V_1	V_2	V_3	V_4	V_5	V_6	Mean
D_1	750	295	542	2110	1364	1470	1088
D_2	1939	1367	1375	1663	1564	1784	1615
D_3	2492	1917	1784	1246	1705	2144	1881
D_4	2830	1966	2042	1576	2352	2500	2211
Mean	2003	1386	1435	1649	1746	1974	1699

S.E. of difference of two

1. D marginal means	= 53.4 lb./ac.
2. V marginal means	= 59.1 lb./ac.
3. V means at the same level of D	= 118.1 lb./ac.
4. D means at the same level of V	= 120.3 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 57(24).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'CV'.**

Object :—To study the effect of different sowing practices on the yield of different Paddy varieties.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) As per treatments. (iv) (a) 4 ploughings, laddering and levelling. (b) As per treatments. (c) and (d) N.A. (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 29.47%. (x) N.A.

2. TREATMENTS :**Main-plot treatments :**2 varieties : $V_1 = T-141$ (medium) and $V_2 = T-1242$ (late).**Sub-plot treatments :**3 methods of planting : $M_1 =$ Transplanted on 7.8.1957, $M_2 =$ Puddle sown (wet) on 6.8.1957 (dibbled) and $M_3 =$ Dibble behind country plough (dry) on 24.6.1957.**3. DESIGN :**

(i) Split-plot. (ii) (a) 2 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 30' x 20'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2912 lb./ac. (ii) (a) 298.0 lb./ac. (b) 317.9 lb./ac. (iii) V effect alone is significant. (iv) Av. yield of grain in lb./ac.

	M_1	M_2	M_3	Mean
V_1	2929	2741	2716	2769
V_2	3027	2981	3076	3028
Mean	2978	2861	2896	2912

S.E. of difference of two

1. V marginal means	= 86.0 lb./ac.
2. M marginal means	= 112.4 lb./ac.
3. M means at the same level of V	= 159.0 lb./ac.
4. V means at the same level of M	= 155.7 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 54(9).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'CM'.**

Object :—To test the merits of the various treatments recommended under the Japanese method of Paddy cultivation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 22.6.1954/28 and 29.7.1954. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10' x 10'. (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) As per treatments. (ix) 55.24%. (x) 30.11.1954 to 3.12.1954.

2. TREATMENTS :

All combinations of (1), (2), (3), (4), (5) and (6)

- (1) Seed rate (P).
- (2) Seed bed preparation (Q).
- (3) Seed bed manuring (R).
- (4) Method of planting (S).
- (5) Field manuring (T).
- (6) Interculturing and weeding (U).

Each at two levels: (a) Local method and (b) Japanese method.

3. DESIGN :

(i) 2⁶ confd. (Effects of pqr, pqst, rst, psu, qrsu, qtu, prtu confd). (ii) (a) 8 blocks/replication ; 8 plots/block. (b) N.A. (iii) 1. (iv) (a) 60' × 15'. (b) 8'4" × 13'4". (v) 1 row around. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Attack of leaf roller. Spraying with BHC 0.2 % against it. (iii) Grain and straw yield, height, tiller counts and ear-length measurements. (iv) (a) 1953--contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3588 lb./ac. (ii) 211.0 lb./ac. (iii) T effect is highly significant. Interactions S×T, Q×U and S×U are significant. (iv) Mean and differential response table of grain in lb./ac.

Differential response

Factors	Mean response	P		Q		R		S		T		U	
		Pa	Pb	Qa	Qb	Ra	Rb	Sa	Sb	Ta	Tb	Ua	Ub
P	96.3	—	—	158.6	34.0	57.4	135.2	159.1	33.5	78.1	114.5	14.0	178.6
Q	20.8	83.1	-41.6	—	—	-44.7	86.2	5.0	-36.5	-40.8	82.2	158.1	-116.6
R	-8.7	-47.6	30.2	-74.1	56.8	—	—	-23.5	6.1	20.6	-38.0	16.8	-34.1
S	21.2	83.9	-41.7	5.4	36.9	6.3	35.9	—	—	-99.8	142.0	-110.0	152.2
T	-594.4	-612.6	-576.2	-655.9	-532.9	-565.1	-623.7	-715.2	-473.5	—	—	-672.2	-516.5
U	18.4	-63.9	-100.7	155.8	-119.0	43.8	-7.1	-112.8	149.5	-59.5	96.2	—	—

S.E. of mean response = 52.7 lb./ac.

S.E. of differential response = 74.6 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 55(17).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'CM'.**

Object :- To test the merits of various treatments recommended under the Japanese method of Paddy cultivation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 19.6.1955/23.7.1955. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10" × 10". (e) 4. (v) Nil. (vi) T—141 (medium). (vii) Irrigated. (viii) As per treatments, (ix) 72.71". (x) 2.12.1955.

2. TREATMENTS :

All combinations of (1), (2), (3), (4) and (5)

- (1) Seed rate (P).
- (2) Seed bed preparation (Q).
- (3) Seed bed manuring (R).
- (4) Transplanting and weeding (S).
- (5) Field manuring (T).

Each at 2 levels (a) Local method and (b) Japanese method.

3. DESIGN :

(i) 2⁵ confd. with pqs, rst, pqrt contd. (ii) (a) 8 plots/block ; 4 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 30' × 15'. (b) 28'4" × 13'4". (v) 1 row around. (vi) Yes.

4. GENERAL :

(i) Satisfactory. Lodging on 11.10.1955 in plots of Japanese field manuring. (ii) N.A. (iii) Grain and straw yield, height, tiller counts and ear-length measurements. (iv) (a) 1953—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2265 lb./ac. (ii) 274.7 lb./ac. (iii) T effect is highly significant. (iv) Mean and differential response table of grain in lb./ac.

Factors	Mean response	Differential response									
		P		Q		R		S		T	
		Pa	Pb	Qa	Qb	Ra	Rb	Sa	Sb	Ta	Tb
P	-0.7	—	—	-10.4	9.0	160.9	-162.2	23.8	-25.1	17.9	-19.2
Q	155.8	146.1	165.5	—	—	254.9	56.8	58.8	252.9	350.6	-39.0
R	204.1	365.6	42.5	303.1	105.0	—	—	30.8	377.4	364.4	43.8
S	36.2	60.6	11.8	-60.9	133.2	-137.1	209.5	—	—	-98.6	171.0
T	-964.9	-946.4	-983.5	-770.1	-1159.8	-804.6	-1125.2	-1099.8	-829.8	—	—

S.E. of mean response = 68.7 lb./ac.

S.E. of differential response = 97.1 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- C.R.R.I. 59(10).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'CM'.

Object :- To compare the Chinese method with the Japanese method and the Local improved method of Paddy cultivation.

1. BASAL CONDITIONS :

(i) (a) Fallow—Paddy. (b) Fallow. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack (iii) 5.7.1959 for M₁ and M₂ and 15.7.1959 for M₃/10.8.1959. (iv) (a) The field was tractor disced Bunds were raised and digging of the soil was taken up in M₃ only. (b) to (e) As per treatments. (v) As per treatments. (vi) BAM—9 (165 days). (vii) Irrigated. (viii) As per treatments. (ix) 45.0°. (x) 17 and 18.11.1959.

2. TREATMENTS :

3 methods of cultivation: M₁=Local improved method : 2 to 3 hand weedings and 3 weeks after transplanting at intervals of 2 to 3 weeks, transplanted in dry nursery at 25 lb./ac. of 10" × 6", 2 to 3 seedlings/hole basal dressing of 4000 lb./ac. of compost, M₂=Japanese method : 3 to 5 interculturings, transplanted in dry nursery at 16 lb./ac., 10" × 10" 4 seedlings/hole basal dressing of 4000 lb./ac. of G.M. and M₃=Chinese method : At least of 20 hoeings, transplanted in wet nursery at 20 lb./ac., 6" × 6", seedlings/hole basal dressing of 20 tons of compost.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 30' × 30'. (b) N.A. (v) Chinese 5 rows around, Japanese 3 rows around and Local 3 rows on 10" side and 5 rows on 6". (vi) Yes.

4. GENERAL :

(i) Some lodging in M₂, but heavy lodging in M₃. (ii) Attack of blast in severe in M₃. Spraying with coppes an at 5 lb./ac. in/100 gal./ac. (iii) Tiller counts and height of plants. (iv) (a) 1959 only. (b) No. (c) Nil. (v) (a) 30 centres all over the country. (b) Nil. (vi) Heavy rains in Oct. (vii) Nil.

5. RESULTS :

(i) 2624 lb./ac. (ii) 182.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₁	M ₂	M ₃
Av. yield	2925	2287	2661

S.E./mean = 74.7 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 58(22).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'CMV'.

Object :- To determine the optimum spacing and suitable time of planting for different varieties under different manuring conditions.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 1.5.1958, 5 and 6.6.1958, 2.7.1958/3 and 4.6.1958, 5.7.1958, 2 and 4.8.1958. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) As per treatments. (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 57.94%. (x) N.A.

2. TREATMENTS :

Main-plot treatments :

Horizontal strip :

3 times of planting : D₁=1.6.1958, D₂=1.7.1958 and D₃=1.8.1958.

Perpendicular strip :

3 levels of manure : M₁=Control (no manure), M₂=20 lb./ac. of N+50 lb./ac. of P₂O₅ and M₃=60 lb./ac. of N+50 lb./ac. of P₂O₅.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 spacings : S₁=6"×6", S₂=12"×6" and S₃=18"×6".

(2) 3 varieties : V₁=P.T.B.—10, V₂=S.L.O.—9 and V₃=T—1242.

3. DESIGN :

(i) Strip-cum-split plot. (ii) (a) 81. (b) 41'×41'. (iii) 2. (iv) (a) 12'×12'. (b) 10'×5'. (v) 1'×15'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain. (iv) (a) N.A. (b) No. (c) Nil. (v) (a) and (b) No. (vi) Expt. originally laid out with 3 replications, but one replication failed. (vii) Nil.

5. RESULTS :

(i) 1864 lb./ac. (ii) (a) 978.8 lb./ac. for D. (b) 174.2 lb./ac. for M. (c) 925.9 lb./ac. for D×M. (d) 438.0 lb./ac. for others. (iii) Main effect of D and V and interactions V×D, V×M and V×S are highly significant. (iv) Av. yield of grain in lb./ac.

	S ₁	S ₂	S ₃	V ₁	V ₂	V ₃	M ₁	M ₂	M ₃	Mean
D ₁	469	661	955	105	1263	717	805	641	639	695
D ₂	2275	2402	2328	1760	2144	3101	2262	2423	2320	2335
D ₃	2573	2567	2545	2122	2453	3110	2551	2602	2531	2561
Mean	1772	1876	1942	1329	1953	2109	1873	1888	1830	1864
M ₁	1803	1933	1883	1249	2308	2062				
M ₂	1795	1850	2020	1371	1871	2424				
M ₃	1719	1847	1924	1367	1681	2442				
V ₁	1411	1397	1179							
V ₂	1694	1906	2259							
V ₃	2213	2326	2389							

S.E. of difference of two

1. D marginal means = 188.4 lb./ac. 6. S or V means at the same level of D or M = 146.0 lb./ac.
2. M marginal means = 33.5 lb./ac. 7. D means at the same level of S or V = 222.9 lb./ac.
3. S or V marginal means = 84.3 lb./ac. 8. M means at the same level of S or V = 123.8 lb./ac.
4. M means at the same level of D = 254.2 lb./ac. S.E. of body of S×V table = 103.2 lb./ac.
5. D means at the same level of M = 314.6 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 59(2).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'CMV'.

Object :- To study the differential response of medium duration varieties to different spacings and levels of N.

1. BASAL CONDITIONS :

(i) (a) Fallow—Paddy. (b) Fallow. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 24.6.1959/21 and 22.8.1959. (iv) (a) Cross discing by tractor and laddering. Final puddling was done by iron plough and laddering. (b) Transplanted after dry nursery. (c) 25 lb./ac. (d) As per treatments. (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Interculture and weeding. (ix) 49.4%. (x) 4 to 16.12.1959.

2. TREATMENTS :

Main-plot treatments :

4 levels of N: $N_0=0$, $N_1=30$, $N_2=60$ and $N_3=90$ lb./ac.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 varieties: $V_1=T-141$ and $V_2=F-1242$.

(2) 4 spacings: $S_1=3'' \times 6''$, $S_2=6'' \times 6''$, $S_3=9'' \times 6''$ and $S_4=12'' \times 6''$.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 8 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) $15' \times 15'$. (b) $13' \times 12'$. (v) $1' \times 1.5'$. (vi) Yes.

4. GENERAL :

(i) Fairly good. (ii) Nil. (iii) Yield of grain, height measurement and tillers count. (iv) (a) 1959 to 1960. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Heavy rain in Oct. (vii) Low yield due to untimely rainfall.

5. RESULTS :

(i) 1816 lb./ac. (ii) (a) 449 lb./ac. (b) 347 lb./ac. (iii) Main effects of N and V and interaction $N \times V$ are highly significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	S_4	Mean	V_1	V
N_0	1312	1097	1309	1183	1225	1395	1056
N_1	2403	2428	2359	2004	2298	2863	1734
N_2	2237	1955	2028	2141	2090	2636	1545
N_3	1299	1714	1801	1795	1652	2103	1202
Mean	1813	1798	1874	1781	1816	2249	1384
V_1	2209	2182	2358	2247			
V_2	1417	1414	1391	1314			

S.E. of difference of two

1. N marginal means	= 129.6 lb./ac.	5. V means at the same level of N	= 141.7 lb./ac.
2. S marginal means	= 100.2 lb./ac.	6. N means at the same level of S	= 216.6 lb./ac.
3. V marginal means	= 70.8 lb./ac.	7. N means at the same level of V	= 163.8 lb./ac.
4. S means at the same level of N	= 200.3 lb./ac.	S.E. of body of S×V table	= 100.2 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 59(3).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'CMV'.**

Object :—To study the differential response of early duration varieties to different spacings and levels of N.

1. BASAL CONDITIONS :

(i) (a) Fallow—Paddy. (b) Fallow. (c) Nil. (ii) (a) Light clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 2.7.1959/27 and 28.7.1959. (iv) (a) Tractor ploughing followed by bullock iron ploughing. (b) Transplanted after dry nursery. (c) 25 lb./ac. (d) As per treatments. (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Interculture and weeding. (ix) 45.0". (x) 26 and 27.10.1959.

2. TREATMENTS :**Main-plot treatments :**4 levels of N : $N_0=0$, $N_1=30$, $N_2=60$ and $N_3=90$ lb./ac.**Sub-plot treatments :**

All combinations of (1) and (2)

(1) 2 varieties : $V_1=PTB-10$ and $V_2=N-136$.(2) 4 spacings : $S_1=3'' \times 6''$, $S_2=6'' \times 6''$, $S_3=9'' \times 6''$ and $S_4=12'' \times 6''$.**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 8 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) $30' \times 15'$. (b) $27' \times 13'$. (v) $1.5' \times 1'$. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain, height measurement, tillers count and length of ear-heads. (iv) (a) 1959—1960. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1738 lb./ac. (ii) (a) 697 lb./ac. (b) 249 lb./ac. (iii) Main effects of V and S are highly significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	S_4	Mean	V_1	V_2
N_0	1608	1711	1708	1726	1689	2118	1261
N_1	1761	1945	1946	2044	1924	2352	1496
N_2	1527	2050	2106	1884	1892	2271	1512
N_3	1189	1375	1474	1751	1447	1702	1192
Mean	1521	1771	1808	1851	1738	2111	1365
V_1	1934	2189	2184	2136			
V_2	1108	1353	1433	1566			

S.E. of difference of two

1. N marginal means	= 246.4 lb./ac.	5. V means at the same level of N	= 124.5 lb./ac.
2. S marginal means	= 88.0 lb./ac.	6. N means at the same level of S	= 289.7 lb./ac.
3. V marginal means	= 62.2 lb./ac.	7. N means at the same level of V	= 261.7 lb./ac.
4. S means at the same level of N	= 176.1 lb./ac.	S.E. of body of S×V table	= 88.0 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 54(7).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'D'.**

Object :—To study the effect of dipping and spraying coppesan against blast on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 17.7.1954/17.8.1954. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9"×6". (e) 2 to 3. (v) Nil. (vi) CO—13 (early). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 55.24". (x) 13.11.1954.

2. TREATMENTS :

5 spraying treatments : T₀=Control (No dipping and no spraying), T₁=Dipping in coppesan at the time of transplanting and spraying coppesan 45, 60, 90 and 97 days after transplanting, T₂=Dipping in coppesan at the time of transplanting and spraying 45 and 90 days after transplanting, T₃=Dipping in coppesan at the time of transplanting and spraying 45 and 97 days after transplanting and T₄=Spraying coppesan 90 and 97 days after transplanting.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 8. (iv) (a) 29'×9.75'. (b) 26.75'×7.25'. (v) 2 rows around. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Blast attack. (iii) Yield of grain and straw, height and ear-length. (iv) (a) 1952—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :**Yield**

(i) 1512 lb./ac. (ii) 185.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Av. yield	1175	1828	1468	1667	1424

S.E./mean = 65.5 lb./ac.

Incidence of neck infection

(i) 24.98 degrees. (ii) 4.57 degrees. (iii) Treatment differences are highly significant. (iv) Av. % of incidence of neck infection in degrees.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Mean angle	33.95	19.84	24.82	21.30	24.99

S.E./mean = 1.62 degrees.

Mean % of neck infection	32.07	12.25	18.50	13.54	18.46
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Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 55(5).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'D'.**

Object :—To study the effect of dipping and spraying coppesan against blast on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 7.7.1955/13.8.1955. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9"×6". (e) 2 to 3. (v) Nil. (vi) CO—13 (early). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 72.71". (x) N.A.

2. TREATMENTS :

Same as in expt. no. 54(7) above.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 8. (iv) (a) 29' × 9.75'. (b) 28' × 8.25'. (v) 6' × 9'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Incidence of blast. (iii) Neck infected tiller counts and yield of grain and straw. (iv) (a) 1952—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Yield

(i) 974 lb./ac. (ii) 114.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Av. yield	828	1050	1075	958	962

S.E./mean = 40.4 lb./ac.

Incidence of neck infection

(i) 10.49 degrees. (ii) 2.11 degrees. (iii) Treatment differences are highly significant. (iv) Av. % of incidence of neck infection in degrees.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Mean angle	14.05	9.27	6.61	12.26	10.25

S.E./mean = 0.74 degrees.

Mean % of neck infection 6.01 2.23 1.50 4.57 3.27

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 54(14).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'D'.

Object :- To study the effect of spraying coppesan against blast on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 3.7.1954/5.8.1954. (iv) (a) 2 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 5' × 6'. (e) 2 to 3. (v) Nil. (vi) CO-13 (early). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 55.24'. (x) 28.10.1954.

2. TREATMENTS :

3 spraying treatments : S₀ = Control, S₁ = Low volume spraying of 0.5% coppesan at 20 gallons/ac. and S₂ = Normal volume spraying of 0.5% coppesan at 100 gallons/ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 9. (iv) (a) 93' × 11.5'. (b) 90' × 10.5'. (v) 1.5' × 0.5'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Incidence of blast. (iii) Neck infected tiller counts and grain yield. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Yield

(i) 1729 lb./ac. (ii) 125.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S ₀	S ₁	S ₂
Av. yield	1470	1821	1897

S.E./mean = 41.8 lb./ac.

Incidence of neck infection

(i) 20.87 degrees. (ii) 7.77 degrees. (iii) Treatment differences are highly significant. (iv) Av. % of incidence of neck infection in degrees.

Treatment	S ₀	S ₁	S ₂
Mean angle	32.39	18.45	11.78
S.E./mean = 2.59 degrees.			
Mean % of neck infection	29.60	11.18	4.34

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 55(12).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'D'.

Object :—To study the effect of spraying coppesan against blast on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 6.7.1955/10.8.1955. (iv) (a) 2 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9" × 6". (e) 2 to 3. (v) Nil. (vi) CO—13 (early). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 72.71". (x) 13.11.1955.

2. TREATMENTS :

3 spraying treatments: S₀=Control, S₁=Low volume spraying of 0.5 % coppesan at 20 gallons/ac. and S₂=Normal volume spraying of 0.5 % coppesan at 100 gallons/ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 9. (iv) (a) 93' × 11.25'. (b) 1/46.22 lb./ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Incidence of blast. (iii) Neck infected tiller counts and grain yield. (iv) (a) 1954—contd. No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Yield

(i) 1040 lb./ac. (ii) 170.6 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	S ₀	S ₁	S ₂
Av. yield	893	1135	1091

S.E./mean = 56.9 lb./ac.

Incidence of neck infection

(i) 20.14 degrees. (ii) 5.90 degrees. (iii) Treatment differences are highly significant. (iv) Av. % of incidence of neck infection in degrees.

Treatment	S ₀	S ₁	S ₂
Mean angle	26.95	17.43	14.03

S.E./mean = 1.97 degrees.

Mean % of neck infection 21.64 9.34 6.31

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 56(13).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'D'.

Object :—To study the effect of spraying coppesan against blast on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 2.7.1956/6.8.1956. (iv) (a) 2 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9'×6". (e) 2 to 3. (v) Nil. (vi) CO.—13 (early). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and one hand weeding. (ix) 82.73". (x) 29.10.1956 and 2.11.1956.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(12) on page 86.

5. RESULTS :

Yield

(i) 1463 lb./ac. (ii) 74.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S ₀	S ₁	S ₂
Av. yield	1336	1418	1626

S.E./mean = 24.7 lb./ac.

Incidence of neck infection

(i) 13.12 degrees. (ii) 2.13 degrees. (iii) Treatment differences are highly significant. (iv) Av. % of incidence of neck infection in degrees.

Treatment	S ₀	S ₁	S ₂
Mean angle	18.43	11.37	9.55

S.E./mean = 0.71 degrees.

Mean % of neck infection 10.16 4.14 3.01

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 57(11).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'D'.

Object :- To study the effect of spraying coppesan against blast on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 5.7.1957/13.8.1957. (iv) (a) 2 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9'×6". (e) 2 to 3. (v) Nil. (vi) CO—13 (early). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 29.47". (x) N.A.

2. TREATMENTS :

Same as in expt. no. 55(12) on page 86.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 9. (iv) (a) 93'×11.25'. (b) 92'×9.75'. (v) 6'×9". (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Incidence of blast. (iii) Neck infected tillers and grain yield. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Yield

(i) 1542 lb./ac. (ii) 124.5 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S ₀	S ₁	S ₂
Av. yield	1344	1528	1755

S.E./mean = 41.5 lb./ac.

Incidence of neck infection

(i) 13.60 degrees. (ii) 4.05 degrees. (iii) Treatment differences are significant. (iv) Av. % of incidence of neck infection in degrees.

Treatment	S ₀	S ₁	S ₂
Mean angle	15.65	15.10	10.05
S.E./mean = 1.35 degrees.			
Mean % of neck infection	7.82	6.95	3.15

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 58(7).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'D'.

Object :- To study the effect of spraying coppesan against blast on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 14.7.1958/11.8.1958. (iv) (a) 2 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9" × 6". (e) 2 to 3. (v) Nil. (vi) CO-13 (early). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 57.94". (x) N.A.

2. TREATMENTS :

Same as in expt. no. 55(12) on page 86.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 9. (iv) (a) 93' × 11.25'. (b) 92' × 9.75'. (v) 6" × 9". (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Incidence of blast. (iii) Neck infected tillers and grain yield. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:**Yield**

(i) 817 lb./ac. (ii) 117.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S ₀	S ₁	S ₂
Av. yield	584	822	1045

S.E./mean = 39.13 lb./ac.

Incidence of neck infection

(i) 24.59 degrees. (ii) 5.35 degrees. (iii) Treatment differences are highly significant. (iv) Av. % of incidence of neck infection in degrees.

Treatment	S ₀	S ₁	S ₂
Mean angle	33.32	22.83	17.61

S.E./mean = 1.78 degrees.

Mean % of neck infection 30.79 15.54 9.21

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 54(16).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'D'.

Object :- To study the effect of spraying herbicides and weeding against weeds on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 11.7.1954/N.A. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9'×10'. (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) As per treatments. (ix) 55.24''. (x) 9.12.1954.

2. TREATMENTS :

All combinations of (1) and (2)+1 extra treatment

(1) 2 levels of weeding : W_0 =No hand weeding and W_1 =Hand weeding.

(2) 5 herbicides : H_0 =No herbicide, H_1 =Chloroxone, H_2 =Phenoxylene, H_3 =2, 4, 5-T and H_4 =Kathone M₇.

Extra treatment : T=Weeding by Japanese weeder.

3. DESIGN :

(i) R.B.D. (ii) (a) 11. (b) N.A. (iii) 4. (iv) (a) 31'8''×7.5''. (b) 30'×6'. (v) 10'×9'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Height, tiller counts ear-length and grain yield. (iv) (a) 1951—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3816 lb./ac. (ii) 138.9 lb./ac. (iii) All the effects are highly significant. (iv) Av. yield of grain in lb./ac.

$$T = 4162 \text{ lb./ac.}$$

	H_0	H_1	H_2	H_3	H_4	Mean
W_0	3831	4250	4586	4099	4274	4208
W_1	4288	3315	3439	2546	3187	3355
Mean	4060	3783	4013	3323	3731	3782

S.E. of H marginal mean = 49.1 lb./ac.

S.E. of W marginal mean = 31.1 lb./ac.

S.E. of body of table or T mean = 69.5 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 55(16).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'D'.

Object :- To study the effect of spraying herbicides and weeding against weeds on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 17.6.1955/8.8.1955. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 10'×9'. (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) As per treatments. (ix) 72.71''. (x) 1.12.1955.

2. TREATMENTS :

12 weedicidal treatments : T_0 =Control, T_1 =Hand weeding, T_2 =Japanese weeder, T_3 =Chloroxone, T_4 =Shell 2, 4-D, T_5 =Fernoxone, T_6 =Kathone M-7, T_7 =Cornox, T_8 =2, 4, 5-T, T_9 =Phenoxylene, T_{10} =M.C.P.A. and T_{11} =Agroxone.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 20'6''×10'10''. (b) 18'×9'2''. (v) 9'×10''. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Height, tiller counts ear-length and grain yield. (iv) (a) 1951—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2466 lb./ac. (ii) 235.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁
Av. yield	2017	2655	2727	2390	2421	2490	2364	2352	1999	2783	2537	2862

S.E./mean = 118.2 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 56(10).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'D'.

Object :-To study the effect of spraying herbicides and weeding against weeds on Paddy .

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 5.7.1956/10.8.1956. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 10''×6''. (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) As per treatments. (ix) 82.73''. (x) N.A.

2. TREATMENTS :

12 weedicial treatments : T₀=Control, T₁=Hand weeding, T₂=Japanese weeder, T₃=Phenoxyline-30, T₄=Agroxone-3, T₅=2-4, 5-T, T₆=Chloroxone, T₇=Shell 2, 4-D, T₈=Fenoxone, T₉=Kathone M-7, T₁₀=Cornox and T₁₁=Ishihara 2, 4-D.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 20.5'×10'10''. (b) 18.5'×9'2''. (v) 1'×10''. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Height, tiller counts ear-length and grain yield. (iv) (a) 1951—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2585 lb./ac. (ii) 197.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁
Av. yield	2158	2643	2571	2949	2995	2217	2584	2453	2687	2394	2610	2761

S.E./mean = 98.9 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 57(16).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'D'.

Object :-To study the effect of spraying herbicides and weeding against weeds on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 3.7.1957/12.8.1957. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9''×6''. (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) As per treatments. (ix) 29.47''. (x) 16 and 17.12.1957.

2. TREATMENTS :

Same as in expt. no. 56(10) above.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 22.5'×20.5'. (b) 1/12.12 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Height, tiller counts ear-length and grain yield. (iv) (a) 1951—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3174 lb./ac. (ii) 445.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁
Av. yield	2886	3369	3212	3306	3528	3005	3103	2887	3143	3162	3202	3288

S.E./mean = 222.6 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 58(3).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'D'.

Object :— To study the effect of spraying herbicides and weeding against weeds on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 5.7.1958/16.8.1958. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 10' × 6". (e) 2 to 3. (v) Nil. (vi) T—141 (medium). (vii) Irrigated. (viii) As per treatments. (ix) 57.94". (x) 8.12.1958.

2. TREATMENTS :

12 weedicidal treatments : T₀=Control, T₁=Hand weeding. T₂=Japanese weeder. T₃=Phenoxelene, T₄=Agroxane, T₅=2, 4-5-T, T₆=Chloroxane, T₇=Shell 2, 4-D, T₈=Kathone M—7, T₉=Cornox, T₁₀=Iso-cornox and T₁₁=Ishihara 2, 4,—D.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 20.5' × 10.83'. (b) 18.5' × 5.17'. (v) 1' × 0.83'. (vi) Yes.

4. GENERAL :

(i) Good. (b) N.A. (iii) Height, tiller counts ear-length and grain yield. (iv) (a) 1951—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2610 lb./ac. (ii) 228.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁
Av. yield	2337	2805	2669	2675	2500	2448	2769	2596	2517	2566	2553	2540

S.E. mean = 114.3 lb./ac.

Crop :- Paddy.

Ref :- C.R.R.I. 59(32).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'D'.

Object :— To study the effect of spraying herbicides and weeding against weeds on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 40 lb./ac. of N as A/S + 30 lb./ac. of P₂O₅ as Super. (ii) (a) Light clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 26.6.1959/31.7.1959. (iv) 1 tractor ploughing, 2 ploughings by iron-plough and laddering. (b) Transplanting. (c) 25 lb./ac. (d) 5" × 6". (e) 2 to 3. (v) 40 lb./ac. of N as A/S. (vi) T—141 (150 days duration). (vii) Irrigated. (viii) As per treatments. (xi) 49.35". (x) 2.12.1959.

2. TREATMENTS :

12 weedicidal treatments : T₀=Control, T₁=Hand weeding, T₂=Japanese weeder, T₃=Phenoxyline—30, T₄=Agroxone—3, T₅=2, 4-5-T, T₆=Chloroxone, T₇=Fernozone, T₈=Shell 2, 4-D, T₉=Kathone M—7, T₁₀=Carnox and T₁₁=Iso-carnox.
Herbicides sprayed 6 weeks after planting at 2 lb./ac. in 100 gallons of water.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 21'×15'. (b) 19.5'×13'. (v) 9'×12". (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height, tiller counts and grain yield. (iv) (a) 1951—contd (with modifications). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3048 lb./ac. (ii) 121.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁
Av. yield	2924	2919	3237	3051	3009	2851	3062	3280	3259	2766	3089	3126

S.E./mean = 60.5 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 56(15).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'D'.

Object :-To find out the suitable fungicide for control of blast on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I. Cuttack. (iii) 2.7.1956/9.8.1956. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) and (d) N.A. (e) 2 to 3. (v) Nil. (vi) CO—13 (early). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 82.73%. (x) 22 and 23.11.1956.

2. TREATMENTS :

4 spraying treatments : S₀=Control (no spraying), S₁=Agrosan dust, S₂=Ceresan dust and S₃=Bordeaux mixture 5 : 5 : 50.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 128'×14.25'. (b) 123.5'×10.5'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Dusting against blast disease was done. (iii) Neck infected tiller counts and grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Yield

(i) 1326 lb./ac. (ii) 78.76 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S ₀	S ₁	S ₂	S ₃
Av. yield	1209	1454	1313	1327

S.E./mean = 32.15 lb./ac.

Incidence of blast

(i) 7.83 degrees. (ii) 2.94 degrees. (iii) Treatment differences are not significant. (iv) Av. % of incidence of infection in degrees.

Treatment	S ₀	S ₁	S ₂	S ₃
Mean angle	8.53	7.52	6.21	9.08
S.E./mean = 1.20 degrees.				
Mean % of infection	2.35	1.76	1.29	2.67

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 57(14).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'D'.

Object :- To find out the suitable fungicide for control of blast.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A./14.8.1957. (iv) (a) 2 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9" x 6". (e) 2 to 3. (v) Nil. (vi) CO-13 (early). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 29.47". (x) N.A.

2. TREATMENTS :

Same as in expt. no. 56(15) on page 92

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 128' x 30'. (b) 126' x 15'. (v) 1' x 7.5'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Attack of blast. (iii) Neck infected tillers and grain yield. (iv) (a) 1956 - contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Yield

(i) 1103 lb./ac. (ii) 163.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S ₀	S ₁	S ₂	S ₃
Av. yield	862	1425	1237	889

S.E./mean = 81.6 lb./ac.

Incidence of blast

(i) 4.94 degrees. (ii) 1.30 degrees. (iii) Treatment differences are highly significant. (iv) Av. % of incidence of infection in degrees.

Treatment	S ₀	S ₁	S ₂	S ₃
Mean angle	8.96	2.81	2.58	5.42

S.E./mean = 0.65 degrees.

Mean % of infection 2.68 0.39 0.28 0.97

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 58(5).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'D'.

Object :- To find out the suitable fungicide for control of blast.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A./19.8.1958. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9"×6". (e) 2 to 3. (v) Nil. (vi) CO—13 (early). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 57.94". (x) N.A.

2. TREATMENTS :

Same as in expt. no. 56(15) on page 92.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 128'×30'. (b) 126'×15'. (v) 1'×7.5'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Attack of blast. (iii) Neck infected tiller counts and grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Yield

(i) 783 lb./ac. (ii) 173.4 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	S ₀	S ₁	S ₂	S ₃
Av. yield	551	753	993	834

S.E./mean = 86.7 lb./ac.

Incidence of blast

(i) 12.60 degrees. (ii) 3.22 degrees. (iii) Treatment differences are significant. (iv) Av. % of incidence of infection in degrees.

Treatment	S ₀	S ₁	S ₂	S ₃
Mean angle	18.25	11.18	10.93	10.04

S.E./mean = 1.61 degrees.

Mean % of infection 10.00 3.98 3.85 3.25

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 59(29).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'D'.

Object :- To find out the suitable fungicide for control of blast.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) G.M.+A/S. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 7.7.1959/20 to 22.8.1959. (iv) (a) 1 summer ploughing, laddering and levelling. (b) Transplanting. (c) 25 lb./ac. (d) 6"×9". (e) 1 to 2. (v) G.M. (dhaincha) + A/S at 40 lb./ac. of N. (vi) CO—13. (vii) Irrigated. (viii) Hand weeding. (ix) and (x) N.A.

2. TREATMENTS :

Same as in expt. no. 56(15) on page 92.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 128'×30'. (b) 127'×28½'. (v) 6"×9". (vi) Yes.

4. GENERAL :

(i) Good. Lodging affected the crop. (ii) Attack of blast. (iii) Neck infected tillers and grain yield. (iv) (a) 1956—1959. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Yield

(i) 764 lb./ac. (ii) 80.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	S ₀	S ₁	S ₂	S ₃
Av. yield	827	755	670	803

S.E./mean = 40.2 lb./ac.

Incidence of blast

(i) 10.32 degrees (ii) and (iii) N.A. (iv) Av. % of incidence of infection in degrees.

Treatment	S ₀	S ₁	S ₂	S ₃
Mean angle	12.81	9.12	9.26	10.07

S.E./mean = degrees.

Mean % of neck infection 5.12 2.54 2.62 3.16

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 54(13).

Site :- Central Rice Research Instt., Cuttack.

Type :- 'D'.

Object :—To find out the best fungicide for control of blast.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 17.7.1954/19.8.1954. (iv) (a) 2 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9' × 6". (e) 2 to 3. (v) Nil. (vi) CO-13 (early). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 55.24". (x) 15.11.1954

2. TREATMENTS :

5 spraying treatments : S₀=Control (no spraying), S₁=Bordeaux mixture, S₂=Perenox 0.5%, S₃=Coppesan 0.5 % and S₄=Cupravit 0.5 %.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 8. (iv) (a) 29' × 9'. (b) 28' × 7.5'. (v) 1 row around. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Attack of blast. (iii) Neck infected tiller counts and grain yield. (iv) (a) 1953—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Yield

(i) 1272 lb./ac. (ii) 222.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of gram in lb./ac.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄
Av. yield	933	1474	1348	1206	1398

S.E./mean = 78.49 lb./ac.

Incidence of blast

(i) 21.15 degrees. (ii) 3.37 degrees. (iii) Treatment differences are highly significant. (iv) Av. % of incidence of infection in degrees.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄
Mean angle	32.91	17.15	19.18	20.88	15.63

S.E./mean = 1.19 degrees.

Mean % of infection 29.61 9.07 11.71 13.10 7.75

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 55(8).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'D'.**

Object :- To find out the best fungicide for control of blast.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I. Cuttack. (iii) 7.7.1955/13.8.1955. (iv) (a) 2 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9" x 6". (e) 2 to 3. (v) Nil. (vi) CO.—13. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 72.71". (x) N.A.

2. TREATMENTS :

5 spraying treatments : S₀=Control (no spraying), S₁=Bordeaux mixture 5 : 5 : 50, S₂=Shell copper fungicide, S₃=Fungemar and S₄=Agrosan dust.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 8. (iv) (a) 29' x 9.75'. (b) 28' x 8.25'. (v) 6" x 9". (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Spraying was done against blast. (iii) Neck infected tiller counts and yield of grain. (iv) (a) 1953—contd. (q) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :**Yield**

(i) 1128 lb./ac. (ii) 123.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄
Av. yield	968	1163	1229	1210	1068

S.E./mean = 43.64 lb./ac.

Incidence of blast

(i) 11.47 degrees. (ii) 2.85 degrees. (iii) Treatment differences are highly significant. (iv) Av. % incidence of infection in degrees.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄
Mean angle	14.47	9.92	9.44	10.43	13.08

S.E./mean = 1.01 degrees.

% of infection	6.67	3.31	3.07	3.56	5.27
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Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 56(12).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'D'.**

Object :- To find out the best fungicide for control of blast.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 2.7.1956/8.8.1956. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9" x 6". (e) 2 to 3. (v) Nil. (vi) CO—13 (early). (vii) Irrigated. (viii) 2 to 3 interculturis with Japanese weeder and 1 hand weeding. (ix) 82.73". (x) 9.11.1956.

2. TREATMENTS :

5 spraying treatments : S₀=Control (no spraying) S₁=Bordeaux mixture 5 : 5 : 50, S₂=Fungi copper Geigy, S₃=Copper sandoz and S₄=Fernide (Thiaram).

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 8. (iv) (a) 29' x 9.75'. (b) 27' x 8.25'. (v) 1' x 9". (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Spraying of fungicides against incidence of disease. (iii) Neck infected tiller counts and grain yield. (iv) (a) 1953—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Yield

(i) 1120 lb./ac. (ii) 152.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄
Av. yield	920	1201	1222	1271	988

S.E./mean = 53.8 lb./ac.

Incidence of blast

(i) 12.28 degrees. (ii) 4.50 degrees. (iii) Treatment differences are highly significant. (iv) Av. % of incidence of infection in degrees.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄
Mean angle	15.84	10.19	7.26	12.49	15.63

S.E./mean = 1.59 degrees.

Mean % of infection	8.73	3.43	2.33	5.42	8.30
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Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 57(13).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'D'.

Object :- To find out the best fungicide for control of blast on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A./ 8.8.1957. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9'' × 6''. (e) 2 to 3. (v) Nil. (vi) CO—13 (early). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 29.47''. (x) N.A.

2. TREATMENTS :

5 spraying treatments : S₀ = Control (no spraying), S₁ = Ceresan at 1 lb./ac. in 100 gallons, S₂ = Fernide at 5 lb./ac. in 100 gallons, S₃ = Aretan 6 % at 3.25 lb./ac. in 100 gallons and S₄ = Mema at 1.3 lb./ac. in 100 gallons.

3. DESIGN and 4. GENERAL :

Same as in expt. no. 55(8) on page 96.

5. RESULTS :

Yield

(i) 1096 lb./ac. (ii) 108.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄
Av. yield	902	1162	917	1236	1262

S.E./mean = 38.5 lb./ac.

Incidence of blast

(i) 4.63 degrees. (ii) 2.49 degrees. (iii) Treatment differences are highly significant. (iv) Av. % of incidence of infection in degrees.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄
Mean angle	5.95	4.82	2.77	4.69	4.93
S.E./mean = 0.88 degrees.					
Mean % of infection	1.18	0.96	0.38	1.00	0.98

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 58(6).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'D'.

Object:—To find out the best fungicide for control of blast on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 15.7.1958/12.8.1958. (iv) (a) 2 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9' × 6". (e) 2 to 3. (v) Nil. (vi) CO—13 (early). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 57.94". (x) N.A.

2. TREATMENTS :

5 spraying treatments : S₀=Control (no spraying), S₁=Coppesan wet at 1 lb./ac. in 100 gallons, S₂=Fernide, S₃=Aretan 6 % at 3.25 lb./ac. in 100 gallons and S₄=Mema at 1.30 lb./ac. in 100 gallons.

3. DESIGN and 4. GENERAL :

Same as in expt. no. 55(8) on page 96.

5. RESULTS :

Yield

(i) 794 lb./ac. (ii) 109.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄
Av. yield	448	764	640	1189	929

S.E./mean = 38.7 lb./ac.

Incidence of blast

(i) 15.82 degrees. (ii) 1.90 degrees. (iii) Treatment differences are highly significant. (iv) Av. % incidence of infection in degrees.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄
Mean angle	21.54	12.97	17.26	12.49	14.82

S.E./mean = 0.67 degrees.

Mean % of infection	13.56	5.09	8.90	4.80	6.68
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Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 59(24).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'D'.

Object:—To find out the best fungicide for control of blast on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 7.7.1959/3 and 4.8.1959. (iv) (a) 2 summer ploughings, laddering and levelling. (b) Transplanting. (c) 25 lb./ac. (d) 6" × 9". (e) 1 to 2. (v) 60 lb./ac. of N. (vi) CO—13 (early). (vii) Irrigated. (viii) Weeding. (ix) (45.05". (x) 23.11.1959.

2. TREATMENTS :

5 spraying treatments : S_0 =Control, S_1 =Ceresan at 7.8 lb. in 100 gallons of water, S_2 =Fernide at 5 lb. in 100 gallons of water, S_3 =Aeretan 6 % at 3.25 lb. in 100 gallons of water and S_4 =Mema at 1.30 lb. in 100 gallons of water.

About 46 litres/ac. of these water solutions were sprayed.

3. DESIGN and 4. GENERAL :

Same as in expt. no. 55(8) on page 96.

5. RESULTS :

Yield

(i) 1553 lb./ac. (ii) 174.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	S_0	S_1	S_2	S_3	S_4
Av. yield	1462	1500	1545	1593	1666

S.E./mean = 61.8 lb./ac.

Incidence of blast

Treatment	S_0	S_1	S_2	S_3	S_4
Mean angle	14.77	9.44	11.32	8.89	9.61
% of neck infection	6.62	2.70	3.90	2.51	2.90

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 55(13).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'DV'.

Object :—To study the effect of spraying of copper fungicide against blast disease on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 25.6.1955/2.8.1955. (iv) (a) 2 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9" x 6". (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 2 to 3 interculturalures with Japanese weeder and 1 hand weeding. (ix) 72.71". (x) N.A.

2. TREATMENTS :

Main-plot treatments :

3 sprayings with 0.5 % copper fungicide : S_0 =Control (water spraying), S_1 =Low volume spraying at 25 gallons./ac. and S_2 =Normal spraying at 100 gallons/ac.

Sub-plot treatments :

16 varieties : V_1 =T-912, V_2 =CO-13, V_3 =Sm-8, V_4 =CH-55, V_5 =H-755, V_6 =PTB-10, V_7 =T-141, V_8 =T-1145, V_9 =SR-26 B, V_{10} =BAM-3, V_{11} =BAM-9, V_{12} =Jelly 175, V_{13} =T-1242, V_{14} =T-90, V_{15} =BAM-6 and V_{16} =BJ-1.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 16 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 8.25' x 7.5'. (b) 6.75' x 6.5'. (v) 1 row around. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Blast incidence was controlled by spraying of copper fungicide. (iii) Grain and straw yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1949 lb./ac. (ii) (a) 425.4 lb./ac. (b) 345.0 lb./ac. (iii) S effect is significant and V effect is highly significant. (iv) Av. yield of grain in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈
S ₀	490	695	1874	1986	1899	1626	2290	1657
S ₁	540	875	1806	1992	1874	1700	1656	1675
S ₂	751	1024	1396	1725	1526	1359	1545	1483
Mean	596	863	1695	1899	1769	1564	1831	1607

	V ₉	V ₁₀	V ₁₁	V ₁₂	V ₁₃	V ₁₄	V ₁₅	V ₁₆	Mean
S ₀	2910	2693	3413	2965	2879	2674	1998	1564	2104
S ₁	2463	2401	2941	2420	2631	2370	1899	1427	1918
S ₂	2588	2290	2681	2228	2805	2184	1917	1806	1831
Mean	2656	2420	3009	2544	2774	2408	1936	1601	1949

S.E. of difference of two

1. S marginal means = 75.2 lb./ac.
2. V marginal means = 140.8 lb./ac.
3. V means at the same level of S = 244.0 lb./ac.
4. S means at the same level of V = 247.8 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 56(24).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'DV'.

Object :- To study the effect of spraying copper fungicides on foliage of different varieties of Paddy in controlling the blast disease.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 28.6.1956/31.7.1956. (iv) (a) Ploughed and puddled by tractor. (b) Transplanted. (c) 25 lb./ac. (d) 6" x 9". (e) 1 to 2. (v) *Dhanicha* as G.M. (vi) As per treatments. (vii) Irrigated. (viii) Hand weeding. (ix) N.A. (x) 8.11.1956 to 20.12.1956.

2. TREATMENTS ;

Same as in expt. no. 55(13) on page 99.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 16 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 8.25' x 7.5'. (b) 7.25' x 6'. (v) One row around. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Incidence of copper in July. (iv) (a) 1953 to 1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2055 lb./ac. (ii) (a) 854 lb./ac. (b) 1316 lb./ac. (iii) V effect is highly significant. (iv) Av. yield of grain in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈
S ₀	954	1103	1552	1134	1346	1377	2971	2663
S ₁	1197	1377	1408	1142	759	1549	1975	1630
S ₂	375	1025	1479	1549	1048	2973	2456	2021
Mean	842	1168	1480	1275	1051	1966	2467	2105

	V ₉	V ₁₀	V ₁₁	V ₁₂	V ₁₃	V ₁₄	V ₁₅	V ₁₆	Mean
S ₀	1970	1737	4877	2449	2722	2410	4451	1580	2206
S ₁	1924	884	6454	657	2887	4048	1854	2511	2134
S ₂	1901	Nil	4885	962	1774	3067	4223	1353	1825
Mean	1932	874	5405	1356	2461	3175	3509	1815	2055

S.E. of difference of two

1. S marginal means = 151 lb./ac.
2. V marginal means = 537 lb./ac.
3. V means at the same level of S = 931 lb./ac.
4. S means at the same level of V = 914 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 57(17).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'DV'.

Object :— To study the effect of spraying of copper fungicide against blast disease on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 26.6.1957/9.8.1957. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9' x 6'. (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 29.47''. (x) 11.12.1957.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(13) on page 99.

4. GENERAL :

(i) Satisfactory. (ii) Blast incidence was controlled by spraying of copper fungicides. (iii) Grain and straw yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1231 lb./ac. (ii) (a) 579.7 lb./ac. (b) 456.7 lb./ac. (iii) V effect alone is highly significant. (iv) Av. yield of grain in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈
S ₀	776	853	952	1232	545	1386	743	308
S ₁	820	869	1282	1095	743	1276	479	292
S ₂	820	1078	682	1337	693	1364	253	435
Mean	805	933	971	1291	660	1342	492	345

	V ₉	V ₁₀	V ₁₁	V ₁₂	V ₁₃	V ₁₄	V ₁₅	V ₁₆	Mean
S ₀	1122	1876	2266	1139	2244	1320	2283	1386	1277
S ₁	990	1738	1876	1287	1771	1793	2063	1243	1226
S ₂	798	1612	1826	1073	2002	1743	2170	1150	1190
Mean	978	1748	1989	1168	2064	1617	2177	1259	1231

S.E. of difference of two

- | | | |
|-----------------------------------|---|---------------|
| 1. S marginal means | = | 102.5 lb./ac. |
| 2. V marginal means | = | 186.4 lb./ac. |
| 3. V means at the same level of S | = | 322.9 lb./ac. |
| 4. S means at the same level of V | = | 329.1 lb./ac. |

Crop :- Paddy (*Kharif*).

Ref :- C.R.R.I. 58(8).

Site :- Central Rice Res. Inst., Cuttack.

Type :- 'DV'.

Object :— To study the effect of spraying of copper fungicide against blast disease on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 5.7.1958/13.8.1958. (iv) (a) 2 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9' x 6' (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 57.94". (x) 3.12.1958 and 10.12.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(13) on page 99.

4. GENERAL :

(i) Satisfactory. (ii) Control measure was taken against blast incidence by spraying copper fungicide. (iii) Yield of grain, straw, height and neck infected tiller counts. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1022 lb./ac. (ii) (a) 511.0 lb./ac. (b) 408.0 lb./ac. (iii) V effect alone is highly significant. (iv) Av. yield of grain in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈	
S ₀	74	97	349	237	365	171	1796	624	
S ₁	62	182	299	93	163	206	1613	727	
S ₂	89	269	531	151	473	295	1737	589	
Mean	75	180	393	160	334	224	1715	647	
	V ₉	V ₁₀	V ₁₁	V ₁₂	V ₁₃	V ₁₄	V ₁₅	V ₁₆	Mean
S ₀	1435	2055	2381	1606	2459	1373	1761	667	1091
S ₁	1288	1516	1951	1419	2094	1466	1450	337	929
S ₂	1896	1924	1807	1811	1970	1412	1528	279	1047
Mean	1540	1832	2046	1612	2174	1417	1580	428	1022

S.E. of difference of two

- | | | |
|-----------------------------------|---|---------------|
| 1. S marginal means | = | 90.3 lb./ac. |
| 2. V marginal means | = | 166.6 lb./ac. |
| 3. V means at the same level of S | = | 288.5 lb./ac. |
| 4. S means at the same level of V | = | 293.6 lb./ac. |

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 59(25).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'DV'.**

Object :— To study the effect of spraying of copper fungicide against blast disease on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 30.6.1959 and 6.7.1956/10 and 11.8.1959. (iv) (a) 2 ploughings and 1 discing by tractor, laddering and levelling. (b) Transplanting. (c) 25 lb./ac. (d) 6"×9". (e) 1 to 2. (v) 1000 lb./ac. as G.M. from *Glycicidium aculatia* and 60 lb./ac. of N as A/S in two doses. (vi) As per treatments. (vii) Irrigated. (viii) Hand weeding. (ix) 45.35". (x) 12.12.1959.

2. TREATMENTS :**Main-plot treatments :**

3 spraying treatments : T_0 =Control (water spray), T_1 =0.5% copper fungicide at 20 gallons/ac. and T_2 =0.5% copper fungicide at 100 gallons/ac.

Sub-plot treatments :

15 varieties: V_1 =T-1145, V_2 =BAM-6, V_3 =Jelly-175, V_4 =H-755, V_5 =CO-13, V_6 =T-1242, V_7 =BAM-9, V_8 =T-90, V_9 =T-141, V_{10} =SR 26-B, V_{11} =PTB-10, V_{12} =Sm-8, V_{13} =BJ 1, V_{14} =CH-55 and V_{15} =CH-47.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 15 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 8.25'×7.5'. (q) 7.25'×6'. (v) 1 row around. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Incidence of copper in July. (iv) (a) 1953-1959. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2139 lb./ac. (ii) (a) 203.4 lb./ac. (b) 313.2 lb./ac. (iii) Main effects of T and V are highly significant. (iv) Av. yield of grain in lb./ac.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8
T_0	1095	1353	907	1767	1431	2839	2495	2886
T_1	1080	1189	837	1783	1431	2988	2902	2784
T_2	1518	1650	1072	1885	1478	3206	2471	3121
Mean	1231	1397	939	1812	1447	3011	2623	2930
	V_9	V_{10}	V_{11}	V_{12}	V_{13}	V_{14}	V_{15}	Mean
T_0	2471	2745	2213	3129	1650	2456	1392	2055
T_1	2644	2769	2745	3512	1674	2213	1369	2128
T_2	2792	2824	2550	3222	1932	2261	1541	2235
Mean	2636	2779	2503	3288	1752	2310	1434	2139

S.E. of difference of two

1. T marginal means = 37.1 lb./ac.
2. V marginal means = 127.9 lb./ac.
3. V means at the same level of T = 221.5 lb./ac.
4. T means at the same level of V = 217.2 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 56(14).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'DV'.**

Object :— To study the effect of spraying of coppesan against blast disease on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 13.7.1956/7.8.1956 and 8.11.1956. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) and (d) N.A. (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 82.73%. (x) 12.11.1956 to 22.1.1957.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 early varieties : $V_1=CO-13$ and $V_2=T-6552$.

or

(1) 2 medium varieties : $V_1=1145$ and $V_2=Sm-8$.

or

(1) 2 late varieties : $V_1=AKP-9$ and $V_2=ASD-5$.

(2) 4 spraying treatments : $T_0=$ No dipping or spraying, $T_1=$ Dipping in coppesan solution at transplanting and spraying coppesan 45, 60, 90 and 97 days after transplanting, $T_2=$ Dipping in coppesan solution at transplanting and spraying coppesan 45 and 60 days after transplanting and $T_3=$ No dipping but spraying coppesan 90 and 97 days after transplanting.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) $21' \times 12.75'$. (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Disease incidence present. Spraying was done to control the disease. (iii) Yield of grain and straw, height, ear-length and neck infection. (iv) (a) 1952—contd. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Infection in late varieties is N.A.

5. RESULTS :

Early varieties yield

(i) 1445 lb./ac. (ii) 142.8 lb./ac. (iii) Main effect of V alone is significant. (iv) Av. yield of grain in lb./ac.

	T_0	T_1	T_2	T_3	Mean
V_1	1256	1302	1241	1449	1312
V_2	1561	1515	1551	1683	1578
Mean	1408	1408	1396	1566	1445

S.E. of V marginal mean = 35.7 lb./ac.

S.E. of T marginal mean = 50.5 lb./ac.

S.E. of body of table = 71.4 lb./ac.

Incidence of blast in early varieties

(i) 5.80 degrees. (ii) 3.80 degrees. (iii) Main effect of V alone is significant. (iv) Av. % of incidence of neck infection in degrees.

	T_0	T_1	T_2	T_3	Mean
V_1	9.29	6.50	3.64	11.12	7.64
V_2	4.47	2.87	3.00	5.50	3.96
Mean	6.88	4.68	3.32	8.31	5.80

S.E. of V marginal mean = 0.95 degrees.

S.E. of T marginal mean = 1.34 degrees.

S.E. of body of table = 1.90 degrees.

Medium varieties yield

(i) 1608 lb./ac. (ii) 194.6 lb./ac. (iii) Main effect of V alone is significant. (iv) Av. yield of grain in lb./ac.

	T ₀	T ₁	T ₂	T ₃	Mean
V ₁	1698	1983	1851	1861	1848
V ₂	1352	1312	1393	1413	1368
Mean	1525	1648	1622	1637	1608

S.E. of V marginal mean = 48.7 lb./ac.
 S.E. of T marginal mean = 68.8 lb./ac.
 S.E. of body of table = 97.3 lb./ac.

Incidence of blast in medium varieties

(i) 9.69 degrees. (ii) 3.22 degrees. (iii) None of the effects is significant. (iv) Av. % of incidence of neck infection in degrees.

	T ₀	T ₁	T ₂	T ₃	Mean
V ₁	10.34	9.08	7.41	7.75	8.65
V ₂	10.66	12.08	10.79	9.40	10.73
Mean	10.50	10.58	9.10	8.58	9.69

S.E. of V marginal mean = 0.81 degrees.
 S.E. of T marginal mean = 1.14 degrees.
 S.E. of body of table = 1.61 degrees

Late varieties yield

(i) 1794 lb./ac. (ii) 148.0 lb./ac. (iii) Main effect of V alone is significant. (iv) Av. yield of grain in lb./ac.

	T ₀	T ₁	T ₂	T ₃	Mean
V ₁	1596	1617	1739	1525	1619
V ₂	1962	2034	1993	1881	1968
Mean	1779	1826	1866	1703	1794

S.E. of V marginal mean = 37.0 lb./ac.
 S.E. of T marginal mean = 52.3 lb./ac.
 S.E. of body of table = 74.0 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 57(12).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'DV'.

Object :- To study the effect of spraying of coppesan against blast disease on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A./10 to 12.8.1957. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9" x 6". (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 29.47". (x) N.A.

2. TREATMENTS :**Main-plot treatments :**2 early varieties : $V_1 = \text{CO-13}$ and $V_2 = \text{T-6552}$.

or

2 medium varieties : $V_1 = \text{T-1145}$ and $V_2 = \text{Sm-8}$.

or

2 late varieties : $V_1 = \text{AKP-9}$ and $V_2 = \text{ASD-5}$.**Sub-plot treatments :**

4 spraying treatments : $T_0 = \text{No dipping or spraying}$, $T_1 = \text{Dipping in coppesan solution at transplanting and spraying coppesan 45, 60, 90 and 97 days after transplanting}$, $T_2 = \text{Dipping in coppesan solution at transplanting and spraying coppesan 45 and 60 days after transplanting}$ and $T_3 = \text{No dipping but spraying coppesan 90 and 97 days after transplanting}$

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 1/162.69 ac. (b) 1/206.32 ac. for late and medium varieties and 1/210.43 for early varieties. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Disease incidence in all varieties except late duration varieties. Spraying with coppesan. (iii) Neck infected tillers and grain yield. (iv) (a) 1952—contd. (b) No. (c) Nil. (v) and (vi) Nil. (vii) There was no infection in late varieties.

5. RESULTS :**Early varieties yield**

(i) 1422 lb./ac. (ii) (a) 84.1 lb./ac. (b) 133.0 lb./ac. (iii) V effect is highly significant. Interaction $T \times V$ is significant. (iv) Av. yield of grain in lb./ac.

	T_0	T_1	T_2	T_3	Mean
V_1	697	960	945	1025	907
V_2	1986	1986	1801	1974	1937
Mean	1342	1473	1373	1500	1422

S.E. of difference of two

1. V marginal means = 29.8 lb./ac.
2. T marginal means = 66.5 lb./ac.
3. T means at the same level of V = 94.0 lb./ac.
4. V means at the same level of T = 86.7 lb./ac.

Incidence of blast in early varieties

(i) 4.51 degrees. (ii) (a) 0.66 degrees. (b) 1.13 degrees. (iii) Main effects of V and T are highly significant. (iv) Av. % incidence of neck of infection in degrees.

	T_0	T_1	T_2	T_3	Mean
V_1	9.45	2.87	8.07	4.51	6.23
V_2	4.95	0.54	4.68	1.03	2.80
Mean	7.20	1.71	6.37	2.77	4.51

S.E. of difference of two

1. V marginal means = 0.23 degrees.
2. T marginal means = 0.56 degrees.
3. T means at the same level of V = 0.80 degrees.
4. V means at the same level of T = 0.73 degrees.

Medium varieties yield

(i) 1046 lb./ac. (ii) (a) 660.0 lb./ac. (b) 332.6 lb./ac. (iii) V effect alone is significant. (iv) Av. yield of grain in lb./ac.

	T ₀	T ₁	T ₂	T ₃	Mean
V ₁	1756	1492	1386	1585	1555
V ₂	380	543	607	617	537
Mean	1068	1018	996	1101	1046

S.E. of difference of two

1. V marginal means = 233.4 lb./ac.
2. T marginal means = 166.3 lb./ac.
3. T means at the same level of V = 235.1 lb./ac.
4. V means at the same level of T = 309.7 lb./ac.

Incidence of blast in medium varieties

(i) 5.75 degrees. (ii) (a) 1.62 degrees. (b) 1.76 degrees. (iii) T effect alone is highly significant. (iv) Av. % of incidence of neck infection in degrees.

	T ₀	T ₁	T ₂	T ₃	Mean
V ₁	8.81	4.22	7.92	4.94	6.47
V ₂	7.36	2.47	6.52	3.72	5.02
Mean	8.08	3.35	7.22	4.33	5.75

S.E. of difference of two

1. V marginal means = 0.57 degrees.
2. T marginal means = 0.88 degrees.
3. T means at the same level of V = 1.24 degrees.
4. V means at the same level of T = 1.22 degrees.

Late varieties yield

(i) 3431 lb./ac. (ii) (a) 718.6 lb./ac. (b) 483.1 lb./ac. (iii) V effect is highly significant. (iv) Av. yield of grain in lb./ac.

	T ₀	T ₁	T ₂	T ₃	Mean
V ₁	2841	2571	2148	2678	2560
V ₂	4333	4630	3860	4390	4303
Mean	3587	3600	3004	3534	3431

S.E. of difference of two

1. V marginal means = 254.1 lb./ac.
2. T marginal means = 241.6 lb./ac.
3. T means at the same level of V = 341.6 lb./ac.
4. V means at the same level of T = 389.8 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 58(9).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'DV'.

Object :- To study the effect of spraying of coppersan against blast disease on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A./12 to 14.8.1958. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanting. (c) N.A. (d) 9' x 6'. (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 57.94%. (x) 13.12.1958 to 5.1.1959.

2. TREATMENTS :

Same as in expt. no. 57(12) on page 105.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 4 sub-plots/main-plot. (b) N.A. (iii) 4 for early and late varieties and 3 for medium. (iv) (a) 1/162.69 ac. (b) 1/210.43 ac. (v) N.A. (vi) Yes.

4. GENERAL :

Same as in expt. no. 57(12) on page 105.

5. RESULTS :**Early varieties yield**

(i) 1076 lb./ac. (ii) (a) 155.8 lb./ac. (b) 212.7 lb./ac. (iii) V effect alone is highly significant. (iv) Av. yield of grain in lb./ac.

	T ₀	T ₁	T ₂	T ₃	Mean
V ₁	679	437	493	153	440
V ₂	1994	1720	1646	1485	1711
Mean	1336	1078	1070	819	1076

S.E. of difference of two

1. V marginal means = 55.1 lb./ac.
2. T marginal means = 106.3 lb./ac.
3. T means at the same level of V = 150.4 lb./ac.
4. V means at the same level of T = 141.4 lb./ac.

Incidence of blast in early varieties

(i) 27.06 degrees. (ii) (a) 29.86 degrees. (iii) Main effect of T alone is highly significant. (iv) Av. % of incidence of neck infection in degrees,

	T ₀	T ₁	T ₂	T ₃	Mean
V ₁	61.11	29.93	46.92	35.64	43.40
V ₂	14.37	7.23	11.48	9.78	10.71
Mean	37.74	18.58	29.20	22.71	27.06

S E. of difference of two

1. V marginal means = 10.56 degrees.
2. T marginal means = 4.51 degrees.
3. T means at the same level of V = 6.38 degrees.
4. V means at the same level of T = 11.92 degrees.

Medium varieties yield

(i) 1971 lb./ac. (ii) (a) 471.5 lb./ac. (b) 301.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	T ₀	T ₁	T ₂	T ₃	Mean
V ₁	2183	2063	1773	1857	1969
V ₂	2225	1883	1890	1896	1973
Mean	2204	1973	1832	1876	1971

S.E. of difference of two

1. V marginal means = 166.7 lb./ac.
2. T marginal means = 150.6 lb./ac.
3. T means at the same level of V = 213.0 lb./ac.
4. V means at the same level of T = 248.6 lb./ac.

Incidence of blast in medium varieties

(i) 23.46 degrees. (ii) (a) 8.62 degrees. (b) 4.12 degrees. (iii) T effect alone is significant. (iv) Av. % of incidence of neck infection in degrees.

	T ₀	T ₁	T ₂	T ₃	Mean
V ₁	30.26	19.69	23.86	20.26	23.52
V ₂	27.03	20.24	21.22	25.14	23.41
Mean	28.64	19.97	22.54	22.70	23.46

S.E. of difference of two

1. V marginal means = 3.52 degrees.
2. T marginal means = 2.38 degrees.
3. T means at the same level of V = 3.36 degrees.
4. V means at the same level of T = 4.57 degrees.

Late varieties yield

(i) 1707 lb./ac. (ii) (a) 249.0 lb./ac. (b) 183.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	T ₀	T ₁	T ₂	T ₃	Mean
V ₁	1680	1756	1646	1677	1690
V ₂	1729	1820	1621	1728	1725
Mean	1704	1788	1634	1702	1707

S.E. of difference of two

1. V marginal means = 88.1 lb./ac.
2. T marginal means = 91.6 lb./ac.
3. T means at the same level of V = 129.5 lb./ac.
4. V means at the same level of T = 142.6 lb./ac.

Incidence of blast in late varieties

(i) 25.29 degrees. (ii) (a) 9.56 degrees. (b) 3.58 degrees. (iii) V effect alone is highly significant. (iv) Av. % of incidence of neck infection in degrees.

	T ₀	T ₁	T ₂	T ₃	Mean
V ₁	13.65	10.64	11.83	12.14	12.06
V ₂	41.70	35.30	37.99	39.05	38.52
Mean	27.68	22.97	24.91	25.59	25.29

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. V marginal means | = 3.38 degrees. |
| 2. T marginal means | = 1.79 degrees. |
| 3. T means at the same level of V | = 2.53 degrees. |
| 4. V means at the same level of T | = 4.03 degrees. |

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 59(28).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'DV'.

Object :—To study the effect of spraying of copesal against blast on early varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 60 to 80 lb./ac. of N in two doses as A/S. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 2.7.1959/8.8.1959. (iv) (a) 2 summer ploughings, puddling and levelling. (b) Transplanting. (c) 25 lb./ac. (d) 6"×9". (e) 1 to 2. (v) 40 lb./ac. of N as A/S. (vi) As per treatments. (vii) Irrigated. (viii) Hand-weeding. (ix) 45.04". (x) 2.11.1959.

2. TREATMENTS :

Main-plot treatments :

2 varieties : $V_1 = CO-13$ and $V_2 = T-6522$.

Sub-plot treatments :

4 spraying treatments : $T_0 =$ Control (no spray), $T_1 =$ Low volume sprayings before flowering on 24.8.1959 and 14.9.1959, $T_2 =$ Normal volume sprayings after flowering on 2.10.1959 and 12.10.1959 and $T_3 = T_1 + T_2$.

Low volume spraying is 0.5 % of copesal at 20 gallons/ac. and normal volume spraying is 0.5 % of copesal at 100 gallons/ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 21'×12.75'. (b) 20'×11.25'. (v) 1 row around. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Blast infection. (iv) (a) 1953—1959. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1386 lb./ac. (ii) (a) 290.8 lb./ac. (b) 119.6 lb./ac. (iii) Interaction of V×T alone is significant. (iv) Av. yield of grain in lb./ac.

	T_0	T_1	T_2	T_3	Mean
V_1	1220	1400	1347	1338	1326
V_2	1502	1424	1559	1300	1446
Mean	1361	1412	1453	1319	1386

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. V marginal means | = 102.8 lb./ac. |
| 2. T marginal means | = 59.8 lb./ac. |
| 3. T means at the same level of V | = 84.5 lb./ac. |
| 4. V means at the same level of T | = 126.2 lb./ac. |

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 59(26).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'DV'.**

Object :—To study the effect of spraying of copesal against blast on medium varieties of Paddy.

1. BASAL CONDITIONS :

(a) Nil. (b) Paddy. (c) 60 to 80 lb./ac. of N as A/S in two doses. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 2.7.1959/18.8.1959. (iv) (a) 2 summer ploughings, puddling and levelling. (b) Transplanting. (c) 25 lb./ac. (d) 6"×9". (e) 1 to 2. (v) 40 lb./ac. of N as A/S. (vi) As per treatments. (vii) Irrigated. (viii) Hand-weeding. (ix) 45.04". (x) 25.11.1959.

2. TREATMENTS :**Main-plot treatments :**2 varieties : V₁=T—1145 and V₂=Sm—8.**Sub-plot treatments :**

4 spraying treatments: T₀=Control (no spray), T₁=Low volume sprayings before flowering on 24.8.1959 and 4.9.1959, T₂=Normal volume sprayings after flowering on 10.10.1959 and 29.10.1959 and T₃=T₁+T₂.

Low volume spraying is 0.5 % of copesal at 20 gallons/ac. and normal volume spraying is 0.5 % of copesal at 100 gallons/ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 21'×12.75'. (b) 20'×11.25'. (v) 1 row around. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Blast infection. (iv) (a) 1953—1959. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2133 lb./ac. (ii) (a) 359.5 lb./ac. (b) 187.4 lb./ac. (iii) V effect alone is highly significant. (iv) Av. yield of grain in lb./ac.

	T ₀	T ₁	T ₂	T ₃	Mean
V ₁	2559	2520	2551	2648	2570
V ₂	1733	1738	1658	1658	1697
Mean	2146	2129	2104	2153	2133

S.E. of difference of two

1. V marginal means = 127.1 lb./ac.
2. T marginal means = 93.7 lb./ac.
3. T means at the same level of V = 132.5 lb./ac.
4. V means at the same level of T = 171.2 lb./ac.

Crop :- Paddy (Kharif).**Ref :- C.R.R.I. 59(27).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'DV'.**

Object :—To study the effect of spraying of copesal against blast on late varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 60 to 80 lb./ac. of N in 2 doses as A/S. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 2.7.1959/18.8.1959. (iv) (a) 2 summer ploughings, puddling and laddering. (b) Transplanting. (c) 25 lb./ac. (d) 6"×9". (e) 1 to 2. (v) 40 lb./ac. of N as A/S. (vi) As per treatments. (vii) Irrigated. (viii) Hand weeding. (ix) 45.35". (x) 21.12.1959.

2. TREATMENTS :

Main-plot treatments :

2 varieties : V_1 =AKP--9 and V_2 =ASD--5.

Sub-plot treatments :

4 spraying treatments : T_0 =Control (no spray), T_1 =Low volume sprayings before flowering on 24.8.1959 and 4.9.1959, T_2 =Normal volume sprayings after flowering on 5.11.1959 and 16.11.1959 and T_3 = T_1+T_2 .

Low volume spraying is 0.5% of copesal at 20 gallons/ac. and normal volume spraying is 0.5% of copesal at 100 gallons/ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 21'×12.75'. (b) 20'×11.25'. (v) 1 row around. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Blast infection. (iv) (a) 1953--1959. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1736 lb./ac. (ii) (a) 412.5 lb./ac. (b) 226.6 lb./ac. (iii) V effect alone is significant. (iv) Av. yield of grain in lb./ac.

	T_0	T_1	T_2	T_3	Mean
V_1	2185	1999	2150	2091	2106
V_2	1217	1403	1169	1675	1366
Mean	1701	1701	1660	1883	1736

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. V marginal means | = 156.5 lb./ac. |
| 2. T marginal means | = 113.3 lb./ac. |
| 3. T means at the same level of V | = 160.2 lb./ac. |
| 4. V means at the same level of T | = 209.1 lb./ac. |

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 54(17).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'DC'.

Object :- To study the effect of herbicides with and without weeding.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 11.6.1954/19 7.1954. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 9"×10". (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) As per treatments. (ix) 55.24". (x) 7.12.1954.

2. TREATMENTS :

All combinations of (1) and (2)+one extra treatments

(1) 2 weeding treatments : W_0 =No weeding and W_1 =Wedding.

(2) 3 chemical treatments : C_0 =0, C_1 =Chloroxene and C_2 =Phenoxylene.

Extra treatments : T_1 =Weeding with Japanese weeder.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 62.5'×12'. (b) 65'10"×10'6". (v) 1 row around. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw, height, tiller counts and ear-length measurements. (iv) (a) 1951--1954. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 4012 lb./ac. (ii) 46.2 lb./ac. (iii) All effects are highly significant. (iv) Av. yield of grain in lb./ac.

 $T_1 = 4363$ lb./ac.

	C ₀	C ₁	C ₂	Mean
W ₀	3924	4197	4230	4117
W ₁	4410	3365	3600	3792
Mean	4167	3781	3915	3954

S.E. of C marginal mean = 16.3 lb./ac.
 S.E. of W marginal mean = 13.3 lb./ac.
 S.E. of body of table or control mean = 29.1 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- C.R.R.I. 55(27).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'DM'.

Object :— To study the effect of spraying herbicides at different stages of plant growth in controlling the weeds and affecting the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 17.6.1955/8.8.1955. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) 25 lb./ac. (d) 10" × 6". (e) 2 to 3. (v) Nil. (vi) T—141 (late). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and 1 hand weeding. (ix) 72.71". (x) 5 and 6.12.1955.

2. TREATMENTS :

Main-plot treatments :

2 levels of N : N₀=0 and N₁=30 lb./ac. of N.

Sub-plot treatments :

All combinations of (1) and (2)+2 extra treatments

(1) 3 times of application of chemicals : T₁=2, T₂=6 and T₃=10 weeks after planting.(2) 2 chemical treatments : C₁=Phenoxylenate at $\frac{3}{4}$ gallons/ac. and C₂=Chloroxone at $2\frac{1}{4}$ lb./ac.2 extra treatments : W₀=Control and W₁=Hand weeding.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 8 sub-plots/main-plot. (b) N.A. (iii) 4: (iv) (a) N.A. (b) 22.5' × 14'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Little attack of grain spoiling fungus. (iii) Yield of grain and straw, height, tiller counts and ear-length measurements. (iv) (a) 1955—1958. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2730 lb./ac. (ii) (a) 98.6 lb./ac. (b) 175.1 lb./ac. (iii) Main effects of N, T, W and N × T interaction are highly significant. Chemical vs. no chemical is significant. (iv) Av. yield of grain in lb./ac.

	N ₀	N ₁	Mean
W ₀	2601	2427	2514
W ₁	3009	2532	2770
Mean	2805	2480	2642

S.E. of difference of two

1. N marginal means = 49.3 lb./ac.
2. W marginal means = 87.6 lb./ac.
3. W means at the same level of N = 123.8 lb./ac.
4. N means at the same level of W = 100.5 lb./ac.

	T ₁	T ₂	T ₃	Mean	C ₁	C ₂
N ₀	2952	2946	2718	2872	2892	2852
N ₁	2818	2866	2254	2646	2712	2580
Mean	2886	2906	2486	2759	2802	2716
C ₁	2932	2962	2512			
C ₂	2838	2850	2460			

S.E. of difference of two

1. N marginal means = 28.4 lb./ac.
2. C marginal means = 50.6 lb./ac.
3. T marginal means = 61.9 lb./ac.
4. C means at the same level of N = 71.5 lb./ac.
5. N means at the same level of C = 58.0 lb./ac.
6. T means at the same level of N = 87.6 lb./ac.
7. N means at the same level of T = 76.9 lb./ac.
- S.E. of body of C×T table = 87.6 lb./ac.

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 56(17).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'DM'.

Object :- To study the effects of spraying herbicides at different stages of plant growth, in controlling weeds and affecting the yield of grain of crop of Paddy.

1. BASAL CONDITIONS :

(i) (a) and (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I. Cuttack. (iii) 5.7.1956/11.8.1956. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 10'×6'. (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and one hand weeding. (ix) 82.73%. (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(27) on page 113.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw, height and tiller counts measurements. (iv) (a) 1955-1958. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1966 lb./ac. (ii) (a) 134.1 lb./ac. (b) 163.6 lb./ac. (iii) N and T effects are highly significant. W effect and interaction N×T×C are significant. (iv) Av. yield of grain in lb./ac.

	N ₀	N ₁	Mean
W ₀	1507	2161	1834
W ₁	1810	2215	2012
Mean	1658	2188	1923

S.E. of difference of two

1. N marginal means = 67.1 lb./ac.
2. W marginal means = 81.8 lb./ac.
3. W means at the same level of N = 115.7 lb./ac.
4. N means at the same level of W = 105.8 lb./ac.

	T ₁	T ₂	T ₃	Mean	C ₁	C ₂
N ₀	1917	1843	1620	1793	1832	1753
N ₁	2225	2294	1986	2168	2147	2188
Mean	2071	2068	1803	1980	1990	1970
C ₁	2105	2072	1794			
C ₂	2037	2064	1811			

S.E. of difference of two

- | | | | |
|-----------------------------------|----------------|-----------------------------------|----------------|
| 1. N marginal means | = 38.7 lb./ac. | 5. N means at the same level of C | = 61.0 lb./ac. |
| 2. C marginal means | = 47.2 lb./ac. | 6. T means at the same level of N | = 81.8 lb./ac. |
| 3. T marginal means | = 57.8 lb./ac. | 7. N means at the same level of T | = 77.2 lb./ac. |
| 4. C means at the same level of N | = 66.8 lb./ac. | S.E. of body of C×T table | = 81.8 lb./ac. |

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 57(3).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'DM'.

Object :— To determine the optimum time of spraying herbicides in controlling weeds and affecting the yield of transplanted crop of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 3.7.1957/22.8.1957. (iv) (a) 4 ploughings, laddering and levelling (b) Transplanted. (c) and (d) N.A. (e) 2 to 3. (v) Nil. (vi) BAM—9 (late). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and one hand weeding. (ix) 29.47". (x) 27.12.1957.

2. TREATMENTS :

Same as in expt. no. 55(27) on page 113.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 8 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 15'×15'. (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain and straw, height, tiller counts and ear-length measurements. (iv) (a) 1955—1958. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2844 lb./ac. (ii) (a) 250.0 lb./ac. (b) 238.0 lb./ac. (iii) Chemical vs. no chemical is highly significant. Interaction N×T×C is highly significant. (iv) Av. yield of grain in lb./ac.

	N ₀	N ₁	Mean
W ₀	2988	2983	2986
W ₁	2820	3291	3055
Mean	2904	3137	3020

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. N marginal means | = 125.0 lb./ac. |
| 2. W marginal means | = 119.0 lb./ac. |
| 3. W means at the same level of N | = 168.3 lb./ac. |
| 4. N means at the same level of W | = 172.6 lb./ac. |

	T ₁	T ₂	T ₃	Mean	C ₁	C ₂
N ₀	2790	2709	2696	2732	2785	2678
N ₁	2892	2820	2805	2839	2774	2904
Mean	2841	2764	2750	2785	2780	2791
C ₁	2762	2754	2823			
C ₂	2920	2775	2678			

S.E. of difference of two

- | | | | |
|-----------------------------------|----------------|-----------------------------------|-----------------|
| 1. N marginal means | = 72.2 lb./ac. | 5. N means at the same level of C | = 99.6 lb./ac. |
| 2. C marginal means | = 69.7 lb./ac. | 6. T means at the same level of N | = 119.0 lb./ac. |
| 3. T marginal means | = 84.1 lb./ac. | 7. N means at the same level of T | = 121.0 lb./ac. |
| 4. C means at the same level of N | = 97.2 lb./ac. | S.E. of body of C×T table | = 119.0 lb./ac. |

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 58(10).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'DM'.

Object :- To determine the optimum time of spraying herbicides in controlling weeds and affecting the yield of the transplanted Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) N.A./1.8.1958. (iv) (a) 4 ploughings, laddering and levelling. (b) Transplanted. (c) N.A. (d) 9'×9'. (e) 2 to 3. (v) Nil. (vi) BAM-9 (late). (vii) Irrigated. (viii) 2 to 3 intercultures with Japanese weeder and one hand weeding. (ix) 57.94°. (x) 25.12.1958.

2. TREATMENTS :

Same as in expt. no. 55(27) on page 113.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 8 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 15'×15'. (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain and straw yield, height, tiller counts and ear-length measurements. (iv) (a) 1956-1958. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1839 lb./ac. (ii) (a) 382.0 lb./ac. (b) 241.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	N ₀	N ₁	Mean
W ₀	1678	1845	1762
W ₁	1685	1821	1753
Mean	1682	1833	1758

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. N marginal means | = 191.0 lb./ac. |
| 2. W marginal means | = 120.5 lb./ac. |
| 3. W means at the same level of N | = 170.4 lb./ac. |
| 4. N means at the same level of W | = 225.8 lb./ac. |

	T ₁	T ₂	T ₃	Mean	C ₁	C ₂
N ₀	1769	1806	1682	1752	1663	1841
N ₁	2070	2017	1854	1980	2020	1940
Mean	1920	1912	1768	1866	1842	1890
C ₁	1870	1844	1812			
C ₂	1970	1979	1724			

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. N marginal means | = 110.3 lb./ac. | 5. N means at the same level of C | = 130.4 lb./ac. |
| 2. C marginal means | = 69.6 lb./ac. | 6. T means at the same level of N | = 120.5 lb./ac. |
| 3. T marginal means | = 85.2 lb./ac. | 7. N means at the same level of T | = 146.5 lb./ac. |
| 4. C means at the same level of N | = 98.4 lb./ac. | S.E. of body of C × T table | = 120.5 lb./ac. |

Crop :- Paddy (Kharif).

Ref :- C.R.R.I. 59(1).

Site :- Central Rice Res. Instt., Cuttack.

Type :- DC.

Object :- To determine a judicious combination of cultural and chemical methods for effective control of weeds and increasing the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) G.M.—Paddy. (b) Fallow. (c) Nil. (ii) (a) Light clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 1.7.1959/27.8.1959. (iv) (a) Ploughing with tractor and 2 puddlings. (b) Transplanted. (c) 25 lb./ac. (d) 9" × 6". (e) 2 to 3. (v) Nil. (vi) T-141 (150 days). (vii) Irrigated. (viii) As per treatments. (ix) 45.33". (x) 1st. week of December, 1959.

2. TREATMENTS :

18 spraying treatments : T₀=Control, T₁=Spraying 2 weeks after planting (at 2 lb. acid. equivalent as Phenoxy-lene), T₂=Spraying 6 weeks after planting (at 2 lb. acid. equivalent as Phenoxy-lene), T₃=Spraying 10 weeks after planting (at 2 lb. acid equivalent as Phenoxy-lene), T₄=Japanese weeder 2 weeks after planting, T₅=Japanese weeder 6 weeks after planting, T₆=Japanese weeder 10 weeks after planting, T₇=Japanese weeder 2 weeks after and spraying 6 weeks after planting, T₈=Japanese weeder 2 weeks after and spraying 10 weeks after planting, T₉=Japanese weeder 6 weeks after and spraying 10 weeks after planting, T₁₀=Spraying 2 weeks after and Japanese weeder 6 weeks after planting, T₁₁=Spraying 2 weeks after and Japanese weeder 10 weeks after planting, T₁₂=Spraying 6 weeks after and Japanese weeder 10 weeks after planting, T₁₃=Japanese weeder 2 and 6 weeks and spraying 10 weeks after planting, T₁₄=Japanese weeder 2, 6 and 10 weeks and spraying 10 weeks after planting, T₁₅=Japanese weeder 2, 6 and 10 weeks after planting, T₁₆=Hand weeding 6 weeks and spraying 10 weeks after planting and T₁₇=Hand weeding 6 weeks after planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 20' × 10.5'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Weed population, height, tiller counts and yield of grain. (iv) (a) 1959—1961. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Heavy rains in October. (vii) Nil.

5. RESULTS :

(i) 2470 lb./ac. (ii) 332.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	2631	2399	2366	2740	2561	2641	2484	2542	2581
Treatment	T ₉	T ₁₀	T ₁₁	T ₁₂	T ₁₃	T ₁₄	T ₁₅	T ₁₆	T ₁₇
Av. yield	2538	2089	2138	2177	2631	2573	2601	2513	2254

S.E./mean = 166.0 lb./ac.

Crop :- Paddy.

Ref :- C.R.R.I. 58(30).

Site :- Central Rice Res. Instt., Cuttack.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Fallow—Paddy. (b) Fallow. (c) Nil. (ii) (a) Light clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 4.7.1958/26.8.1958. (iv) (a) Ploughing, puddling and laddering by tractor. (b) Transplanting. (c) 25 lb./ac. (d) 6"×10". (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Inter-culture and weeding. (ix) 50.8". (x) 17.11.1958 to 6.12.1958.

2. TREATMENTS :

Main-plot treatments :

5 levels of N as A/S : N₀=0, N₁=20, N₂=40, N₃=60 and N₄=80 lb./ac.

Sub-plot treatments :

6 medium varieties : V₁=T-635, V₂=PFB-13, V₃=EHM-112-241-2-68, V₄=T-1+1, V₅=T-1879 and V₆=BAM-9×Norin-18.

N applied in two equal doses on 26.8.1958 and 24.9.1958.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 2'×10'. (b) 22'×8'4". (v) 1'×9". (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Damaged by leaf eating insects. (iii) Height and tiller counts. (iv) (a) 1958—1960. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1902 lb./ac. (ii) (a) 176.0 lb./ac. (b) 365.0 lb./ac. (iii) Main effects of N and V are highly significant. (iv) Av. yield of grain in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	Mean
N ₀	1317	1625	1059	1695	2044	1352	1515
N ₁	1585	2001	1076	2237	2080	1633	1769
N ₂	1640	2270	1237	2272	2296	1842	1926
N ₃	1671	2327	1801	2460	2641	2372	2212
N ₄	1544	2503	1436	2524	2527	1994	2088
Mean	1511	2145	1322	2238	2318	1839	1902

S.E. of difference of two

1. N marginal means	= 58.7 lb./ac.
2. V marginal means	= 133.3 lb./ac.
3. V means at the same level of N	= 298.0 lb./ac.
4. N means at the same level of V	= 278.3 lb./ac.

Crop :- Paddy.**Ref :- C.R.R.I. 58(31).****Site :- Central Rice Res. Instt., Cuttack.****Type :- 'MV'.**

Object :- To study the effect of N and P on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Fallow—Rice. (b) Fallow. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.R.R.I., Cuttack. (iii) 11.7.1958/12.8.1958. (iv) (a) 4 ploughings with iron plough. (b) Transplanted after dry nursery. (c) 25 lb./ac. (d) 9"×9". (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Intercultural and hand weeding. (ix) 50.8%. (x) 9.12.1958.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 4 levels of N : $N_0=0$, $N_1=30$, $N_2=60$ and $N_3=90$ lb./ac.(2) 2 levels of P_2O_5 : $P_0=0$ and $P_1=50$ lb./ac.**Sub-plot treatments :**6 medium varieties : $V_1=T-141$ (control), $V_2=BK-6$, $V_3=T-1233$, $V_4=BAM-9 \times$ Norin -18, $V_5=T-90 \times$ Aikoku and $V_6=T-874-1-9-2$.

Fertilizers applied in two equal doses on 12.8.1958 and 12.9.1958.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 17'3"×11½'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Average. (ii) Nil. (iii) Tiller counts and grain yield. (iv) (a) 1958 - 1960. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2486 lb./ac. (ii) (a) 585.0 lb./ac. (b) 269.0 lb./ac. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in lb./ac.

	V_1	V_2	V_3	V_4	V_5	V_6	Mean	P_0	P_1
N_0	2433	2423	2386	2430	2235	2622	2421	2442	2400
N_1	2887	2578	2821	2524	2377	2462	2608	2590	2626
N_2	3220	2839	2687	2541	1963	2935	2697	2689	2705
N_3	2339	2451	2267	2178	1818	2258	2218	2120	2316
Mean	2720	2573	2540	2418	2098	2569	2486	2460	2512
P_0	2680	2594	2521	2398	2098	2471			
P_1	2759	2551	2559	2438	2097	2667			

S.E. of difference of two

1. N marginal means	= 168.9 lb./ac.	5. N means at the same level of V	= 242.2 lb./ac.
2. P marginal means	= 119.4 lb./ac.	6. V means at the same level of P	= 134.5 lb./ac.
3. V marginal means	= 95.1 lb./ac.	7. P means at the same level of V	= 171.2 lb./ac.
4. V means at the same level of N	= 190.2 lb./ac.	S.E. of body of N x P table	= 168.9 lb./ac.

Indian Institute of Sugarcane Research
LUCKNOW

INDIAN INSTITUTE OF SUGARCANE RESEARCH, LUCKNOW.

1. Name of the experimental station : Indian Institute of Sugarcane Research.
2. Tehsil : Lucknow.
3. District : Lucknow.
4. Address : Director, Indian Institute of Sugarcane Research, Lucknow.
5. Year of establishment : 1954.
6.

Latitude	Longitude	Altitude
N.A.	N.A.	N.A.
7. Wheather research, multiplication or demonstration farm : Research farm.
8. Whether State, University or private managed : Indian Council of Agricultural Research.
9. Programme of research : Fundamental and applied research on the different aspects of sugarcane culture.
10. Normal cropping pattern :

	I Year	II Year	III Year
	Sugarcane plant	Green manuring —Wheat	Green manuring- Sugarcane
11. Type of tract it represents : Alluvial loam soil. Semi-arid. The parent material is old alluvium and is no more subject to inundation.
12. General description of topography of the experimental area : Level land.
13. Soils :

(a) Broad soil types : Type IV/I and type IV/II according to classification scheme followed by sugarcane soil survey staff of U.P.

(i) Depth : 72".

(ii) Colour : Grey or brownish grey.

(iii) Structure : Friable.

(b) Chemical analysis :

	Type IV/I	Type IV/II
pH	7.0—7.8	7.6
Loss of ignition	3.6	2.44
HCl in solubles	81.76	84.73
R ₂ O ₃	9.12	8.73
Fe ₂ O ₃	3.38	3.41
Al ₂ O ₃	5.36	5.12
CaO	0.93	0.44
MgO	0.71	0.75
P ₂ O ₅	0.23	0.20
K ₂ O	0.84	0.70
Organic carbon	0.865	0.585

Total nitrogen	0.103	0.070
C/N	8.55	8.36
Total soluble salts	0.105	0.110
CO ₃	0.005	Nil
HCO ₃	0.04	0.06
Cl	0.008	0.005
SO ₄	0.050	0.025

(c) Mechanical analysis :

	Type IV/I	Type IV/II
Sand	2.54	0.85
Fine Sand	55.27	53.88
Silt	18.84	24.13
Clay	17.97	18.28
CaCO ₃	2.50	Nil

14. Normal average rainfall in mm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
60.3	286.7	340.1	170.7	96.1	1.8	4.9	24.6	6.6	8.7	2.0	28.6	1031.1

(The period on which the figures are based is 1956—1964.)

15. Irrigation facilities available ; year from which the facilities were made available : Canal irrigation ; since its inception.

16. Whether any proper drainage system exists : Yes.

Crop :- Sugarcane.

Ref :- I.I.S.R. 58(270).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'M'.

Object :- To study the effect of different levels of N and P through different sources on Sugarcane.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 12.2.1958. (iv) (a) to (c) N.A. (d) Rows 3' apart. (e) N.A. (v) N.A. (vi) CO 617. (vii) Irrigated. (viii) and (ix) N.A. (x) 13.1.1959.

2. TREATMENTS:

11 manurial treatments: M_0 =Control, M_1 =80 lb./ac. of N as Urea, M_2 =120 lb./ac. of N as Urea, M_3 =80 lb./ac. of N as G.N.C.+A/S, M_4 =120 lb./ac. of N as G.N.C.+A/S, M_5 = M_1 +80 lb./ac. of P_2O_5 as Super, M_6 = M_2 +120 lb./ac. of P_2O_5 as Super, M_7 = M_3 +80 lb./ac. of P_2O_5 as Super, M_8 = M_4 +120 lb./ac. of P_2O_5 as Super, M_9 =Complezal supra giving 80 lb./ac. each of N and P_2O_5 and M_{10} =Complezal supra giving 120 lb./ac. each of N and P_2O_5 .

$\frac{1}{3}$ of fertilizer quantity applied at planting (12.2.1958) and $\frac{1}{3}$ at tillering phase (17.6.1958).

3. DESIGN:

(i) R.B.D. (ii) (a) 11. (b) N.A. (iii) 3. (iv) (a) 55'x21'. (b) 49'x15'. (v) 3'x3'. (vi) Yes.

4. GENERAL:

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 27.19 tons/ac. (ii) 2.54 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8	M_9	M_{10}
Av. yield	26.94	24.48	29.05	28.32	28.56	25.75	24.95	25.95	28.49	28.49	28.09

S.E./mean = 1.47 tons/ac.

Crop :- Sugarcane.

Ref :- I.I.S.R. 59(310).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'M'.

Object :- To study the effect of different levels of N and P through different sources on Sugarcane.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 11 and 12.3.1959. (iv) (a) to (c) N.A. (d) Rows 3' apart. (e) N.A. (v) N.A. (vi) CO 617. (vii) Irrigated. (viii) and (ix) N.A. (x) 17 and 18.1.1960.

2. TREATMENTS:

13 manurial treatments: M_0 =Control, M_1 =80 lb./ac. of N as Urea, M_2 =120 lb./ac. of N as Urea, M_3 =80 lb./ac. of N as G.N.C.+A/S, M_4 =120 lb./ac. of N as G.N.C.+A/S, M_5 =80 lb./ac. of N as Urea from Aldehyde, M_6 =120 lb./ac. of N as Urea from Aldehyde, M_7 = M_1 +80 lb./ac. of P_2O_5 as Super, M_8 = M_2 +120 lb./ac. of P_2O_5 as Super, M_9 = M_3 +80 lb./ac. of P_2O_5 as Super, M_{10} = M_4 +120 lb./ac. of P_2O_5 as Super, M_{11} =Complezal supra giving 80 lb./ac. each of N and P_2O_5 and M_{12} =Complezal supra giving 120 lb./ac. each of N and P_2O_5 .

$\frac{1}{3}$ of fertilizer quantity applied at planting and $\frac{1}{3}$ at tillering.

3. DESIGN:

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) (a) 55'x24'. (b) 49'x18'. (v) 3'x3'. (vi) Yes.

4. GENERAL:

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 16.47 tons/ac. (ii) 4.09 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	12.53	15.14	16.99	15.75	13.45	17.46	14.98

Treatment	M_7	M_8	M_9	M_{10}	M_{11}	M_{12}
Av. yield	18.54	18.04	20.21	16.41	17.08	17.53

S.E./mean = 2.36 tons/ac.

Crop :- Sugarcane.**Ref :- I.I.S.R. 59(309).****Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'M'.**

Object :- To study the effect of different levels and sources of N with and without P on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 4.11.1959. (iv) (a) and (b) N.A. (c) 57 setts (3 budded)/row. (d) Rows 3' apart. (e) N.A. (v) N.A. (vi) CO. 453. (vii) Irrigated. (viii) and (ix) N.A. (x) 14 to 17.1.1961.

2. TREATMENTS :6 manurial treatments: M_0 =Control, M_1 =80 lb./ac. of N as A/S, M_2 =80 lb./ac. of N as Urea, M_3 = M_1 +80 lb./ac. of P_2O_5 as Super, M_4 = M_2 +80 lb./ac. of P_2O_5 as Super and M_5 =Complesal supra giving 80 lb./ac. each of N and P_2O_5 .**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) 55' x 18'. (b) 1/74.1 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1959—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 35.91 tons/ac. (ii) 4.33 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5
Av. yield	34.57	38.44	32.39	35.50	36.69	37.84

S.E./mean = 1.94 tons/ac.

Crop :- Sugarcane.**Ref :- I.I.S.R. 55(344).****Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'M'.**

Object :- To study the effect of spraying of trace-elements and nutrients on Sugarcane.

1. BASAL CONDITIONS :(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 17 and 18.2.1955. (iv) (a) and (b) N.A. (c) 342 setts (3 budded)/plot. (d) Rows 3½' apart. (e) N.A. (v) G.M. (*sanai*). (vi) CO 513. (vii) Irrigated. (viii) and (ix) N.A. (x) 11 to 28.2.1956.**2. TREATMENTS :****Main-plot treatments :**

All combination of (1) and (2)

(1) 2 levels of spray of N as A/S : N_0 =0 and N_1 =2 % solution at 10 lb./ac.(2) 2 levels of spray of P_2O_5 as Super : P_0 =0 and P_1 =2 % solution at 10 lb./ac.**Sub-plot treatments :**6 trace-elements at 10 ppm : T_1 =Molybdenum chloride, T_2 =Stannous chloride, T_3 =Zinc chloride, T_4 =Copper chloride, T_5 =Manganese chloride and T_6 =Cobalt chloride.**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 55' x 21'. (b) 49' x 14'. (v) 3' x 3.5'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1955—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 16.22 tons/ac. (ii) (a) 12.76 tons/ac. (b) 3.11 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of sugarcane in tons/ac.

	T_1	T_2	T_3	T_4	T_5	T_6	Mean	P_0	P_1
N_0	17.94	16.56	17.57	17.12	17.96	16.90	17.34	17.54	17.14
N_1	16.69	14.07	14.69	15.26	15.62	14.30	15.10	13.47	16.74
Mean	17.32	15.32	16.13	16.19	16.79	15.60	16.22	15.50	16.94
P_0	14.90	15.45	16.55	16.76	14.99	14.37			
P_1	19.73	15.18	15.71	15.62	18.58	16.82			

S.E. of difference of two

1. N or P marginal means	= 3.01 tons/ac.
2. T marginal means	= 1.27 tons/ac.
3. T means at the same level of N or P	= 1.79 tons/ac.
4. N or P means at the same level of T	= 3.42 tons/ac.
S.E. of body of N×P table	= 3.01 tons/ac.

Crop :- Sugarcane.

Ref :- I.I.S.R. 56(353).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'M'.

Object :—To study the effect of spraying trace-elements and nutrients on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.R.S., Lucknow. (iii) 19.2.1956. (iv) (a) 1 ploughing and 4 harrowings. (b) N.A. (c) 57 setts (3 budded)/row. (d) Rows 3½' apart. (e) N.A. (v) 75 lb./ac. of N as G.M. (*sanai*), G.N.C. and A/S. (vi) CO. 513. (vii) Irrigated. (viii) 7 intercultures, 7 weedings and 1 earthing up. (ix) N.A. (x) 14 to 24.2 1957.

2. TREATMENTS :

Main-plot treatments :

10 manurial treatments : M₀=Control (water application), M₁=2 % solution of A/S at 10 lb./ac. of N, M₂=2 % solution of Super at 10 lb./ac. of P₂O₅, M₃=2 % solution of A/S and Super at 10 lb./ac. each of N and P₂O₅ in 1 : 1 ratio, M₄=10 ppm of Zinc chloride, M₅=10 ppm of Manganese chloride, M₆=10 ppm of Cobalt chloride, M₇=10 ppm of Copper chloride, M₈=10 ppm of Boric acid and M₉=10 ppm of Stannous chloride.

Sub-plot treatments :

2 methods of application : S₁=Through soil and S₂=Through foliar spray (3 sprayings).

3. DESIGN :

(i) Split-plot. (ii) (a) 10 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 55'×21', (b) 49'×14'. (v) 3'×3½'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) and (b) N.A. (c) Nil. (v) to (vi) Nil.

5. RESULTS :

(i) 22.20 tons./ac. (ii) (a) 2.07 tons/ac. (b) 2.62 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of sugarcane in tons/ac.

	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	Mean
S ₁	20.88	21.05	21.71	22.63	21.21	22.78	21.54	22.70	22.74	23.87	22.11
S ₂	22.20	22.84	22.94	21.15	24.45	22.80	21.89	20.57	22.14	21.93	22.29
Mean	21.54	21.94	21.32	22.89	21.83	22.79	21.72	21.64	22.44	22.90	22.20

S.E. of difference of two

1. M marginal means	= 1.20 tons/ac.
2. S marginal means	= 0.68 tons/ac.
3. S means at the same level of M	= 2.14 tons/ac.
4. M means at the same level of S	= 1.93 tons/ac.

Crop :- Sugarcane.

Ref :- I.I.S.R. 57(384).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'M'.

Object :—To study the effect of spraying trace-elements on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 21.2.1957. (iv) (a) 1 ploughing, 4 harrowings and 5 plankings. (b) N.A. (c) 53 setts (3 budded)/row. (d) Rows 3½' apart. (e) N.A. (v) 40 lb./ac. of N as *sanai* (G.M.) + 10 lb./ac. of N as G.N.C. + 25 lb./ac. of N as A/S. (vi) CO.S. 513. (vii) Irrigated. (viii) 6 intercultures and 6 weedings. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

10 trace-element solutions (0.5 %) at 50 gallons/ac. : M_0 =Control (no application), M_1 =Ferric chloride, M_2 =Molybdc acid, M_3 =Magnesium chloride, M_4 =Zinc chloride. M_5 =Manganese chloride, M_6 =Cobalt chloride, M_7 =Copper chloride, M_8 =Boric acid and M_9 =Stannous chloride.

Sub-plot treatments :

2 times of foliar spray : T_1 =During August and September and T_2 =During August alone.

3. DESIGN :

(i) Split-plot. (ii) (a) 10 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 51' × 21'. (b) 45' × 14'. (v) 3' × 3.5'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 7.76 tons/ac. (ii) (a) 2.74 tons/ac. (b) 1.97 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of sugarcane in tons/ac.

	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8	M_9	Mean
S_1	7.70	7.09	7.83	7.09	7.15	7.30	7.20	7.43	8.78	8.23	7.58
S_2	7.60	7.01	8.19	7.92	9.00	7.51	8.59	8.23	9.27	6.01	7.93
Mean	7.65	7.05	8.01	7.51	8.08	7.41	7.90	7.83	9.03	7.12	7.76

S.E. of difference of two

1. M marginal means = 1.58 tons/ac.
2. S marginal means = 0.51 tons/ac.
3. S means at the same level of M = 1.61 tons/ac.
4. M means at the same level of S = 1.95 tons/ac.

Crop :- Sugarcane.

Ref :- I.I.S.R. 59(303).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'M'.

Object :- To study the effect of different levels of P on the yield of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) February, 1959. (iv) and (v) N.A. (vi) CO.S.—510. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

4 levels of P_2O_5 : $P_0=0$, $P_1=100$, $P_2=200$ and $P_3=300$ lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 24' × 10'. (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1959—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 22.02 tons/ac. (ii) 2.29 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	P_0	P_1	P_2	P_3
Av. yield	21.33	21.90	22.06	22.80

S.E./mean = 1.15 tons/ac.

Crop :- Sugarcane.

Ref :- I.I.S.R. 56(369).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'MV'.

Object :- To find out the efficiency of different methods of placement of phosphatic fertilizers for Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 25 to 27.2.1956. (iv) (a) 4 harrowings by tractor and 3 plankings. (b) N.A. (c) 330 setts (3 budded)/ac. (d) Rows 3½' apart. (e) N.A. (v) 150 lb./ac. of N as *sanai* (G.M.), castor cake and A/S. (vi) As per treatments. (vii) Irrigated. (viii) 10 weedings and 10 intercultures. (ix) and (x) N.A.

2. TREATMENTS :

All combinations of (1), (2) and (3)+2 extra treatments (2 plots each)

(1) 2 varieties : $V_1 = \text{CO. 453}$ and $V_2 = \text{CO.K. 41}$

(2) 2 times of application of P_2O_5 : $T_1 = \text{Just after germination}$ and $T_2 = \text{During tillering phase}$.

(3) 2 methods of application of P_2O_5 : $M_1 = \text{Top dressing}$ and $M_2 = \text{At plough depth between rows}$.

Extra treatments : $V_1 P_0 = V_1$ without P_2O_5 and $V_2 P_0 = V_2$ without P_2O_5 .
 P_2O_5 is applied at 100 lb./ac.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) 55'×21'. (b) 49'×14'. (v) 3'×3.5'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) to (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 26.87 tons/ac. (ii) 2.70 tons/ac. (iii) Only interaction $V \times T$ is significant. (iv) Av. yield of sugarcane in tons/ac.

$V_1 P_0 = 26.53$ tons/ac. and $V_2 P_0 = 26.51$ tons/ac.

	T ₁	T ₂	Mean	M ₁	M ₂
V ₁	26.02	28.90	27.46	26.93	27.99
V ₂	27.03	25.81	26.42	26.51	26.34
Mean	26.53	27.36	26.94	26.72	27.17
M ₁	26.10	27.34			
M ₂	26.96	27.38			

S.E. of any marginal mean = 0.55 tons/ac.
 S.E. of body of any table or $V P_0$ mean = 0.78 tons/ac.

Crop :- Sugarcane.

Ref :- I.I.S.R. 57(332).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 13 and 14.3.1957. (iv) (a) and (b) N.A. (c) 57 setts (3 budded)/row. (d) Rows 3' apart. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) and (ix) N.A. (x) 14 to 17.3.1958.

2. TREATMENTS :

Main-plot treatments :

2 levels of N : $N_1 = 100$ and $N_2 = 200$ lb./ac.

Sub-plot treatments :

8 varieties : $V_1 = \text{CO. 617}$, $V_2 = \text{CO. 853}$, $V_3 = \text{CO. 951}$, $V_4 = \text{CO. 969}$, $V_5 = \text{CO. 597}$, $V_6 = \text{CO.K. 41}$,
 $V_7 = \text{CO. 527}$ and $V_8 = \text{CO. 453}$.

3. DESIGN :

(i) Split-plot. (ii) 2 main-plots/replication ; 8 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 75'×18'. (b) 49'×12'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 14.03 tons/ac. (ii) (a) 2.66 tons/ac. (b) 2.84 tons/ac. (iii) Main effect of V is highly significant and interaction N×V is significant. (iv) Av. yield of sugarcane in tons/ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈	Mean
N ₁	6.83	16.67	17.03	14.40	15.13	15.24	5.15	15.76	13.28
N ₂	13.58	16.40	12.54	20.84	14.01	15.90	7.85	17.14	14.78
Mean	10.20	16.54	14.79	17.62	14.57	15.57	6.50	16.45	14.03

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. N marginal means | = 0.77 tons/ac. |
| 2. V marginal means | = 1.64 tons/ac. |
| 3. V means at the same level of N | = 2.32 tons/ac. |
| 4. N means at the same level of V | = 2.30 tons/ac. |

Crop :- Sugarcane.

Ref :- I.I.S.R. 58(367).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'MV'.

Object :- To study the effect of different levels of N, P and K on different varieties of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 13 and 14.3.1958. (iv) (a) and (b) N.A. (c) 27 setts (3 budded)/row. (d) Rows 3' apart. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) and (ix) N.A. (x) 18.3.1959.

2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

- (1) 3 levels of N : N₀=0, N₁=100 and N₂=200 lb./ac.
- (2) 3 levels of P₂O₅ : P₀=0, P₁=100 and P₂=200 lb./ac.
- (3) 3 levels of K₂O : K₀=0, K₁=50 and K₂=100 lb./ac.
- (4) 2 varieties : V₁=CO. 453 and V₂=CO. 527.

‡ of N and whole of P₂O₅ and K₂O applied at planting. † of N applied at tillering.

3. DESIGN :

(i) 3³×2 confd. (ii) (a) 9 plots/block and 6 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 25'×21'. (b) 19'×15'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 23.76 tons/ac. (ii) 11.85 tons/ac. (iii) Main effect of V is highly significant and interaction P×K is significant. (iv) Av. yield of sugarcane in tons/ac.

	N ₀	N ₁	N ₂	P ₀	P ₁	P ₂	K ₀	K ₁	K ₂	Mean
V ₁	26.89	29.46	28.57	26.19	29.23	29.51	28.65	27.90	28.37	28.31
V ₂	13.47	20.74	23.42	15.99	23.10	18.56	21.29	17.05	19.31	19.21
Mean	20.18	25.10	26.00	21.09	26.16	24.03	24.97	22.47	23.84	23.76
K ₀	20.21	26.06	28.63	16.09	22.60	36.21				
K ₁	18.81	24.33	24.28	17.43	29.87	20.12				
K ₂	21.52	24.91	25.08	29.74	26.01	15.77				
P ₀	13.87	23.23	26.16							
P ₁	25.22	25.50	27.77							
P ₂	21.45	26.58	24.07							

S.E. of V marginal mean = 2.28 tons/ac.
 S.E. of N, P or K marginal mean = 2.80 tons/ac.
 S.E. of body of V×N, V×P or V×K table = 3.95 tons/ac.
 S.E. of body of N×P, N×K or P×K table = 4.84 tons/ac.

Crop :- Sugarcane.

Ref :- I.I.S.R. 56(278).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'C'.

Object :—To study the effect of different seed rates and spacings on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 6.3.1956. (iv) (a) 5 harrowings by tractor. (b) N.A. (c) and (d) As per treatments. (e) N.A. (v) 40 lb./ac. of N as *sanai* G.M. +10 lb./ac. of N as castor cake +100 lb./ac. of N as A/S +50 lb./ac. of P₂O₅ as Super. (vi) CO. 453. (vii) Irrigated. (viii) 5 intercultures and 5 weedings. (ix) N.A. (x) 11 to 14 2.1957.

2. TREATMENTS :

Main-plot treatments :

2 spacings between rows : S₁=2' and S₂=3'.

Sub-plot treatments :

3 seed rates : T₁=57 setts (single budded)/row, T₂=57 setts (2 budded)/row and T₃=57 setts (3 budded)/row.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 55'×18'. (b) 49'×18'. (v) 3' at each end. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1956—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 21.68 tons/ac. (ii) (a) 5.65 tons/ac. (b) 3.84 tons/ac. (iii) Only main effect of T is highly significant. (iv) Av. yield of sugarcane in tons/ac.

	T ₁	T ₂	T ₃	Mean
S ₁	20.59	21.39	26.57	22.98
S ₂	15.22	21.26	24.65	20.38
Mean	18.11	21.32	25.61	21.68

S.E. of difference of two

1. S marginal means	= 2.31 tons/ac.
2. T marginal means	= 1.92 tons/ac.
3. T means at the same level of S	= 2.72 tons/ac.
4. S means at the same level of T	= 3.20 tons/ac.

Crop :- Sugarcane.**Ref :- I.I.S.R. 57(330).****Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'C'.**

Object :—To study the effect of different seed rates and spacings on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 6.3.1957. (iv) (a) 4 harrowings and 2 ploughings by tractor. (b) N.A. (c) and (d) As per treatments. (e) N.A. (v) 150 lb./ac. of N as G.M., G.N.C. and A/S+150 lb./ac. of P_2O_5 as Super at planting. (vi) CO. 453. (vii) Irrigated. (viii) 2 earthings and 4 intercultures. (ix) and (x) N.A.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(278) on page 127.

5. RESULTS :

(i) 14.52 tons/ac. (ii) (a) 6.45 tons/ac. (b) 4.54 tons/ac. (iii) Only main effect of T is significant. (iv) Av. yield of sugarcane in tons/ac.

	T ₁	T ₂	T ₃	Mean
S ₁	11.45	17.02	18.59	15.69
S ₂	8.68	16.67	14.69	13.35
Mean	10.07	16.85	16.64	14.52

S.E. of difference of two

1. S marginal means	= 2.63 tons/ac.
2. T marginal means	= 2.27 tons/ac.
3. T means at the same level of S	= 3.21 tons/ac.
4. S means at the same level of T	= 3.71 tons/ac.

Crop :- Sugarcane.**Ref :- I.I.S.R. 59(443).****Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'C'.**

Object :—To study the effect of inter-cropping opiumpoppy with Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam soil. (d) Refer soil analysis, I.I.S.R., Lucknow. (iii) Autumn planting on 30.10.1957. and spring planting on 30.4.1960. (iv) (a) to (e) N.A. (v) 40 lb./ac. of N as G.N.C.+60 lb./ac. of N as A/S to autumn planted cane and 80 lb./ac. of N as A/S to spring planted cane. (vi) CO. S. 510 (early medium). (vii) Irrigated. (viii) N.A. (ix) 56.4". (x) 14.2.1961.

2. TREATMENTS :

3 cultural treatments : C₁=Autumn planted sugarcane, C₂=Opium-poppy intersown in autumn-planted sugarcane and C₃=Opium-poppy followed by sugarcane planted in spring.

3. DESIGN :

(i) R B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 55'×33'. (b) 49'×27'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1959—1960. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Severe hailstorm in March caused total damage. (vii) Nil.

5. RESULTS :

(i) 21.48 tons/ac. (ii) 2.14 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	C ₁	C ₂	C ₃
Av. yield	25.92	25.78	12.75
S.E./mean = 0.76 tons/ac.			

Crop :- Sugarcane.

Ref :- I.I.S.R. 55(328).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'CV'.

Object :- To study the effect of different dates of planting on different varieties of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) As per treatments. (iv) (a) 4 harrowings by tractor. (b) N.A. (c) 57 setts (3 budded)/row. (d) Rows 3½' apart. (e) N.A. (v) 50 lb./ac. of P₂O₅+40 lb./ac. of N as *sanai* (G.M.)+10 lb./ac. of N as G.N.C.+100 lb./ac. of N as A/S. (vi) As per treatments. (vii) Irrigated. (viii) 16 interculture and weeding operations. N.A. (x) 1 to 5.4.1957.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties : V₁=CO. 617 and V₂=CO. 527.

(2) 8 dates of planting : D₁=29.8.1955, D₂=29.9.1955, D₃=28.10.1955, D₄=29.11.1955, D₅=29.12.1955, D₆=28.1.1956, D₇=28.2.1956 and D₈=22.3.1956.

During August and September the setts were planted on the side of ridge to avoid rotting of setts due to rain water.

3. DESIGN :

(i) Fact. in R.B.D. with 1 d.f. for V×D interaction totally confd. with blocks in all the replications. (ii) (a) 16. (b) N.A. (iii) 3. (iv) (a) 55'×31½'. (b) 49'×24½'. (v) 3'×3.5'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 16.90 tons/ac. (ii) 3.80 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of sugarcane in tons/ac.

	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈	Mean
V ₁	15.20	17.14	17.59	18.08	16.58	20.20	17.81	20.86	17.93
V ₂	15.44	15.70	18.17	14.77	16.04	14.99	17.51	14.33	15.87
Mean	15.32	16.42	17.88	16.42	16.31	17.60	17.66	17.60	16.90

S.E. of V marginal mean = 0.78 tons/ac.
 S.E. of D marginal mean = 1.55 tons/ac.
 S.E. of body of table = 2.19 tons/ac.

Crop :- Sugarcane.**Ref :- I.I.S.R. 56(352).****Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'CV'.**

Object :—To study the effect of different dates of planting on different varieties of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) As per treatments. (iv) (a) 2 ploughings and 1 planking. (b) N.A. (c) 57 setts (3 budded)/row. (d) 3½' between rows. (e) N.A. (v) 30 lb./ac. of N as G.M. (*sanai*) + 40 lb./ac. of N as G.N.C. + 80 lb./ac. of N as A/S + 50 lb./ac. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) 16 interculturalures, weeding and earthing operations. (ix) N.A. (x) 21 to 26.3.1958 and 24.4.1958.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties : V₁=CO. 617 and V₂=CO. 527.(2) 8 dates of planting : D₁=30.8.1956, D₂=19.9.1956, D₃=22.10.1956, D₄=20.11.1956, D₅=18.12.1956, D₆=24.1.1957, D₇=21.2.1957 and D₈=21.3.1957.**3. DESIGN :**

(i) Fact. in R.B.D. with 1 d.f. for V×D interaction totally confd. with blocks in all the replications. (ii) (a) 8 plots/block and 2 blocks/replication. (b) N.A. (iii) 3. (iv) (a) 55'×28'. (b) 49'×21'. (v) 3'×3½'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 14.18 tons/ac. (ii) 3.55 tons/ac. (iii) Main effect of D is highly significant and effect of V is significant. (iv) Av. yield of sugarcane in tons/ac.

	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈	Mean
V ₁	14.44	22.78	15.51	14.82	18.05	15.60	12.85	8.47	15.32
V ₂	20.67	21.12	12.98	11.77	13.48	10.26	9.08	5.07	13.05
Mean	17.56	21.95	14.24	13.30	15.76	12.93	10.96	6.77	14.18

S.E. of V marginal mean = 0.72 tons/ac.
 S.E. of D marginal mean = 1.45 tons/ac.
 S.E. of body of table = 2.05 tons/ac.

Crop :- Sugarcane.**Ref :- I.I.S.R. 57(331).****Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'CV'.**

Object :—To study the effect of different dates of planting on different varieties of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) As per treatments. (iv) (a) and (b) N.A. (c) 43 setts (3 budded)/row. (d) Rows 3' apart. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) and (ix) N.A. (x) 8 to 10.2.1959.

1. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties : V₁=CO. 617 and V₂=CO. 527.(2) 7 dates of planting : D₁=17.9.1957, D₂=18.2.1957, D₃=19.11.1957, D₄=23.12.1957, D₅=16.1.1958, D₆=19.2.1958 and D₇=20.3.1958.

3. DESIGN :

(i) Fact. in R.B.D. with 1 d. f. for V×D interaction totally confd. with blocks in all the replications. (ii) (a) 7 plots/block and 2 blocks/replication. (b) N.A. (iii) 4. (iv) (a) 41'×24'. (b) 35'×18'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 16.66 tons/ac. (ii) 3.25 tons/ac. (iii) Main effects of V and D are highly significant. (iv) Av. yield of sugarcane in tons/ac.

	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	Mean
V ₁	27.18	26.05	19.52	20.60	15.60	15.87	3.30	18.30
V ₂	26.99	20.43	18.52	14.98	12.06	11.32	0.86	15.02
Mean	27.09	23.24	19.02	17.79	13.83	13.60	2.08	16.66

S.E. of V marginal mean = 0.61 tons/ac.
 S.E. of T marginal mean = 1.15 tons/ac.
 S.E. of body of table = 1.63 tons/ac.

Crop :- Sugarcane.

Ref :- I.I.S.R. 55(332).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'CV'.

Object :—To study the effect of different seasons of planting on different varieties of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) As per treatments. (iv) (a) 5 harrowings by tractor and 5 plankings. (b) N.A. (c) 57 sets (3 budded)/row. (d) and (e) N.A. (v) 150 lb./ac. of N as A/S and G.N.C in 2 : 1 ratio + 50 lb./ac. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) 9 weedings and interculture operations and 1 earthing. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 seasons of planting : D₁=Autumn (October-November) and D₂=Spring (February).

Sub-plot treatments :

10 varieties : V₁=CO. 951, V₂=CO. 957, V₃=CO. 959, V₄=CO. 969, V₅=CO. 980, V₆=CO. 997, V₇=CO.K. 41, V₈=CO. 617, V₉=CO. 453 and V₁₀=CO. 313.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 10 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 55'×28'. (b) 49'×21'. (v) 3'×3.5'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 24.53 tons/ac. (ii) (a) 2.89 tons/ac. (b) 2.50 tons/ac. (iii) Main effect of V alone is highly significant. (iv) Av. yield of sugarcane in tons/ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈	V ₉	V ₁₀	Mean
D ₁	24.96	18.19	19.09	31.92	25.35	23.96	29.23	23.96	32.07	15.76	24.45
D ₂	27.86	22.30	19.06	28.70	23.61	26.84	28.00	24.44	30.97	14.28	24.61
Mean	26.41	20.25	19.08	30.31	24.48	25.40	28.62	24.20	31.52	15.02	24.53

S.E. of difference of two

1. D marginal means = 0.75 tons/ac.
2. V marginal means = 1.44 tons/ac.
3. V means at the same level of D = 2.04 tons/ac.
4. D means at the same level of V = 2.07 tons/ac.

Crop :- Sugarcane.**Ref :- I.I.S.R. 56(354).****Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'CV'.**

Object :—To study the effect of different seasons of planting on different varieties of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) As per treatments. (iv) (a) 2 ploughings, 3 harrowings and 1 planking. (b) N.A. (iii) 57 setts (3 budded)/row. (d) Rows at 3½' apart. (e) N.A. (v) 40 lb./ac. of N as G.M. (*sanai*) + 30 lb./ac. of N as G.N.C. + 80 lb./ac. of N as A/S + 50 lb./ac. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) 8 intercultures and weedings. (ix) N.A. (x) 20 to 27.2.1958.

2. TREATMENTS :**Main-plot treatments :**2 seasons of planting: D₁=Autumn (October—November) and D₂=Spring (February).**Sub-plot treatments :**10 varieties: V₁=CO. 617, V₂=CO. 853, V₃=CO. 951, V₄=CO. 957, V₅=CO. 969, V₆=CO. 980, V₇=CO. 997, V₈=CO.K. 41, V₉=CO. 453 and V₁₀=CO. 313.**3. DESIGN :**

(i) Split-plot. (ii) (a) 2 main-plots/replication; 10 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 55' × 24½'. (b) 49' × 17½'. (v) 3' × 3.5'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 16.63 tons/ac. (ii) (a) 4.01 tons/ac. (b) 2.96 tons/ac. (iii) Main effect of V alone is highly significant. (iv) Av. yield of sugarcane in tons/ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈	V ₉	V ₁₀	Mean
D ₁	14.85	27.06	16.72	12.07	20.42	17.76	14.38	19.67	19.34	14.66	17.69
D ₂	13.25	18.91	15.89	12.21	14.24	15.72	15.77	15.77	20.96	12.88	15.56
Mean	14.05	22.98	16.30	12.14	17.33	16.74	15.08	17.72	20.15	13.77	16.63

S.E. of difference of two

1. D marginal means = 1.04 tons/ac.
2. V marginal means = 1.71 tons/ac.
3. V means at the same level of D = 2.42 tons/ac.
4. D means at the same level of V = 2.52 tons/ac.

Crop :- Sugarcane.**Ref :- I.I.S.R. 59(558).****Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'CV'.**

Object :—To study the effect of different seasons of planting on different varieties of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) As per treatments. (iv) (a) and (b) N.A. (c) 1 sett (3 budded)/foot. (d) Rows 3' apart. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) 56.4". (x) 30.1.1961 to 4.2.1961.

2. TREATMENTS :**Main-plot treatments :**2 seasons of planting : D_1 =Autumn (October—November) and D_2 =Spring (February).**Sub-plot treatments :**6 varieties : V_1 =CO. 453 (late), V_2 =CO. 527 (early), V_3 =CO. 969 (late), V_4 =CO. 976 (early), V_5 =CO. 997 (early) and V_6 =CO. 1111 (late).**3. DESIGN :**

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 55' × 15'. (b) 49' × 15'. (v) 3' at each end of the plot. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Germination %, shoot counts, millable canes, juice analysis and sugarcane yield. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 29.65 tons/ac. (ii) (a) 3.54 tons/ac. (b) 3.07 tons/ac. (iii) Main effect of V alone is highly significant. (iv) Av. yield of sugarcane in tons/ac.

	V_1	V_2	V_3	V_4	V_5	V_6	Mean
D_1	30.14	30.35	30.90	32.71	20.01	37.09	30.20
D_2	31.25	31.17	29.95	32.90	17.13	32.19	29.10
Mean	30.70	30.76	30.42	32.80	18.57	34.64	29.65

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. D marginal means | = 1.02 tons/ac. |
| 2. V marginal means | = 1.54 tons/ac. |
| 3. V means at the same level of D | = 2.17 tons/ac. |
| 4. D means at the same level of V | = 2.23 tons/ac. |

Crop :- Sugarcane.**Ref :- I.I.S.R. 56(355).****Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'CV'.**

Object :—To study the effect of different spacings on different varieties of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 23 and 24.2.1956. (iv) (a) 1 ploughing, 4 harrowings and 4 plankings. (b) N.A. (c) and (d) As per treatments. (e) N.A. (v) 150 lb./ac. of N as *sanai* (G.M.), G.N.C. and A/S. (vi) As per treatments. (vii) Irrigated. (viii) 6 weeding and interculture operations. (ix) N.A. (x) 31.1.1957 to 4.2.1957.

2. TREATMENTS :

Main-plot treatments :

4 cultural treatments: C_1 =Rows $2\frac{1}{2}'$ apart with 145 buds/row, C_2 =Rows 3' apart with 177 buds/row, C_3 =Rows $3\frac{1}{2}'$ apart with 199 buds/row and C_4 =Rows 4' apart with 227 buds/row.

Sub-plot treatments :

3 varieties: V_1 =CO. 453, V_2 =CO. 617 and V_3 =CO. 513.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) $55' \times 28'$. (b) 1/31.76 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1956—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 22.48 tons/ac. (ii) (a) 2.31 tons/ac. (b) 2.20 tons/ac. (iii) Main effect of V alone is highly significant. (iv) Av. yield of sugarcane in tons/ac.

	C_1	C_2	C_3	C_4	Mean
V_1	25.67	25.94	27.13	26.24	26.24
V_2	21.45	18.63	21.66	19.47	20.30
V_3	20.66	21.64	20.53	20.74	20.89
Mean	22.59	22.07	23.11	22.15	22.48

S.E. of difference of two

1. C marginal means = 0.94 tons/ac.
2. V marginal means = 0.78 tons/ac.
3. V means at the same level of C = 1.56 tons/ac.
4. C means at the same level of V = 1.58 tons/ac.

Crop :- Sugarcane.

Ref :- I.I.S.R. 57(335).

Site :- Indian Instt. of Sugarcane Res , Lucknow. Type :- 'CV'.

Object :-To study the effect of different spacings on different varieties of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 18.2.1957. (iv) (a) 1 ploughing, 3 harrowings and 4 plankings. (b) N.A. (c) and (d) As per treatments. (e) N.A. (v) 150 lb./ac. of N+50 lb./ac. of P_2O_5 . (vi) As per treatments. (vii) Irrigated. (viii) 3 intercultures, 3 weedings and 3 earthings. (ix) N.A. (x) 13 to 20.12.1957.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(355) on page 133.

5. RESULTS :

(i) 16.09 tons/ac. (ii) (a) 6.97 tons/ac. (b) 4.08 tons/ac. (iii) Main effect of V alone is highly significant. (iv) Av. yield of sugarcane in tons/ac.

	C_1	C_2	C_3	C_4	Mean
V_1	20.24	22.29	20.31	20.92	20.94
V_2	17.15	16.04	16.37	16.27	16.46
V_3	13.15	9.21	11.57	9.57	10.88
Mean	16.85	15.85	16.08	15.59	16.09

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. C marginal means | = 2.85 tons/ac. |
| 2. V marginal means | = 1.44 tons/ac. |
| 3. V means at the same level of C | = 2.89 tons/ac. |
| 4. C means at the same level of V | = 3.69 tons/ac. |

Crop :- Sugarcane.

Ref :- I.I.S.R. 55(345).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'CV'.

Object :- To study the effect of chemical treatments of setts and different times of planting on different varieties of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) As per treatments. (iv) (a) 1 ploughing and 2 harrowings by tractor. (b) N.A. (c) 301 setts (3 budded)/plot. (d) Rows 3½' apart. (e) N.A. (v) 150 lb./ac. of N as A/S and G.N.C. in 2 : 1 ratio + 50 lb./ac. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) 12 weedings and interculture operations. (ix) N.A. (x) 4 to 8.1.1957.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

1) 2 times of planting : D₁=Autumn (November) and D₂=Spring (February).2) 2 varieties : V₁=CO. 617 and V₂=CO. 527.

Sub-plot treatments :

5 sett treatments : S₀=Control (no sett treatment), S₁=Abvit solution (1 lb. in 20 gallons of water), S₂=Agallol solution (1 lb. in 20 gallons of water), S₃=Aretan solution (1 lb. in 40 gallons of water) and S₄=10% Molasses solution after neutralising with lime.

Setts dipped in the solution in case of S₁, S₂ and S₃ and soaked for 8 hours in case of S₄.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 41' × 24½'. (b) 35' × 17½'. (v) 3' × 3.5'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 23.74 tons/ac. (ii) (a) 5.55 tons/ac. (b) 2.54 tons/ac. (iii) Main effect of V alone is highly significant. (iv) Av. yield of sugarcane in tons/ac.

	S ₀	S ₁	S ₂	S ₃	S ₄	Mean	V ₁	V ₂
D ₁	24.56	23.84	23.04	23.32	24.17	23.79	19.50	28.08
D ₂	22.59	23.41	23.36	23.88	25.20	23.69	19.60	27.77
Mean	23.58	23.62	23.20	23.60	24.69	23.74	19.55	27.93
V ₁	19.31	19.01	19.40	19.07	20.95			
V ₂	27.84	28.23	27.01	28.13	28.43			

S.E. of difference of two

- | | |
|--|-----------------|
| 1. D or V marginal means | = 1.24 tons/ac. |
| 2. S marginal means | = 0.90 tons/ac. |
| 3. S means at the same level of D or V | = 1.27 tons/ac. |
| 4. D or V means at the same level of S | = 1.68 tons/ac. |
| S.E. of body of D × V table | = 1.24 tons/ac. |

Crop :- Sugarcane.**Ref :- I.I.S.R. 56(370).****Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'CV'.**

Object :— To study the effect of chemical treatments of setts and different times of planting on different varieties of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis I.I.S.R., Lucknow. (iii) As per treatments. (iv) (a) 1 ploughing by bullocks and 2 harrowings by disc. (b) N.A. (c) 342 setts (3 budded)/plct. (d) Rows 3½' apart. (e) N.A. (v) 150 lb./ac. of N+ 50 lb./ac. of P₂O₅. (vi) As per treatments. (vii) Irrigated. (viii) 8 weedings and interculture operations. (ix) N.A. (x) 14 to 21.12.1957.

2. TREATMENTS :**Main-plot treatments :**

All combinations of (1) and (2)

(1) 2 times of planting : D₁=Autumn (November) and D₂=Spring (February).

(2) 2 varieties : V₁=CO. 617 and V₂=CO. 527.

Sub-plots treatments :

6 sett treatments : S₀=Control (fresh setts unsoaked), S₁=10% solution of A/S, S₂=10% solution of Super, S₃=10% solution of A/S+Super (50 : 50), S₄=0.25% solution of lime and S₅=Water.

Setts soaked for 6 hours in the solutions. The solution in case of S₁, S₂ and S₃ was neutralised with lime.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 55' × 21'. (b) 49' × 14'. (v) 3' × 3 5'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 13.97 tons/ac. (ii) (a) 3.98 tons/ac. (b) 2.68 tons/ac. (iii) Main effects of V and S are highly significant. (iv) Av. yield of sugarcane in tons/ac.

	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	Mean	V ₁	V ₂
D ₁	15.03	13.12	14.44	14.08	16.13	13.18	14.33	12.14	16.52
D ₂	15.59	9.44	15.05	11.59	14.71	15.22	13.60	10.05	17.14
Mean	15.31	11.28	14.75	12.84	15.42	14.20	13.97	11.10	16.83
V ₁	11.47	10.87	11.03	10.08	11.36	11.77			
V ₂	19.15	11.69	18.46	15.59	19.48	16.63			

S.E. of difference of two

1. D or V marginal means	= 0.94 tons/ac.
2. S marginal means	= 1.09 tons/ac.
3. S means at the same level of D or V	= 1.55 tons/ac.
4. D or V means at the same level of S	= 1.69 tons/ac.
S.E. of body of D × V table	= 0.94 tons/ac.

Crop :- Sugarcane.**Ref :- I.I.S.R. 55(331).****Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'CM'.**

Object :— To study the effect of different levels of N, P and crop rotations on Sugarcane crop.

1. BASAL CONDITIONS:

(i) (a) and (b) As per treatments. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis I.I.S.R., Lucknow. (iii) 16 and 17.2.1955. (iv) (a) and (b) N.A. (c) 57 setts (3 budded)/row. (d) Rows at 3½' apart. (e) N.A. (v) N.A. (vi) CO. 453. (vii) Irrigated. (viii) and (ix) N.A. (x) 17.2.1956 to 3.3.1956.

2. TREATMENTS :

Main-plot treatments :

2 crop rotations : $S_1 = \text{Sanai (G.M.)—Wheat—Sanai (G.M.)—Sugarcane}$ and $S_2 = \text{Senai (G.M.)—Wheat—Fallow—Sugarcane}$.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 4 levels of N as A/S : $N_0=0, N_1=100, N_2=150$ and $N_3=200$ lb./ac.

(2) 3 levels of P_2O_5 as Super : $P_0=0, P_1=100$ and $P_2=200$ lb./ac.

A/S and Super applied as top dressing.

3. DESIGN :

(i) Split-plot. (ii) 2 main-plots/replication ; 12 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 55' × 21'. (b) 49' × 14'. (v) 3' × 3½'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1955—1958. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 26.29 tons/ac. (ii) (a) 11.24 tons/ac. (b) 3.62 tons/ac. (iii) Only main effect of N is highly significant. (iv) Av. yield of sugarcane in tons/ac.

	N_0	N_1	N_2	N_3	Mean	P_0	P_1	P_2
S_1	19.08	25.22	28.61	27.90	25.20	24.48	24.32	26.81
S_2	21.24	30.25	28.82	29.24	27.38	26.36	27.88	27.91
Mean	20.16	27.73	28.71	28.57	26.29	25.42	26.10	27.36
P_0	18.16	26.55	27.64	29.34				
P_1	20.56	27.88	28.49	27.48				
P_2	21.81	28.76	30.00	28.89				

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|------------------------------------|-----------------|
| 1. S marginal means | = 2.65 tons/ac. | 5. S means at the same level of N | = 3.03 tons/ac. |
| 2. N marginal means | = 1.21 tons/ac. | 6. P means at the same level of S | = 1.48 tons/ac. |
| 3. P marginal means | = 1.05 tons/ac. | 7. S means at the same level of P | = 2.91 tons/ac. |
| 4. N means at the same level of S | = 1.71 tons/ac. | S.E. of body of $N \times P$ table | = 1.48 tons/ac. |

Crop :- Sugarcane.

Ref :- I.I.S.R. 55(368).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'CM'.

Object :- To study the effect of different levels of N, P and crop rotations on Sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 10 and 11.2.1956. (iv) (a) 4 harrowings, 1 ploughing and 5 plankings. (b) N.A. (c) 57 setts (3 budded)/row. (d) 3½' between rows. (b) N.A. (v) N.A. (vi) CO. 453. (vii) Irrigated. (viii) 7 intercultures and weeding operations. (ix) and (x) N.A.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(331) on page 136.

5. RESULTS:

(i) 23.52 tons/ac. (ii) (a) 2.88 tons/ac. (b) 2.53 tons/ac. (iii) Main effect of N is highly significant. Main effect of P and interaction N×P is significant. (iv) Av. yield of sugarcane in tons/ac.

	N ₀	N ₁	N ₂	N ₃	Mean	P ₀	P ₁	P ₂
S ₁	20.16	25.55	25.65	24.36	23.93	24.40	23.33	24.06
S ₂	18.54	26.42	24.21	23.27	23.11	23.93	21.47	23.93
Mean	19.35	25.99	24.93	23.81	23.52	24.17	22.40	24.00
P ₀	18.17	27.82	27.36	22.72				
P ₁	20.46	24.73	21.71	22.70				
P ₂	18.83	25.42	25.73	26.02				

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. S marginal means | = 0.68 tons/ac. | 5. S means at the same level of N | = 1.24 tons/ac. |
| 2. N marginal means | = 0.84 tons/ac. | 6. P means at the same level of S | = 1.03 tons/ac. |
| 3. P marginal means | = 0.73 tons/ac. | 7. S means at the same level of P | = 1.08 tons/ac. |
| 4. N means at the same level of S | = 1.19 tons/ac. | S.E. of body of N×P table | = 1.03 tons/ac. |

Crop :- Sugarcane.

Ref :- I.I.S.R. 57(401).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'CM'.

Object :- To study the effect of different levels of N, P and crop rotations on Sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis; I.I.S.R., Lucknow. (iii) 1 and 2.2.1957. (iv) (a) 1 ploughing and 2 harrowings by tractor. (b) N.A. (c) 342 setts (3 budded)/plot. (b) Rows 3½' apart. (e) N.A. (v) N.A. (vi) CO. 453. (vii) Irrigated. (viii) 6 interculture and weeding operations. (ix) and (x) N.A.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(331) on page 136.

5. RESULTS :

(i) 19.81 tons/ac. (ii) (a) 3.92 tons/ac. (b) 2.59 tons/ac. (iii) Main effect of N is highly significant and effect of P is significant. (iv) Av. yield of sugarcane in tons/ac.

	N ₀	N ₁	N ₂	N ₃	Mean	P ₀	P ₁	P ₂
S ₁	17.39	20.28	19.25	21.41	19.58	18.77	20.47	19.50
S ₂	16.53	20.80	20.07	22.71	20.04	18.66	19.89	21.58
Mean	16.96	20.54	19.66	22.09	19.81	18.72	20.18	20.54
P ₀	14.74	20.88	18.15	21.10				
P ₁	17.32	20.74	20.25	22.40				
P ₂	18.82	20.00	20.58	22.77				

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. S marginal means | = 0.92 tons/ac. | 5. S means at the same level of N | = 1.40 tons/ac. |
| 2. N marginal means | = 0.86 tons/ac. | 6. P means at the same level of S | = 1.06 tons/ac. |
| 3. P marginal means | = 0.75 tons/ac. | 7. S means at the same level of P | = 1.26 tons/ac. |
| 4. N means at the same level of S | = 1.22 tons/ac. | S.E. of body of N×P table | = 1.06 tons/ac. |

Crop :- Sugarcane.**Ref :- I.I.S.R. 58(381).****Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'CM'.**

Object :—To study the effect of different levels of N, P and crop rotation on Sugarcane yield.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 7.2.1958. (iv) (a) and (b) N.A. (c) 57 setts (3 budded)/row. (d) Rows 3½' apart. (e) N.A. (v) N.A. (vi) CO. 453. (vii) Irrigated. (viii) and (ix) N.A. (x) 2 and 3.3.1959.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(331) on page 136.

5. RESULTS :

(i) 23.42 tons/ac. (ii) (a) 4.11 tons/ac. (b) 2.51 tons/ac. (iii) Main effect of N and interaction S×N are highly significant. (iv) Av. yield of sugarcane in tons/ac.

	N ₀	N ₁	N ₂	N ₃	Mean	P ₀	P ₁	P ₂
S ₁	22.98	24.16	23.96	23.67	23.69	23.40	23.74	23.92
S ₂	18.81	23.84	23.58	26.37	23.15	22.80	23.60	23.05
Mean	20.50	24.00	23.77	25.02	23.42	23.10	23.67	23.49
P ₀	21.14	23.30	23.14	24.83				
P ₁	20.26	24.59	24.77	25.07				
P ₂	21.29	24.10	23.39	25.17				

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. S marginal means | = 0.97 tons/ac. | 5. S means at the same level of N | = 1.41 tons/ac. |
| 2. N marginal means | = 0.84 tons/ac. | 6. P means at the same level of S | = 1.02 tons/ac. |
| 3. P marginal means | = 0.72 tons/ac. | 7. S means at the same level of P | = 1.28 tons/ac. |
| 4. N means at the same level of S | = 1.18 tons/ac. | S.E. of body of N×P table | = 1.02 tons/ac. |

Crop :- Sugarcane.**Ref :- I.I.S.R. 59(314).****Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'CM'.**

Object :—To study the effect of different levels of N and different seasons of planting on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) As per treatments. (iv) and (v) N.A. (vi) CO.S. 510. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :**Main-plot treatments :**2 seasons of planting : D₁=Autumn (4.11.1958) and D₂=Spring (11.2.1959).**Sub-plot treatments :**6 levels of N : N₀=0, N₁=60, N₂=120, N₃=180, N₄=240 and N₅=300 lb./ac.**3. DESIGN :**

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) 55'×24'. (b) 49'×18'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1959—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

- (i) 22.15 tons/ac. (ii) (a) 2.20 tons/ac. (b) 1.66 tons/ac. (iii) Main effect of D alone is highly significant.
 (iv) Av. yield of sugarcane in tons/ac.

	N ₀	N ₁	N ₂	N ₃	N ₄	N ₅	Mean
D ₁	23.36	24.27	24.54	24.90	23.29	25.04	24.23
D ₂	18.64	19.93	20.65	21.28	20.16	19.74	20.07
Mean	21.00	22.10	22.60	23.09	21.72	22.39	22.15

S.E. of difference of two

1. D marginal means = 0.57 tons/ac.
 2. N marginal means = 0.74 tons/ac.
 3. N means at the same level of D = 1.05 tons/ac.
 4. D means at the same level of N = 1.11 tons/ac.

Crop :- Sugarcane.

Ref :- I.I.S.R. 56(371).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'IMV'.

Object :- To study the effect of different levels of N and irrigation on different varieties of Sugarcane.

1. BASAL CONDITIONS:

- (i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 16 to 18.2.1956. (iv) (a) 2 plougings, 3 harrowings and 5 plankings. (b) N.A. (c) 342 setts (3 budded /plot. (d) Row 3' apart. (e) N.A. (v) G.M. (*sanai*). (vi) and (vii) As per treatments. (viii) 2 weedings and 5 intercultures. (ix) N.A. (x) 9.3.1957 to 1.4.1957.

2. TREATMENTS:

Main-plot treatments :

All combinations of (1) and (2)

(1) 2 levels of N : N₁=100 and N₂=200 lb./ac.

(2) 2 levels of irrigation : I₁=2 irrigations at 20 days interval during premonsoon period and I₂=4 irrigations at 10 days interval during premonsoon period.

Sub-plot treatments :

8 varieties : V₁=CO. 617, V₂=CO. 853, V₃=CO. 951, V₄=CO. 969, V₅=CO. 997, V₆=CO.K. 41, V₇=CO. 527 and V₈=CO. 453.

3. DESIGN :

- (i) Split-plot. (ii) (a) 4 main-plots/replication ; 8 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 55' × 18', (b) 49' × 12'. (v) 3' × 3'. (vi) Yes.

4. GENERAL :

- (i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

- (i) 28.89 tons/ac. (ii) (a) 7.46 tons/ac. (b) 11.82 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of sugarcane in tons/ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈	Mean	I ₁	I ₂
V ₁	22.44	35.71	28.96	29.05	26.16	29.47	23.94	30.37	28.26	28.86	27.66
V ₂	24.33	38.51	30.85	29.61	28.15	28.44	25.91	30.34	29.52	30.69	28.34
Mean	23.38	37.11	29.90	29.33	27.15	28.96	24.92	30.36	28.89	29.78	28.00
I ₁	23.91	37.68	31.53	29.55	30.60	28.01	24.90	32.03			
I ₂	22.86	36.53	28.28	29.11	23.71	29.90	24.94	28.68			

S.E. of difference of two

1. I or N marginal means	= 1.52 tons/ac.
2. V marginal means	= 4.83 tons/ac.
3. V means at the same level of I or N	= 6.82 tons/ac.
4. I or N means at the same level of V	= 6.56 tons/ac.
S.E. of body of I×N table	= 1.52 tons/ac.

Crop :- Sugarcane.

Ref :- I.I.S.R. 58(380).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'IMV'.

Object :- To study the effect of different levels of N and irrigation on different varieties of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 24.1.1958. (iv) (a) and (b) N.A. (c) 43 setts (3 budded)/row. (d) Rows 3' apart. (e) N.A. (v) G.M. (*sanai*). (vi) and (vii) As per treatments. (viii) and (ix) N.A. (x) 17.2.1959 to 8.4.1959.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 4 levels of N : $N_0=0$, $N_1=100$, $N_2=150$ and $N_3=200$ lb./ac.(2) 2 intervals of irrigation : $I_1=10$ and $N_2=20$ days.

Sub-plot treatments :

4 varieties : $V_1=CO. 591$, $V_2=CO. 969$, $V_3=CO. 453$ and $V_4=CO. 997$.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 44'×21'. (b) 35'×15'. (v) 4.5'×3'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 25.70 tons/ac. (ii) (a) 8.80 tons/ac. (b) 8.99 tons/ac. (iii) Main effect of V alone is significant. (iv) Av. yield of sugarcane in tons/ac.

	N_0	N_1	N_2	N_3	Mean	V_1	V_2	V_3	V_4
I_1	26.05	24.57	28.80	28.71	27.03	24.07	31.31	29.48	23.27
I_2	21.82	24.92	24.74	25.96	24.36	22.65	25.78	26.43	22.57
Mean	23.94	24.75	26.77	27.34	25.70	23.36	28.55	27.96	22.92
V_1	22.52	22.47	23.93	24.52					
V_2	26.35	26.73	30.92	30.20					
V_3	23.74	27.74	28.43	31.93					
V_4	23.13	22.05	23.81	22.69					

S.E. of difference of two

1. N marginal means	= 2.54 tons/ac.	5. N means at the same level of V	= 5.16 tons/ac.
2. I marginal means	= 1.80 tons/ac.	6. V means at the same level of I	= 3.67 tons/ac.
3. V marginal means	= 2.60 tons/ac.	7. I means at the same level of V	= 3.65 tons/ac.
4. V means at the same level of N	= 5.19 tons/ac.	S.E. of body of N×T table	= 2.54 tons/ac.

Crop :- Sugarcane.**Ref :- I.I.S.R. 59(410).****Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'IMV'.**

Object :—To study the effect of different levels of N and irrigation on different varieties of Sugarcane.

1. BASAL CONDITIONS :(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 19 and 20.2.1959. (iv) (a) and (b) N.A. (c) 43 setts (3 budded)/row. (d) Rows 3' apart. (e) N.A. (v) G.M. (*sanai*). (vi) and (vii) As per treatments. (viii) to (x) N.A.**2. TREATMENTS :**

Same as in expt. no. 58(380) on page 141.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 41'×21'. (b) 35'×15'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 21.27 tons/ac. (ii) (a) 8.24 tons/ac. (b) 3.00 tons/ac. (iii) Main effect of V is highly significant and that of I is significant. (iv) Av. yield of sugarcane in tons/ac.

	N ₀	N ₁	N ₂	N ₃	Mean	V ₁	V ₂	V ₃	V ₄
I ₁	19.54	18.66	28.25	27.35	23.45	23.16	25.56	25.41	19.67
I ₂	16.54	20.73	19.63	19.47	19.09	18.13	20.76	21.21	16.25
Mean	18.04	19.69	23.94	23.41	21.27	20.64	23.16	23.31	17.96
V ₁	18.26	18.13	22.36	23.82					
V ₂	20.79	21.54	26.61	23.71					
V ₃	19.38	20.76	26.67	26.44					
V ₄	13.74	18.33	20.12	19.66					

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. N marginal means | = 2.38 tons/ac. | 5. N means at the same level of V | = 2.81 tons/ac. |
| 2. I marginal means | = 1.68 tons/ac. | 6. V means at the same level of I | = 1.22 tons/ac. |
| 3. V marginal means | = 0.87 tons/ac. | 7. I means at the same level of V | = 1.99 tons/ac. |
| 4. V means at the same level of N | = 1.73 tons/ac. | S.E. of body of N×I table | = 2.38 tons/ac. |

Crop :- Sugarcane.**Ref :- I.I.S.R. 55(346).****Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'ICM'.**

Object :—To study the effect of different levels of N, irrigation and different methods of planting on Sugarcane.

1. BASAL CONDITIONS :(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 19 to 23.2.1955. (iv) (a) N.A. (b) As per treatments. (c) 522 setts (3 budded)/plot. (d) Rows 3½' apart. (e) N.A. (v) G.M. (*sanai*). (vi) CO. 617. (vii) As per treatments. (viii) and (ix) N.A. (x) 17.2.1956 to 3.3.1956.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 2 levels of irrigation : I_1 = Normal irrigation at 80,000 gallons/ac. and I_2 = Low irrigation at 20,000 gallons/ac.(2) 2 methods of irrigation : M_1 = Spray and M_2 = Flood irrigation.**Sub-plot treatments :**

All combinations of (1) and (2)

(1) 2 methods of planting : T_1 = Trench planting and T_2 = Flat planting.(2) 2 levels of N : N_1 = 100 and N_2 = 200 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) $56' \times 31\frac{1}{2}'$. (b) $50' \times 24\frac{1}{2}'$. (v) $3' \times 3.5'$. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 23.58 tons/ac. (ii) (a) 2.90 tons/ac. (b) 3.26 tons/ac. (iii) Main effect of I is significant and that of N is highly significant. (iv) Av. yield of sugarcane in tons/ac.

	M_1	M_2	N_1	N_2	T_1	T_2	Mean
I_1	24.02	24.52	22.83	25.70	24.05	24.49	24.27
I_2	22.48	23.30	21.29	24.48	22.11	23.66	22.89
Mean	23.25	23.91	22.06	25.09	23.08	24.08	23.58
T_1	22.50	23.63	21.70	24.46			
T_2	24.00	24.16	22.43	25.73			
N_1	21.53	22.60					
N_2	24.97	25.22					

S.E. of difference of two

1. I or M marginal means	= 0.59 tons/ac.
2. T or N marginal means	= 0.67 tons/ac.
3. T or N means at the same level of I or M	= 0.94 tons/ac.
4. I or M means at the same level of T or N	= 0.89 tons/ac.
S.E. of body of I × M table	= 0.59 tons/ac.
S.E. of body of T × N table	= 0.67 tons/ac.

Crop :- Sugarcane.**Ref :- I.I.S.R. 56(373).****Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'ICM'.**

Object :- To study the effect of different levels of N, irrigation and different methods of planting on Sugarcane.

1. BASAL CONDITIONS:

(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 4 and 5.3.1956. (iv) (a) N.A. (b) As per treatments. (c) N.A. (d) Rows $3\frac{1}{2}'$ apart. (e) N.A. (v) G.M. (*sanai*). (vi) CO. 617. (vii) As per treatments. (viii) and (ix) N.A. (x) 21.2.1957 to 29.3.1957.

2. TREATMENTS:

Same as in expt. no. 55(346) on page 142.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 49' × 28', (b) 43' × 21'. (v) 3' × 3.5'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 23.38 tons/ac. (ii) (a) 4.16 tons/ac. (b) 2.42 tons/ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of sugarcane in tons/ac.

	M ₁	M ₂	N ₁	N ₂	T ₁	T ₂	Mean
I ₁	22.40	22.13	23.99	20.53	22.75	21.78	22.26
I ₂	23.42	25.60	25.50	23.51	24.75	24.26	24.51
Mean	22.91	23.86	24.75	22.02	23.75	23.02	23.38
T ₁	23.11	24.40	24.67	22.84			
T ₂	22.71	23.32	24.83	31.21			
N ₁	24.68	24.81					
N ₂	21.14	22.91					

S.E. of difference of two

1. I or M marginal means = 1.20 tons/ac.
2. T or N marginal means = 0.70 tons/ac.
3. T or N means at the same level of I or M = 0.99 tons/ac.
4. I or M means at the same level of T or N = 1.39 tons/ac.
- S.E. of body of I × M table = 1.20 tons/ac.
- S.E. of body of T × N table = 0.70 tons/ac.

Crop :- Sugarcane.

Ref :- I.I.S.R. 57(400).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'ICMV'.

Object:—To study the effect of different levels of N, irrigation and different times of planting on different varieties of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) As per treatments. (iv) (a) and (b) N.A. (c) 342 setts (3 budded)/plot. (d) Rows 3' apart. (e) N.A. (v) G.M. (*sanai*). (vi) and (vii) As per treatments. (viii) and (ix) N.A. (x) 27 to 30.1.1959.

2. TREATMENTS :

Main-plot treatments :

3 treatments : T₁=Autumn planting with usual irrigations, T₂=Autumn planting with 2 extra irrigations and T₃=Spring planting with usual irrigations.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N ; N₀=0, N₁=120 and N₂=180 lb./ac.

(2) 2 varieties : V₁=CO. 453 and V₂=CO. 527.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 55' × 18', (b) 49' × 12'. (v) 3' × 3'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1957—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 24.82 tons/ac. (ii) (a) 6.44 tons/ac. (b) 5.16 tons/ac. (iii) Main effect of V alone is highly significant.
(iv) Av. yield of sugarcane in tons/ac.

	N ₀	N ₁	N ₂	Mean	V ₁	V ₂
T ₁	26.03	25.38	25.71	25.71	28.51	22.90
T ₂	27.28	25.49	24.44	25.74	27.20	24.27
T ₃	19.64	24.28	25.15	23.02	26.11	19.94
Mean	24.32	25.05	25.10	24.82	27.27	22.37
V ₁	25.70	28.34	27.78			
V ₂	22.93	21.76	22.42			

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. T marginal means | = 1.86 tons/ac. | 5. T means at the same level of V | = 2.38 tons/ac. |
| 2. V marginal means | = 1.22 tons/ac. | 6. N means at the same level of T | = 2.58 tons/ac. |
| 3. N marginal means | = 1.49 tons/ac. | 7. T means at the same level of N | = 2.81 tons/ac. |
| 4. V means at the same level of T | = 2.11 tons/ac. | S.E. of body of V×N table | = 1.49 tons/ac. |

Crop :- Sugarcane.

Ref :- I.I.S.R. 54(281).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'D'.

Object :- To control stem borer *chilothea auricila* Ddgn. by foliar spray application of insecticides on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 12.3.1954. (iv) (a) and (b) N.A. (c) 55 setts (3 budded)/row. (d) 3' between rows. (e) N.A. (v) N.A. (vi) CO. 313. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

12 emulsion sprays: T₀=Control (no spray), T₁=DDT+BHC 1%, T₂=BHC 0.25%, T₃=Aldrin 0.1%, T₄=Chlordane 1%, T₅=Dieldrin 0.1%, T₆=DDT 0.1%, T₇=Endrin 0.1, T₈=Folido 0.1%, T₉=Pothane 0.1%, T₁₀=Toxaphene 0.1% and T₁₁=Malathion 0.1%.

1st spraying on 10.9.1954 and 2nd on 22.10.1954 with hatching of eggs in the field.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) and (b) 55'×33'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Stem borer attack. (iii) % of stem bored canes. (iv) 1954—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 40.17 degrees. (ii) 13.23 degrees. (iii) Treatment differences are not significant. (iv) Mean % of stem bored canes in degrees.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Mean angle	44.14	39.81	34.64	40.68	56.14	41.22
Transformed back %	48.51	41.07	32.49	42.55	68.76	43.49

Treatment	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁
Mean angle	23.60	35.66	36.79	35.20	30.73	63.49
S.E./mean = 7.64 degrees.						
Transformed back %	16.36	34.14	36.01	33.40	26.35	79.77

Crop :- Sugarcane.

Ref :- I.I.S.R. 55(333).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'D'.

Object :-To control stem borer *chilothea auricila* Ddgn. by foliar spray application of insecticides on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 17.2.1955. (iv) (a) to (c) N.A. (d) Rows 3½' apart. (e) N.A. (v) N.A. (vi) CO. 313. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

12 insecticidal treatments : T₀=Control (no application), T₁=BHC 1% suspension spray, T₂=Chlordane 0.5% emulsion spray, T₃=Dieldrin 5 oz./ac., T₄=Toxaphene 0.1% emulsion spray, T₅=Endrin 0.1% emulsion spray, T₆=Folidol 0.1% emulsion spray, T₇=Parathion 0.05% suspension spray, T₈=Ryania 40% dust, T₉=Toxaphene 10% dust, T₁₀=DDT 0.1% emulsion spray and T₁₁=BHC 0.25% emulsion spray.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) a) and (b) 55'×35'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Stem borer attack. (iii) Incidence of stem borer. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 36.48 degrees. (ii) 6.79 degrees. (iii) Treatment differences are not significant. (iv) Av. % incidence of stem borer in degrees.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Mean angle	42.70	34.31	31.11	40.83	34.22	28.22
Transformed back %	46.02	31.95	26.93	42.82	31.81	22.64
Treatment	T ₆	T ₇	T ₈	T ₉	T ₁₁	T ₁₂
Mean angle	41.68	38.37	34.17	40.12	31.27	40.79
S.E./mean = 3.92 degrees.						
Transformed back %	44.27	38.64	31.73	41.60	27.17	42.75

Crop :- Sugarcane.

Ref :- I.I.S.R. 56(372).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'D'.

Object :-To control stem borer *chilothea auricila* Ddgn. by foliar application of spray of insecticides in Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 16 and 17.2.1956.
(iv) (a) and (b) N.A. (c) 638 setts (3 budded)/plot. (d) Rows 3' apart. (e) N.A. (v) N.A. (vi) CO. 527.
(vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

6 emulsion sprays : T_0 =Control (no spray), T_1 =Endrin 0.1%, T_2 =DDT 0.1%, T_3 =Toxaphene 0.1%, T_4 =Chlordane 0.5% and T_5 =BHC 0.5%.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) and (b) 55' x 33'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Stem borer attack. (iii) Yield of sugarcane and stem bored cane counts. (iv) (a) 1954—contd.
(b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Sugarcane yield

(i) 34.56 tons/ac. (ii) 4.12 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	34.05	36.57	33.03	32.63	35.23	35.83

S.E./mean = 1.68 tons/ac.

Stem bored cane counts

(i) 3.94. (ii) 0.87. (iii) Treatment differences are highly significant. (iv) Mean value of \sqrt{x} where x is the number of stem bored canes/plot.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Mean value	4.76	2.37	3.85	4.51	4.39	3.77

S.E./mean = 0.36

Transformed back counts	22.66	5.62	14.82	20.34	19.27	14.21
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Crop :- Sugarcane.

Ref :- I.I.S.R. 57(399).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'D'.

Object :— To control stem borer *Chilo traea auricila* Ddgn. by foliar application of insecticides in Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 18 and 19.2.1957.
(iv) (a) and (b) N.A. (c) 60 setts (3 budded)/row. (d) Rows 3' apart. (e) N.A. (v) N.A. (vi) CO—527.
(vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

10 emulsion sprays : T_0 =Control (3 plots), T_1 =DDT 0.1% at 1 lb./ac. actual, T_2 =DDT 0.25% at 2.5 lb./ac. actual, T_3 =DDT 0.5% at 5 lb./ac. actual, T_4 =Gamma BHC 0.5% at 5 lb./ac. actual, T_5 =Gamma BHC 0.1% at 1 lb./ac. actual, T_6 =Gamma BHC 0.2% at 2 lb./ac. actual, T_7 =Endrin 0.1% at 1 lb./ac. actual, T_8 =Endrin 0.15% at 1.5 lb./ac. actual and T_9 =Endrin 0.2% at 2 lb./ac. actual.

1st application from 24 to 26.9.1957 and 2nd on 25 and 26.10.1957.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) and (b) 55' x 13'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Stem borer attack. (iii) Yield of sugarcane and number of bored canes. (iv) (a) 1954—contd.
(b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

Sugarcane yield

(i) 19.39 tons/ac. (ii) 3.31 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉
Av. yield	19.48	19.88	20.08	19.27	20.78	18.43	17.47	16.40	21.62	20.27

S.E./mean (excluding T₀) = 1.91 tons/ac.

S.E. of T₀ mean = 1.10 tons/ac.

Number of bored canes

(i) 1261 canes/ac. (ii) 41.33 canes/ac. (iii) Treatment differences are not significant. (iv) Av. number of bored canes/ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉
Av. number	1320	1288	1168	1008	1104	928	1256	1208	1080	1589

S.E./mean (excluding T₀) = 23.86 canes/ac.

S.E. of T₀ mean = 13.78 canes/ac.

Crop :- Sugarcane

Ref :- I.I.S.R. 54(282).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'D'.

Object :- To study the control measures against termite in Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 15.3.1954. (iv) (a) and (b) N.A. (c) 55 setts (3 budded)/row. (d) and (e) N.A. (v) N.A. (vi) CO-313. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 dustings at 20 lb./ac.: T₀=Control (no dusting), T₁=BHC 5%, T₂=Aldrin 2.5%, T₃=Dieldrin 1.5%, T₄=Chlordane 5%, T₅=Folidol 1.5%, T₆=Parathion 1.0% and T₇=Toxaphene 1.0%.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) and (b) 55' × 21'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Termite attack. (iii) Percentage of termite incidence. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 39.06 degrees. (ii) 5.73 degrees. (iii) Treatment differences are not significant. (iv) Mean % of incidence of termite in degrees.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Mean angle	44.26	42.86	36.15	39.09	35.38	41.36	36.69	36.68

S.E./mean = 3.31 degrees.

Transformed back %	48.73	46.31	34.95	39.86	33.68	43.73	35.84	35.82
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Crop :- Sugarcane.

Ref :- I.I.S.R. 55(334).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'D'.

Object :- To study the control measures against termite in Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 24.2.1955. (iv) (a) and (b) N.A. (c) 60 setts (3 budded)/row. (d) Rows 3½' apart. (e) N.A. (v) N.A. (vi) CO. 313. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

10 dusting treatments : T₀=Control (no application), T₁=BHC 5% at 20 lb./ac., T₂=Aldrin 1% at 50 lb./ac., T₃=Aldrin 1% at 100 lb./ac., T₄=Dieldrin 1.5% at 20 lb./ac., T₅=Chlordane 5% at 20 lb./ac., T₆=Chlordane 5% at 40 lb./ac., T₇=Folidol 1.5% at 20 lb./ac., T₈=Parathion 1.0% at 20 lb./ac. and T₉=Toxaphene 10.0% at 20 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) and (b) 55' × 31½'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Termite attack. (iii) Incidence of termite. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 24.39 degrees. (ii) 6.72 degrees. (iii) Treatment differences are not significant. (iv) Mean % of incidence of termite in degrees.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉
Mean angle	32.39	22.33	21.73	21.60	22.29	22.75	24.73	25.49	24.39	26.15
S.E./mean = 3.88 degrees.										
Transformed back %	28.91	14.79	14.07	13.91	14.75	15.30	17.82	18.82	17.38	19.72

Crop :- Sugarcane.

Ref :- I.I.S.R. 56(367).

Site :- Indian Instt. of Sugarcane Res., Lucknow.

Type :- 'D'.

Object :- To study the control measures against termite on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 5 and 6.3.1956. (iv) (a) and (b) N.A. (c) 50 setts (3 budded)/row. (d) 3' between rows. (e) N.A. (v) N.A. (vi) CO. 313. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

9 insecticidal treatments : T₀=Control, T₁=BHC 5% dust at 20 lb./ac., T₂=Aldrin 1% dust at 100 lb./ac., T₃=Dieldrin 2.5% dust at 20 lb./ac., T₄=Chlordane 5% dust at 20 lb./ac., T₅=Chlordane 5% dust at 40 lb./ac., T₆=Dipping of the setts in 0.25% BHC suspension, T₇=Dipping the setts in 0.25% Dieldrin suspension and T₈=Dipping the setts in 1.0% Chlordane emulsion.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a) and (b) 55' × 33'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Termite attack. (iii) Yield of sugarcane and incidence of termite. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Sugarcane yield

(i) 25.14 tons/ac. (ii) 1.42 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	22.83	24.57	28.50	25.04	23.31	25.59	25.04	26.30	25.04

S.E./mean = 0.82 tons/ac.

Incidence of termite

(i) 9.27 degrees. (ii) 4.47 degrees. (iii) Treatment differences are significant. (iv) Mean % of incidence of termite in degrees.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Mean angle	16.76	13.23	1.95	4.67	8.24	14.13	11.06	8.28	5.07

S.E./mean = 2.58 degrees.

Transformed back %	8.74	5.68	0.62	1.15	2.53	6.40	4.14	2.56	1.27
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Crop :- Sugarcane.

Ref :- I.I.S.R. 57(398).

Site :- Indian Instt. of Sugarcane Res., Lucknow.

Type :- 'D'.

Object :- To study the control measures against termite on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 11 and 12.10.1957. (iv) (a) and (b) N.A. (c) 60 setts (3 budded)/row. (d) 3' between rows. (e) N.A. (v) N.A. (vi) CO. 313. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

12 insecticidal treatments : T₀=Control (no application), T₁=BHC at 20 lb./ac. of 5% dust, T₂=Aldrin at 20 lb./ac. of 5% dust, T₃=Chlordane at 20 lb./ac. of 5% dust, T₄=Dipping the sett in 0.5% Agollol solution, T₅=Dipping the sett in 0.5% Aretan solution, T₆=T₁+T₄, T₇=T₂+T₄, T₈=T₃+T₄, T₉=T₂+T₅, T₁₀=T₃+T₅ and T₁₁=BHC emulsion over sett at 1.135 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) and (b) 55' × 21'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Termite attack. (iii) Yield of sugarcane and incidence of termite. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Sugarcane yield

(i) 19.53 tons/ac. (ii) 3.34 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁
Av. yield	16.90	21.20	19.25	21.35	16.31	20.34	16.93	19.74	20.32	20.01	19.53	22.47

S.E./mean = 1.93 tons/ac.

Incidence of termite

(i) 20.60 degrees. (ii) 3.90 degrees. (iii) Treatment differences are significant. (iv) Mean % of incidence of termite in degrees.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Mean angle	24.08	22.00	20.10	22.35	20.48	26.86
Transformed back %	16.98	14.39	12.19	14.82	12.63	20.71

Treatment	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁
Mean angle	15.86	14.02	23.37	18.37	20.33	19.33
Transformed back %	7.89	6.32	16.07	10.33	12.44	11.34

S.E./mean = 2.25 degrees.

Crop :- Sugarcane.**Ref :- I.I.S.R. 58(378).****Site :- Indian Instt. of Sugarcane Res., Lucknow.****Type :- 'D'.**

Object :—To study the control measures against termite on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 14 and 15.2.1958. (iv) (a) and (b) N.A. (c) 60 setts (3 budded)/row. (d) Rows 3' apart. (e) N.A. (v) N.A. (vi) CO. 443. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :9 insecticidal treatments: T_0 =Control (no application), T_1 =1 lb./ac. of actual Chlordane 5% dust, T_2 =Aretan 0.5% dip, T_3 =Agallol 0.5%+Aldrin at 1 lb./ac., T_4 =Agallol 0.5%+1 lb./ac. of BHC dust, T_5 =Agallol 0.5%+ T_1 , T_6 =Aretan 5%+ T_1 , T_7 =1.25 lb./ac. of Gamma BHC emulsion and T_8 =1.50 lb./ac. of Gamma BHC emulsion.**3. DESIGN :**

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 55'×33'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Termite attack. (iii) Yield of sugarcane and incidence of termite. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :**Sugarcane yield**

(i) 12.01 tons/ac. (ii) 4.56 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	6.31	9.55	14.96	12.80	14.72	12.60	9.58	12.71	14.85

S.E./mean = 2.28 tons/ac.

Incidence of termite

(i) 24.54 degrees. (ii) 5.89 degrees. (iii) Treatment differences are not significant. (iv) Mean % of incidence of termite in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Mean angle	24.62	23.99	20.55	26.94	24.49	27.41	23.87	21.92	27.11

S.E./mean = 2.94 degrees.

Transformed back %	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
	17.68	16.86	12.71	20.82	17.54	21.50	16.72	14.29	21.07

Crop :- Sugarcane.**Ref :- I.I.S.R. 54(285).****Site :- Indian Instt. of Sugarcane Res., Lucknow.****Type :- 'D'.**

Object :—To study the effect of soil application of BHC against borers on Sugarcane in pre monsoon period.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) to (v) N.A. (vi) CO. 313. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :3 dustings with 5% BHC : $T_0=0$, $T_1=100$ and $T_2=150$ lb./ac.**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 5. (iv) (a) and (b) 55'×33'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of borer. (iii) Yield of Sugarcane and number of dead hearts. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Sugarcane yield

(i) 20.86 tons/ac. (ii) 2.24 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	T ₀	T ₁	T ₂
Av. yield	20.25	20.08	22.25

S.E./mean = 1.00 tons/ac.

Number of dead hearts

(i) 5533 dead hearts/ac. (ii) 1781 dead hearts/ac. (iii) Treatment differences are not significant. (iv) Av. number of dead hearts/ac.

Treatment	T ₀	T ₁	T ₂
Av. number	5693	5736	5170

S.E./mean = 796 dead hearts/ac.

Crop :- Sugarcane.

Ref :- I.I.S.R. 54(286).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'D'.

Object :- To study the effect of spraying of different chemicals on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

6 insecticidal treatments : T₀=Control (no application), T₁=2, 4-D sodium salt at 0.25 gm. per 2 gallons of water, T₂=2, 4-D amine salt at 0.25 gm. per 2 gallons of water, T₃=Phonoxo acetic acid at 0.25 gm. per 2 gallons of water, T₄=10% Molasses solution at 10 lb./ac. and T₅=10% mixture of A/S and Super at 10 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/41.40 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 21.13 tons/ac. (ii) 1.86 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Av. yield	19.74	22.96	21.81	21.84	20.23	20.18

S.E./mean = 0.76 tons/ac.

Crop :- Sugarcane.

Ref :- I.I.S.R. 54(249).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'D'.

Object :- To study the effect of dipping of setts in chemicals on Sugarcane yield.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 25.10.1954 to 3.11.1954. (iv) and (v) N.A. (vi) CO. 617. (vii) Irrigated. (viii) and (ix) N.A. (x) 3 to 7.2.1956.

2. TREATMENTS :

7 sett soaking treatments : T_0 =Control (no soaking), T_1 =Abavit solution at 1 lb. in 20 gallons of water, T_2 =Agallol solution at 1 lb. in 20 gallons of water, T_3 =10% solution of Molasses, T_4 =10% solution of A/S and Super, T_5 =10% solution of A/S and T_6 =Water.

Setts soaked for 5 mts. in case of T_1 and for 8 hours in T_3 , T_4 , T_5 and T_6 . In T_2 setts were dipped in the solution.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a) $56' \times 24\frac{1}{2}'$. (b) $50' \times 17\frac{1}{2}'$. (v) $3' \times 3.5'$. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 22.85 tons/ac. (ii) 4.28 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	22.69	24.34	24.44	20.51	24.44	20.28	23.22

S.E./mean = 1.75 tons/ac.

Crop :- Sugarcane.

Ref :- I.I.S.R. 55(330).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'D'.

Object :- To study the effect of foliar application of insecticides against shoot borer *chilothea infuscatellus* Snell.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 5 and 6.3.1956. (iv) (a) and (b) N.A. (c) 50 setts (3 budded)/row. (d) Rows 3' apart. (e) N.A. (v) N.A. (vi) CO. 313. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

9 spraying treatments : T_0 =Control (no application), T_1 =BHC 1.0%, T_2 =Endrin 0.1%, T_3 =Endrin 0.05%, T_4 =Folidol 0.05%, T_5 =Parathion 0.05%, T_6 =BHC 0.25%, T_7 =DDT 0.1% and T_8 =Malathion 0.05%.

In T_1 , T_4 and T_5 suspension spraying and in T_2 , T_3 , T_6 , T_7 and T_8 emulsion spraying is done on 3 and 4.5.1956.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a) and (b) $55' \times 33'$. (v) Nil. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Number of dead hearts and yield of sugarcane. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Sugarcane yield

(i) 25.14 tons/ac. (ii) 1.42 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	22.83	24.57	28.50	25.04	23.31	25.29	25.04	26.30	25.04

S.E./mean = 0.82 tons/ac.

Number of dead hearts

(i) 8897 dead hearts/ac. (ii) 1727 dead hearts/ac. (iii) Treatment differences are highly significant.
(iv) Av. number of dead hearts/ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. number	15488	5936	4128	8488	13352	9872	9536	6280	6992

S.E./mean = 996.9 dead hearts/ac.

Crop :- Sugarcane.

Ref :- I.I.S.R. 55(329).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'D'.

Object:— To study the effect of foliar application of insecticides against borer *chilo traea infuscatellus* and stem borer *chilo traea auricilia* on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 17.2.1955. (iv) and (v) N.A. (vi) CO.—527. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

12 insecticidal treatments : T₀=Control (no spray), T₁=BHC 1%, T₂=Chlordane 0.5%, T₃=Dieldrin at 50 ozs./ac. actual, T₄=Toxaphene 0.1%, T₅=Endrin 0.1%, T₆=Folidol 0.1%, T₇=Parathion 0.05% at 2 lb./ac. of 2.5% WDP in 100 gallons of water, T₈=Ryania 40% dust at 10 lb./ac. in pre-monsoon and 40 lb./ac. in post monsoon, T₉=Toxaphene 10% dust at 40 lb./ac., T₁₀=DDT 0.1% and T₁₁=BHC 0.25%.

In treatments T₁ and T₇ suspension spray, in T₈ and T₉ dusting and in others emulsion spray is done.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 1/24 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of borers. (iii) Yield of sugarcane and number of dead hearts. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Sugarcane yield

(i) 26.01 tons/ac. (ii) 2.87 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁
Av. yield	29.19	28.58	24.81	24.86	25.94	25.75	26.60	27.77	25.36	27.09	23.19	23.01

S.E./mean = 1.66 tons/ac.

Number of dead hearts

(i) 2135 dead hearts/ac. (ii) 734.6 dead hearts/ac. (iii) Treatment differences are not significant. (iv) Av. number of dead hearts/ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁
Av. number	2864	2488	1944	3128	1704	2328	1544	1944	1696	1880	2032	2072

S.E./mean = 424.1 dead hearts/ac.

Crop :- Sugarcane.

Ref :- I.I.S.R. 55(335).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'D'.

Object:—To study the effect of soil applications of B.H.C., Chlordane, Toxaphene and Aldrin against hot weather attack of borers on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 17.2.1955. (iv) (a) and (b) N.A. (c) 57 setts (3 budded)/row. (d) and (e) N.A. (v) N.A. (vi) CO-527. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 insecticidal treatments : T_0 =Control, T_1 =BHC at 2.5 lb./ac., T_2 =EHC at 5.0 lb./ac., T_3 =Chlordane at 2.5 lb./ac., T_4 =Chlordane at 5.0 lb./ac., T_5 =Toxaphene at 4.0 lb./ac., T_6 =Toxaphene at 5.0 lb./ac., and T_7 =Aldrin at 1.0 lb./ac.

Treatments applied on 7 to 10.5.1955.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) and (b) 55' × 17.5'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Total number of dead hearts observed 1½ and 2 months after application and yield of sugarcane. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Sugarcane yield

(i) 31.50 tons/ac. (ii) 3.99 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	33.18	32.65	34.36	31.23	32.76	30.37	27.64	29.83

S.E./mean = 2.30 tons/ac.

Number of dead hearts

(i) 5.47. (ii) 0.78. (iii) Treatment differences are not significant. (iv) Mean value of \sqrt{x} where x=number of dead hearts/plot.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Mean value	5.89	5.07	4.70	6.57	5.34	5.78	4.82	5.59

S.E./mean = 0.45

Transformed back counts	34.69	25.70	22.09	43.16	28.52	33.41	23.23	31.25
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Crop :- Sugarcane.

Ref :- I.I.S.R. 56(374).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'D'.

Object :- To study the effect of soil application of different insecticides against early shoot borer *chilothea infuscatellus snell* on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 17.2.1956. (iv) (a) and (b) N.A. (c) 638 setts (3 budded)/row. (d) 3' × 1.5'. (e) N.A. (v) N.A. (vi) CO. 527. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

5 insecticidal treatments : T_0 =Control, T_1 =BHC at 2.5 lb./ac., T_2 =BHC at 5 lb./ac., T_3 =Chlordane at 5 lb./ac. and T_4 =Toxaphene at 5 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 3. (iv) (a) and (b) 55' × 33'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of shoot borer. (iii) Yield of sugarcane and number of dead hearts (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Sugarcane yield

(i) 31.21 tons/ac. (ii) 6.18 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Av. yield	33.94	28.27	37.71	26.69	29.45

S.E./mean = 3.57 tons/ac.

Number of dead hearts

(i) 7197 dead hearts/ac. (ii) 3091 dead hearts/ac. (iii) Treatment differences are not significant. (iv) Av. number of dead hearts/ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Av. number	8640	6952	4288	9256	6848

S.E./mean = 1785 dead hearts/ac.

Crop :- Sugarcane.

Ref :- I.I.S.R. 59(396).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'D'.

Object :-To study the effect of application of BHC against termite and shoot borer on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 19.3.1959. (iv) (a) and (b) N.A. (c) 750 setts (3 budJed)/plot. (d) 3' x 1.5'. (e) N.A. (v) N.A. (vi) CO.S.—443. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 insecticidal treatments : T₀=Control (no application), T₁=1 lb./ac. of Gamma BHC emulsion in 5 gallons of water, T₂=1 lb./ac. of Gamma BHC emulsion in 15 gallons of water, T₃=1 lb./ac. of Gamma BHC emulsion in 25 gallons of water, T₄=8 ozs./ac. of 0.65% Gamma BHC dust, T₅=4 ozs./ac. of 0.65% Gamma BHC dust, T₆=20 lb./ac. of 5% BHC dust over the setts in furrows and T₇=Aretan/BHC at 1 lb./ac. in 20 gallons of water.

In treatments T₁, T₂, T₃ and T₇ the seed cane pieces are dipped in the solution.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 40' x 15'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of termite and shoot borer. (iii) Number of dead hearts. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1634 dead hearts/ac. (ii) 1062 dead hearts/ac. (iii) Treatment differences are not significant. (iv) Av. number of dead hearts/ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Av. number	1180	853	1616	1488	762	1779	2232	3158

S.E./mean = 531 dead hearts/ac.

Crop :- Sugarcane.

Ref :- I.I.S.R. 59(397).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'D'.

Object :-To study the effect of application of BHC against termite and shoot borer on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 18.3.1959. (iv) (a) and (b) N.A. (c) 50 setts (3 budded)/row. (d) 3'×1.5'. (e) N.A. (v) N.A. (vi) CO. 443. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

7 insecticidal treatments : T₀=Control, T₁=Gamma BHC emulsion over the setts in furrows at 1 lb. actual/ac. by water canal, T₂=Dipping the setts in Gamma BHC at 8 ozs./ac. emulsion in 10 gallons of water, T₃=Dipping the setts in Gamma BHC at 8 ozs./ac. emulsion in 5 gallons of water, T₄=Gamma BHC dust over the setts in furrows at 1 lb./ac. T₅=BHC 5% dust at 20 lb./ac. over the setts in furrows and T₆=Dipping the setts in Aretan/BHC solution at 1 lb./ac. in 20 gallons of water.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 40'×15'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of termite and shoot borer. (iii) Number of dead hearts. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2321 dead hearts/ac. (ii) 779.8 dead hearts/ac. (iii) Treatment differences are not significant. (iv) Av. number of dead hearts/ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆
Av. number	2305	1833	2378	1778	2286	2784	2885

S.E./mean = 389.9 dead hearts/ac.

Crop :- Sugarcane.

Ref :- I.I.S.R. 59(409).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'D'.

Object :—To study the effect of foliar application of insecticides against stalk borer on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 12.3.1959. (iv) (a) to (c) N.A. (d) 3'×1.5'. (e) N.A. (v) N.A. (vi) CO. 527. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 insecticidal treatments : T₀=Control, T₁=BHC at 1 lb./ac., T₂=DDT at 1 lb./ac., T₃=Endrin at 1 lb./ac., T₄=Folidol at 4 ozs./ac., T₅=T₂+T₄, T₆=T₃+T₄ and T₇=Basudin at 1 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) and (b) 55'×33'. (v) No. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of stalk borer. (iii) Yield of sugarcane and percentage incidence of stalk borer at harvest. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Sugarcane yield

(i) 18.60 tons/ac. (ii) 2.68 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Av. yield	16.55	18.75	17.89	15.24	21.11	20.05	21.76	17.42

S.E./mean = 1.55 tons/ac.

Incidence of stalk borer

(i) 34.82 degrees. (ii) 11.61 degrees. (iii) Treatment differences are not significant. (iv) Mean % of incidence of stalk borer in degrees.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Mean angle	38.39	26.71	20.78	29.50	37.72	33.51	57.60	34.35

S.E./mean = 6.70 degrees.

Transformed back %	38.68	20.50	12.93	24.51	37.56	30.70	71.09	32.01
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Crop :- Sugarcane.

Ref :- I.I.S.R. 59(398).

Site :- Indian Instt. of Sugarcane Res., Lucknow. Type :- 'D'.

Object :- To study the effect of soil application of insecticides against shoot borer on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, I.I.S.R., Lucknow. (iii) 13.3.1959. (iv) (a) and (b) N.A. (c) 500 buds/plot. (d) 3' x 1.5'. (e) N.A. (v) Nil. (vi) CO.S. 527. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2) + control (2 plots)

(1) 3 insecticidal treatments : T₁=Endrin at 0.5 lb./ac, T₂=BHC at 2.5 lb./ac. and T₃=BHC at 5 lb./ac.

(2) 2 times of application : A₁=One application in May and A₂=Two applications in May and June each.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) and (b) 25' x 15'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of shoot borer. (iii) Counts of dead heart. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 19941 dead hearts/ac. (ii) 6692 dead hearts/ac. (iii) None of the effects is significant. (iv) Av. number of dead hearts/ac.

Control = 23852

	T ₁	T ₂	T ₃	Mean
A ₁	16340	18856	18973	18056
A ₂	22922	17347	17385	19218
Mean	19631	18102	18179	18637

S.E. of A marginal mean = 2231 dead hearts/ac.
 S.E. of T marginal mean or control mean = 2732 dead hearts/ac.
 S.E. of body of table = 3864 dead hearts/ac.

Central Potato Research Institute
SIMLA

CENTRAL POTATO RESEARCH STATION, PATNA

1. Name of the experimental station : Central Potato Research Station.
2. Tehsil or Taluka : —
3. District : Patna.
4. Address : Central Potato Research Station, P.O. Sahay Nagar, Patna (Bihar).
5. Year of establishment : 1949.
6. Latitude Longitude Altitude
25°37' N 85°10' E 173 feet
7. Whether research, multiplication or demonstration farm : Research cum seed multiplication farm.
8. Whether State, University or private managed : I.C.A.R.
9. Programme of research : This research station undertakes research on potato problems relating to Agronomy, Botany, Plant Pathology, Entomology and Agricultural Engineering.
10. Normal cropping pattern : Potato—Summer crops—Green manuring.
11. Type of tract it represents : Alluvial.
12. General description of the topography of the experimental area : The experimental area is divided into half acre units and is levelled and plain.
13. Soils :
 - (a) Broad soil types : Sandy, sandy loam and clay loam.
 - (i) Depth : Shallow.
 - (ii) Colour : Sandy to light loam.
 - (iii) Structure : Loose to compact

(b) Chemical analysis :

Textural class	Sandy	Sandy loam	Clay loam
pH	6.8 to 7.1	7.0 to 7.2	6.9 to 7.3
Cation exchange capacity (m.e./100 gm.)	4.9 to 7.7	6.5 to 9.0	7.3 to 9.6
Available nitrogen in lb./ac.	123 to 375	291 to 482	275 to 500
Available phosphorus in lb./ac.	105 to 360	55 to 589	136 to 485
Available potassium in lb./ac.	130 to 525	237 to 497	317 to 859
Organic carbon %	0.5 to 0.8	0.4 to 1.0	1.0

POTATO EXPERIMENTAL AND TRIAL CENTRE, JULLUNDUR

1. Name of the experimental station : Potato Experimental and Trial Centre,
2. Tehsil or Taluka : Jullundur.
3. District : Jullundur.
4. Address : Regional Botanist, Potato Exptl. and Trial Centre, Post Bag No. 4., Jullundur,
5. Year of establishment : 1957.
6. Latitude Longitude Altitude
31° 19 mts. 36 sec. N. 75° 36 mts. 48 sec. E. 780 ft. above sea level.
7. Whether research multiplication or demonstration farm : Research farm.
8. Whether State, University or private managed : Regional Research Station of C. P. R. I. (I. C. A. R.).
9. Programme of Research : Research work on Botany, Agronomy, Virus pathology, seed production techniques and other connected problems of potato cultivation.
10. Normal cropping pattern :
Green Manure—Potato—Fallow (one year rotation)
Green Manure—Potato—Potato (one year rotation)
Green Manure—Potato—Wheat (one year rotation).
13. Soils :
(a) Broad soil types : N.A.
(i) Depth : Very deep.
(ii) Colour : Yellowish brown.
(iii) Structure : Loam and sandy loam :
(b) Chemicals analysis : N.A.
(c) Mechanical analysis : N.A.
14. Normal average rainfall in cm. :
June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. March April May Total
6.551 24.893 22.966 18.791 0.165 1.161 9.441 1.887 2.065 2.439 1.290 2.380 7.085
(The period on which the figures are based is 1962—1966.)
15. Irrigation facilities available ; year from which the facilities were made available : Lift irrigation tube-well ; since 1957.
16. Whether any proper drainage system exists : Only natural drainage which is quite satisfactory)

POTATO EXPERIMENTAL AND TRIAL CENTRE, BABUGARH.

1. Name of the experimental station : Potato Experimental and Trial Centre.
2. Tehsil or Taluka : Hapur.
3. District : Meerut.
4. Address : P.O. Babugarh, Distt. Meerut, U.P.
5. Year of establishment : 1957.
6. Latitude N.A. Longitude N.A. Altitude N.A.
7. Whether research, multiplication or demonstration farm : Research-cum-multiplication farm.
8. Whether State, University or private managed : I.C.A.R. managed.
9. Programme of research : To evolve new potato varieties and to find out their cultural and manurial requirements for the region.
10. Normal cropping pattern : *Rabi*—Potato. *Kharif*—Leguminous crops for green manuring, maize and paddy.
11. Type of tract it represents : Indo-Gangetic plains (Western U. P.).
12. General description of the topography of the experimental area : The landscape has a gradual gradient from west to east. On the upper side soil is clayey type, alkaline in some patches and contains *kankar* beds. These fields contain mainly sub-soil due to shifting of soil during levelling. Middle fields are lower by at least 3 ft. than the fields at the upper end and contain loamy type of soil. Fields at the down end are further lower by 4 ft. and contain sandy loam type of soil. Fertility varies along the gradient.
13. Soils :
 - (a) Broad soil types : Clayey loam at the upper end. Loamy in the middle fields. Sandy loam at the down end. Deep soils.
 - (i) Depth :
 - (ii) Colour : Pale reddish to ash grey.
 - (iii) Structure : Sticky and hard crumb structure.
 - (b) Chemical analysis :

Depth	pH	Organic carbon %	Total nitrogen %	Available P ₂ O ₅ lb./ac.	Available K ₂ O lb./ac.
0—6"	7.1	0.240	0.0378	Above 36	Below 100
6"—18"	7.1	0.165	0.028	0—9	from 0—86
18"—36"	7.1	0.105	0.028	0—9	depth
 - (c) Mechanical analysis :

Depth	Coarse sand %	Fine sand %	Silt %	Clay %
0—6"	5.560	59.790	24.800	6.400
6"—18"	3.845	44.735	29.400	19.800
18"—36"	4.315	45.900	24.200	23.800

14. Normal average rainfall in inches :

June	July	Aug-	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
1.2	21.76	30.01	16.83	2.91	0.04	0.84	2.39	0.25	1.74	0.58	0.80	79.35

(The period on which the figures are based is 1960—1964.)

15. Irrigation facilities available; Tube well ; since 1957.
year from which the facilities
were made available :

16. Whether any proper drainage system No.
exists :

(c) Mechanical analysis : N.A.

14. Normal average rainfall in cm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
18	41	13	9	28	—	—	—	—	1	—	—	110

(The figures are based on the rainfall of 1964—1965)

Note :— Bihar State faced drought in 1965, hence figures of rainfall in 1964 have been taken as they may be more towards normal.

15. Irrigation facilities available ; Tube well ; since 1954.
year from which the facilities were
made available :

16. Whether any proper drainage Yes.
system exists :

Crop :- Potato (Rabi).**Ref :- C.P.R.I. 58(103).****Site :- Central Potato Res. Stn., Babugarh.****Type :- 'M'.**

Object :—To study the effect of different sources of N with P and K on Potato yield.

1. BASAL CONDITIONS :

(i) to (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) and (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2) + a control

(1) 4 sources of N : S₁=Nitrophoska blue, S₂=Nitrophoska green, S₃=C/A/N and S₄=A/S.(2) 3 levels of N : N₁=50, N₂=100 and N₃=150 lb./ac.448 lb./ac. of Super and 224 lb./ac. of Pot. Sul. applied to S₃ and S₄.**3. DESIGN :**

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 1/160 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of tubers. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) Jullundur and Patna. (b) Nil. (vi) Nil. (vii) Mean yield of control is N.A.

5. RESULTS:

(i) N.A. (ii) 1.91 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of tubers in tons/ac.

Control = N.A.

	S ₁	S ₂	S ₃	S ₄	Mean
N ₁	9.47	11.78	11.27	11.48	11.00
N ₂	11.30	11.48	9.60	10.32	10.68
N ₃	11.56	13.81	12.33	10.90	12.15
Mean	10.78	12.36	11.07	10.90	11.28

S.E. of N marginal mean = 0.55 tons/ac.

S.E. of S marginal mean = 0.64 tons/ac.

S.E. of body of table = 1.10 tons/ac.

Crop :- Potato (Rabi).**Ref :- C.P.R.I. 57(96).****Site :- Central Potato Res. Stn., Babugarh.****Type :- 'M'.**

Object :—To study the effect of N, P and K due to soil and spray application.

1. BASAL CONDITIONS :

(i) to (v) N.A. (vi) Up-to-date. (vii) Irrigated. (viii) 1 earthing. (ix) and (x) N.A.

2. TREATMENTS :**Main-plot treatments :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N₀=0, N₁=50 and N₂=100 lb./ac.(2) 3 levels of P₂O₅ as Super : P₀=0, P₁=50 and P₂=100 lb./ac.**Sub-plot treatments :**2 methods of application of manures : S₁=Soil and S₂=Spray application.**3. DESIGN :**

(i) Split-plot. (ii) (a) 9 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 19.5' × 17.25'. (b) 16.5' × 16.5'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Tuber yield. (iv) (a) N.A. (b) No. (c) Nil. (v) (a) Jullundur and Patna. (b) Nil. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 4.96 tons/ac. (ii) (a) 1.41 tons/ac. (b) 0.63 tons/ac. (iii) Main effect of S and interaction N×S are highly significant. Interaction P×S is significant. (iv) Av. yield of tuber in tons/ac.

	P ₀	P ₁	P ₂	Mean	N ₀	N ₁	N ₂
S ₁	5.27	5.49	4.72	5.16	4.31	5.14	6.04
S ₂	4.78	4.65	4.83	4.75	4.47	4.97	4.82
Mean	5.03	5.07	4.78	4.96	4.39	5.06	5.43
N ₀	4.59	4.55	4.02				
N ₁	5.06	5.38	4.73				
N ₂	5.43	5.29	5.58				

S.E. of difference of two

- | | |
|--|-----------------|
| 1. N or P marginal means | = 0.41 tons/ac. |
| 2. S marginal means | = 0.15 tons/ac. |
| 3. S means at the same level of N or P | = 0.26 tons/ac. |
| 4. N or P means at the same level of S | = 0.45 tons/ac. |
| S.E. of body of N×P table | = 0.50 tons/ac. |

Crop :- Potato (*Rabi*).

Ref :- C.P.R.I. 59(93).

Site :- Central Potato Res. Stn., Babugarh.

Type :- 'M'.

Object :— To try the commercial fertilizer mixtures containing N, P and K in different ratios against A/S.

1. BASAL CONDITIONS :

(i) to (vi) N.A. (vii) Irrigated. (viii) 1 weeding and 1 earthing. (ix) and (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2) + control (2 plots)

(1) 4 sources of N : S₁=A/S, S₂=Nitrophoska green, S₃=Nitrophoska blue and S₄=C/A/N.

(2) 3 levels of N : N₁=75, N₂=150 and N₃=225 lb./ac.

448 lb./ac. of Super and 224 lb./ac. of Pot. Sul. applied to S₁ and S₄.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 5. (iv) (a) 19½'×19½'. (b) 16½'×16½'. (v) 1.5'×1.5'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of tubers. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) Jullundur and Patna. (b) Nil. (vi) Nil. (vii) Mean yield of control is N.A.

5. RESULTS :

(i) N.A. (ii) 3.03 tons/ac. (iii) Only 'control vs. others' is highly significant. (iv) Av. yield of tuber in tons/ac.

Control = N.A.

	S ₁	S ₂	S ₃	S ₄	Mean
N ₁	12.97	14.44	13.06	14.79	13.82
N ₂	14.52	15.22	16.41	13.41	14.89
N ₃	13.81	15.79	15.21	15.16	14.99
Mean	13.77	15.15	14.89	14.45	14.57

S.E. of N marginal mean	= 0.87 tons/ac.
S.E. of S marginal mean	= 1.01 tons/ac.
S.E. of body of table	= 1.75 tons/ac.

Crop :- Potato (Rabi).

Ref :- C.P.R.I. 59(89).

Site :- Central Potato Res. Stn., Babugarh.

Type :- 'M'.

Object :- To compare the effect of N, P and K through soil and spray application.

1. BASAL CONDITIONS :

(i) to (v) N.A. (vi) Up-to-date. (vii) Irrigated. (viii) 1 earthing. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1), (2) and (3)

(1) 2 levels of N : $N_0=0$ and $N_1=100$ lb./ac.

(2) 2 levels of P : $P_0=0$ and $P_1=100$ lb./ac.

(3) 2 levels of K : $K_0=0$ and $K_1=100$ lb./ac.

Sub-plot treatments :

2 methods of application : $M_1=$ Soil application and $M_2=$ Spray application.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) $19.5' \times 19.5'$. (b) $1/160$ ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of tubers. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) Jullundur and Patna. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 8.45 tons/ac. (ii) (a) 1.62 tons/ac. (b) 1.47 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of tuber in tons/ac.

	P_0	P_1	K_0	K_1	M_1	M_2	Mean
N_0	7.72	8.95	7.76	8.92	8.57	8.10	8.34
N_1	8.24	8.90	8.62	8.52	8.71	8.42	8.57
Mean	7.98	8.92	8.19	8.72	8.64	8.26	8.45
M_1	8.36	8.92	8.50	8.78			
M_2	7.61	8.92	7.88	9.65			
K_0	7.89	8.49					
K_1	8.08	9.36					

S.E. of difference of two

1. N, P or K marginal means	= 0.40 tons/ac.
2. M marginal means	= 0.37 tons/ac.
3. M means at the same level of N, P or K	= 0.52 tons/ac.
4. N, P or K means at the same level of M	= 0.55 tons/ac.
S.E. of body of $N \times P$, $N \times K$ or $P \times K$ table	= 0.40 tons/ac.

Crop :- Potato (Rabi).**Ref :- C.P.R.I. 58(102)****Site :- Central Potato Res. Stn., Babugarh.****Type :- 'M'.**

Object :—To study the effect of various micro-nutrient elements on the yield of Potato.

1. BASAL CONDITIONS :

(i) to (ix) N.A. (x) 14.2.1959.

2. TREATMENTS:

All combinations of (1), (2), (3), (4) (5) and (6)

(1) 2 levels of B : B₀=Absence and B₁=Presence.(2) 2 levels of Mn : M₀=Absence and M₁=Presence.(3) 2 levels of Zn : Z₀=Absence and Z₁=Presence.(4) 2 levels of Mo : N₀=Absence and N₁=Presence.(5) 2 levels of Cu : C₀=Absence and C₁=Presence.(6) 2 levels of Fe : F₀=Absence and F₁=Presence.

Doses of micro-nutrients are not available.

3. DESIGN :(i) 2⁶ confd. (ii) (a) 8 plots/block ; 8 blocks/replication. (b) N.A. (iii) 1. (iv) (a) N.A. (b) 1/160 ac. (v) N.A. (vi) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Potato yield. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 9.43 tons/ac. (ii) 1.30 tons/ac. (iii) Main effect of N and interaction N×M are significant. (iv) Table of mean and differential responses in tons/ac.

		Diff rental response											
Mean response		B		M		Z		C		N		F	
		+	-	+	-	+	-	+	-	+	-	+	-
- 0.29		—	—	-0.20	-0.38	0.31	-0.89	0.00	-0.58	0.07	-0.65	-0.53	-0.05
M	0.21	0.30	0.12	—	—	0.50	-0.08	-0.32	0.74	0.90	-0.48	0.37	0.05
Z	0.23	0.83	-0.38	0.53	-0.07	—	—	0.86	-0.40	0.31	0.15	0.59	-0.13
C	- 0.06	0.24	-0.36	-0.60	0.47	0.57	-0.69	—	—	-0.45	0.33	0.09	-0.21
N	- 0.67	-0.31	-1.04	0.02	-1.37	-0.60	-0.75	-1.07	-0.28	—	—	-0.45	-0.90
F	- 0.43	-0.67	-0.19	-0.27	-0.59	-0.07	-0.79	-0.28	-0.58	-0.21	-0.65	—	—

S.E. of mean response = 0.32 tons/ac.

S.E. of differential response = 0.46 tons/ac.

Crop :- Patato (Rabi).**Ref :- R.P.C.I. 59(91).****Site :- Central Patato Res. Stn., Babugarh.****Type :- 'M'.**

Object :—To study the effect of various micro-nutrients elements on Potato yield.

1. BASAL CONDITIONS :

(i) to (x) N.A.

2. TREATMENTS :

Same as in expt. no. 58(102) above.

3. DESIGN :

(i) 2⁶ confd. (ii) (a) 8 blocks/replication and 8 plots/block. (b) N.A. (iii) 1. (iv) (a) 1/115 ac. (b) 1/160/ac. (v) and (vi) N.A.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of potato. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) Jullundur and Patna. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 10.54 tons/ac. (ii) 1.24 tons/ac. (iii) None of the effects is significant. (iv) Table of mean and differential responses in tons/ac.

		Differential response											
		B		M		Z		C		N		F	
		+	-	+	-	+	-	+	-	+	-	+	-
B	0.18	—	—	0.01	0.36	-0.12	0.50	0.81	-0.43	0.18	0.19	-0.24	0.61
M	-0.09	-0.27	0.08	—	—	-0.27	0.08	-0.44	0.25	0.05	-0.24	0.10	-0.29
Z	-0.07	-0.38	0.24	-0.24	0.10	—	—	-0.38	0.25	0.49	-0.63	-0.14	-0.004
C	-0.04	0.58	-0.66	-0.39	0.30	-0.36	0.27	—	—	0.04	-0.12	-0.53	0.45
N	-0.30	-0.30	-0.30	-0.15	-0.44	0.27	-0.86	-0.22	-0.38	—	—	-0.65	0.05
F	0.13	-0.29	0.56	0.33	-0.06	0.06	0.21	-0.35	0.62	-0.22	0.49	—	—

S.E. of mean response = 0.31 tons/ac.

S.E. of differential response = 0.44 tons/ac.

Crop :- Potato.

Ref :- C.P.R.I. 58(47).

Site :- Potato Exptl. and Trial Centre, Jullundur.

Type :- 'M'.

Object :— To compare the effects of different fertilizer mixtures on Potato.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sannhemp*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Jullundur. (iii) 26.10.1958. (iv) (a) 1 tractor ploughing, 2 plankings and 1 discing. (b) By hand. (c) 15 to 20 mds./ac. (d) 21" × 9". (e) 1. (v) F.Y.M. at 250 mds./ac. (vi) *Kufri* red. (vii) Irrigated. (viii) 3 crust breakings, weeding and 1 earthing. (ix) 5.24". (x) 30.3.1959 to 5.4.1959.

2. TREATMENTS :

Same as in expt. no. 58(103) on page 159.

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) 39' × 136.5'. (iii) 5. (iv) (a) 19½' × 19½'. (b) 16½' × 16½'. (v) 1.5' × 1.5'. (vi) Yes.

4. GENERAL :

(i) Normal except for control. (ii) Severe effect of early blights, moderate effect of late blight and frost were observed. Sprays of Bordeaux mixture and Basudin were given to check them and irrigation interval was reduced to 3 days during severe frost days. (iii) Tuber yield. (iv) (a) 1958—1959. (b) No. (c) Nil. (v) (a) Babugarh and Patna. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 5.94 tons/ac. (ii) 0.72 tons/ac. (iii) Main effects of S and N are highly significant and interaction S × N and 'control vs. others' are significant. (iv) Av. yield of tuber in tons/ac.

Control = 4.00 tons/ac.

	S ₁	S ₂	S ₃	S ₄	Mean
N ₁	4.51	4.43	6.11	5.98	5.26
N ₂	5.48	6.96	7.28	6.38	6.52
N ₃	5.99	6.68	7.26	6.18	6.53
Mean	5.33	6.02	6.88	6.18	6.10

S.E. of N marginal mean = 0.16 tons/ac.
 S.E. of S marginal mean = 0.19 tons/ac.
 S.E. of body of table or control mean = 0.32 tons/ac.

Crop :- Potato.**Ref :- C.P.R.I. 59(45).****Site :- Potato Exptl. and Trial Centre, Jullundur. Type :- 'M'.**

Object :— To compare the effect of different fertilizer mixtures on Potato.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sannhemp*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis Jullundur. (iii) 24.10.1959. (iv) (a) 1 tractor ploughing, 2 plankings and 1 discing. (b) By hand. (c) 15 to 20 mds./ac. (d) 21"×9". (e) 1. (v) N.A. (vi) *Kufri* red. (vii) Irrigated. (viii) 3 crust breakings, weedings and 1 earthing. (ix) 2.24". (x) 1.3.1960.

2. TREATMENTS :

Same as in expt. no. 59(93) on page 160.
 Manures applied on 24.10.1959.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) 39'×136.5'. (iii) 5. (iv) (a) 19½'×19½'. (b) 16½'×16½'. (v) 1.5'×1.5'. (vi) Yes.

4. GENERAL :

(i) Normal except control. (ii) Severe effect of early blight, moderate effect of late blight and frost were observed. Sprays of Bordeaux mixture and Basudin were given to check them and irrigation interval was reduced to 3 days during severe frost. (iii) Tuber yield. (iv) (a) 1958—1959. (b) No. (c) Nil. (v) (a) Babugarh and Patna. (b) Nil. (vi) N.A. (vii) Control yield is N.A.

5. RESULTS :

(i) N.A. (ii) 1.58 tons/ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of tuber in tons/ac.

Control = N.A.

	S ₁	S ₂	S ₃	S ₄	Mean
N ₁	9.26	9.33	9.49	10.52	9.65
N ₂	11.56	11.82	11.32	11.94	11.66
N ₃	11.75	11.24	13.36	10.83	11.80
Mean	10.86	10.80	11.39	11.10	11.04

S.E. of N marginal mean = 0.35 tons/ac.
 S.E. of S marginal mean = 0.41 tons/ac.
 S.E. of body of table = 0.71 tons/ac.

Crop :- Potato.**Ref :- C.P.R.I. 58(46).****Site :- Potato Exptl. and Trial Centre, Jullundur. Type :- 'M'.**

Object :—To study the effect of micro-nutrient elements on the growth and yield of Potato.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sannhemp*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.I., Jullundur. (i) 18.10.1958. (iv) (a) 1 tractor ploughing, 2 plankings and 1 discing. (b) By hand. (c) 15 to 20 mds./ac. (d) 21"×9". (e) 1. (v) 150 lb./ac. of N as C/A/N+75 lb./ac. of P₂O₅ as Super+100 lb./ac. of K₂O as Pot. Sul. was applied in bands below the seed at the time of planting. (vi) Up-to-date. (vii) Irrigated. (viii) 3 crust breaking, 3 weeding and 1 earthing. (ix) 4.96". (x) 5 to 9.3.1959.

2. TREATMENTS :

All combinations of (1), (2), (3), (4), (5) and (6)

- (1) 2 levels of Boron : B₀=0 and B₁=0.375% solution of Boric Acid.
 (2) 2 levels of Manganese : M₀=0 and M₁=0.375% solution of Manganese sulphate.
 (3) 2 levels of Zinc : Z₀=0 and Z₁=0.15% solution of Zinc Sulphate.
 (4) 2 levels of Copper : C₀=0 and C₁=0.75% solution of CuSO₄.
 (5) 2 levels of Molybdenum : Mb₀=0 and Mb₁=0.15% solution of Ammo. Molybdate.
 (6) 2 levels of Iron : I₀=0 and I₁=0.75% solution of Ferrous Sulphate.

3. DESIGN :

(i) 2⁶ fact. (ii) (a) 8 plots/block ; 8 blocks/replication. (b) 156'×156'. (iii) 1. (iv) (a) 19.5'×19.5'. (b) 16.5'×16.5'. (v) 1.5'×1.5'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Early blight and frost were severe, late blight was moderate. Sprays of Bordeaux mixture were given to check blights and aphid and irrigation interval was reduced to three days. (iii) Yield of tubers. (iv) (a) 1958 - 1959. (b) No. (c) Nil. (v) (a) Babugarh and Patna. (b) Nil. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 5.04 tons/ac. (ii) 1.12 tons/ac. (iii) Only interaction Z×M is highly significant. (v) Table of mean and differential responses in tons/ac.

		Differential response											
		B		M		Z		C		Mb		I	
Mean response		-	+	-	+	-	+	-	+	-	+	-	+
		B	0.31	—	—	0.06	0.56	-0.11	0.74	-0.05	0.69	0.32	0.31
M	-0.05	-0.30	0.20	—	—	-0.44	0.36	0.43	-0.52	-0.19	0.09	0.19	-0.28
Z	-0.11	-0.53	0.32	-0.51	0.29	—	—	-0.47	0.26	0.66	-0.87	-0.36	0.14
C	0.05	-0.31	0.43	0.53	-0.42	-0.31	0.42	—	—	0.14	-0.03	0.33	-0.22
Mb	0.23	0.23	0.22	0.08	0.36	0.99	-0.54	0.31	0.14	—	—	0.25	0.20
I	-0.49	-0.64	-0.34	-0.25	-0.72	-0.74	-0.24	-0.21	-0.76	-0.46	-0.51	—	—

S.E. of mean response = 0.28 tons/ac.

S.E. of differential response = 0.40 tons/ac.

Crop :- Potato.**Ref :- C.P.R.I. 59(43).****Site :- Potato Exptl. and Trial Centre, Jullundur. Type :- 'M'.**

Object :—To study the effect of micro-nutrient elements in various combinations on the growth and yield of Potato.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sannhemp*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.I., Jullundur. (iii) 20.10.1959. (iv) (a) 1 tractor ploughing, 2 plankings, and 1 discing. (b) By hand. (c) 15 to 20 mds./ac. (d) 21"×9". (e) 1. (v) 150 lb./ac. of N as C/A/N+75 lb./ac. of P₂O₅ as Super+100 lb./ac. of K₂O as Pot. Sul. were applied in bands below the seed at the time of planking. (vi) Up-to-date. (vii) Irrigated. (viii) 3 crust breakings, 3 weedings and 1 earthing. (ix) 2.24". (x) 1.3.1960.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(46) on page 165.

5. RESULTS :

(i) 5.11 tons/ac. (ii) 0.80 tons/ac. (iii) Main effect of B alone is significant. (iv) Table of mean and differential responses in tons/ac.

		Differential response											
	Mean response	B		M		Z		C		Mb		I	
		-	+	-	+	-	+	-	+	-	+	-	+
B	-0.41	-	-	-0.35	-0.47	-0.51	-0.30	-0.50	-0.32	-0.21	-0.61	-0.31	-0.51
M	-0.33	-0.27	-0.39	-	-	-0.43	-0.23	-0.56	-0.10	-0.33	-0.33	-0.11	-0.55
Z	0.09	-0.01	0.20	-0.01	0.19	-	-	-0.22	0.40	0.05	0.13	-0.11	0.31
C	0.02	-0.07	0.11	-0.21	0.25	-0.29	0.33	-	-	0.15	-0.11	-0.19	0.23
Mb	0.01	0.21	-0.19	0.01	0.01	-0.03	0.05	0.14	-0.12	-	-	0.25	-0.23
I	-0.15	-0.05	-0.25	0.07	-0.37	-0.36	0.06	-0.36	0.06	0.09	-0.39	-	-

S.E. of mean response = 0.20 tons/ac.

S.E. of differential response = 0.28 tons/ac.

Crop :- Potato.

Ref :- C.P.R.I. 58(44).

Site :- Potato Exptl. and Trial Centre, Jullundur.

Type :- 'M'.

Object :—To see the effect of soil and foliar applications of N and P on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sannhemp*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.I., Jullundur. (iii) 13.10.1958. (iv) (a) 1 tractor ploughings, 2 plankings and 1 discing. (b) By hand. (c) 15 to 20 mds./ac. (d) 21"×9". (e) 1. (v) 250 mds./ac. of F.Y.M. one month before the planting of tubers. (vi) N.A. (vii) Irrigated. (viii) Mulching after every irrigation and 2 earthings. (ix) 4.06". (x) 2.2.1959.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N₀=0, N₁=50 and N₂=100 lb./ac.

(2) 3 levels of P₂O₅ as Super : P₀=0, P₁=50 and P₂=100 lb./ac.

Sub-plot treatments :

2 methods of application : M₁=Soil application and M₂=Spray application.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 19.5'×19.5'.

(b) 1/160 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Early blight in severe form and late blight was moderate. Frost effect severe in some plots. Sprays were given against blights and aphids. (iii) Tuber yield. (iv) (a) and (b) No. (c) Nil. (v) (a) Babugarh and Patna. (b) Nil. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 6.37 tons/ac. (ii) (a) 1.39 tons/ac. (b) 0.72 tons/ac. (iii) Main effect of M and interactions $M \times N$ and $M \times P$ are highly significant. The interaction $M \times N \times P$ is significant. (iv) Av. yield of tuber in tons/ac.

	N_0	N_1	N_2	Mean	M_1	M_2
P_0	5.30	7.10	6.60	6.33	7.10	5.56
P_1	6.29	6.28	5.98	6.18	7.65	4.72
P_2	6.47	7.03	6.29	6.59	8.04	5.15
Mean	6.02	6.80	6.29	6.37	7.60	5.14
M_1	6.74	8.27	7.78			
M_2	5.30	5.33	4.80			

S.E. of difference of two

1. N or P marginal means = 0.40 tons/ac.
 2. M marginal means = 0.17 tons/ac.
 3. M means at the same level of N or P = 0.29 tons/ac.
 4. N or P means at the same level of M = 0.45 tons/ac.
- S.E. of the body of $N \times P$ table = 0.49 tons/ac.

Crop :- Potato.

Ref :- C.P.R.I. 59(41).

Site :- Potato Exptl. and Trial Centre, Jullundur. Type :- 'M'.

Object :- To study the effect of N, P and K as soil and foliar applications on Potato.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sannhemp*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.I., Jullundur. (iii) 16.10.1959. (iv) (a) to (e) N.A. (v) Nil. (vi) Up-to-date. (vii) Irrigated. (viii) 3 crust breakings* 3 weedings and 1 earthing. (ix) 2.24". (x) 14.2.1960.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1), (2) and (3)

- (1) 2 levels of N as Urea : $N_0=0$ and $N_1=100$ lb./ac.
- (2) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=100$ lb./ac.
- (3) 2 levels of K_2O as Pot. Sul. : $K_0=0$ and $K_1=100$ lb./ac.

Sub-plot treatments :

2 methods of application : M_1 =Soil application and M_2 =Spray (foliar) application.

Spray application given at the rate of half of the dose applied to soil divided in four equal doses. First spray applied when plants were 4" to 5" high and subsequent doses at 7 day's intervals. Super was neutralised with lime before application.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication ; 2 sub-plots/main-plot. (b) 156' x 39'. (iii) 4. (iv) (a) 19.5' x 19.5'. (b) 16.5' x 16.5'. (v) 1.5' x 1.5'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Early blight was severe and late blight and frost were moderate. Virus was also observed. Sprays of Bordeaux mixture and Basudin were given to check the diseases. (iii) Rate of germination, growth data and yield of tubers. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) and (vi) N.A. (vii) Two way table for PK is N.A.

5. RESULTS :

(i) 3.48 tons/ac. (ii) (a) 0.89 tons/ac. (b) 0.89 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of tuber in tons/ac.

	P ₀	P ₁	K ₀	K ₁	M ₁	M ₂	Mean
N ₀	3.14	3.38	3.22	3.31	3.13	3.40	3.26
N ₁	3.91	3.48	3.67	3.72	3.47	3.92	3.70
Mean	3.53	3.43	3.44	3.52	3.30	3.66	3.48
M ₁	3.33	3.26	3.27	3.33			
M ₂	3.72	3.60	3.62	3.70			

S.E. of difference of two

1. N or P or K marginal means = 0.22 tons/ac.
 2. M marginal means = 0.22 tons/ac.
 3. M means at the same level of N or P, K = 0.31 tons/ac.
 4. N, P or K means at the same level of M = 0.31 tons/ac.
- S.E. of body of N×P or N×K table = 0.22 tons/ac.

Crop :- Potato (Rabi).

Ref :- C.P.R.I. 58(112)

Site :- Central Potato Res. Stn., Patna.

Type :- 'M'.

Object :- To try the commercial fertilizer mixtures containing N, P and K in different ratios against A/S.

1. BASAL CONDITIONS :

(i) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Patna. (iii) 7.11.1958. (iv) (a) 4 ploughings. (b) and (c) N.A. (d) 18"×9". (e) 1. (v) G.M. (vi) *Kufri* red. (vii) Irrigated. (viii) 1 earthing. (ix) N.A. (x) 25 and 27.2.1959.

2. TREATMENTS :

Same as in expt. no. 58(103) on page 159.
Manures applied on 6.11.1958.

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 5. (iv) (a) 10½'×12'. (b) 7½'×10½'. (v) 1.5'×9". (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of tubers (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) Julluundur and Babugarh. (b) Nil. (vi) Nil. (vii) Mean yield of control is N.A.

5. RESULTS :

(i) N.A. (ii) 11.00 tons/ac. (iii) None of the effect is significant. (iv) Av yield of tubers in tons/ac.

Control = N.A.

	S ₁	S ₂	S ₃	S ₄	Mean
N ₁	7.45	7.55	8.06	9.81	8.22
N ₂	10.30	9.81	9.57	10.90	10.14
N ₃	10.58	10.92	10.96	10.84	10.82
Mean	9.44	9.43	9.53	10.52	9.73

- S.E. of N marginal mean = 2.46 tons/ac.
S.E. of S marginal mean = 2.84 tons/ac.
S.E. of body of table = 4.92 tons/ac.

Crop :- Potato (Rabi).**Ref :- C.P.R.I. 59(103).****Site :- Central Potato Res. Stn., Patna.****Type :- 'M'.**

Object :—To try the commercial fertilizer mixtures containing N, P and K in different ratios against A/S.

1. BASAL CONDITIONS :

(i) (a) No. (b) Maize+Cowpea (fodder). (c) A/S. (ii) (a) Loam. (b) Refer soil analysis, C.P.R.S., Patna. (iii) 5 and 6.11.1959. (iv) (a) 3 ploughings, cross ploughings and 3 plankings. (b) Ridge and furrow method. (c) 18 mds./ac. (d) 1½'×9". (e) 1. (v) Nil. (vi) *Kufri* red. (vii) Irrigated. (viii) 1 weeding and 1 earthing. (ix) 8.49". (x) 1st row harvested on 10 and 11.2.1960, 2nd row harvested on 11 and 12.2.1960. Central portion harvested 12 and 13.2.1960.

2. TREATMENTS :

Same as in in expt. no. 59(93) on page 160.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 13½'×12'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Fungicide spray against late blight. (iii) Yield of tubers. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) Jullundur and Babugarh. (b) Nil. (vi) Nil. (vii) Control yield is N.A.

5. RESULTS :

(i) N.A. (ii) 0.63 tons/ac. (iii) Main effect of N and 'control vs. others' are highly significant. (iv) Av. yield of tubers in tons/ac.

Control = N.A.

	S ₁	S ₂	S ₃	S ₄	Mean
N ₁	5.26	4.45	4.36	4.39	4.62
N ₂	6.25	6.01	6.00	5.27	5.88
N ₃	6.89	6.87	7.07	6.89	6.93
Mean	6.13	5.78	5.81	5.52	5.81

S.E. of N marginal mean = 0.14 tons/ac.

S.E. of S marginal mean = 0.16 tons/ac.

S.E. of body of table = 0.28 tons/ac.

Crop :- Potato (Rabi).**Ref :- C.P.R.I. 57(101).****Site :- Central Potato Res. Stn., Patna.****Type :- 'M'.**

Object :—To study the effect of soil and spray application of N and P on Potato.

1. BASAL CONDITIONS :

(i) (a) Fallow—Potato. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.S., Patna. (iii) N.A. (iv) (a) 3 ploughings and 3 cross ploughings each followed by planking. (b) In ridges and furrows. (c) 26 mds./ac. (d) 18"×9". (e) N.A. (v) N.A. (vi) *Kufri* red. (vii) Irrigated. (viii) 2 earthings. (ix) and (x) N.A.

2. TREATMENTS :**Main-plot treatments :**2 methods of application : M₁=Soil application and M₂=Spray (foliar) application.**Sub-plot treatments :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N₀=0, N₁=50 and N₂=100 lb./ac.(2) 3 levels of P₂O₅ as Super : P₀=0, P₁=50 and P₂=100 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 15'9"×15' (b) 14'3"×12'. (v) 1.5'×9". (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of tubers. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) Jullundur and Babugarh. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 3.11 tons/ac. (ii) (a) 1.18 tons/ac. (b) 0.57 tons/ac. (iii) Main effect of M, N and interactions N×P, M×N and M×P are highly significant. Interaction M×N×P is significant. (iv) Av. yield of tuber in tons/ac.

	N ₀	N ₁	N ₂	Mean	P ₀	P ₁	P ₂
M ₁	2.32	4.44	5.02	3.93	3.63	3.94	4.22
M ₂	2.02	2.88	1.93	2.28	2.60	2.46	1.77
Mean	2.17	3.66	3.48	3.11	3.12	3.20	2.99
P ₀	1.89	4.14	3.32				
P ₁	2.62	3.38	3.60				
P ₂	1.99	3.47	3.52				

S.E. of difference of two

1. M marginal means	= 0.28 tons/ac.
2. N or P marginal means	= 0.16 tons/ac.
3. N or P means at the same level of M	= 0.23 tons/ac.
4. M means at the same level of N or P	= 0.34 tons/ac.
S.E. of body of N×P table	= 0.20 tons/ac.

Crop :- Potato (Rabi).

Ref :- C.P.R.I. 58(109).

Site :- Central Potato Res. Stn., Patna.

Type :- 'M'.

Object :— To study the effect of soil and spray application of N and P on Potato.

1. BASAL CONDITIONS :

(i) (a) Fallow—Potato. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.S., Patna. (iii) N.A. (iv) (a) 3 ploughings and 3 cross ploughings each followed by planking. (b) Ridge and furrow method. (c) 26 mds./ac. (d) 1.5'×9". (e) N.A. (v) Nil. (vi) Up-to-date. (vii) Irrigated. (viii) 4 weedings and 2 earthings. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 methods of application : M₁=Soil application and M₂=Spray application.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N as (A/S+Urea) : N₀=0, N₁=50 and N₂=100 lb./ac.

(2) 3 levels of P₂O₅ as Super : P₀=0, P₁=50 and P₂=100 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/160 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of tubers. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) Jullundur and Babugarh. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 3.52 tons/ac. (ii) (a) 0.68 tons/ac. (b) 0.60 tons/ac. (iii) Main effect of M and interaction $M \times N$ are highly significant. Main effect of N is significant. (iv) Av. yield of tuber in tons/ac.

	N ₀	N ₁	N ₂	Mean	P ₀	P ₁	P ₂
M ₁	3.12	3.26	3.73	3.04	3.07	3.12	2.93
M ₂	3.29	4.20	4.50	4.00	3.93	4.07	3.99
Mean	3.21	3.73	3.61	3.52	3.50	3.59	3.46
P ₀	3.30	3.62	3.58				
P ₁	3.12	3.88	3.78				
P ₂	3.20	3.69	3.48				

S.E. of difference of two

1. M marginal means = 0.16 tons/ac.
 2. N or P marginal means = 0.17 tons/ac.
 3. N or P means at the same level of M = 0.24 tons/ac.
 4. M means at the same level of N or P = 0.26 tons/ac.
- S.E. of body of $N \times P$ table = 0.21 tons/ac.

Crop :- Potato (Rabi).

Ref :- C.P.R.I. 59(99).

Site :- Central Potato Res. Sta., Patna.

Type :- 'M'.

Object :— To study the effect of soil and spray application of N and P on Potato.

1. BASAL CONDITIONS :

(i) (a) Fallow—Potato. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.I., Patna. (iii) 12 and 13.11.1959. (iv) (a) 3 ploughings and 3 cross ploughings each followed by a planking. (b) Ridges and furrows method. (c) 26 mds/ac. (d) $1\frac{1}{2}' \times 9''$. (e) N.A. (v) Nil. (vi) Up-to-date (improved, early). (vii) Irrigated. (viii) 1 weeding and 1 earthing. (ix) 8.49". (x) 18 to 20.2.1960.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1), (2) and (3)

- (1) 2 levels of N as A/S+Urea : N₀=0 and N₁=100 lb./ac.
- (2) 2 levels of P₂O₅ as Super : P₀=0 and P₁=100 lb./ac.
- (2) 2 levels of K₂O as Pot. Sul. : K₀=0 and K₁=100 lb./ac.

Sub-plot treatments :

2 methods of application : M₁=Soil application and M₂=Spray (foliar) application.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) $16\frac{1}{2}' \times 15'$. (b) $13\frac{1}{2}' \times 13\frac{1}{2}'$. (v) $1.5' \times 9''$. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Cutworm, fungicidal sprays against late blight. (iii) Yield of tubers. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) Jullundur and Babugarh. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 3.63 tons/ac. (ii) (a) 0.75 tons/ac. (b) 0.70 tons/ac. (iii) Main effects of N, M and interaction $N \times M$ are highly significant. Interactions $P \times K$ and $N \times P \times K$ are significant. (iv) Av. yield of tubers in tons/ac.

	P ₀	P ₁	K ₀	K ₁	Mean	M ₁	M ₂
N ₀	2.50	2.45	2.50	2.44	2.47	2.45	2.49
N ₁	4.97	4.61	4.49	5.09	4.79	6.86	2.72
Mean	3.73	3.53	3.50	3.76	3.63	4.65	2.61
M ₁	4.77	4.53	4.36	4.95			
M ₂	2.69	2.52	2.64	2.58			
K ₀	3.34	3.65					
K ₁	4.13	3.40					

S.E. of difference of two

1. N, P or K marginal means = 0.19 tons/ac.
 2. M marginal means = 0.18 tons/ac.
 3. M means at the same level of N, P or K = 0.25 tons/ac.
 4. N, P or K means at the same level of M = 0.26 tons/ac.
- S.E. of body of N×P, N×K or P×K table = 0.19 tons/ac.

Crop :- Potato (Rabi).

Ref :- C.P.R.I. 57(102).

Site :- Central Potato Res. Stn., Patna.

Type :- 'M'.

Object :- To study the effect of micro-nutrient elements on growth and yield of Potato.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 4.11.1957. (iv) (a) 4 ploughings. (b) and (c) N.A. (d) 1½'×9". (e) N.A. (v) G.M. with *sannhemp*, 6 mds./ac. of A/S half at the time of planting and the remaining half at the time of earthing up a d 66 mds./ac. of Super at planting. (vi) D.R.R. (vii) Irrigated. (viii) Earthing up on 18.12.1957. (ix) N.A. (x) 24.3.1958.

2. TREATMENTS :

All combinations of (1), (2), (3), (4), (5) and (6)

- (1) 2 levels of B : B₀=0 and B₁=10 lb./ac.
- (2) 2 levels of Mn : Mn₀=0 and Mn₁=10 lb./ac.
- (3) 2 levels of Zn : Zn₀=0 and Zn₁=4 lb./ac.
- (4) 2 levels of Cu : Cu₀=0 and Cu₁=2 lb./ac.
- (5) 2 levels of Mo : Mo₀=0 and Mo₁=4 lb./ac.
- (6) 2 levels of Fe : Fe₀=0 and Fe₁=20 lb./ac.

3. DESIGN :

(i) 2⁸ Fact. (ii) (a) 8 plots/block ; 8 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 12'×14'. (b) 9'×12½'. (v) 1½'×9". (vi) Yes.

4. GENERAL :

(i) Normal. (ii) No. (iii) Yield of tuber. (iv) (a) 1957—1959. (b) No. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 13423 lb./ac. (ii) 2932.0 lb./ac. (iii) None of the effects is significant. (iv) Table of mean and differential responses in lb./ac.

Differential response

Factors	Mean response	Differential response											
		B		Mn		Zn		Cu		Mo		Fe	
		-	+	-	+	-	+	-	+	-	+	-	+
B	-423	-	-	-308	-115	-69	-354	-5	-418	-424	1	-61	-362
Mn	717	262	455	-	-	410	307	117	600	448	269	394	323
Zn	381	333	48	242	139	-	-	238	143	108	273	9	372
Cu	-301	56	-357	-392	91	-102	-199	-	-	103	-404	-43	-258
Mo	-231	-328	97	-26	-205	-33	-198	+138	-369	-	-	6	-237
Fe	-1105	-703	-402	-518	-87	-734	-371	-445	-660	-431	-674	-	-

S.E. of mean response = 733.0 lb./ac

S.E. of differential response = 1036.5 lb./ac.

Crop :- Potato (Rabi).

Ref :- C.P.R.I. 58(111).

Site :- Central Potato Res. Stn., Patna.

Type :- 'M'.

Object :- To study the effect of various micro-nutrient elements as foliar spray on Potato.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.I., Patna. (iii) 4.11.1958. (iv) (a) 4 ploughings. (b) and (c) N.A. (d) $1\frac{1}{2}' \times 9''$. (e) N.A. (v) G.M. with *sannhemp*. A/S applied at 6 mds./ac. half at planting and half at the time of earthing up and Super applied at 6 mds./ac. at the time of planting. (vi) N.A. (vii) Irrigated. (viii) 1 earthing. (ix) and (x) N.A.

2. TREATMENTS :

All combinations of (1), (2), (3), (4), (5) and (6)

- (1) 2 levels of Boron as Boric acid : $B_0=0$ and $B_1=10$ lb./ac.
- (2) 2 levels of Manganese as Manganese Sul. : $M_0=0$ and $M_1=10$ lb./ac.
- (3) 2 levels of Zinc as Zn. Sul. : $Z_0=0$ and $Z_1=4$ lb./ac.
- (4) 2 levels of Cu as C/S : $C_0=0$ and $C_1=2$ lb./ac.
- (5) 2 levels of Molybdenum as Ammonium molybdate : $N_0=0$ and $N_1=4$ lb./ac.
- (6) 2 levels of Iron as Ferrous sulphate : $F_0=0$ and $F_1=20$ lb./ac.

3. DESIGN :

(i) 2⁸ confd. (ii) (a) 8 plots/block ; 8 blocks/replication. (b) N.A. (iii) 1. (iv) (a) $15' \times 15'$. (b) $12' \times 13\frac{1}{4}'$. (v) $1'6'' \times 9''$. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Micro-nutrients sprayed on 19 and 20.12.1958 and 9.2.1959. (iii) Yield of potato. (iv) (a) 1957-1959. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 7.48 tons/ac. (ii) 1.12 tons/ac. (iii) No effect is significant. (iv) Table of mean and differential responses in tons/ac.

Factors	Mean response	Differential response											
		B		M		Z		C		N		F	
		+	-	+	-	+	-	+	-	+	-	+	-
B	-0.43	—	—	-0.47	-0.38	-0.22	-0.64	-0.38	-0.47	-0.47	-0.39	-0.24	-0.61
M	0.005	-0.01	0.05	—	—	-0.01	0.02	-0.24	0.25	0.11	-0.10	-0.13	0.14
Z	-0.18	-0.03	-0.39	-0.20	-0.16	—	—	0.03	-0.39	-0.41	0.05	-0.09	-0.27
C	-0.09	-0.04	-0.13	-0.33	0.16	0.12	-0.29	—	—	-0.14	-0.03	-0.04	-0.13
N	-0.02	-0.06	0.02	0.09	-0.13	-0.25	0.21	-0.08	0.03	—	—	0.34	-0.38
F	-0.54	-0.35	-0.72	-0.68	-0.40	-0.45	-0.63	-0.49	-0.59	-0.18	-0.90	—	—

S.E. of mean response = 0.28 tons/ac.

S.E. of differential response = 0.39 tons/ac.

Crop :- Potato (Rabi).

Ref :- C.P.R.I. 59(101).

Site :- Central Potato Res. Stn., Patna.

Type :- 'M'.

Object :- To study the effect of various micro-nutrient elements as foliar spray on Potato yield.

1. BASAL CONDITIONS :

(i) (a) Fallow-Potato. (b) Fallow. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.I., Patna. (iii) 3.11.1959. (iv) (a) 3 ploughings and cross ploughings each followed by planking. (b) Ridge and furrows method. (c) 18 mds./ac. (d) $1\frac{1}{2}' \times 9''$. (e) N.A. (v) 150 lb./ac. of A/S+75 lb./ac. of phosphoric acid as Super+100 lb./ac. of potash as Pot. Sul. (vi) *Kufri* red. (vii) Irrigated. (viii) 1 weeding and 1 earthing. (ix) 8.49". (x) 5, 6, 8.2.1960.

2. TREATMENTS :

All combinations of (1), (2), (3), (4), (5) and (6)

(1) 2 levels of Boron as Boric acid ; $B_0=0$ and $B_1=0.375\%$ sol. of Boric acid.

(2) 2 levels of Manganese as Manganese Sul. : $M_0=0$ and $M_1=0.375\%$ sol. of Manganese sul.

(3) 2 levels of Zinc as Zn. Sul. : $Z_0=0$ and $Z_1=0.15\%$ sol. of Zn. Sul.

(4) 2 levels of Cu as C/S : $C_0=0$ and $C_1=0.075\%$ sol. of C/S.

(5) 2 levels of Molybdenum as Ammonium molybdate : $N_0=0$ and $N_1=0.15\%$ sol. of Ammonium molybdate.

(6) 2 levels of Iron as Ferrous sulphate : $F_0=0$ and $F_1=0.75\%$ sol. of Ferrous sulphate.

3. DESIGN :

(i) 2⁶ Conf. (ii) (a) 8 plots/block ; 8 blocks/replication. (b) N.A. (iii) 1. (iv) (a) $15' \times 15'$. (b) $12' \times 13\frac{1}{2}'$. (v) $1'6'' \times 9''$. (vi) N.A.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of potato. (iv) (a) 1959—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 5.26 tons/ac. (ii) 0.61 tons/ac. (iii) Main effect of C and interactions $F \times M$ and $F \times C$ are significant. (iv) Table of mean and differential responses in tons/ac.

Differential response

Factors	Mean response	B		M		Z		C		N		F	
		+	-	+	-	+	-	+	-	+	-	+	-
B	-0.22	-	-	-0.16	-0.27	-0.14	-0.28	-0.16	-0.27	-0.15	-0.30	-0.33	-0.10
M	0.16	0.21	0.10	-	-	0.41	-0.10	0.13	0.18	0.14	0.17	-0.19	0.50
Z	-0.01	0.06	-0.08	0.24	-0.26	-	-	-0.02	+0.001	-0.14	0.12	-0.06	0.04
C	0.35	0.40	0.30	0.33	0.38	0.34	0.37	-	-	0.39	0.31	0.77	-0.06
N	0.005	0.10	-0.09	-0.01	0.02	-0.12	0.13	-0.03	0.04	-	-	0.24	-0.23
F	-0.02	-0.14	0.09	-0.37	0.32	-0.08	0.03	0.39	-0.44	0.21	-0.26	-	-

S.E. of mean response = 0.15 tons/ac.
S.E. of differential response = 0.21 tons/ac.

Crop :- Potato (Rabi).

Ref :- C.P.R.I. 58(101).

Site :- Central Potato Res. Stn., Babugarh.

Type :- 'MV'.

Object:—To study the response of important commercial varieties and promising hybrids to Potash fertilizers.

1. BASAL CONDITIONS :

(i) to (v) N.A. (vi) As per treatments. (vii) to (x) N.A.

2. TREATMENTS :

Main-plot treatments :

6 varieties : $V_1=ON.-1360$, $V_2=ON.-2236$, $V_3=Up-to-date$, $V_4=Craig's\ Defiance$, $V_5=Kufri\ red$ and $V_6=Kufri\ Safeda$.

Sub-plot treatments :

4 levels of K_2O as Pot. Sul. : $K_0=0$, $K_1=50$, $K_2=100$ and $K_3=150\ lb./ac.$

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/160 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) (a) Jullundur and Patna. (b) Nil. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 9.66 tons/ac. (ii) (a) 2.81 tons/ac. (b) 0.94 tons/ac. (iii) Main effect of K is highly significant and interaction $V \times K$ is significant. (iv) Av. yield of tuber in tons/ac.

	V_1	V_2	V_3	V_4	V_5	V_6	Mean
K_0	9.74	8.09	11.50	7.93	9.15	7.34	8.96
K_1	11.39	8.82	10.53	9.72	9.85	9.53	9.97
K_2	9.85	8.93	12.41	8.17	9.78	8.55	9.62
K_3	10.85	8.42	11.90	10.34	9.84	9.21	10.09
Mean	10.46	8.56	11.58	9.04	9.66	8.66	9.66

S.E. of difference of two

1. V marginal means	= 0.99 tons/ac.
2. K marginal means	= 0.27 tons/ac.
3. K means at the same level of V	= 0.66 tons/ac.
4. V means at the same level of K	= 1.15 tons/ac.

Crop :- Potato (Rabi).**Ref :- C.P.R.I. 59(90).****Site :- Central Potato Res. Stn., Babugarh.****Type :- 'MV'.**

Object :—To study the response of important commercial varieties and promising hybrids to Potash fertilizers.

1. BASAL CONDITIONS :

(i) to (v) N.A. (vi) As per treatments. (vii) to (x) N.A.

2. TREATMENTS :**Main-plot treatments :**4 varieties : V₁=ON.—1360, V₂=ON.—2236, V₃=Up-to-date and V₄=Kufri-red.**Sub-plot treatments :**4 levels of K₂O : K₀=0, K₁=75, K₂=150 and K₃=225 lb./ac.**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 19½' × 19½'. (b) 16½' × 16½'. (v) 1.5' × 1.5'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) (a) Jullundur and Patna. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 12.00 tons/ac. (ii) (a) 2.32 tons/ac. (b) 1.86 tons/ac. (iii) Only main effect of V is significant. (iv) Av. yield of tuber in tons/ac.

	K ₀	K ₁	K ₂	K ₃	Mean
V ₁	10.83	11.56	12.58	10.20	11.29
V ₂	9.75	12.05	10.59	12.90	11.32
V ₃	9.94	11.20	11.40	12.54	11.27
V ₄	14.16	13.60	14.59	14.18	14.13
Mean	11.77	12.10	12.29	12.45	12.00

S.E. of difference of two

1. V marginal means	= 0.82 tons/ac.
2. K marginal means	= 0.66 tons/ac.
3. K means at the same level of V	= 1.31 tons/ac.
4. V means at the same level of K	= 1.40 tons/ac.

Crop :- Potato.**Ref :- C.P.R.I. 58(45).****Site :- Potato Exptl. and Trial Centre, Jullundur. Type :- 'MV'.**

Object :—To study the response of important commercial varieties and promising hybrids to Potash fertilizers.

1. BASAL CONDITIONS :

(i) (a) and (b) *Sannhemp*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.I., Jullundur. (iii) 16.10.1958. (iv) (a) 1 tractor ploughing, 2 plankings and 1 discing. (b) By hand. (c) 15 to 20 mds./ac. (d) 21"×9". (e) 1. (v) 2 mds./ac. of Pot. Sul. was applied in bands below seed places at the time of planting. (vi) As per treatments. (vii) Irrigated. (viii) 3 crust breakings, 3 weedings and 1 earthing. (ix) 4.96". (x) 7.3.1959.

2. TREATMENTS :

Same as in expt. no. 58(101) on page 175.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 19.5'×19.5'. (b) 16.5'×16.5'. (v) 1.5'×1.5'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Severe attack of early blight and moderate attack of late blight were observed. Spraying was done against aphids and blights with Basudin and Bordeaux mixture. Interval of irrigation was reduced to 3 days when frost was severe. (iii) Yield of tuber. (iv) (a) 1958—1959. (b) No. (c) Nil. (v) (a) Babugarh and Patna. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 6.14 tons/ac. (ii) (a) 1.32 tons/ac. (b) 0.80 tons/ac. (iii) Main effect of V alone is highly significant. (iv) Av. yield of tuber in tons/ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	Mean
K ₀	4.76	5.06	6.05	7.28	6.76	5.51	5.90
K ₁	6.29	5.88	6.07	6.59	6.89	6.43	6.36
K ₂	6.29	5.60	5.85	7.56	7.01	5.01	6.22
K ₃	4.89	5.63	6.24	6.61	7.40	5.56	6.06
Mean	5.56	5.54	6.05	7.01	7.02	5.63	6.14

S.E. of difference of two

1. V marginal means = 0.47 tons/ac.
2. K marginal means = 0.23 tons/ac.
3. K means at the same level of V = 0.57 tons/ac.
4. V means at the same level of K = 0.68 tons/ac.

Crop :- Potato.

Ref :- C.P.R.I. 59(42).

Site :- Potato Exptl. and Trial Centre, Jullundur. Type :- 'MV'.

Object :—To study the response of some of the important commercial varieties and promising hybrids to Potash fertilizers.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sannhemp*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.I., Jullundur. (iii) 18.10.1959. (iv) (a) 1 tractor ploughing, 2 plankings and 1 discing. (b) By hand. (c) 15 to 20 mds./ac. (d) 21"×9". (e) 1. (v) 250 mds./ac. of F.Y.M. (vi) As per treatments. (vii) Irrigated. (viii) 3 crust breakings, 3 weedings and 1 earthing. (ix) 4.17". (x) 28.3.1960.

2. TREATMENTS :

Main-plot treatments :

6 varieties : V₁=ON.—1360, V₂=ON.—2236, V₃=Up-to-date, V₄=Craigs Defiance, V₅=Kufri Red and V₆=Kufri sofeda.

Sub-plot treatments :

4 levels of K₂O as Pot. Sul. : K₀=0, K₁=75, K₂=150 and K₃=225 lb./ac.
Fertilizers applied on 18.10.1959.

3. DESIGN and 4. GENERAL :

Same as in expt. no. 58(45) on page 176.

5. RESULTS :

(i) 6.11 tons/ac. (ii) (a) 1.35 tons/ac. (b) 1.10 tons/ac. (iii) Main effect of V and K are highly significant and interaction V×K is significant. (iv) Av. yield of tuber in tons/ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	Mean
K ₀	4.99	3.11	4.83	5.46	7.32	6.84	5.42
K ₁	6.31	3.66	4.45	6.97	7.27	8.62	6.21
K ₂	6.24	3.65	6.24	6.46	9.09	6.73	6.40
K ₃	5.30	3.93	6.29	5.86	10.01	7.03	6.40
Mean	5.71	3.59	5.45	6.19	8.42	7.30	6.11

S.E. of difference of two

1. V marginal means = 0.48 tons/ac.
2. K marginal means = 0.32 tons/ac.
3. K means at the same level of V = 0.78 tons/ac.
4. V means at the same level of K = 0.83 tons/ac.

Crop :- Potato (Rabi).

Ref :- C.P.R.I. 58(110).

Site :- Central Potato Res. Stn., Patna.

Type :- 'MV'.

Object :- To study the effect of K on different varieties of Potato.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.I., Patna. (iii) N.A. (iv) (a) 2 ploughings and 1 cross ploughing. (b) Ridge and furrow method. (c) N.A. (d) 18"×9". (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 1 earthing. (ix) and (x) N.A.

2. TREATMENTS :

Same as in expt. no. 58(101) on page 175.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 15'×10½'. (b) 13½'×7½'. (v) .75'×1.5'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of tuber. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) Jullundur and Babugarh. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 8.02 tons/ac. (ii) (a) 2.62 tons/ac. (b) 0.68 tons/ac. (iii) Main effects of V, K and interaction V×K are highly significant. (iv) Av. yield of tuber in tons/ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	Mean
K ₀	6.77	7.47	8.62	5.09	9.23	6.65	7.30
K ₁	7.86	7.66	9.94	5.25	9.17	7.26	7.86
K ₂	8.19	7.97	10.52	5.64	9.99	8.15	8.41
K ₃	9.65	9.22	9.88	5.98	9.93	6.52	8.53
Mean	8.12	8.08	9.74	5.49	9.58	7.14	8.02

S.E. of difference of two

1. V marginal means	= 0.93 tons/ac.
2. K marginal means	= 0.20 tons/ac.
3. K means at the same level of V	= 0.48 tons/ac.
4. V means at the same level of K	= 1.02 tons/ac.

Crop :- Potato (Rabi).

Ref :- C.P.R.I. 59(100).

Site :- Central Potato Res. Stn., Patna.

Type :- 'MV'.

Object :— To find out the potash needs for different varieties of Potato.

1. BASAL CONDITIONS :

(i) (a) Fallow—Potato. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.I., Patna. (iii) 6 and 7.11.1959. (iv) (a) 3 ploughings and cross ploughings each followed by planking. (b) Ridges and furrow method. (c) $V_1=22$, $V_2=24$, $V_3=26$, $V_4=20$, $V_5=18$ and $V_6=16$ mds./ac. (d) $2' \times 9'$. (e) N.A. (v) 6 mds./ac. of N as A/S+6 mds./ac. of P_2O_5 as Super applied as band placement in rows below seed just before sowing. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding and 1 earthing. (ix) 8.49". (x) 15 to 17.11.1959.

2. TREATMENTS :

Same as in expt. no. 59(42) on page 177.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) $10\frac{1}{2}' \times 15'$. (b) $7\frac{1}{2}' \times 13\frac{1}{2}'$. (v) $1.5' \times 9'$. (vi) Yes.

4. GENERAL :

(i) Stand of crop was good except. in V_4 in which the seed was extremely heterogeneous and the quantity was poor. Growth satisfactory. (ii) Attack of cut worm. Fungicidal spray against late blight. (iii) Yield of tubers. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) Jullundur and Babugarh. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 4.98 tons/ac. (ii) (a) 1.35 tons/ac. (b) 0.70 tons/ac. (iii) Main effects of V and K are highly significant. (iv) Av. yield of tubers in tons/ac.

	V_1	V_2	V_3	V_4	V_5	V_6	Mean
K_0	4.76	4.38	4.76	2.99	4.69	3.74	4.22
K_1	5.17	6.43	5.82	4.39	4.97	3.86	5.11
K_2	4.75	6.04	6.07	4.22	5.81	4.04	5.16
K_3	5.73	6.42	6.81	3.76	5.80	4.08	5.43
Mean	5.10	5.82	5.86	3.84	5.32	3.93	4.98

S.E. of difference of two

1. V marginal means	= 0.48 tons/ac.
2. K marginal means	= 0.20 tons/ac.
3. K means at the same level of V	= 0.49 tons/ac.
4. V means at the same level of K	= 0.64 tons/ac.

Crop :- Potato (Rabi).

Ref :- C.P.R.I. 57(99).

Site :- Central Potato Res. Stn., Patna.

Type :- 'C'.

Object :— To find out the most effective method of planting Potato.

1. BASAL CONDITIONS :

(i) to (v) N.A. (vi) Up-to-date. (vii) Irrigated. (viii) 1 weeding and 1 earthing. (ix) and (x) N.A.

2. TREATMENTS :

6 methods of planting: M_1 =Planting in flat, M_2 =Babugarh system, M_3 =Jullundur double row system, M_4 =Planting in the centre of the ridge, M_5 =Planting on the north side of the ridge and M_6 =Planting on the south side of the ridge.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) and (b) $22\frac{1}{2} \times 17\frac{1}{4}$ '. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of tuber. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) Jullundur and Patna. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 7.72 tons/ac. (ii) 0.72 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	6.73	8.48	8.14	7.92	7.51	7.52

S.E./mean = 0.29 tons/ac.

Crop :- Potato (Rabi).

Ref :- C.P.R.I. 58(107).

Site :- Central Potato Res. Stn., Babugarh.

Type :- 'C'.

Object :—To find out the most effective method of planting Potato.

1. BASAL CONDITIONS :

(i) to (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) and (x) N.A.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(99) on page 179.

5. RESULTS :

(i) 8.96 tons/ac. (ii) 1.41 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	7.11	9.87	9.47	10.31	8.76	8.24

S.E./mean = 0.58 tons/ac.

Crop :- Potato (Rabi).

Ref :- C.P.R.I. 59(97).

Site :- Central Potato Res. Stn., Babugarh.

Type :- 'C'.

Object :—To find out the most effective method of planting Potato.

1. BASAL CONDITIONS :

(i) to (vi) N.A. (vii) Irrigated. (viii) 1 weeding and 1 earthing. (ix) and (x) N.A.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(99) on page 179.

5. RESULTS :

(i) 11.97 tons/ac. (ii) 1.66 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	M ₁	M ₂	M ₃	M	M ₅	M ₆
Av. yield	11.63	12.48	11.88	12.71	10.98	12.13

S.E./mean = 0.68 tons/ac.

Crop :- Potato.

Ref :- C.P.R.I. 58(50).

Site :- Potato Exptl. and Trial Centre, Jullundur. Type :- 'C'.

Object :—To find out the most effective method of planting Potato.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sannhemp*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.I., Jullundur. (iii) 24.10.1958. (iv) (a) 1 tractor ploughing, 2 plankings and 1 discing. (b) By hand. (c) 15 to 20 mds./ac. (d) 21" × 9". (e) 1. (v) 6 mds./ac. each of C/A/N and Super were applied in bands below seed at planting. (vi) *Kufri*—red. (vii) Irrigated. (viii) 3 crust breaking, 3 weedings and 1 earthing. (ix) 4.88". (x) 6.2.1959.

2. TREATMENTS :

6 methods of planting : M₁=Jullundur double row, M₂=Babugarh method, M₃=Planting in flat, M₄=Dibbling in centre, M₅=Dibbling in north side of ridge and M₆=Dibbling in south side of ridge.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 58.5' × 39'. (iii) 6. (iv) (a) 19½' × 19½'. (b) 16½' × 16½'. (v) 1.5' × 1.5'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of early blight was severe. Attack of late blight was moderate and frost was slight. Spraying of Bordeaux mixture and Basudin were given against blight and aphids. (iii) Tuber yield. (iv) (a) 1958—1959. (b) No. (c) Nil. (v) (a) Babugarh and Patna. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 6.54 tons/ac. (ii) 1.00 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆
Av. yield	8.12	5.44	5.82	6.70	6.82	6.35

S.E./mean = 0.41 tons/ac.

Crop :- Potato.

Ref :- C.P.R.I. 59(47).

Site :- Potato Exptl. and Trial Centre, Jullundur. Type :- 'C'.

Object :—To find out the most effective method of planting Potato.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sannhemp*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.I., Jullundur. (iii) 23.10.1959. (iv) (a) 1 tractor ploughing, 2 plankings and 1 discing. (b) By hand. (c) 15 to 20 mds./ac. (d) 21" × 9". (e) 1. (v) 6 mds./ac. each of C/A/N and Super were given in bands below seed at planting. (vi) *Kufri*—red. (vii) Irrigated. (viii) 3 crust breakings, 3 weedings and 1 earthing. (ix) 4.17". (x) 5.4.1960.

TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(50) above.

5. RESULTS :

(i) 10.32 tons/ac. (ii) 2.41 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆
Av. yield	10.06	11.56	9.44	11.60	9.86	9.39

S.E./mean = 0.98 tons/ac.

Crop :- Potato (Rabi).

Ref :- C.P.R.I. 59(107).

Site :- Central Potato Res. Stn., Patna.

Type :- 'C'.

Object :—To find out the best method of planting Potato.

1. BASAL CONDITIONS :

(i) (a) *Sannhemp*—Potato. (b) *Sannhemp*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.S. Patna. (iii) 24.11.1959. (iv) (a) 3 ploughings and cross ploughings, each ploughing was followed by planking. (b) In ridges and furrows. (c) 26 mds./ac. (d) 18"×9". (e) 1. (v) 8 mds./ac. of A/S+6 mds./ac. of Super and was applied as band placement just before planting in rows below seeds. (vi) *Kufri* red. (vii) Irrigated. (viii) 1 weeding and 1 earthing. (ix) 8.49" (x) 1 and 2.3.1960.

2. TREATMENTS :

6 methods of planting : M₁=Double row Jullundur system (2½' between rows), M₂=Dibbling of tubers on north side of ridge and irrigating it immediately after planting, M₃=Dibbling of tubers on south side of ridge and irrigating it immediately after planting, M₄=Dibbling of tubers in centre side of ridge and irrigating it immediately after planting. M₅=Planting of tubers at optimum soil moisture condition and irrigating it after complete germination (Babugarh system) and M₆=Planting of tubers on flat at optimum soil moisture and ridge after complete germination.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 15'×15'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of cut worm. Fungicidal sprays as precautionary measures against late blight. (iii) Yield of tubers. (iv) (a) and (b) No. (c) Nil. (v) (a) Jullundur and Babugarh. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 6.28 tons/ac. (ii) 0.65 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tubers in tons/ac.

Treatment	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆
Av. yield	5.75	5.96	6.32	5.89	6.92	6.83

S.E./mean = 0.32 tons/ac.

Crop :- Potato (Rabi).

Ref :- C.P.R.I. 58(105)

Site :- Central Potato Res. Stn., Babugarh.

Type :- 'CV'.

Object :—To find out the best method of planting Potato.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) As per treatments. (iv) and (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) and (ix) N.A. (x) As per treatments.

2. TREATMENTS :

Main-plot treatments :

2 varieties : V_1 =Upto-date and V_2 =Kufri-red.

Sub-plot treatments ;

14 dates of sowing/harvest : $D_1=25.9.1958/15.1.1959$, $D_2=10.10.1958/5.2.1959$, $D_3=25.10.1958/20.3.1959$, $D_4=4.11.1958/20.3.1959$, $D_5=14.11.1958/20.3.1959$, $D_6=24.11.1958/20.3.1959$, $D_7=14.11.1958/20.4.1959$, $D_8=24.11.1958/20.4.1959$, $D_9=14.12.1958/20.4.1959$, $D_{10}=14.12.1958/20.4.1959$, $D_{11}=24.12.1958/28.4.1959$, $D_{12}=3.1.1959/28.4.1959$, $D_{13}=13.1.1959/28.4.1959$ and $D_{14}=23.1.1959/28.4.1959$.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots, replication, 14 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/160 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Tuber yield. (iv) (a) 1957—1959. (b) N.A. (c) Nil. (v) and (vi) Nil. (vii) D_1 and D_{14} were dropped from the analysis.

5. RESULTS :

(i) 7.74 tons/ac. (ii) (a) 1.83 tons/ac. (b) 1.21 tons/ac. (iii) Main effect of D and interaction $V \times D$ are highly significant. (iv) Av. yield of tuber in tons/ac.

	D_2	D_3	D_4	D_5	D_6	D_7	D_8	D_9	D_{10}	D_{11}	D_{12}	D_{13}	Mean
V_1	6.92	12.97	12.37	10.13	8.05	5.88	5.28	6.72	6.21	3.92	4.59	4.61	7.30
V_2	9.18	14.36	14.38	12.80	12.24	9.61	6.84	4.27	6.20	3.44	2.67	2.28	8.18
Mean	8.05	13.66	13.38	11.45	10.15	7.74	6.06	5.49	6.20	3.68	3.63	3.45	7.74

S.E. of difference of two

1. V marginal means = 0.37 tons/ac.
2. D marginal means = 0.60 tons/ac.
3. D means at the same level of V = 0.86 tons/ac.
4. V means at the same level of D = 0.09 tons/ac.

Crop :- Potato.**Ref :- C.P.R.I. 59(95).****Site :- Central Potato Res. Stn., Babugarh.****Type :- 'OV'.**

Object :- To study the effect of different dates of sowing on different varieties of Potato.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) As per treatments. (iv) and (v) N.A. (vi) As per treatments. (vii) to (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 varieties : V_1 =Up-to-date and V_2 =Kufri-red.

Sub-plot treatments :

10 dates of sowing : $D_1=15$ th Sept. (C.S.), $D_2=1$ st Oct. (C.S.), $D_3=15$ th Oct. (C.S.), $D_4=30$ th Oct. (C.S.), $D_5=15$ th Nov. (C.S.), $D_6=15$ th Nov. (C.S.), $D_7=30$ th Nov. (C.S.), $D_8=30$ th Nov. (H.S.), $D_9=15$ th Dec. (H.S.) and $D_{10}=30$ th Dec. (H.S.).

C.S.=Cold storage seed and H.S.=Hill seed.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 10 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/160. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of potato. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) Jullundur and Patna. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 6.06 tons/ac. (ii) (a) 1.03 tons/ac. (b) 1.95 tons/ac. (iii) Main effect of D is highly significant and interaction D×V is significant. (iv) Av. yield of potato in tons/ac.

	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈	D ₉	D ₁₀	Mean
V ₁	1.61	3.74	8.06	7.31	10.06	5.70	6.62	6.13	3.12	5.08	5.74
V ₂	3.62	7.38	8.20	11.97	11.01	5.44	6.82	4.11	2.37	2.98	6.39
Mean	2.61	5.56	8.13	9.64	10.53	5.57	6.72	5.12	2.74	4.03	6.06

S.E. of difference of two

1. V marginal means = 0.23 tons/ac.
2. D marginal means = 0.98 tons/ac.
3. D means at the same level of V = 1.38 tons/ac.
4. V means at the same level of D = 1.33 tons/ac.

Crop :- Potato (Rabi).

Ref :- C.P.R.I. 53(106).

Site :- Central Potato Res. Stn., Babugarh.

Type :- 'CV'.

Object :— To study the tuber initiation in different Potato varieties.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 19 to 22.10.1958. (iv) (a) N.A. (b) Ridges and furrow method. (c) N.A. (d) 1½'×9". (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 1 earthing. (ix) N.A. (x) As per treatments.

2. TREATMENTS :

Main-plot treatments :

6 varieties : V₁=ON.—2186, V₂=ON.—2236, V₃=Kufri-red, V₄=Up-to-date, V₅=ON.—2237 and V₆=ON.—1360.

Sub-plot treatments :

8 durations of crop : D₁=50, D₂=60, D₃=70, D₄=80, D₅=90, D₆=100, D₇=110 and D₈=120 days.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/160 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of potato. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) Jullundur and Patna. (b) Nil. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 4.01 tons/ac. (ii) (a) 1.12 tons/ac. (b) 0.51 tons/ac. (iii) Main effect of D and interaction V×D are highly significant. Main effect of V is significant. (iv) Av. yield of tuber in tons/ac.

	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈	Mean
V ₁	0.93	2.88	3.68	4.34	4.76	4.53	4.90	5.26	3.91
V ₂	0.95	2.70	3.45	4.36	4.67	4.79	4.05	4.24	3.65
V ₃	0.69	2.56	3.81	4.70	5.20	5.42	5.02	6.21	4.20
V ₄	0.75	2.45	3.18	4.25	4.33	4.42	4.28	4.95	3.58
V ₅	0.83	2.53	3.88	4.99	5.60	5.62	6.16	6.66	4.53
V ₆	1.01	2.97	4.32	4.82	5.05	5.24	5.21	5.07	4.21
Mean	0.86	2.68	3.72	4.58	4.93	5.00	4.94	5.40	4.01

S.E. of difference of two

1. V marginal means	= 0.28 tons/ac.
2. D marginal means	= 0.15 tons/ac.
3. D means at the same level of V	= 0.36 tons/ac.
4. V means at the same level of D	= 0.44 tons/ac.

Crop :- Potato (Rabi).**Ref :- C.P.R.I. 59(96).****Site :- Central Potato Res. Stn., Babugarh.****Type :- 'CV'.**

Object :— To study the tuber initiation in different Potato varieties.

1. BASAL CONDITIONS :

(i) to (iii) N.A. (iv) (a) N.A. (b) Ridges and furrow method. (c) N.A. (d) 18" × 9". (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings and 1 earthing. (ix) N.A. (x) As per treatments.

2. TREATMENTS :**Main-plot treatments :**5 varieties : V₁=ON.-2236, V₂=ON.-1360, V₃=Up-to-date, V₄=Great scot and V₅=Kufri-red.**Sub-plot treatments :**8 durations of crop : V₁=50, D₂=60, D₃=70, D₄=80, D₅=90, D₆=100, D₇=110 and V₈=120 days.**3. DESIGN :**

(i) R.B.D. (ii) (a) 5 main-plots/replication ; 8 sub-plots/main-plots. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 1/160 ac. (v) N.A. (vi) Yes.

4. GENERAL :

Same as in expt. no. 58(106) on page 184.

5. RESULTS :

(i) 3.05 tons/ac. (ii) (a) 1.53 tons/ac. (b) 0.53 tons/ac. (iii) Main effect of D and interaction V × D are highly significant and main effect of V is significant. (iv) Av. yield of tuber in tons/ac.

	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈	Mean
V ₁	1.01	1.50	2.53	3.82	3.91	4.98	5.07	5.88	3.59
V ₂	1.24	1.82	2.50	3.16	4.17	4.79	3.90	4.40	3.25
V ₃	1.50	1.87	2.58	3.39	3.83	4.02	4.46	4.02	3.21
V ₄	0.96	1.22	1.84	2.08	2.31	3.07	2.87	2.57	2.11
V ₅	0.40	0.95	1.63	2.68	3.76	4.00	5.43	5.74	3.07
Mean	1.02	1.47	2.22	3.02	3.60	4.17	4.35	4.52	3.05

S.E. of difference of two

1. V marginal means	= 0.54 tons/ac.
2. D marginal means	= 0.24 tons/ac.
3. D means at the same level of V	= 0.53 tons/ac.
4. V means at the same level of D	= 0.73 tons/ac.

Crop :- Potato (Rabi).**Ref :- C.P.R.I. 57(98).****Site :- Central Potato Res. Stn., Babugarh.****Type :- 'CV'.**

Object :— To study the effect on the yield of Potato of different sizes of the tuber of different varieties.

1. BASAL CONDITIONS :

(i) to (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

Main-plot treatments :

3 varieties : $V_1=ON$. -1360, $V_2=Kufri$ -red and $V_3=Up$ -to-date.

Sub-plot treatments :

7 sizes of tuber : $S_1=\frac{1}{2}$ ozs., $S_2=1$ ozs., $S_3=1\frac{1}{2}$ ozs., $S_4=2$ ozs., $S_5=\frac{1}{2}$ ozs., $S_6=1$ ozs. and $S_7=1\frac{1}{2}$ ozs. S_1 to S_4 were sown as whole tuber and S_5 to S_7 as cut tuber.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 7 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) $13\frac{1}{2}' \times 17\frac{1}{2}'$.
(b) $10\frac{1}{2}' \times 16\frac{1}{2}'$. (b) $1.5' \times 4\frac{1}{2}'$. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) 1957-1959. (b) No. (c) Nil. (v) (a) Jullundur and Patna
(b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 6.68 tons/ac. (ii) (a) 2.94 tons/ac. (b) 2.25 tons/ac. (iii) Interaction $V \times S$ alone is highly significant.
(iv) Av. yield of tuber in tons/ac.

	S_1	S_2	S_3	S_4	S_5	S_6	S_7	Mean
V_1	5.57	5.95	7.26	9.70	6.00	5.54	8.75	6.97
V_2	9.40	9.07	2.44	2.86	5.97	6.10	2.32	5.45
V_3	7.67	7.89	8.83	10.08	5.57	6.66	6.67	7.62
Mean	7.55	7.64	6.18	7.55	5.85	6.10	5.91	6.68

S.E. of difference of two

1. V marginal means = 0.79 tons/ac.
2. S marginal means = 0.92 tons/ac.
3. S means at the same level of V = 1.59 tons/ac.
4. V means at the same level of S = 1.67 tons/ac.

Crop :- Potato (Rabi).**Ref :- C.P.R.I. 58(104).****Site :- Central Potato Res. Stn., Babugarh.****Type :- 'CV'.**

Object :- To study the effect of whole and cut tubers on the growth and yield of different varieties of Potato.

1. BASAL CONDITIONS :

(i) to (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 1 earthing. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

3 varieties : $V_1=Kufri$ -red, $V_2=ON$.--2236 and $V_3=Up$ -to-date.

Sub plot treatments :

7 sizes of tubers : $S_1=\frac{1}{2}$ ozs., $S_2=1$ ozs., $S_3=1\frac{1}{2}$ ozs., $S_4=2$ ozs., $S_5=\frac{1}{2}$ ozs., $S_6=1$ ozs. and $S_7=1\frac{1}{2}$ ozs. S_1 to S_4 were sown as whole tubers and S_5 to S_7 as cut tubers.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 7 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/160 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of tubers. (iv) (a) 1957-1959. (c) No. (c) Nil. (v) (a) Jullundur and Patna. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 9.92 tons/ac. (ii) (a) 6.08 tons/ac. (b) 2.11 tons/ac. (lii) None of the effects is significant. (iv) Av. yield of tuber in tons/ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	Mean
V ₁	11.56	12.95	11.81	11.31	11.03	11.28	11.40	11.62
V ₂	9.59	8.84	10.08	10.40	6.88	8.89	8.33	9.00
V ₃	7.92	9.73	10.74	9.60	7.20	7.52	11.12	9.12
Mean	9.69	10.51	10.88	10.43	8.37	9.23	10.28	9.92

S.E. of difference of two

1. V marginal means = 1.62 tons/ac.
2. S marginal means = 0.86 tons/ac.
3. S means at the same level of V = 1.49 tons/ac.
4. V means at the same level of S = 2.13 tons/ac.

Crop :- Potato (Rabi).

Ref :- C.P.R.I. 59(94).

Site :- Central Potato Res. Stn., Babugarh.

Type :- 'CV'.

Object :—To study the effect of whole tubers and cut tubers on the growth and yield of different varieties of Potato.

1. BASAL CONDITIONS :

(i) to (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 2 earthings. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

3 varieties : V₁=Kufri-safeda, V₂=Up-to-date and V₃=Kufri-red.

Sub-plot treatments :

7 sizes of tuber : S₁=½ ozs., S₂=1 ozs., S₃=1½ ozs., S₄=2 ozs., S₅=½ ozs., S₆=1 ozs. and S₇=1½ ozs. S₁ to S₄ were sown as whole tubers and S₅ to S₇ as cut tubers.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 7 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/160 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of tuber. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) Jullundur and Patna. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 4.32 tons/ac. (ii) (a) 0.71 tons/ac. (b) 1.50 tons/ac. (iii) Main effects of V and S are highly significant and interaction V×S is significant. (iv) Av. yield of tuber in tons/ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	Mean
V ₁	6.29	5.78	4.25	5.62	3.12	3.07	3.87	4.57
V ₂	3.18	3.03	5.05	3.62	1.87	2.53	2.09	3.05
V ₃	5.87	7.13	6.74	7.14	1.06	3.21	6.18	5.33
Mean	5.11	5.31	5.35	5.46	2.02	2.94	4.05	4.32

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. V marginal means | = 0.19 tons/ac. |
| 2. S marginal means | = 0.61 tons/ac. |
| 3. S means at the same level of V | = 1.06 tons/ac. |
| 4. V means at the same level of S | = 1.00 tons/ac. |

Crop :- Potato (Rabi).**Ref :- C.P.R.I. 59(95).****Site :- Central Potato Res. Stn., Babugarh.****Type :- 'CV'.**

Object :- To find out optimum time of planting of different varieties of Potato during main crop period.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) As per treatments. (iv) and (v) N.A. (vi) As per treatments. (vii) to (x) N.A.

2. TREATMENTS :

Main-plots treatments :

2 varieties : V_1 = Up-to-date and V_2 = Kufri-red.

Sub-plot treatments :

10 dates of planting : D_1 = 15.9.1959, D_2 = 1.10.1959, D_3 = 15.10.1959, D_4 = 30.10.1959, D_5 = 15.11.1959, D_6 = 15.11.1959, D_7 = 30.11.1959, D_8 = 30.11.1959, D_9 = 15.12.1959 and D_{10} = 30.12.1959.For D_1 to D_6 and D_7 cold storage seed was used and for D_8 , D_9 to D_{10} seed used was hill seed.**3. DESIGN :**

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 10 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/160 ac. (v) Nil. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of tubers. (iv) (a) 1957 -1959. (b) No. (c) Nil. (v) (a) Jullundur and Patna. (b) Nil. (vi) and (vii) N.A.

5. RESULTS :(i) 6.07 tons/ac. (ii) (a) 1.03 tons/ac. (b) 1.96 tons/ac. (iii) Main effect of D is highly significant and interaction $V \times D$ is significant. (iv) Av. yield of tuber in tons/ac.

	D_1	D_2	D_3	D_4	D_5	D_6	D_7	D_8	D_9	D_{10}	Mean
V_1	1.61	3.74	8.06	7.31	10.06	5.70	6.62	6.13	3.12	5.08	5.74
V_2	3.62	7.38	8.20	11.97	11.01	5.45	6.83	4.11	2.37	2.98	6.39
Mean	2.62	5.56	8.13	9.64	10.54	5.58	6.72	5.12	2.74	4.03	6.07

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. V marginal means | = 0.23 tons/ac. |
| 2. D marginal means | = 0.98 tons/ac. |
| 3. D means at the same level of V | = 1.39 tons/ac. |
| 4. V means at the same level of D | = 1.33 tons/ac. |

Crop :- Potato.**Ref :- C.P.R.I. 59(39).****Site :- Potato Exptl. and Trial Centre, Jullundur.****Type :- 'CV'.**

Object :- To find out the optimum time of planting of different varieties of Potato during main crop season.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sannhemp*. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) As per treatments. (iv) (a) 1 tractor ploughing, 2 plankings, 2 tillerings and 1 discing. (b) By hand. (c) 15 to 20 mds./ac. (d) 21" × 9". (e) 1. (v) 6 mds./ac. of each C/A/N and Super at the time of planting. (vi) As per treatments. (vii) Irrigated. (viii) 3 crust breakings, 4 weedings and 1 earthing. (ix) 4.10". (x) 1, 15.12.1959, 9.4.1960 and 23.5.1960.

2. TREATMENTS :

Main-plot treatments :

2 varieties : V_1 = Up-to-date and V_2 = *Kufri-red*.

Sub-plot treatments :

11 dates of planting : D_1 = 1.9.1959, D_2 = 15.9.1959, D_3 = 1.10.1959, D_4 = 15.10.1959, D_5 = 30.10.1959, D_6 = 15.11.1959, D_7 = 15.11.1959, D_8 = 30.11.1959, D_9 = 30.11.1959, D_{10} = 15.12.1959 and D_{11} = 30.12.1959.

For D_1 to D_6 and D_8 cold storage seed was used and for D_7 , D_9 to D_{11} seed used was hill seed.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 11 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 19.5' × 19.5'. (b) 16.5' × 16.5. (v) 1.5' × 1.5'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Early blight observed in severe form, late blight observed in moderate form. Moderate frost effect was observed. (iii) Tuber yield. (iv) (a) 1958—1959. (b) No. (c) Nil. (v) (a) Babugarh and Patna. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 3.96 tons/ac. (ii) (a) 1.94 tons/ac. (b) 1.10 tons/ac. (iii) Main effect of D alone is highly significant. (iv) Av. yield of tuber in tons/ac.

	D_1	D_2	D_3	D_4	D_5	D_6	D_7	D_8	D_9	D_{10}	D_{11}	Mean
V_1	0.98	0.12	5.47	9.32	6.74	4.56	1.74	4.33	1.79	1.24	1.74	3.46
V_2	1.35	0.60	10.13	10.92	7.76	4.97	3.30	4.93	2.06	1.63	1.42	4.46
Mean	1.16	0.36	7.80	10.12	7.25	4.76	2.52	4.63	1.92	1.44	1.58	3.96

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. V marginal means | = 0.41 tons/ac. |
| 2. D marginal means | = 0.55 tons/ac. |
| 3. D means at the same level of V | = 0.78 tons/ac. |
| 4. V means at the same level of D | = 0.85 tons/ac. |

Crop :- Potato.

Ref :- C.P.R.I. 58(49).

Site :- Potato Exptl. and Trial Centre, Jullundur. Type :- 'CV'.

Object : To find out the optimum duration of different commercial varieties of Potato.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sannhemp*. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 13 and 14.10.1958. (iv) (a) 1 tractor ploughing and 2 plankings. (b) By hand. (c) 15 to 20 mds./ac. (d) 21" × 9". (e) 1. (v) 250 mds./ac. of F.Y.M. applied 1 month before planting. (vi) As per treatments. (vii) Irrigated. (viii) Mulching every 10 days, 1 earthing up and 1 spraying. (ix) 4.88". (x) Harvesting at 10 days intervals from 3.12.1958 to 14.2.1959.

2. TREATMENTS :**Main-plot treatments :**

8 varieties : V_1 =Up-to-date, V_2 =CD., V_3 =ON-45, V_4 =ON-2236, V_5 =ON-2287, V_6 =PS-309, V_7 =ON-1360 and V_8 =Kufri-red.

Sub-plot treatments :

8 durations of cropping : D_1 =50, D_2 =60, D_3 =70, D_4 =80, D_5 =90, D_6 =100, D_7 =110 and D_8 =120 days.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication ; 8 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 19.5' × 19.5'. (b) 16.5' × 16.5'. (v) 1.5' × 1.5'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of blight and severe effect of frost. Spraying done against blight aphid. (iii) Yield of potato. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) Babugarh and Patna. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 4.81 tons/ac. (ii) (a) 1.47 tons/ac. (b) 1.12 tons/ac. (iii) V and D effects and interaction V × D are highly significant. (iv) Av. yield of tuber in tons/ac.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8	Mean
D_1	1.27	2.40	0.17	1.62	0.41	0.61	1.32	0.42	1.03
D_2	2.67	3.98	1.08	2.69	1.43	1.42	2.61	1.19	2.13
D_3	3.17	4.94	1.98	4.31	2.90	2.36	4.33	3.33	3.42
D_4	5.29	6.43	4.20	5.14	4.48	4.29	6.20	5.21	5.15
D_5	5.09	8.14	5.96	5.18	5.46	5.34	6.95	5.90	6.00
D_6	6.94	8.87	5.67	5.72	6.36	6.02	6.08	8.09	6.72
D_7	7.06	7.09	7.39	6.42	5.73	6.21	7.31	7.95	6.89
D_8	7.37	8.40	8.23	5.75	6.44	7.10	6.75	7.34	7.17
Mean	4.86	6.28	4.34	4.60	4.15	4.17	5.19	4.93	4.81

S.E. of difference of two

1. V marginal means = 0.26 tons/ac.
2. D marginal means = 0.20 tons/ac.
3. D means at the same level of V = 0.79 tons/ac.
4. V means at the same level of D = 0.83 tons/ac.

Crop :- Potato (Rabi).

Ref :- C.P.R.I. 59(38).

Site :- Potato Exptl. and Trial Centre, Jullundur. Type :- 'CV'.

Object :- To find out the optimum duration on different commercial varieties of Potato.

1. BASAL CONDITIONS :

(i) (a) and (b) N.A. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.I., Jullundur. (iii) 22.10.1959. (iv) (a) to (e) N.A. (v) 6 mds./ac. of C/A/N and Super each was applied at planting. (vi) As per treatments. (vii) Irrigated. (viii) 1 crusting and breaking, 1 weeding, 1 earthing up and 4 sprayings. (ix) N.A. (x) 10.12.1959 to 20.2.1960.

2. TREATMENTS :**Main-plot treatment :**

7 varieties : V_1 =ON-1360, V_2 =ON-2287, V_3 =CD., V_4 =Kufri-kuber, V_5 =Kufri-red, V_6 =Up-to-date and V_7 =ON-45.

Sub-plot treatment :

8 durations of cropping : D_1 =50, D_2 =60, D_3 =70, D_4 =80, D_5 =90, D_6 =100, D_7 =110 and D_8 =120 days.

3. DESIGN :

(i) Split-plot. (ii) (a) 7 main-plots/replication ; 8 sub-plots/main-plot. (b) 56/115 ac. (iii) 4. (iv) (a) 19.5' × 19.5'. (b) 16.5' × 1.65'. (v) 1½' × 1½'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Severe attack of early blight and damage due to frost. Control measures -N.A. (iii) Germination count, height/plant, and yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) and (vi) N.A. (vii) Since the yield data for some plots is not available for V₇ variety, it has been excluded from the statistical analysis.

5. RESULTS :

(i) 4.17 tons/ac. (ii) (a) 1.13 tons/ac. (b) 0.82 tons/ac. (iii) All effects are highly significant. (iv) Av. yield of tuber in tons/ac.

	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈	Mean
V ₁	0.92	2.42	3.89	4.97	5.70	6.63	6.97	6.31	4.73
V ₂	0.44	1.76	2.73	3.93	5.24	5.35	6.08	6.58	4.01
V ₃	0.44	1.71	2.65	4.55	4.66	5.97	5.87	6.74	4.07
V ₄	0.84	2.02	2.66	2.13	3.00	4.64	5.40	4.37	3.13
V ₅	0.44	1.80	3.36	5.66	7.11	7.41	8.94	9.50	5.53
V ₆	0.56	1.59	2.73	3.63	4.30	4.61	5.70	5.40	3.56
Mean	0.61	1.88	3.00	4.14	5.00	5.77	6.49	6.48	4.17

S.E. of difference of two

1. V marginal means = 0.28 tons/ac.
2. D marginal means = 0.24 tons/ac.
3. D means at the same level of V = 0.53 tons/ac.
4. V means at the same level of D = 0.61 tons/ac.

Crop :- Potato.

Ref :- C.P.R.I. 58(48).

Site :- Potato Exptl. and Trial Centre, Jullundur. Type :- 'CV'.

Object :- To study the effect of whole and cut tubers on the growth and yield of Potato.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sannhemp*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.I., Jullundur. (iii) 23.10.1958. (iv) (a) 1 tractor ploughing, 2 plankings, 2 tillerings and 1 discing. (b) By hand. (c) 15 to 20 mds./ac. (d) 21" × 9". (e) 1. (v) 6 mds./ac. each of C/A/N and Super applied at the time of planting. (vi) As per treatments. (vii) Irrigated. (viii) Crust breaking and 3 weedings, 1 earthing up. (ix) 4.9". (x) 18.2 1959.

2. TREATMENTS :

Main-plot treatments :

8 varieties : V₁=Up-to-date, V₂=Craigs Defiance and V₃=*Kufri-red*.

Sub-plot treatments :

7 sizes of tuber : S₁=0.5, S₂=1.0, S₃=1.5, S₄=2.0, S₅=0.5, S₆=1.0 and S₇= 1.5 ozs.

S₁ to S₄ were sown as whole tubers and S₅ to S₇ as cut tubers.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 7 sub-plots/main-plot. (b) 58.5' × 136.5'. (iii) 4. (iv) (a) 19.5' × 19.5'. (b) 16.5' × 16.5'. (x) 1.5' × 1.5. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Severe attack of early blight. Spraying of Bordeaux mixture + Basudin were given against blights and aphids. Irrigation interval was reduced against frost. (iii) Rate of germination, growth data, no. of plants at harvest and yield of tuber. (iv) (a) 1958—1959. (b) No. (c) Nil. (v) (a) Babugarh and Patna. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 6.59 tons/ac. (ii) (a) 1.18 tons/ac. (b) 0.96 tons/ac. (iii) Main effects of S, V and interaction S×V are highly significant. (iv) Av. yield of tuber in tons/ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	Mean
V ₁	3.17	5.92	1.16	6.44	1.12	7.17	8.03	4.72
V ₂	5.89	7.35	4.52	8.40	5.13	9.17	9.25	7.10
V ₃	7.36	7.73	5.48	8.94	6.94	10.07	9.13	7.95
Mean	5.47	7.00	3.72	7.93	4.40	8.80	8.80	6.59

S.E. of difference of two

1. V marginal means = 0.32 tons/ac.
2. S marginal means = 0.39 tons/ac.
3. S means at the same level of V = 0.68 tons/ac.
4. V means at the same level of S = 0.70 tons/ac.

Crop :- Potato.

Ref :- C.P.R.I. 59(48).

Site :- Potato Exptl. and Trial Centre, Jullundur. Type :- 'CV'.

Object :—To study the effect of whole and cut tubers on the growth and yield of Potato.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sannhemp*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.I., Jullundur. (iii) 23.10.1959. (iv) (a) 1 tractor ploughing, 2 plankings, 2 tillerings and 1 discing. (b) By hand. (c) 15 to 20 mds./ac. (d) 21"×9". (e) 1. (v) 6 mds./ac. each of C/A/N and Super applied at sowing. (vi) As per treatments. (vii) Irrigated. (viii) 3 crust breakings, 3 weedings and 1 earthing. (ix) 2.24". (x) 7.3.1960.

2. TREATMENTS :

Main-plot treatments :

3 varieties : V₁=Up-to-date, V₂=*Kufri-red* and V₃=*Craigs Defiance*.

Sub-plot treatments :

7 sizes of tuber : S₁=0.5, S₂=1.0, S₃=1.5, S₄=2, S₅=0.5, S₆=1.0 and S₇=1.5 ozs.

S₁ to S₄ were sown as whole tubers and S₅ to S₇ as cut tubers.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 7 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 19.5'×19.5'. (b) 16.5'×16.5'. (v) 1.5'×1.5'. (vi) Yes.

4. GENERAL :

(i) Normal except cut tubers of V₃. (ii) Early blight was severe, late blight and frost moderate. Sprays of Bordeaux mixture and Basudin were give against blights and aphids. Irrigation interval was reduced when frost was severe. (iii) Tuber yield. (iv) 1958—1959. (b) No. (c) Nil. (v) (a) Patna and Babugarh. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 7.34 tons/ac. (ii) (a) 1.30 tons/ac. (b) 1.64 tons/ac. (iii) Main effects of V and S are highly significant. (iv) Av. yield of tuber in tons/ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	Mean
V ₁	5.56	8.05	9.14	10.02	4.89	7.18	5.11	7.14
V ₂	8.76	11.11	10.65	10.54	7.67	7.96	8.57	9.32
V ₃	6.13	7.90	8.82	8.59	1.80	3.04	2.67	5.56
Mean	6.82	9.02	9.54	9.72	4.79	6.06	5.45	7.34

S.E. of difference of two

1. V marginal means	= 0.35 tons/ac.
2. S marginal means	= 0.67 tons/ac.
3. S means at the same level of V	= 1.16 tons/ac.
4. V means at the same level of S	= 1.13 tons/ac.

Crop :- Potato (Rabi).

Ref :- C.P.R.I. 57(103).

Site :- Central Potato Res. Stn., Patna.

Type :- 'CV'.

Object :—To study the tuber initiation in different varieties of Potato.

1. BASAL CONDITIONS :

(i) (a) *Sannhemp*—Potato. (b) *Sannhemp*. (c) Nil. (ii) (a) Loamy. (b) Refer soil analysis, C.P.R.S., Patna. (iii) N.A. (iv) (a) 4 ploughings. (b) and (c) N.A. (d) 18"×9". (e) N.A. (v) G.M.+6 mds./ac. of A/S half at the time of planting and half at the time of earthing up+6 mds./ac. of Super at the time of planting. (vi) N.A. (vii) Irrigated. (viii) 2 weedings and 2 earthings. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

8 varieties : $V_1=ON-2287$, $V_2=CD.$, $V_3=ON-2236$, $V_4=Up-to-date$, $V_5=ON-1360$, $V_6=ON-1337$, $V_7=ON-45$ and $V_8=Kufri-red$.

Sub-plot treatments :

6 durations of crop : $D_1=75$, $D_2=82$, $D_3=89$, $D_4=96$, $D_5=103$ and $D_6=110$ days.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 15'×10½'. (b) 12'×9'. (v) 1.5'×9". (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Fungicide spray as protection measure against late blight. (iii) Yield of tuber. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) Jullundur and Babugarh. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 9.08 tons/ac. (ii) (a) 1.47 tons/ac. (b) 1.40 tons/ac. (iii) All the effects and interactions are highly significant. (iv) Av. yield of tuber in tons/ac.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8	Mean
D_1	7.38	8.07	6.38	9.09	9.66	9.45	7.81	6.61	8.05
D_2	8.02	9.32	7.38	7.56	8.80	11.84	7.80	6.62	8.42
D_3	7.39	9.13	8.92	6.15	11.48	12.21	9.15	8.49	9.11
D_4	11.17	10.38	8.90	7.86	9.28	11.02	8.85	7.11	9.32
D_5	10.49	11.15	9.27	9.28	9.06	11.06	11.06	9.43	10.10
D_6	10.71	11.43	7.76	10.28	10.32	8.22	8.54	8.73	9.50
Mean	9.19	9.91	8.10	8.37	9.77	10.63	8.87	7.83	9.08

S.E. of difference of two

1. V marginal means	= 0.49 tons/ac.
2. D marginal means	= 0.40 tons/ac.
3. D means at the same level of V	= 1.14 tons/ac.
4. V means at the same level of D	= 1.15 tons/ac.

Crop :- Potato (*Rabi*).

Ref :- C.P.R.I. 57(104).

Site :- Central Potato Res. Stn., Patna.

Type :- 'CV'.

Object :—To study the effect of whole and cut tubers on the growth and yield of Potato.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.S. Patna. (iii) 6/8.11.1957. (iv) (a) 3 ploughings followed by plankings. (b) Ridge and furrow method. (c) N.A. (d) 18"×9". (e) N.A. (v) G.M. with *Sannhemp*+6 mds./ac. of A/S half at the time of planting and half at the time of earthing up+6 mds./ac. of Super at the time of planting. (vi) As per treatments. (vii) Irrigated. (viii) 1 earthing. (ix) N.A. (x) 15/16.4.1958.

2. TREATMENTS:

Main-plot treatments :

3 varieties : $V_1=ON-1360$, $V_2=Kufri$ red and $V_3=Up-to-date$.

Sub-plot treatments :

7 seed sizes : $S_1=\frac{1}{2}$, $S_2=1$, $S_3=1\frac{1}{2}$, $S_4=2$, $S_5=\frac{3}{2}$, $S_6=1$ and $S_7=1\frac{1}{2}$ ozs.For S_1 to S_4 seed sown was whole tuber and for S_5 to S_7 cut tuber was used.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 7 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 10 $\frac{1}{2}$ '×14 $\frac{1}{2}$ '. (b) 7 $\frac{1}{2}$ '×12 $\frac{1}{2}$ '. (v) 1.5'×9". (vi) Yes.

4. GENERAL:

(i) Normal. (ii) N.A. (iii) Yield of tuber. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) Jullunder and Babugarh. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 5.28 tons/ac. (ii) (a) 1.80 tons/ac. (b) 0.88 tons/ac. (iii) Only main effect of S is highly significant. (iv) Av. yield of tuber in tons/ac.

	S_1	S_2	S_3	S_4	S_5	S_6	S_7	Mean
V_1	4.78	6.43	6.41	6.04	4.27	5.79	5.40	5.59
V_2	5.77	5.63	5.08	5.76	4.57	5.40	5.18	5.34
V_3	4.38	4.81	5.05	6.73	4.17	4.24	4.93	4.90
Mean	4.98	5.62	5.51	6.18	4.34	5.14	5.17	5.28

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. V marginal means | = 0.56 tons/ac. |
| 2. S marginal means | = 0.41 tons/ac. |
| 3. S means at the same level of V | = 0.72 tons/ac. |
| 4. V means at the same level of S | = 0.87 tons/ac. |

Crop :- Potato (*Rabi*).

Ref :- C.P.R.I. 58(113).

Site :- Central Potato Res. Stn., Patna.

Type :- 'CV'.

Object :—To find out the smallest seed size which will give the maximum yield.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clayay loam. (b) Refer soil analysis, C.P.R.S., Patna. (iii) 8.11.1958. (iv) (a) 3 ploughings. (b) Ridge and furrow method. (c) N.A. (d) 1 $\frac{1}{2}$ '×9". (e) N.A. (v) G.M.+6 mds./ac. of A/S half at the time of earthing and other half of A/S and 6 mds./ac. of Super at the time of planting. (vi) As per treatments. (vii) Irrigated. (viii) 1 earthing. (ix) N.A. (x) 27 and 28.2.1959.

2. TREATMENTS :

Main-plot treatments :

3 varieties : $V_1=ON-2236$, $V_2=Kufri$ red and $V_3=Up-to-date$.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 types of tuber : $T_1=Whole$ and $T_2=Cut$ tuber.

(2) 3 seed sizes : $S_1=\frac{1}{2}$, $S_2=1$ and $S_3=1\frac{1}{2}$ ozs.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) $12' \times 12'$, (b) $9' \times 10\frac{1}{2}'$. (v) $1.5' \times 9''$. (vi) Yes.

4. GENERAL :

Same as in expt. no. 57(104) on page 194.

5. RESULTS :

(i) 6.55 tons/ac. (ii) (a) 2.31 tons/ac. (b) 1.01 tons/ac. (iii) Main effects of T, S and interaction $V \times T$ are highly significant. (iv) Av. yield of tuber in tons/ac.

	T_1	T_2	Mean	S_1	S_2	S_3
V_1	7.33	5.21	6.27	5.68	6.23	6.91
V_2	7.72	6.28	7.00	6.61	7.45	6.93
V_3	5.99	6.79	6.39	5.77	5.67	7.73
Mean	7.01	6.09	6.55	6.02	6.45	7.19
S_1	6.84	5.20				
S_2	6.70	6.19				
S_3	7.50	6.89				

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|------------------------------------|-----------------|
| 1. V marginal means | = 0.77 tons/ac. | 5. V means at the same level of T | = 0.84 tons/ac. |
| 2. T marginal means | = 0.27 tons/ac. | 6. S means at the same level of V | = 0.58 tons/ac. |
| 3. S marginal means | = 0.34 tons/ac. | 7. V means at the same level of S | = 0.90 tons/ac. |
| 4. T means at the same level of V | = 0.48 tons/ac. | S.E. of body of $S \times T$ table | = 0.34 tons/ac. |

Crop :- Potato (Rabi).

Ref :- C.P.R.I. 59(104).

Site :- Central Potato Res. Stn., Patna.

Type :- 'CV'.

Object :- To find out the suitable seed size that will give the maximum yield.

1. BASAL CONDITIONS :

(i) (a) *Sannhemp*-Potato. (b) *Sannhemp*. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, C.P.R.S., Patna. (iii) 4.11.1959. (iv) (a) 3 ploughings and cross ploughings each followed by a planking. (b) Ridge and furrow planting. (d) $2' \times 9''$. (e) N.A. (v) A/S at 6 mds./ac. and Super at 6 mds./ac. The fertilizers were applied at the time of planting. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding and 1 earthing (ix) 3.49". (x) 1.2.1960.

2. TREATMENTS :

Main-plot treatments :

3 varieties : $V_1=ON-2236$, $V_2=Up-to-date$ and $V_3=Kufri$ red.

Sub-plot treatments :

7 sizes of seeds : $S_1=\frac{1}{2}$, $S_2=1$, $S_3=1\frac{1}{2}$, $S_4=2$, $S_5=\frac{1}{2}$, $S_6=1$ and $S_7=1\frac{1}{2}$ oz.

For S_1 to S_4 seed sown was whole and for S_5 to S_7 cut tuber was used.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 7 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 13.5' × 10'. (b) 10.5' × 8.5'. (v) 1'6" × 9". (vi) Yes.

4. GENERAL :

(i) Stand was inferior and growth was satisfactory. (ii) Fungicidal spray against late blight. (iii) Yield of tuber. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) Jullundur and Babugarh. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 5.69 tons/ac. (ii) (a) 1.06 tons/ac. (b) 0.91 tons/ac. (iii) Main effect of S is highly significant. V effect and interaction V × S are significant. (iv) Av. yield of tuber in tons/ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	Mean
V ₁	6.33	6.74	7.74	7.45	4.37	5.57	6.65	6.41
V ₂	5.29	4.98	8.55	7.59	3.07	4.50	4.36	5.48
V ₃	5.03	5.89	5.38	6.84	4.48	4.66	4.15	5.20
Mean	5.55	5.87	7.22	7.29	3.97	4.91	5.05	5.69

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. V marginal means | = 0.33 tons/ac. |
| 2. S marginal means | = 0.43 tons/ac. |
| 3. S means at the same level of V | = 0.74 tons/ac. |
| 4. V means at the same level of S | = 0.76 tons/ac. |

Crop :- Potato (Rabi).

Ref :- C.P.R.I. 58(114).

Site :- Central Potato Res. Stn., Patna.

Type :- 'CV'.

Object :—To find out the time rate of tuberization of commercial varieties of Potato.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.P., Patna. (iii) 1.11.1958. (iv) (a) 4 ploughings. (b) Ridge and furrows method. (c) N.A. (d) 1½' × 9". (e) N.A. (v) G.M.+A/S at 6 mds./ac. half at the time of planting and half at the time of earthing up and Super at 6 mds./ac. at the time of planting. (vi) As per treatments. (vii) Irrigated. (viii) 1 earthing. (ix) N.A. (x) As per treatments.

2. TREATMENTS :

Main-plot treatments :

6 varieties : V₁=Up-to-date, V₂=ON-45, V₃=ON-1360, V₄=ON-2236 (*Kufri kabar*), V₅=*Kufri red* and V₆=*Kufri safeda* (*Phuboa*).

Sub-plot treatments :

8 dates of harvest at an interval of 10 days : D₁=26.12.1958 (56 days after planting), D₂=5.1.1959, D₃=15.1.1959, D₄=25.1.1959, D₅=4.2.1959, D₆=14.2.1959, D₇=24.2.1959 and D₈=6.3.1959.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 8 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 10.5' × 12'. (b) 7.5' × 10.5'. (v) 1½' × 9". (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of tuber. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) Jullundur and Babugarh. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 6.79 tons/ac. (ii) (a) 5.83 tons/ac. (b) 1.18 tons/ac. (iii) Main effects of V and D are highly significant. (iv) Av. yield of tuber in tons/ac.

	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈	Mean
V ₁	6.30	8.45	7.73	9.58	9.40	9.57	9.81	9.35	8.77
V ₂	3.56	5.42	6.22	6.91	8.43	7.68	9.01	6.55	6.72
V ₃	3.71	5.60	6.54	6.09	7.92	6.86	6.61	5.52	6.11
V ₄	4.02	4.52	5.89	6.04	6.93	8.44	6.80	6.25	6.11
V ₅	3.52	5.23	7.81	8.95	8.65	7.48	9.79	8.35	7.47
V ₆	1.83	3.24	5.14	5.84	7.59	7.72	7.07	5.90	5.54
Mean	3.82	5.41	6.55	7.23	8.15	7.96	8.18	6.99	6.79

S.E. of difference of two

1. V marginal means = 1.68 tons/ac.
2. D marginal means = 0.39 tons/ac.
3. D means at the same level of V = 0.96 tons/ac.
4. V means at the same level of D = 1.91 tons/ac.

Crop :- Potato (*Rabi*).

Ref :- C.P.R.I. 59(106).

Site :- Central Potato Res. Stn., Patna.

Type :- 'CV'.

Object :- To find out the time rate of tuberisation of commercial varieties of Potato.

1. BASAL CONDITIONS:

(i) (a) *Sannhemp*-Potato. (b) *Sannhemp*. (c) Nil. (ii) (a) Loamy. (b) Refer soil analysis, C.P.R.I., Patna. (iii) 10 and 11.11.1959. (iv) (a) 3 ploughings and cross ploughings each followed by planking. (b) Ridge and furrow method. (c) 24, 22, 22, 24, 18 and 20 mds./ac. according to V₁ to V₆. (d) and (e) N.A. (v) G.M. with *sannhemp*, A/S and Super each at 6 mds./ac. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and earthing. (ix) 8.49°. (x) As per treatments.

2. TREATMENTS:

Main-plot treatments:

6 varieties: V₁=Up-to-date, V₂=ON-45, V₃=ON-1460, V₄=ON-2236, V₅=*Kufri red* and V₆=C.D.

Sub-plot treatments:

7 days of harvest: D₁=1.1.1960, D₂=10.1.1960, D₃=20.1.1960, D₄=30.1.1960, D₅=9.2.1960, D₆=19.2.1960 and D₇=29.2.1960.

3. DESIGN:

(i) Split-plot. (ii) (a) 6 main-plots/replication; 7 sub-plot/main-plot. (b) N.A. (iii) 3. (iv) (a) 13½' × 10½'. (b) 10½' × 9'. (v) 1½' × 9'. (vi) Yes.

4. GENERAL:

(i) Stand uniform and growth satisfactory. (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1957-1959. (b) No. (c) Nil. (v) (a) Jullundur and Babugarh. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 5.80 tons/ac. (ii) (a) 1.73 tons/ac. (b) 0.86 tons/ac. (iii) Main effects of V and D are highly significant. (iv) Av. yield of potato in tons/ac.

	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	Mean
V ₁	3.10	4.07	5.72	6.29	5.91	6.84	8.88	5.83
V ₂	5.34	6.22	7.68	7.91	8.03	7.55	11.15	7.70
V ₃	3.77	4.60	5.52	6.32	6.34	6.13	8.80	5.93
V ₄	4.84	5.22	5.99	7.11	7.52	7.14	11.84	7.09
V ₅	2.72	4.17	5.01	5.96	6.03	5.99	9.51	5.63
V ₆	—	2.65	2.38	3.22	3.84	2.62	3.92	2.65
Mean	3.29	4.48	5.37	6.13	6.27	6.04	9.01	5.80

S.E. of difference of two

1. V marginal means	= 0.53 tons/ac.
2. D marginal means	= 0.29 tons/ac.
3. D means at the same level of V	= 4.70 tons/ac.
4. V means at the same level of D	= 0.84 tons/ac.

Crop :- Potato (Rabi).

Ref :- C.P.R.I. 59(105).

Site :- Central Potato Res. Stn., Patna.

Type :- 'CV'.

Object :—To secure the information on the rate of bulking of Commercial varieties of Potato.

1. BASAL CONDITIONS :

(i) (a) *Sannhemp*—Potato. (b) *Sannhemp*. (c) N.A. (ii) (a) Loam clayey. (b) Refer soil analysis, C.P.R.S., Patna. (iii) As per treatments. (iv) (a) 3 ploughings+cross ploughings each followed by a planking. (b) Ridge and furrow method. (c) For up-to-date 24 mds./ac. and for *Kufri red* 18 mds./ac. (d) $1\frac{1}{2}'' \times 9''$. (e) N.A. (v) *Sannhemp* (G.M.) and 6 mds./ac. each of A/S and Super applied at the time of planting. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and 3 earthings. (ix) $8.49''$. (x) 14.2.1960.

2. TREATMENTS :

Main-plot treatments :

2 varieties : V_1 =Up-to-date and V_2 =*Kufri-red*.

Sub-plot treatments :

7 dates of planting : D_1 =19.10.1959, D_2 =30.10.1959, D_3 =15.11.1959, D_4 =30.11.1959, D_5 =30.11.1959, D_6 =15.12.1959 and D_7 =30.12.1959.

D_1 to D_4 are cold sive seed and D_5 to D_7 are hill seed.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 7 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) $19\frac{1}{2}' \times 12'$. (b) $16\frac{1}{2}' \times 10\frac{1}{2}'$. (v) $18'' \times 9''$. (vi) Yes.

4. GENERAL :

(i) Stand was not uniform and growth was good in early planting plots. (ii) Fungicidal spray as precautionary measure for late blight disease. (iii) Yield of potato. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) Jullunder and Babugarh. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1.99 tons/ac. (ii) (a) 1.14 tons/ac. (b) 0.77 tons/ac. (iii) Main effect of D is highly significant. (iv) Av. yield of potato in tons/ac.

	D_1	D_2	D_3	D_4	D_5	D_6	D_7	Mean
V_1	4.57	5.25	2.34	1.99	0.55	0.09	0.05	2.12
V_2	4.38	3.73	3.13	0.93	0.23	0.54	0.19	1.87
Mean	4.47	4.49	2.73	1.46	0.39	0.31	0.12	1.99

S.E. of difference of two

1. V marginal means	= 0.35 tons/ac.
2. D marginal means	= 0.44 tons/ac.
3. D means at the same level of V	= 0.63 tons/ac.
4. V means at the same level of D	= 0.68 tons/ac.

Crop :- Potato (*Rabi*).

Ref :- C.P.R.I. 59[92(a)].

Site :- Central Potato Res. Stn., Babugarh.

Type :- 'CM'.

Object :—To find out the suitable spacing between plants and rows at different levels of N for Potato.

1. BASAL CONDITIONS :

(i) to (iii) N.A. (iv) (a) to (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) *Kufri red*. (vii) Irrigated. (viii) 1 earthing. (ix) and (x) N.A.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 spacings between plants : $S_1=6''$, $S_2=9''$ and $S_3=12''$.(2) 3 spacings between Rows : $R_1=1'$, $R_2=1\frac{1}{2}'$ and $R_3=2'$.(3) 3 levels of N : $N_0=0$, $N_1=100$ and $N_2=200$ lb./ac.

3. DESIGN :

(i) 3³ confd. (ii) (a) 3 blocks/replication ; 9 plots/block. (b) N.A. (iii) 1. (iv) (a) and (b) 24' × 12'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of potato. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) Jullundur and Patna. (b) N.A. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 11.34 tons/ac. (ii) 2.38 tons/ac. (iii) Main effects of R, S and N are highly significant. (iv) Av. yield of potato in tons/ac.

	R ₁	R ₂	R ₃	Mean	S ₁	S ₂	S ₃
N ₀	10.74	8.65	6.36	8.59	8.66	8.21	8.89
N ₁	14.40	14.03	11.38	13.27	14.85	12.49	12.47
N ₂	13.19	12.86	10.45	12.17	12.89	12.31	11.30
Mean	12.78	11.85	9.39	11.34	12.13	11.00	10.89
S ₁	12.29	13.43	10.67				
S ₂	13.47	10.54	8.99				
S ₃	12.57	11.57	8.52				

S.E. of any marginal mean = 0.79 tons/ac.

S.E. of body of any table = 1.37 tons/ac.

Crop :- Potato (*Rabi*).

Ref :- C.P.R.I. 59[92(b)].

Site :- Central Potato Res. Stn., Babugarh.

Type :- 'CM'.

Object :—To find out the suitable spacing between plants and rows at different levels of N for Potato.

1. BASAL CONDITIONS :

(i) to (iii) N.A. (iv) (a) to (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) Up-to-date. (vii) Irrigated. (viii) 1 earthing. (ix) and (x) N.A.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 59[92(a)] above.

5. RESULTS :

(i) 10.02 tons/ac. (ii) 2.20 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of potato in tons/ac.

	R ₁	R ₂	R ₃	Mean	S ₁	S ₂	S ₃
N ₀	9.54	9.33	8.25	9.04	9.32	8.75	9.05
N ₁	10.13	11.51	9.25	10.30	11.43	10.67	8.79
N ₂	11.97	9.85	10.37	10.73	11.91	9.99	10.30
Mean	10.55	10.23	9.29	10.02	10.89	9.80	9.38
S ₁	11.13	11.43	10.10				
S ₂	10.35	10.43	8.64				
S ₃	10.15	8.84	9.14				

S.E. of any marginal mean

= 0.73 tons/ac.

S.E. of body of any table

= 1.27 tons/ac.

Crop :- Potato.**Ref :- C.P.R.I. 59(44 a).****Site :- Potato Exptl. and Trial Centre, Jullundur. Type :- 'CM'.**

Object :- To find out the suitable spacing between plants and rows at different levels of N for Potato.

1. BASAL CONDITIONS :

(i) (a) and (b) *Sannhemp*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.I., Jullundur. (iii) 21.10.1959. (iv) (a) 1 tractor ploughing, 2 plankings, 2 tillerings and 1 discing. (b) By hand. (c) 15 to 20 mds./ac. (d) As per treatments. (e) 1. (v) Super at 6 mds./ac. was applied in bands below the seeds at the time of planting. (vi) *Kufri* red and up-to-date. (vii) Irrigated. (viii) Crust breaking and weeding 3 times and earthing up once. (ix) 10.25 cms. (x) 18.3.1960.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N as C/A/N : N₀=0, N₁=100 and N₂=200 lb./ac.(2) 3 spacings between plants : S₁=6", S₂=9" and S₃=12".(3) 3 spacings between rows : R₁=1', R₂=1½' and R₃=2'.

N applied on 21.10.1959.

3. DESIGN :

(i) 3³ confd. (SR²N² is completely confd). (ii) (a) 3 blocks/replication ; 9 plots/block. (b) 72' × 108'. (iii) 2. (iv) (a) and (b) 24' × 12'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of early blight was severe, late blight and frost were moderate spraying of bordeaux mixture and basudin were given and irrigation interval was reduced when frost was severe. (iii) Tuber yield, (iv) (a) 1959—not contd. (b) No. (c) Nil. (v) (a) Babugarh and Patna. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 4.10 tons/ac. (ii) 0.97 tons/ac. (iii) Main effects of R, N and interaction R × N are highly significant. (iv) Av. yield of potato in tons/ac.

	R ₁	R ₂	R ₃	Mean	S ₁	S ₂	S ₃
N ₀	2.42	2.08	1.87	2.12	2.21	2.15	2.02
N ₁	5.83	5.09	4.15	5.02	5.41	5.17	4.49
N ₂	6.66	5.80	3.06	5.17	5.57	5.20	4.75
Mean	4.97	4.32	3.03	4.10	4.40	4.17	3.75
S ₁	5.52	4.50	3.16				
S ₂	5.02	4.39	3.10				
S ₃	4.36	4.08	2.81				

S.E. of any marginal mean = 0.23 tons/ac.
S.E. of body of any table = 0.39 tons/ac.

Crop :- Potato.

Ref :- C.P.R.I. 59(44 b).

Site :- Potato Exptl. and Trial Centre, Jullundur. Type :- 'CM'.

Object :—To find out the suitable spacing between plants and rows at different levels of N for Potato.

1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 59[44(a)] on page 200.

5. RESULTS :

(i) 3.94 tons/ac. (ii) 0.77 tons/ac. (iii) Main effects of N, R and S are highly significant. (iv) Av. yield of potato in tons/ac.

	R ₁	R ₂	R ₃	Mean	S ₁	S ₂	S ₃
N ₀	2.24	2.13	1.73	2.03	1.98	2.36	1.77
N ₁	6.17	5.06	4.08	5.10	5.87	4.77	4.67
N ₂	5.36	5.28	3.45	4.70	4.47	4.59	4.04
Mean	4.59	4.16	3.09	3.94	4.44	3.91	3.49
S ₁	4.70	5.10	3.52				
S ₂	4.85	3.83	3.04				
S ₃	4.23	3.54	2.71				

S.E. of any marginal mean = 0.18 tons/ac.
S.E. of body of any table = 0.31 tons/ac.

Crop :- Potato (Rabi).

Ref :- C.P.R.I. 59[102(a)].

Site :- Central Potato Res. Stn., Patna.

Type :- 'CM'.

Object :—To find out the suitable spacings between plants and rows at different levels of N for Potato.

1. BASAL CONDITIONS :

(i) (a) *Sannhemp*—Potato. (b) *Sannhemp*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.S., Patna. (iii) 3.11.1959. (iv) (a) 3 ploughings and cross ploughings each followed by planking. (b) Ridges and furrows method. (c) 26 and 16 mds./ac. for V₁ and V₂ respectively. (d) As per treatments. (e) N.A. (v) P₂O₅ as Super applied as hand placement (in rows below seed) just before planting. (vi) V₁=Up to date and V₂=*Kufri Red*. (vii) Irrigated. (viii) 1 weeding and earthing. (ix) 8.49". (x) 8.2.1960.

2. TREATMENTS :

Same as in expt. no. 59[44(a)] on page 200.

3. DESIGN :

(i) 3³ confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) and (b) 24' × 10½'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Attack of Cut worm ; fungicidal sprays against late blight. (iii) Yield of potato. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) Jullundur and Babugarh. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 8.75 tons/ac. (ii) 1.94 tons/ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of potato in tons/ac.

	R ₁	R ₂	R ₃	Mean	N ₀	N ₁	N ₂
S ₁	10.07	9.94	8.34	9.45	5.77	11.05	11.52
S ₂	8.95	8.90	7.97	8.61	5.58	9.92	10.33
S ₃	8.78	8.02	7.78	8.19	5.32	9.02	10.24
Mean	9.27	8.95	8.03	8.75	5.56	10.00	10.70
N ₀	5.95	5.39	5.33				
N ₁	10.51	10.26	9.22				
N ₂	11.35	11.20	9.54				

S.E. of any marginal mean
S.E. of body of any table

= 0.65 tons/ac.
= 1.12 tons/ac.

Crop :- Potato.

Ref :- C.P.R.I. 59[102(b)].

Site :- Central Potato Res. Stn., Patna.

Type :- 'CM'.

Object :—To find out a suitable spacing between plants and rows at different levels of N for Potato.

1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 59[102(a)] on page 201.

5. RESULTS :

(i) 7.04 tons/ac. (ii) 0.99 tons/ac. (iii) Main effect of N is highly significant and interaction R×S is significant. (iv) Av. yield of potato in tons/ac.

	R ₁	R ₂	R ₃	Mean	S ₁	S ₂	S ₃
N ₀	4.68	3.66	3.06	3.89	4.32	2.94	4.15
N ₁	6.70	7.06	7.82	7.19	7.19	7.16	7.24
N ₂	9.75	11.08	9.52	10.12	11.31	8.83	10.21
Mean	7.04	7.27	6.80	7.04	7.61	6.31	7.20
S ₁	9.01	6.31	7.49				
S ₂	4.92	7.60	6.41				
S ₃	7.19	7.89	6.51				

S.E. of any marginal mean
S.E. of body of any table

= 0.33 tons/ac.
= 0.57 tons/ac.

Crop :- Potato.

Ref :- C.P.R.I. 58(43).

Site :- Potato Exptl. and Trial Centre, Jullundur. Type :- 'IVM'.

Object :—To study the effect of N, P and K and different interval of irrigations on different varieties of Potato.

1. BASAL CONDITIONS:

(i) (a) N.A. (b) *Sannhemp*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.I., Jullundur. (iii) 12, 13.10.1958. (iv) 1 tractor ploughing, 2 plankings and 1 discing. (b) By hand. (c) 15 to 20 mds./ac. (c) 21" x 9". (e) 1. (v) 250 mds./ac. of F.Y.M. one month before planting. (vi) As per treatments. (vii) Irrigated. (viii) Mulching after every irrigation and earthing up twice. (ix) 0.5". (x) 16 to 26.3.1959.

2. TREATMENTS:

Main-plot treatments :

All combinations of (1) and (2)

- (1) 3 varieties : $V_1=ON-1360$, $V_2=Up-to-date$ and $V_3=Kufri$ red.
 (2) 3 intervals of irrigation : $I_1=7$, $I_2=10$ and $I_3=13$ days.

Sub-plot treatments :

All combinations of (1), (2) and (3)

- (1) 3 levels of N as A/S/N : $N_0=0$, $N_1=100$ and $N_2=200$ lb./ac.
 (2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=75$ and $P_2=150$ lb./ac.
 (3) 3 levels of K_2O as Potash : $K_0=0$, $K_1=100$ and $K_2=200$ lb./ac.

3. DESIGN :

(i) Split-plot confd. (ii) (a) 9 main-plots/replication ; 9 sub-plots/block ; 3 blocks/main-plot. (b) N.A. (iii) 1. (iv) (a) 19.5' x 19.5'. (b) 16.5' x 16.5'. (v) 1.5' x 1.5'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of early blight severe, late blight moderate. Frost attack was severe in some plots and moderate in others. Spraying done to control blight and aphids. (iii) Tuber yield. (iv) (a) 1958—1959. (b) No. (c) Nil. (v) (a) Babugarh and Patna. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 5.75 tons/ac. (ii) (a) 3.07 tons/ac. (b) 1.12 tons/ac. (iii) Main effects of N, P and interaction $N \times P$ are highly significant. (iv) Av. yield of potato in tons/ac.

	V_1	V_2	V_3	I_1	I_2	I_3	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	3.78	3.93	4.65	3.70	4.83	3.83	4.03	4.02	4.31	4.20	4.11	4.04	4.12
N_1	5.83	5.90	6.75	5.68	6.81	5.99	4.92	6.46	7.10	6.09	6.25	6.14	6.16
N_2	6.93	6.42	7.54	6.49	7.46	6.94	5.56	7.38	7.95	6.98	7.10	6.81	6.76
Mean	5.51	5.42	6.31	5.29	6.37	5.59	4.84	5.95	6.45	5.76	5.82	5.66	5.75
K_0	5.62	5.41	6.24	5.37	6.51	5.40	4.99	5.87	6.41				
K_1	5.74	5.21	6.51	5.27	6.36	5.83	4.83	6.04	6.59				
K_2	5.18	5.62	6.19	5.24	6.23	5.53	4.68	5.96	6.36				
P_0	4.41	4.72	5.39	4.14	5.57	4.81							
P_1	5.75	5.65	6.46	5.42	6.74	5.70							
P_2	6.39	5.88	7.10	6.32	6.78	6.25							
I_1	5.44	4.50	5.93										
I_2	5.56	5.64	7.90										
I_3	5.54	6.10	5.12										

S.E. of difference of two

1. I or V marginal means = 0.48 tons/ac.
 2. N, P or K marginal means = 0.17 tons/ac.
 3. N, P or K means at the same level of I or V = 0.30 tons/ac.
 4. I or V means at the same level of N, P or K = 0.54 tons/ac.
 S.E. of body of $I \times V$ table = 0.59 tons/ac.
 S.E. of body of $N \times P$, $N \times K$ or $P \times K$ table = 0.21 tons/ac.

Crop :- Potato.

Ref :- C.P.R.I. 59(40).

Site :- Potato Exptl. and Trial Centre, Jullundur. Type :- 'IVM'.

Object :—To study the effect of N, P, K and different intervals of irrigation on different varieties of Potato.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sannhemp*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.I., Jullundur. (iii) 14.10.1959. (iv) (a) 1 tractor ploughing, 2 plankings, 2 tillerings and discing. (b) By hand. (c) 15 to 20 mds./ac. (d) 21"×9". (e) 1. (v) 250 mds./ac. of F.Y.M. one month before planting. (vi) As per treatments. (vii) Irrigated. (viii) 3 crust breakings and weedings, earthing up once and spraying against late blight twice. (ix) 0.22". (x) 16 and 18.2.1960.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 2 varieties : $V_1=O.N.-1360$, $V_2=Up-to-date$ and $V_3=Kufri-red$.(2) 3 intervals of irrigation : $I_1=6$, $I_2=10$ and $I_3=14$ days.

Sub-plot treatments :

All combinations of (1), (2) and (3)

(1) 3 levels of N as C/A/N : $N_0=0$, $N_1=100$ and $N_2=200$ lb./ac.(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=75$ and $P_2=150$ lb./ac.(3) 3 levels of K_2O as Potash : $K_0=0$, $K_1=100$ and $K_2=200$ lb./ac.

3. DESIGN and 4. GENERAL :

Same as in expt. no. 58(43) on page 202.

5. RESULTS :

(i) 7.25 tons/ac. (ii) (a) 2.73 tons/ac. (b) 1.34 tons/ac. (iii) Main effect of V, N, P, K and interaction $N \times K$, $N \times V$ and $N \times I$ are highly significant. (iv) Av. yield of potato in tons/ac.

	V_1	V_2	V_3	I_1	I_2	I_3	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	4.36	4.96	4.93	4.34	4.96	4.94	4.33	4.68	5.24	4.85	4.83	4.57	4.75
N_1	7.63	7.85	10.13	8.65	9.10	7.87	7.67	8.94	9.02	7.23	9.13	9.26	8.54
N_2	7.39	8.28	9.68	9.41	8.30	7.65	7.85	8.63	8.88	6.52	9.42	9.41	8.45
Mean	6.46	7.03	8.25	7.47	7.45	6.82	6.62	7.42	7.71	6.20	7.79	7.75	7.25
K_0	5.69	5.84	7.08	6.48	6.30	5.83	5.52	6.64	6.45				
K_1	6.58	7.67	9.12	7.92	8.07	7.38	7.17	8.12	8.07				
K_2	7.12	7.58	8.55	8.01	7.99	7.25	7.14	7.49	8.62				
P_0	5.80	6.46	7.58	7.04	6.57	6.23							
P_1	6.67	7.33	8.25	7.61	7.68	6.95							
P_2	6.91	7.31	8.92	7.76	8.11	7.27							
I_1	6.92	7.61	7.88										
I_2	6.58	7.09	8.69										
I_3	5.88	6.39	8.18										

S.E. of difference of two

1. I or V marginal means = 0.43 tons/ac.

2. N, P or K marginal means = 0.21 tons/ac.

3. N, P or K means at the same level of I or V = 0.36 tons/ac.

4. I or V means at the same level of N, P or K = 0.52 tons/ac.

S.E. of body of $I \times V$ table = 0.52 tons/ac.S.E. of body of $N \times P$, $N \times K$ or $P \times K$ table = 0.26 tons/ac.

Crop :- Potato (*Rabi*).

Ref :- C.P.R.I. 57(100).

Site :- Central Potato Res. Stn., Patna.

Type :- 'IMV'.

Object :- To study the effect of manures and irrigation on different varieties of Potato.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.I., Patna. (iii) 1 to 3.11.1957. (iv) (a) 4 ploughings. (b) and (c) N.A. (d) 18" x 9". (e) N.A. (v) *Sannhemp* as G.M. (vi) As per treatments. (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 12 to 14 and 17 to 20.3.1958.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 varieties : $V_1=ON-1360$, $V_2=Up-to-date$ and $V_3=Darjeeling\ red\ round$.(2) 3 intervals of irrigation : $I_1=6$, $I_2=10$ and $I_3=14$ days.

Sub-plot treatments :

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S : $N_0=0$, $N_1=100$ and $N_2=200$ lb./ac.(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=75$ and $P_2=150$ lb./ac.(3) 3 levels of K_2O as Pot. Sul. : $K_0=0$, $K_1=50$ and $K_2=100$ lb./ac.

Manuring done from 1 to 3.11.1957.

3. DESIGN:

(i) Split-plot confd. (ii) (a) 9 main-plots/replication ; 3 blocks/main-plot and 9 sub-plots/block. (b) N.A. (iii) 1. (iv) (a) 15' x 12'. (b) 12' x 10.5'. (v) 1.5' x 9'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Tuber yield. (iv) (a) 1957-1959. (b) N.A. (c) Nil. (v) (a) Babugarh and Jullundur. (b) N.A. (vi) and (vii) N.A.

5. RESULTS :

(i) 6.97 tons/ac. (ii) (a) 3.27 tons/ac. (b) 0.77 tons/ac. (iii) Main effects of N, K, V, I and interactions $V \times N$, $V \times K$, $I \times N$, $I \times P$ and $I \times K$ are highly significant. Interactions $N \times P$ and $N \times K$ are significant. (iv) Av. yield of tuber in tons/ac.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	I_1	I_2	I_3	Mean
V_1	4.88	8.50	9.60	7.72	7.55	7.72	7.39	7.95	7.64	8.84	7.26	6.88	7.66
V_2	4.34	6.74	6.50	5.86	6.03	5.69	5.17	5.84	6.57	6.40	6.25	4.93	5.86
V_3	5.06	8.45	8.65	7.33	7.36	7.46	7.27	7.45	7.42	8.64	7.18	6.33	7.38
Mean	4.76	7.90	8.25	6.97	6.98	6.96	6.61	7.08	7.21	7.96	6.90	6.05	6.97
I_1	5.24	9.18	6.47	8.29	8.26	7.33	7.16	8.29	8.43				
I_2	4.90	7.63	8.17	6.67	6.85	7.18	6.82	6.97	6.91				
I_3	4.14	6.89	7.12	5.94	5.84	6.37	5.87	5.98	6.30				
K_0	4.44	7.68	7.72	6.55	6.59	6.70							
K_1	4.97	7.70	8.58	7.08	7.04	7.12							
K_2	4.87	8.31	8.45	7.27	7.31	7.05							
P_0	4.64	8.07	8.19										
P_1	4.75	7.65	8.54										
P_2	4.88	7.97	8.03										

S.E. of difference of two

- | | |
|---|-----------------|
| 1. V or I marginal means | = 0.51 tons/ac. |
| 2. N, P or K marginal means | = 0.12 tons/ac. |
| 3. N, P or K means at the same level of V or I | = 0.21 tons/ac. |
| 4. V or I means at the same level of N, P or K | = 0.54 tons/ac. |
| S.E. of body of $V \times I$ table | = 0.63 tons/ac. |
| S.E. of body of $N \times P$, $P \times K$ or $N \times K$ table | = 0.15 tons/ac. |

Crop :- Potato (*Rabi*).

Ref :- C.P.R.I. 59(98).

Site :- Central Potato Res. Stn., Patna.

Type :- 'IMV'.

Object :- To study the effect of manures and irrigation on different varieties of Potato.

1. BASAL CONDITIONS :

(i) (a) *Sannhemp*—Potato. (b) *Sannhemp*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.I, Patna. (iii) 16 to 19.11.1959. (iv) (a) 3 ploughings and plankings. (b) Ridge and furrow method. (c) 24 mds./ac. for V_1 and V_2 and 18 mds./ac. for V_3 . (d) $18'' \times 9''$. (e) 1. (v) *Sannhemp* as G.M. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding and 1 earthing. (ix) 8.49". (x) 22 to 24, 26, 29.2.1960 and 2 and 3.3.1960.

2. TREATMENTS :

Same as in expt. no. 58(43) on page 202.

3. DESIGN :

(i) Split-plot confd. (ii) (a) 9 main-plots/replication ; 3 blocks/main-plot and 9 sub-plots/block. (b) N.A. (iii) 1. (iv) (a) $13.5' \times 12'$. (b) $10.5' \times 10.5'$. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Fungicidal spray against late blight. (iii) Tuber yield. (iv) (a) 1957—1959. (b) N.A. (c) Nil. (v) (a) Babugarh and Jullundur. (b) Nil. (vi) and (vii) N.A.

5. RESULTS :

(i) 4.79 tons/ac. (ii) (a) 4.50 tons/ac. (b) 0.92 tons/ac. (iii) Main effect of N is highly significant and interaction $I \times N$ is significant. (iv) Av. yield of tuber in tons/ac.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	I_1	I_2	I_3	Mean
V_1	3.02	5.88	6.44	5.04	5.24	5.06	5.03	5.07	5.24	4.88	5.88	4.58	5.11
V_2	3.05	5.51	6.09	4.99	4.80	4.86	4.52	4.97	5.15	5.34	4.50	4.82	4.89
V_3	2.55	4.86	5.69	4.67	4.21	4.25	4.50	4.27	4.37	4.77	4.47	3.89	4.38
Mean	2.87	5.42	6.07	4.90	4.75	4.72	4.68	4.77	4.92	5.00	4.95	4.43	4.79
I_1	2.69	5.74	6.56	5.12	4.94	4.93	4.76	5.10	5.12				
I_2	3.09	5.56	6.20	4.95	4.87	5.03	4.98	4.80	5.07				
I_3	2.84	4.98	5.47	4.64	4.44	4.21	4.31	4.40	4.57				
K_0	3.03	5.02	6.00	4.96	4.51	4.58							
K_1	2.67	5.67	5.96	4.74	4.99	4.58							
K_2	2.91	5.58	6.27	5.00	4.75	5.00							
P_0	3.11	5.48	6.11										
P_1	2.72	5.43	6.10										
P_2	2.78	5.37	6.02										

S.E. of difference of two

- | | |
|---|-----------------|
| 1. V or I marginal means | = 0.70 tons/ac. |
| 2. N, P or K marginal means | = 0.14 tons/ac. |
| 3. N, P or K means at the same level of V or I | = 0.25 tons/ac. |
| 4. V or I means at the same level of N, P or K. | = 0.73 tons/ac. |
| S.E. of body of $V \times I$ table | = 0.87 tons/ac. |
| S.E. of body of $N \times P$, $P \times K$ or $N \times K$ table | = 0.18 tons/ac. |

Crop :- Potato (Rabi).

Ref :- C.P.R.I. 58(44).

Site :- Central Potato Res. Stn., Patna.

Type :- 'IMV'.

Object :- To find out the requirements of N, P and K fertilizers for Potato.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, C.P.R.I., Patna. (iii) 10, 12, 13, 14 and 18.11.1958. (iv) (a) 4 ploughings. (b) and (c) N.A. (d) $1\frac{1}{2}' \times 9''$. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Earthing up on 11, 13 and 16.12.1958. (ix) N.A. (x) 13 to 23.2.1959.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

- (1) 3 varieties : $V_1=O.N.-2236$, $V_2=Up-to-date$ and $V_3=Kufri-red$.
 (2) 2 irrigation levels : $I_1=7$, $I_2=10$ and $I_3=13$ days.

Sub-plot treatments :

All combinations of (1), (2) and (3)

- (1) 3 levels of N as A/S : $N_0=0$, $N_1=100$ and $N_2=200$ lb./ac.
 (2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=75$ and $P_2=150$ lb./ac.
 (3) 3 levels of K_2O as Pot. Sul. : $K_0=0$, $K_1=50$ and $K_2=100$ lb./ac.

3. DESIGN :

(i) $3^2 \times 3^3$ Split-plot confd. (ii) (a) 9 main-plots/replication ; 27 sub-plots/main-plot. (b) N.A. (iii) 1.
 (iv) (a) $15' \times 12'$. (b) $12' \times 10\frac{1}{2}'$. (v) $1\frac{1}{2}' \times 9''$. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Tuber yield. (iv) (a) 1957—1959. (b) N.A. (c) Nil. (v) (a) Babugarh and Jullundur.
 (b) N.A. (vi) and (vii) N.A.

5. RESULTS :

(i) 5.82 tons/ac. (ii) (a) 2.36 tons/ac. (b) 2.58 tons./ac. (iii) Only main effect of N is highly significant.
 (iv) Av. yield of tuber in tons/ac.

	I_1	I_2	I_3	K_0	K_1	K_2	N_0	N_1	N_2	P_0	P_1	P_2	Mean
V_1	6.16	4.91	6.38	5.65	5.83	5.98	4.70	5.96	6.79	5.44	6.16	5.15	5.82
V_2	5.24	5.94	5.20	5.42	5.57	5.38	4.59	5.66	6.12	5.68	5.13	5.56	5.46
V_3	6.37	6.27	5.91	5.54	6.49	6.52	4.34	6.99	7.22	6.33	6.61	5.61	6.18
Mean	5.92	5.71	5.83	5.54	5.96	5.96	4.54	6.20	6.71	5.82	5.97	5.67	5.82
P_0	6.48	5.63	5.35	5.56	5.88	6.02	4.64	5.77	7.04				
P_1	5.80	6.11	5.99	4.97	6.78	6.15	4.57	6.55	6.78				
P_2	5.49	5.38	6.15	6.08	5.23	5.71	4.42	6.29	6.31				
N_0	3.84	4.84	4.95	4.47	4.71	4.55							
N_1	6.60	5.61	6.39	5.92	5.99	6.70							
N_2	7.31	6.68	6.14	6.22	7.18	4.74							
K_0	5.01	5.81	5.79										
K_1	6.53	5.91	5.45										
K_2	6.23	5.41	6.25										

S.E. of difference of two

1. V or I marginal means = 0.37 tons/ac.
 2. N, P or K marginal means = 0.40 tons/ac.
 3. N, P or K means at the same level of V or I = 0.70 tons/ac.
 4. V or I means at the same level of N, P or K = 0.68 tons/ac.
- S.E. of body of $V \times I$ table = 0.45 tons/ac.
 S.E. of body of $N \times P$, $N \times K$ or $P \times K$ table = 0.50 tons/ac.

Jute Agricultural Research Institute
BARRACKPORE

JUTE AGRICULTURAL RESEARCH INSTITUTE, NILGANJ, BARRACKPORE.

1. Name of experimental station : Jute Agricultural Research Institute.
2. Tehsil or Taluka : Barrackpore.
3. District : 24—Parganas.
4. Address : Director, Jute Agricultural Research Institute, Nilganj, Barrackpore, West Bengal.
5. Year of establishment : Located at Rice Research Station, Chinsurah in 1948. Shifted to Nilganj, Barrackpore in 1952.
6. Latitude 22° 45' N Longitude 88° 26' E Altitude 30'
7. Whether research, multiplication or demonstration farm : Research farm.
8. Whether State, University or private managed : Under the administration of I.C.A.R.
9. Programme of research : Breeding and Genetics, Cytogenetics, Anatomy, Plant Nutrition and Plant Physiology, Agronomy, Agricultural Chemistry and Microbiology, Mycology and Plant Pathology and Entomology of jute, mesta and allied long fibres and improvement of existing agricultural implements under Agricultural Engineering Section.
10. Normal cropping pattern : *Kharif* season—Jute and jute substitutes with paddy as second crop where possible. *Rabi* season—Pulses, mustard, wheat and potato.
11. Type of tract it represents : Alluvial.
12. General description of the topography of the experimental area : More or less plain.
13. Soils :
 - (a) Broad soil types : New alluvial ; sandy loam.
 - (i) Depth : Five to six feet in depth (below six feet mostly sand ; rock not found). Lime concretions found at lower depths.
 - (ii) Colour : Light grey.
 - (iii) Structure : Single grained.
 - (b) Chemical analysis :

Organic carbon (W. B. value)	0.5 to 0.7%
Total nitrogen	0.05 to 0.07%
Available CaO	0.3 to 0.5%
Available P ₂ O ₅	60 to 100 p.p.m.
Available K ₂ O	0.04 to 0.07%
pH	6.7 to 7.2

(c) Mechanical analysis :

Coarse sand	1 to 3%
Fine sand	45 to 50%
Silt	28 to 35%
Clay	12 to 18%

14. Normal average rainfall in mm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
251.7	317.4	246.8	307.7	126.7	7.0	0.1	14.2	17.7	22.8	33.8	90.2	1436.1

(The period on which the figures are based is 1956-1965.)

15. Irrigation facilities available ;
year from which the facilities
were made available :

Irrigation of about 8 acres is being done by portable pumps from the adjoining canal and ponds since 1952. 35 acres are being irrigated by a deep tubewell since 1963. 58 acres are without irrigation facilities.

16. Whether any proper drainage system
exists :

Yes.

**CENTRAL NUCLEUS JUTE SEED MULTIPLICATION FARM,
BUDBUD (PANAGARH)**

1. Name of the experimental station : Central Nucleus Jute Seed Multiplication Farm.
2. Tehsil or Taluka : Galsi.
3. District : Burdwan.
4. Address : Central Nucleus Jute Seed Multiplication Farm,
P.O. Budbud, District Burdwan, W.B.
5. Year of establishment : 1956.
6. Latitude Longitude Altitude
N.A. N.A. N.A.
7. Whether research, multiplication or demonstration farm : Seed multiplication farm.
8. Whether State, University or private managed : Regional office (Jute Development), Govt of India,
Ministry of Food and Agriculture.
9. Programme of research : Besides seed production, some trials on jute are undertaken.
10. Normal cropping pattern : Jute—Paddy ; Jute—Wheat or Gram.
11. Type of tract it represents : Old alluvial (sandy clay).
12. General description of the topography of the experimental area : The land is medium high, level and slightly sloping.
13. Soils :
 - (a) Broad soil types : Laterite from heavy clay to loam clay.
 - (i) Depth : N.A.
 - (ii) Colour : Grey.
 - (iii) Structure : Sticky in nature.
 - (b) Chemical analysis :

Total nitrogen	0.057% to 0.07%
Organic carbon	0.4% to 0.5%
pH	6.1 to 6.3
Exchangeable calcium	7 to 14 m.e.%
Available P ₂ O ₅	2 to 4 ppm
Available aluminium	400 to 600 ppm
Available iron	1500 to 2400 ppm
Available manganese	40 to 80 ppm
 - (c) Mechanical analysis : N.A.
14. Normal average rainfall in cm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
19	33	21	21	9	1	—	2	1	3	6	5	121

(The average rainfall is based on the period June, 1963 to May 1967).

15. Irrigation facilities available ;
year from which the facilities
were made available :

3 pump sets of 5 H.P. for small irrigation purposes
from the tanks since 1961. One tube was bored
in 1962 and irrigation facilities will be available
after the work of laying pipe lines is completed.

16. Whether any proper drainage
system exists :

The existing drainage system has been choked by
the squatters by building hutments over the
drain.

Crop :- Paddy.**Ref :- J.A.R.I. 54(18).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'M'.**

Object :—To study the effect of manures and G.M. on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 31.7.1954. (iv) (a) Ploughing and laddering. (b) Transplanting. (c) and (d) N.A. (e) 2 to 3. (v) and (vi) N.A. (vii) Unirrigated. (viii) 2 weedings and interculture. (ix) 48.89°. (x) 4.12.1954.

2. TREATMENTS :10 manurial treatments : M_0 =Control (no manure), M_1 =Cowpea as G.M., M_2 =*Dhaincha* as G.M., M_3 =Oil cake, M_4 =F.Y.M., M_5 =Compost, M_6 =Sludge, M_7 =20 lb./ac. of N+60 lb./ac. of P_2O_5 +25 lb./ac. of K_2O , M_8 =Cowpea (G.M.)+200 lb./ac. of lime and M_9 =*Dhaincha* as G.M.+200 lb./ac. of lime.**3. DESIGN :**(i) R.B.D. (ii) (a) 10. (b) 98'×64'. (iii) 4. (iv) (a) 30'×17'. (b) 28'×15'. (v) 1'×1'. (vi) Y_e .**4. GENERAL .**

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1954—1958. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2263 lb./ac. (ii) 355.7 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8	M_9
Av. yield	1510	2846	2564	2204	2340	2392	2133	1977	2334	2327

S.E./mean = 177.9 lb./ac.

Crop :- Paddy.**Ref :- J.A.R.I. 55(20).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'M'.**

Object :—To study the effect of manures and G.M. on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 13.8.1955. (iv) (a) Ploughing and laddering. (b) Transplanting. (c) and (d) N.A. (e) 2 to 3. (v) and (vi) N.A. (vii) Unirrigated. (viii) Weeding and interculture. (ix) 49.39°. (x) 8.12.1955.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(18) above.

5. RESULTS :

(i) 1989 lb./ac. (ii) 463.1 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8	M_9
Av. yield	1452	1711	1763	1543	2386	2632	2502	2126	1828	1945

S.E./mean = 231.6 lb./ac.

Crop :- Paddy (Aman).**Ref :- J.A.R.I. 56(17).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'M'.**

Object :— To study the effect of manures and G.M. on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 24.8.1956. (iv) (a) Ploughing and laddering. (b) Transplanting. (c) and (d) N.A. (e) 2 to 3. (v) and (vi) N.A. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 69.29". (x) 18.12.1956.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(18) on page 209.

5. RESULTS :

(i) 2487 lb./ac. (ii) 230.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉
Av. yield	1971	2567	2671	2697	2411	2463	2334	2593	2463	2697

S.E./mean = 115.1 lb./ac.

Crop :- Paddy (Aman).**Ref :- J.A.R.I. 58(9).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'M'.**

Object :— To study the effect of G.M. and manures on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 6.9.1958. (iv) (a) Ploughing and laddering. (b) Transplanted. (c) and (d) N.A. (e) 2 to 3. (v) and (vi) N.A. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 45.26". (x) 1st week of December, 1958.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(18) on page 209.

5. RESULTS :

(i) 2069 lb./ac. (ii) 308.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉
Av. yield	1919	2126	2139	2204	1945	2152	1997	2191	2023	1997

S.E./mean = 154.0 lb./ac.

Crop :- Paddy (Aman).**Ref :- J.A.R.I. 54(16).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'M'.**

Object :— To study the optimum time of sowing and age of G.M. crops for incorporation when sown pure or inter-cropped with jute on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 31.8.1954. (iv) (a) 4 to 5 ploughings and spading. (b) N.A. (c) N.A. (d) 1' between rows. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 2 weedings and 2 thinnings. (ix) 48.89". (x) 10.12.1954.

2. TREATMENTS :

14 manurial treatments : T₁=Cowpea sown alone and incorporated after 55 days, T₂=*Dhaincha* sown alone and incorporated after 55 days, T₃=Cowpea intercropped with jute and incorporated after 56 days, T₄=*Dhaincha* intercropped with jute and incorporated after 56 days, T₅=Cowpea intercropped with jute and incorporated along with jute-tops after 55 days, T₆=*Dhaincha* intercropped with jute and incorporated along with jute-tops after 55 days, T₇=Cowpea sown alone and incorporated after 35 days, T₈=*Dhaincha* sown alone and incorporated after 35 days, T₉=Cowpea intercropped with jute and incorporated after 35 days, T₁₀=*Dhaincha* intercropped with jute and incorporated after 35 days, T₁₁=Cowpea intercropped with jute and incorporated along with jute-tops after 35 days, T₁₂=*Dhaincha*, intercropped with jute and incorporated along with jute-tops after 35 days, T₁₃=Fallow—Paddy and T₁₄=Jute—Paddy.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) 145' × 62'. (iii) 4. (iv) (a) 30' × 19'. (b) 28' × 17'. (v) 1' × 1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1954—1958. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1676 lb./ac. (ii) 284.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Av. yield	2196	2088	1327	1457	1687	1730	1909
Treatment	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂	T ₁₃	T ₁₄
Av. yield	1980	1420	1552	1580	1915	1458	1162

S.E./mean = 142.3 lb./ac.

Crop :- Paddy (*Aman*).

Ref :- J.A.R.I. 55(19).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :- To study the optimum time of sowing and age of G.M. crops for incorporation when sown pure or intercropped with jute on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 14.9.1955. (iv) (a) 3 to 4 ploughings, laddering and spacing. (b) Broadcast. (c) to (e) N.A. (v) and (vi) N.A. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 49.39%. (x) 22.12.1955.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(16) on page 210.

Kali-kali used in place of cowpea.

5. RESULTS :

(i) 1167 lb./ac. (ii) 178.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Av. yield	1193	1171	1125	1216	1273	977	1341
Treatment	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂	T ₁₃	T ₁₄
Av. yield	1296	1205	1091	1182	1046	1205	1023

S.E./mean = 89.1 lb./ac.

Crop :- Paddy (Aman).**Ref :- J.A.R.I. 56(13).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'M'.**

Object:—To study the optimum time of sowing and age of G.M. crops for incorporation when sown pure or intercropped with jute on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 23.8.1956. (iv) (a) 4 ploughings and laddering. (b) Broadcast in rows. (c) N.A. (d) 1' between rows. (e) N.A. (v) and (vi) N.A. (vii) Unirrigated. (viii) 2 weedings and thinning. (ix) 69.29". (x) 20.12.1956.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(16) on page 210.

Kali-kali used in place of cowpea.

5. RESULTS :

(i) 2888 lb./ac. (ii) 202.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Av. yield	3091	3000	2887	2750	3023	2909	3137
Treatment	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂	T ₁₃	T ₁₄
Av. yield	3114	2637	2932	2978	2819	2500	2659

S.E./mean = 101.4 lb./ac.

Crop :- Paddy (Aman).**Ref :- J.A.R.I. 54(15).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'M'.**

Object:—To study the comparative efficiency of G.M. alone or in conjunction with fertilizers, when sown pure or incorporated with jute on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 15.8.1954. (iv) (a) 3 to 4 ploughings and laddering. (b) Transplanting. (c) 8 srs./ac. (d) N.A. (e) 2 to 3. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 2 weedings and thinning. (ix) 48.89". (x) 4.12.1954.

2. TREATMENTS :

10 manurial treatments: M₀=Control (no manure), M₁=Fertilizers applied to *dhaincha* used as G.M., M₂=*Dhaincha* used as G.M.+fertilizers, M₃=*Dhaincha* alone, M₄=Fertilizers applied to cowpea used as G.M., M₅=Cowpea used as G.M.+fertilizers, M₆=Cowpea alone, M₇=Fallow fertilizers applied to paddy crop, M₈=Non-fibre portion of jute incorporated and M₉=Fibre portion of jute incorporated with fertilizers.

Fertilizers = 20 lb./ac. of N+60 lb./ac. of P₂O₅+25 lb./ac. of K₂O.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 40'×18'. (b) 37'×15'. (v) 1.5'×1.5'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1954—1958. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2642 lb./ac. (ii) 136.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉
Av. yield	2215	2648	2776	2713	2590	2705	2561	2879	2500	2838

S.E./mean = 68.1 lb./ac.

Crop :- Paddy (Aman).**Ref :- J.A.R.I. 55(18).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'M'.**

Object :- To study the comparative efficiency of G.M. alone and in conjunction with fertilizers, when sown pure or incorporated with jute, on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 25.8.1955. (iv) (a) Ploughing and laddering. (b) Transplanting. (c) and (d) N.A. (e) 2. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 2 weedings and 2 thinnings. (ix) 49.39". (x) 16.12.1955.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(15) on page 212.

5. RESULTS :

(i) 1825 lb./ac. (ii) 245.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉
Av. yield	1471	1913	2086	1711	2211	1933	1663	2221	1490	1548

S.E./mean = 122.7 lb./ac.

Crop :- Paddy (Aman).**Ref :- J.A.R.I. 56(18).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'M'.**

Object :- To study the comparative efficiency of G.M. alone and in conjunction with fertilizers, when sown pure or incorporated with jute, on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) Middle of August, 1956. (iv) (a) 3 to 4 ploughings and laddering. (b) Transplanting. (c) 8 to 9 srs./ac. (d) N.A. (e) 2. (v) and (vi) N.A. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 69.29". (x) Middle of December, 1956.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(15) on page 212.

5. RESULTS :

(i) 2555 lb./ac. (ii) 411.5 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉
Av. yield	2404	2385	1990	2750	3067	2558	2288	2846	2721	2538

S.E./mean = 205.8 lb./ac.

Crop :- Wheat (Rabi).**Ref :- J.A.R.I. 54(17).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'M'.**

Object :- To study the optimum time of sowing and age of G.M. crop for incorporation, when or intercropped with jute, on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 31.10.1955. (iv) 2 ploughings and 2 ladderings. (b) Broadcast. (c) to (e) N.A. (v) and (vi) N.A. (vii) U. (viii) 2 weedings and 2 thinnings. (ix) 48.89". (x) Middle of March, 1955.

2. TREATMENTS :

14 manurial treatments: T₁=Kali-kali sown alone and incorporated after 55 days, T₂=Sannhemp sown alone and incorporated after 55 days, T₃=Kali-kali intercropped with jute and incorporated after 55 days, T₄=Sannhemp intercropped with jute and incorporated after 55 days, T₅=Kali-kali intercropped with jute and incorporated along with jute tops after 55 days, T₆=Sannhemp intercropped with jute and incorporated along with jute tops after 55 days, T₇=Kali-kali sown alone and incorporated after 55 days, T₈=Sannhemp sown alone and incorporated after 55 days, T₉=Kali-kali intercropped with jute and incorporated after 35 days, T₁₀=Sannhemp intercropped with jute and incorporated after 35 days, T₁₁=Kali-kali intercropped with jute and incorporated along with jute tops and leaves after 35 days, T₁₂=Sannhemp intercropped with jute and incorporated along with jute tops and leaves after 35 days, T₁₃=Fallow—Wheat and T₁₄=Jute—Wheat.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) 117'×92'. (iii) 4. (iv) (a) 45'×15'. (b) 43'×13'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1954 -contd. (expt. failed in 1955). (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 1586 lb./ac. (ii) 303.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Av. yield	2084	1721	1675	1456	1680	1592	1592
Treatment	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂	T ₁₃	T ₁₄
Av. yield	1529	1760	1453	1739	1488	886	1544

S.E./mean = 150.4 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- J.A.R.I. 56(16).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :- To study the optimum time of sowing and age of G.M. crop for incorporation, when sown pure or incorporated with jute, on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 10.11.1956. (iv) (a) 4 to 5 ploughings and spading. (b) Broadcast. (c) to (e) N.A. (v) and (vi) N.A. (vii) Unirrigated. (viii) 2 weedings and thinning. (ix) 69.29%. (x) 20.3.1957.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(17) on page 213.

5. RESULTS :

(i) 139 lb./ac. (ii) 41.4 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Yield	96	151	118	171	155	165	116
Treatment	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂	T ₁₃	T ₁₄
Yield	118	168	155	176	170	73	120

S.E./mean = 20.7 lb./ac.

Crop :- Wheat (Rabi).

Ref :- J.A.R.I. 57(13).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :- To study the optimum time of sowing and age of G.M. crop for incorporation, when sown pure or incorporated with jute, on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 2nd week of October, 1957. (iv) (a) 4 ploughings and spading. (b) Broadcast. (c) to (e) N.A. (v) and (vi) N.A. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 48.33". (x) 29.3.1958.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(17) on page 213.

5. RESULTS :

(i) 729 lb./ac. (ii) 170.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Av. yield	604	662	838	877	740	818	584
Treatment	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂	T ₁₃	T ₁₄
Av. yield	506	993	779	818	779	487	721

S.E./mean = 85.3 lb./ac.

Crop :- Rozelle (Kharif).

Ref :- J.A.R.I. 54(1).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :- To study the effect of manures on the yield of Rozelle fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rozelle. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 2.6.1954. (iv) (a) 4 to 6 ploughings and ladderings. (b) Broadcast. (c) 20 lb./ac. (d) 4" between plants. (e) 1. (v) Nil. (vi) H. Sabdariffa (medium). (vii) Unirrigated. (viii) 2 weedings and 1 thinning. (ix) 43.68". (x) 10.12.1954.

2. TREATMENTS :

All combinations of (1), (2) and (3) + 2 extra treatments
 (1) 3 levels of N as A/S : N₀=0, N₁=20 and N₂=40 lb./ac.
 (2) 2 levels of P₂O₅ as Super : P₀=0 and P₁=20 lb./ac.
 (3) 2 levels of K₂O as Mur. Pot. : K₀=0 and K₁=20 lb./ac.
 Extra treatments : C₁=20 and C₂=40 lb./ac. of N as compost.
 N applied in two equal doses, one and 1½ months after sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) 55' × 137'. (iii) 4. (iv) (a) 17' × 26'. (b) 15' × 24'. (v) 1' × 1'. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Weight of green and dry fibre, stand count, base diameter and plant height. (iv) (a) 1954—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1997 lb./ac. (ii) 154.5 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of dry fibre in lb./ac.

$C_1 = 1932 \text{ lb./ac. and } C_2 = 2032 \text{ lb./ac.}$

	N_0	N_1	N_2	Mean	K_0	K_1
P_0	1978	1992	2103	2024	2030	2018
P_1	1909	1946	2070	1975	1961	1989
Mean	1944	1969	2087	2000	1996	2004
K_0	1953	1986	2049			
K_1	1935	1952	2125			

S.E. of N marginal mean	= 38.6 lb./ac.
S.E. of P or K marginal mean	= 31.5 lb./ac.
S.E. of body of $N \times P$ or $N \times K$ table	= 54.6 lb./ac.
S.E. of body of $P \times K$ table	= 44.6 lb./ac.
S.E. of C mean	= 77.3 lb./ac.

Crop :- Rozelle (Kharif).

Ref :- J.A.R.I. 56(1).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :—To find out the effect of different manures on the yield of Rozelle fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rozelle. (c) 3 tons/ac. of compost. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 29.5.1956. (iv) (a) 4 to 6 ploughings and laddering. (b) Broadcast. (c) 15 lb./ac. (d) 4" between plants. (e) 1. (v) Nil. (vi) R.T.—2 (medium). (vii) Unirrigated. (viii) 2 weedings and 1 thinning. (ix) N.A. (x) 5.12.1956.

2. TREATMENTS :

All combinations of (1), (2) and (3)+3 extra treatments

(1) 3 levels of N as A/S : $N_0=0$, $N_1=40$ and $N_2=80$ lb./ac.

(2) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=40$ lb./ac.

(3) 2 levels of K_2O as Pot. Chloride : $K_0=0$ and $K_1=25$ lb./ac.

Extra treatments : $T_1=40$ lb./ac. of N as compost, $T_2=80$ lb./ac. of N as compost and $T_3=120$ lb./ac. of N as A/S.

3. DESIGN :

(i) R.B.D. (ii) (a) 15. (b) $69' \times 122'$. (iii) 4. (iv) (a) $21' \times 22'$. (b) $19' \times 20'$. (v) $1' \times 1'$. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Weight of green and dry fibre, stand count, base diameter and plant height. (iv) (a) 1956—contd. (expt. not conducted in 1957). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1485 lb./ac. (ii) 210.6 lb./ac. (iii) Main effect of N and effect of T are highly significant. (iv) Av. yield of dry fibre in lb./ac.

 $T_1 = 1304 \text{ lb./ac., } T_2 = 1504 \text{ lb./ac. and } T_3 = 1948 \text{ lb./ac.}$

	N_0	N_1	N_2	Mean	K_0	K_1
P_0	1208	1538	1544	1430	1487	1373
P_1	1232	1500	1737	1490	1543	1437
Mean	1220	1519	1641	1460	1515	1405
K_0	1313	1577	1655			
K_1	1127	1461	1627			

S.E. of N marginal mean	= 52.7 lb./ac.
S.E. of P or K marginal mean	= 43.0 lb./ac.
S.E. of body of N×P or N×K table	= 74.5 lb./ac.
S.E. of body of P×K table	= 60.8 lb./ac.
S.E. of T mean	= 105.3 lb./ac.

Crop :- Rozelle (Kharif).

Ref :- J.A.R.I. 58(1).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :- To find out the effect of different manures on the yield of Rozelle fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rozelle. (c) 8 tons/ac. of compost. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 3.6.1958. (iv) (a) 4 to 6 ploughings and ladderings. (b) Broadcast. (c) 15 lb./ac. (d) 4" between plants. (e) 1. (v) Nil. (vi) R.T.—2 (medium). (vii) Unirrigated. (viii) 2 weedings and 1 thinning. (ix) 35.71". (x) 29.11.1958.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(1) on page 216.

5. RESULTS :

(i) 1659 lb./ac. (ii) 196.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of dry fibre in lb./ac.

$$T_1 = 1777 \text{ lb./ac.}, T_2 = 1698 \text{ lb./ac. and } T_3 = 1509 \text{ lb./ac.}$$

	N ₀	N ₁	N ₂	Mean	K ₀	K ₁
P ₀	1541	1675	1730	1649	1659	1639
P ₁	1695	1696	1615	1669	1672	1666
Mean	1618	1686	1673	1659	1666	1652
K ₀	1653	1649	1696			
K ₁	1583	1723	1650			

S.E. of N marginal mean	= 49.2 lb./ac.
S.E. of P or K marginal mean	= 40.1 lb./ac.
S.E. of body of N×P or N×K table	= 69.5 lb./ac.
S.E. of body of P×K table	= 56.8 lb./ac.
S.E. of T mean	= 98.3 lb./ac.

Crop :- Rozelle (Kharif).

Ref :- J.A.R.I. 59(1).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :- To find out the effect of different manures on the yield of Rozelle fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rozelle. (c) 3 tons/ac. of compost. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 15.6.1959. (iv) (a) 4 to 6 ploughings and ladderings. (b) Broadcast. (c) 15 lb./ac. (d) 4" between plants. (e) 1. (v) Nil. (vi) R.T.—2 (medium). (vii) Unirrigated. (viii) 2 weedings and 1 thinning. (ix) 84.72". (x) 3.12.1959.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(1) on page 216.

5. RESULTS :

(i) 958 lb./ac. (ii) 169.6 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of dry fibre in lb./ac.

$$T_1 = 907 \text{ lb./ac.}, T_2 = 962 \text{ lb./ac. and } T_3 = 1049 \text{ lb./ac.}$$

	N ₀	N ₁	N ₂	Mean	K ₀	K ₁
P ₀	818	954	1059	944	941	947
P ₁	791	1004	1102	966	1001	931
Mean	805	979	1081	955	971	939
K ₀	790	950	1174			
K ₁	820	1008	988			

S.E. of N marginal mean	= 42.4 lb./ac.
S.E. of P or K marginal mean	= 34.6 lb./ac.
S.E. of body of N×P or N×K table	= 60.0 lb./ac.
S.E. of body of P×K table	= 49.0 lb./ac.
S.E. of T mean*	= 84.8 lb./ac.

Crop :- Rozelle (*Kharif*).

Ref :- J.A.R.I. 54(2).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :- To study the effect of different dates of sowing on the yield of Rozelle fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rozelle. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) As per treatments. (iv) (a) 4 to 6 ploughings and ladderings. (b) Broadcast. (c) 20 lb./ac. (d) 4" between plants. (e) 1. (v) 3 tons/ac. of compost. (vi) H. Sabdariffa. (vii) Irrigated. (viii) 2 weedings and 1 thinning. (ix) 43.68". (x) 3.12.1954.

2. TREATMENTS :

14 dates of sowing : D₁=7.2.1954, D₂=3.3.1954, D₃=17.3.1954, D₄=31.3.1954, D₅=14.4.1954, D₆=28.4.1954, D₇=12.5.1954, D₈=26.5.1954, D₉=9.6.1954, D₁₀=23.6.1954, D₁₁=7.7.1954, D₁₂=21.7.1954, D₁₃=4.8.1954 and D₁₄=18.8.1954.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) 75'×30'. (iii) 4. (iv) (a) 14'×9'. (b) 12'×7'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Phom attack. Perenox spray was given. (iii) Weight of green and dry fibre, stand count, plant height and base diameter. (iv) 1951-1957. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Last 4 dates were rejected from the analysis as they gave extremely poor yield.

5. RESULTS :

(i) 1786 lb./ac. (ii) 375.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈	D ₉	D ₁₀
Av. yield	1914	2665	2408	2340	2331	2042	1608	1244	793	515

$$\text{S.E./mean} = 187.7 \text{ lb./ac.}$$

Crop :- Rozelle (Kharif).**Ref :- J.A.R.I. 55(3).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'C'.**

Object :— To see the effect of different dates of sowing on the yield of Rozelle.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rozelle. (c) 3 tons/ac. of compost. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) As per treatments. (iv) (a) 4 to 6 ploughings and ladderings. (b) Broadcast. (c) 25 lb./ac. (d) 4" between rows. (e) 1. (v) 3 tons/ac. of T.C. (vi) M.T.—129 (medium). (vii) Unirrigated. (viii) 2 weedings and 1 thinning. (ix) 61.75". (x) 6.10.1955.

2. TREATMENTS :

8 dates of sowing : $D_1=1.4.1955$, $D_2=15.4.1955$, $D_3=29.4.1955$, $D_4=13.5.1955$, $D_5=27.5.1955$, $D_6=10.6.1955$, $D_7=24.6.1955$ and $D_8=8.7.1955$.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) $54' \times 32'$. (iii) 4. (iv) (a) $15' \times 12'$. (b) $13' \times 10'$. (v) $1' \times 1'$. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Slight attack of virus. (iii) Weight of green and dry fibre, plant height, base diameter and stand count. (iv) (a) 1951—1957. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 607 lb./ac. (ii) 178.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5	D_6	D_7	D_8
Av. yield	514	536	1060	906	953	559	156	172

S.E./mean = 89.4 lb./ac.

Crop :- Rozelle (Kharif).**Ref :- J.A.R.I. 56(3).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'C'.**

Object :— To study the effect of different dates of sowing on the yield of Rozelle fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rozelle. (c) 3 tons/ac. of compost. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) As per treatments. (iv) (a) 4 to 6 ploughings and ladderings. (b) Broadcast. (c) 25 lb/ac. (d) 4" between plants. (e) 1. (v) 3 tons/ac. of compost. (vi) M.T.—129 (medium). (vii) Unirrigated. (viii) 2 weedings and 1 thinning. (ix) and (x) N.A.

2. TREATMENTS :

8 dates of sowing : $D_1=2.4.1956$, $D_2=16.4.1956$, $D_3=30.4.1956$, $D_4=14.5.1956$, $D_5=28.5.1956$, $D_6=11.6.1956$, $D_7=25.6.1956$ and $D_8=9.7.1956$.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) $54' \times 32'$. (iii) 4. (iv) (a) $15' \times 12'$. (b) $13' \times 10'$. (v) $1' \times 1'$. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Attack of spiral borer, black pulmkin beetle. DDT sprayed. (iii) Weight of green and dry fibre, base diameter, stand count and plant height. (iv) (a) 1951—1957. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 611 lb./ac. (ii) 80.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5	D_6	D_7	D_8
Av. yield	837	1164	1249	814	292	217	216	98

S.E./mean = 40.4 lb./ac.

Crop :- Rozelle (Kharif).**Ref :- J.A.R.I. 57(4).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'C'.**

Object :— To study the effect of different dates of sowing on the yield of Rozelle fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rozelle. (c) 3 tons/ac. of compost. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) As per treatments. (iv) (a) 4 to 6 ploughings and ladderings. (b) Broadcast. (c) 25 lb./ac. (d) 4" between plants. (e) 1. (v) 3 tons/ac. of compost. (vi) M.T.—129 (medium). (vii) Unirrigated. (viii) 2 weedings, 1 thinning and mulching. (ix) N.A. (x) 16.9.1957 for D₁ and D₂, 12.10.1957 for D₃ and D₄ and 18.10.1957 for D₅ to D₈.

2. TREATMENTS :

8 dates of sowing : D₁=2.4.1957, D₂=16.4.1957, D₃=30.4.1957, D₄=14.5.1957, D₅=28.5.1957, D₆=11.6.1957, D₇=25.6.1957 and D₈=9.7.1957

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) 54'×32'. (iii) 4. (iv) (a) 16'×13'. (b) 14'×11'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Insect attack in D₁ and D₂ plots. DDT spray was given. (iii) Green and dry fibre weight, plant height, base diameter and stand count. (iv) (a) 1951—1957. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 724 lb./ac. (ii) 265.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈
Av. yield	928	974	1061	828	822	647	339	193

S.E./mean = 132.9 lb./ac.

Crop :- Rozelle (Kharif).**Ref :- J.A.R.I. 55(4).****Site -- Jute Agri. Res. Instt., Nilganj.****Type :- 'C'.**

Object :— To study the effect of different dates of sowing on the yield of Rozelle fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rozelle. (c) 3 tons/ac. of T.C. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) As per treatments. (iv) (a) 4 to 6 ploughings and ladderings. (b) Broadcast. (c) 20 lb./ac. (d) 9" between plant. (e) 1. (v) 3 tons/ac. of T.C. (vi) R.T.—1 (medium). (vii) Unirrigated. (viii) 2 weedings, 1 thinning and 4 mulching. (ix) 61.75". (x) 7.12.1955.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(3) on page 219.

4. GENERAL :

(i) Wilting is found due to draught. (ii) Nil. (iii) Green and dry fibre weight, plant height, base diameter and stand count. (iv) (a) 1951—1957. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1183 lb./ac. (ii) 224.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈
Av. yield	1695	1908	1443	1546	1378	809	337	349

S.E./mean = 112.4 lb./ac.

Crop :- Rozelle (Kharif).

Ref :- J.A.R.I. 56(4).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'C'.

Object :-To study the effect of different dates of sowing on the yield of Rozelle fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rozelle. (c) 3 tons/ac. of compost. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) As per treatments. (iv) (a) 4 to 6 ploughings and ladderings. (b) Broadcast. (c) 20 lb./ac. (d) 4" between plants. (e) 1. (v) 3 tons/ac. of compost. (vi) R.T.—1 (medium). (vii) Unirrigated. (viii) 2 weedings and 1 thinning. (ix) N.A. (x) 26.11.1956.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(3) on page 219.

4. GENERAL :

(i) Fair. (ii) Attack of stemrot in D₁, D₂ and D₃ plots. Perenox and DDT sprayed. (iii) Green and dry fibre weight, plant height, base diameter and stand count. (iv) (a) 1951—1957. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1293 lb./ac. (b) 278.5 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈
Av. yield	2381	2199	2139	1555	746	628	420	276

S.E./mean = 139.3 lb./ac.

Crop :- Rozelle (Kharif).

Ref :- J.A.R.I. 57(1).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'C'.

Object :-To see the effect of different dates of sowing on the yield of Rozelle fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rozelle. (c) 3 tons/ac. of compost. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) As per treatments. (iv) (a) 4 to 6 ploughings and ladderings. (b) Broadcast. (c) 20 lb./ac. (d) 4" between plants. (e) 1. (v) 3 tons/ac. of compost. (vi) R.T.—1 (medium). (vii) Unirrigated. (viii) 2 weedings, 1 thinning and mulching. (ix) N.A. (x) 18.11.1957.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(4) on page 220.

5. RESULTS :

(i) 1515 lb./ac. (ii) 503.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈
Av. yield	2107	2086	1918	1788	1761	1244	644	570

S.E./mean = 251.5 lb./ac.

Crop :- Rozelle (Kharif).

Ref :- J.A.R.I. 54(6).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'C'.

Object :-To study the effect of seedrates on the yield of Rozelle fibre.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Rozelle. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 7.5.1954. (iv) (a) 4 to 6 ploughings and laddering. (b) Broadcast. (c) As per treatments. (d) and (e) N.A. (v) 3 tons/ac. of compost. (vi) H. Camabinus (medium). (vii) Irrigated. (viii) 2 weedings. (ix) 43.68". (x) 11.9.1954.

2. TREATMENTS :

8 seed rates : $R_1=5$, $R_2=10$, $R_3=15$, $R_4=20$, $R_5=25$, $R_6=30$, $R_7=35$ and $R_8=40$ lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) $80' \times 14'$. (iii) 5. (iv) (a) $14' \times 10'$. (b) $12' \times 8'$. (v) $1' \times 1'$. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Green and dry fibre weight, stand count, base diameter and plant height. (iv) (a) 1952—1956. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1127 lb./ac. (ii) 157.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	R_1	R_2	R_3	R_4	R_5	R_6	R_7	R_8
Av. yield	947	1137	1223	1327	1274	1118	1104	886

S.E./mean = 70.6 lb./ac.

Crop :- Rozelle (Kharif).

Site :- Jute Agri. Res. Instt., Nilganj.

Ref :- J.A.R.I. 55(6).

Type :- 'C'.

Object :—To study the effect of seed rate on the yield of Rozelle fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rozelle. (c) 3 tons/ac. of compost. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 3.6.1955. (iv) (a) 4 to 6 ploughings and laddering. (b) Broadcast. (c) As per treatments. (d) and (e) N.A. (v) 3 tons/ac. of compost. (vi) MT.—129 (medium). (vii) Unirrigated. (viii) 2 weedings. (ix) 61.75". (x) 22.9.1955.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(6) on page 221.

5. RESULTS :

(i) 736 lb./ac. (ii) 109.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	R_1	R_2	R_3	R_4	R_5	R_6	R_7	R_8
Av. yield	781	918	833	837	797	626	537	560

S.E./mean = 48.7 lb./ac.

Crop :- Rozelle (Kharif).

Site :- Jute Agri. Res. Instt., Nilganj.

Ref :- J.A.R.I. 56(7).

Type :- 'C'.

Object :—To study the effect of seed rate on the yield of Rozelle fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rozelle. (c) 3 tons/ac. of compost. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 27.5.1956. (iv) (a) 4 to 6 ploughings and ladderings. (b) Broadcast. (c) As per treatments. (d) and (e) N.A. (v) 3 tons./ac. of compost. (vi) M.T.—129 (medium). (vii) Unirrigated. (viii) 2 weedings. (ix) N.A. (x) 27.9.1956.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(6) on page 220.

5. RESULTS :

(i) 621 lb./ac. (ii) 82.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	R ₁	R ₂	R ₃	R ₄	R ₅	R ₆	R ₇	R ₈
Av. yield	564	545	710	659	642	633	609	603

S.E./mean = 36.7 lb./ac.

Crop :- Rozelle (Kharif).

Ref :- J.A.R.I. 54(5).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'C'.

Object :—To study the effect of seed rate on the yield of Rozelle fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rozelle. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 20.5.1954. (iv) 4 to 6 ploughings and ladderings. (b) Broadcast. (c) As per treatments. (d) and (e) N.A. (v) 3 tons ac. of T.C. (vi) H. Sabdariffa. (vii) Unirrigated. (viii) 2 weedings. (ix) 43 68". (x) 8.12.1954.

2. TREATMENTS :

8 seed rates: R₁=5, R₂=10, R₃=15, R₄=20, R₅=25, R₆=30, R₇=35 and R₈=40 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) 134'×24'. (iii) 5. (iv) (a) 24'×15'. (b) 22'×13'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Green and dry fibre weight, stand count, base diameter and plant height, (iv) (a) 1952—1957. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1699 lb./ac. (ii) 164.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	R ₁	R ₂	R ₃	R ₄	R ₅	R ₆	R ₇	R ₈
Av. yield	1755	1843	1917	1725	1665	1622	1549	1518

S.E./mean = 73.7 lb./ac.

Crop :- Rozelle (Kharif).

Ref :- J.A.R.I. 55(7).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'C'.

Object :—To study the effect of different seed rates on the yield of Rozelle.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rozelle. (c) 3 tons/ac. of compost. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 4.6.1955. (iv) (a) 4 to 6 ploughings and ladderings. (b) Broadcast. (c) As per treatments, (d) and (e) N.A. (v) 3 tons/ac. of T.C. (vi) R.T.—2 (medium). (vii) Unirrigated. (viii) 2 weedings. (ix) 61.75". (x) 23.12.1955.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(5) on page 223.

5. RESULTS :

(i) 1240 lb./ac. (ii) N.A. (iii) Treatment differences are not significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	R ₁	R ₂	R ₃	R ₄	R ₅	R ₆	R ₇	R ₈
Av. yield	1142	1271	1376	1332	1243	1331	1167	1061

S.E./mean = N.A.

Crop :- Rozelle (Kharif).

Ref :- J.A.R.I. 56(2).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'C'.

Object :— To study the effect of seed rate on the yield of Rozelle fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rozelle. (c) 3 tons/ac. of compost. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 14.6.1956. (iv) (a) 4 to 6 ploughings and ladderings. (b) Broadcast. (c) As per treatments. (d) and (e) N.A. (v) 3 tons/ac. of compost. (vi) R.T.—2 (medium). (vii) Unirrigated. (viii) 2 weedings. (ix) N.A. (x) 14.12.1956.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(5) on page 223.

5. RESULTS :

(i) 1378 lb./ac. (ii) 364.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	R ₁	R ₂	R ₃	R ₄	R ₅	R ₆	R ₇	R ₈
Av. yield	1604	1569	1423	1368	1321	1314	1237	1185

S.E./mean = 162.9 lb./ac.

Crop :- Rozelle (Kharif).

Ref :- J.A.R.I. 57(2).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'C'.

Object :—To study the effect of seed rate on the yield of Rozelle fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rozelle. (c) 3 tons/ac. of compost. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 12.6.1957. (iv) (a) 4 to 6 ploughings and ladderings. (b) Broadcast. (c) As per treatments. (d) and (e) N.A. (v) 3 tons/ac. of compost. (vi) R.T.—2 (medium). (vii) Unirrigated. (viii) 2 weedings. (ix) N.A. (x) 21.11.1957.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(5) on page 223.

5. RESULTS :

(i) 1561 lb./ac. (ii) 181.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	R ₁	R ₂	R ₃	R ₄	R ₅	R ₆	R ₇	R ₈
Av. yield	1434	1542	1568	1635	1528	1613	1580	1584

S.E./mean = 81.2 lb./ac.

Crop :- Rozelle (Kharif).**Ref :- J.A.R.I. 54(4).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'C'.**

Object :- To study the effect of different spacings on the yield of Rozelle fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rozelle. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 24.5.1954.
 (iv) (a) 4 to 6 ploughings and ladderings. (b) Line sowing by drill. (c) N.A. (d) As per treatments. (e) 1.
 (v) 3 tons/ac. of T.C. (vi) H. Sabdariffa. (vii) Unirrigated. (viii) 2 weedings and thinnings. (ix) 43.68%. (x) 2.12.1954.

2. TREATMENTS :

All combinations of (1) and (2)+a control

(1) 5 spacings between lines : $S_1=4''$, $S_2=6''$, $S_3=9''$, $S_4=12''$ and $S_5=15''$.
 (2) 3 spacing within lines : $C_1=2''$, $C_2=4''$ and $C_3=6''$.

Control=Broadcast

3. DESIGN :(i) R.B.D. (ii) (a) 16. (b) $46' \times 66'$. (iii) 4. (iv) (a) $15' \times 10'$. (b) $13' \times 8'$. (v) $1' \times 1'$. (vi) Yes.**4. GENERAL :**

(i) Fair. (ii) Nil. (iii) Green and dry fibre weight, stand count, base diameter and plant height. (iv) (a) 1954-1957. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2447 lb./ac. (ii) 320.3 lb./ac. (iii) Main effect of C and 'control vs. others' are significant. (iv) Av. yield of dry fibre in lb./ac.

Control = 2034 lb./ac.

	S_1	S_2	S_3	S_4	S_5	Mean
C_1	2158	2248	2425	2473	2355	2332
C_2	2453	2549	2469	2609	2355	2487
C_3	2533	2599	2788	2678	2434	2606
Mean	2381	2465	2561	2587	2381	2475

S.E. of S marginal mean = 92.5 lb./ac.
 S.E. of C marginal mean = 71.6 lb./ac.
 S.E. of body of table or control mean = 160.2 lb./ac.

Crop :- Rozella (Kharif).**Ref :- J.A.R.I. 55(5).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'C'.**

Object :- To study the effect of different spacings on the yield of Rozelle fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rozelle. (c) 3 tons/ac. of T. C. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 6.6.1955. (iv) (a) 4 to 6 ploughings and ladderings. (b) Line sowing by hand. (c) 10 lb./ac. (d) As per treatments. (e) 1. (v) 3 tons/ac. of T. C. (vi) Altissime green (medium). (vii) Unirrigated. (viii) 2 weedings, 1 thinning and mulching. (ix) 61.75%. (x) 20.12.1955.

2. TREATMENTS :

All combinations of (1) and (2)+a control

(1) 5 spacings between lines : $S_1=4''$, $S_2=6''$, $S_3=9''$, $S_4=12''$ and $S_5=15''$.
 (2) 3 spacings within lines : $C_1=2''$, $C_2=4''$ and $C_3=6''$.

Control=Broadcast.

3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) 46' × 66'. (iii) 4. (iv) (a) and (b) 15' × 10'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of dry fibre and sticks. (iv) (a) 1954—1957. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1816 lb./ac. (ii) 260.8 lb./ac. (iii) Main effect of C alone is significant. (iv) Av. yield of dry fibre in lb./ac.

Control = 1852 lb./ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	Mean
C ₁	1567	1624	1750	1682	1762	1677
C ₂	1908	1985	2007	1911	1751	1912
C ₃	1894	2118	1718	1879	1653	1852
Mean	1790	1909	1825	1824	1722	1814

S.E. of S marginal mean = 75.3 lb./ac.

S.E. of C marginal mean = 58.3 lb./ac.

S.E. of body of table or control mean = 130.4 lb./ac.

Crop :- Rozelle (Kharif).

Ref :- J.A.R.I. 56(8).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'C'.

Object :—To study the effect of different spacings on the yield of Rozelle fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rozelle. (c) 3 tons/ac. of compost. (ii) (a) Sandy loam. (b) Refer soil adalysis, Nilganj. (iii) 27.6.1956. (iv) (a) 4 to 6 ploughings and ladderings. (b) Line sowing by hand. (c) 10 lb./ac. (d) As per treatments. (e) 1. (v) 3 tons/ac. of compost. (vi) R.T.—1 (medium). (vii) Unirrigated. (viii) 2 weedings and 1 thinning. (ix) N.A. (x) 12.12.1956.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(5) on page 225.

4. GENERAL :

(i) Fair. (ii) Occurrence of stem rot. Perenox spray was given. (iii) Yield of dry fibre and sticks. (iv) (a) 1954—1957. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 695 lb./ac. (ii) 119.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of dry fibre in lb./ac.

Control = 718 lb./ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	Mean
C ₁	817	655	715	637	631	691
C ₂	682	729	791	709	732	729
C ₃	661	706	667	613	664	662
Mean	720	696	724	653	676	694

S.E. of S marginal mean = 34.6 lb./ac.

S.E. of C marginal mean = 26.8 lb./ac.

S.E. of body of table or control mean = 59.9 lb./ac.

Crop :- Rozelle (Kharif).

Ref :- J.A.R.I. 57(3).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'C'.

Object :- To study the effect of different spacings on the yield of Rozelle fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rozelle. (c) 30 tons/ac. of compost. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 13.6.1957. (iv) (a) 4 to 6 ploughings and ladderings. (b) Line sowing. (c) N.A. (d) As per treatments. (e) 1. (v) 3 tons/ac. of T.C. (vi) R.T-1. (medium). (vii) Unirrigated. (viii) 2 weedings. (ix) N.A. (x) 20.11.1957.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(5) on page 225.

5. RESULTS :

(i) 1303 lb./ac. (ii) 164.3 lb./ac. (iii) Main effect of S alone is highly significant. (iv) Av. yield of dry fibre in lb./ac.

Control = 1200 lb./ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	Mean
C ₁	1418	1366	1314	1225	1171	1299
C ₂	1495	1458	1332	1266	1160	1342
C ₃	1330	1395	1323	1200	1231	1290
Mean	1404	1406	1323	1230	1187	1310

S.E. of S marginal mean = 47.4 lb./ac.

S.E. of C marginal mean = 36.7 lb./ac.

S.E. of body of table or control mean = 82.2 lb./ac.

Crop :- Rozelle (Kharif).

Ref :- J.A.R.I. 58(4).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'C'.

Object :- To study the possibility of growing 2nd crop after harvest of Rozelle.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rozelle. (c) 3 tons/ac. of compost. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 6.5.1958. (iv) (a) 4 to 6 ploughings and ladderings. (b) Broadcast. (c) 20 lb./ac. (d) 4" x 4". (e) 1. (v) 3 tons/ac. of compost before sowing of Rozelle. (vi) R.T-2 (medium). (vii) Unirrigated. (viii) 2 weedings and 1 thinning. (ix) 35.71". (x) As per treatments.

2. TREATMENTS :

5 times of harvest of Rozelle : T₁=120, T₂=140, T₃=160, T₄=180 days after sowing and T₅=Usual time (at pod stage).

Kali-kalai as second crop sown on 4.9.1958, 24.9.1958, 14.10.1958 and 3.11.1958 respectively. No kali-kalai in T₅.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) 126" x 118". (iii) 5. (iv) (a) 24' x 22'. (b) 22' x 20'. (v) 1' x 1'. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Green and dry fibre weight, stand count, plant height and base diameter. (iv) (a) 1958-1960. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1878 lb./ac. (ii) 165.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅
Av. yield	1648	1722	1955	1987	2079

S.E./mean = 73.9 lb./ac.

Crop :- Rozelle (Kharif)

Ref :- J.A.R.I. 59(4).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'C'.

Object :—To study the possibility of growing 2nd crop after harvest of Rozelle.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Rozelle. (c) 3 tons/ac. of compost. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 4.6.1959. (iv) (a) 4 to 6 ploughings and laddering. (b) Broadcast. (c) 20 lb./ac. (d) 4" × 4". (e) 1. (v) 3 tons/ac. of compost before sowing of Rozelle. (vi) R.T-2 (medium). (vii) Unirrigated. (viii) 2 weedings and 1 thinning. (ix) 84.72". (x) 9.12.1959 for T₅ and others as per treatments.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(4) on page 227.

Kali-kalai as second crop sown on 7.10.1959, 23.10.1959, 13.11.1959 and 2.12.1959 respectively.

5. RESULTS :

(i) 1108 lb./ac. (ii) 73.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅
Av. yield	982	938	1086	1304	1180

S.E./mean = 32.9 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 59(25).

Site :- Jute Res. Sub-Stn., Kendrapara.

Type :- 'M'.

Object :—To study the effect of different sources and times of application of N on Jute.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jute. (c) Nil. (ii) Recent alluvium. (b) N.A. (iii) 30.5.1959. (iv) (a) 5 ploughings, laddering and harrowings. (b) Drilling. (c) 3.5 lb./ac. (d) 12" × 3". (e) N.A. (v) 4000 lb./ac. of compost at the time of land preparation. (vi) J.R.O.—632 (late). (vii) Unirrigated. (viii) 3 weedings, 2 thinnings and 3 wheel hoeings. (ix) N.A. (x) 13.10.1959.

2. TREATMENTS :

All combinations of (1) and (2) + a control

(1) 2 sources of 20 lb./ac. of N : S₁=A/S and S₂=Urea.

(2) 2 times of application of N : T₁=30 days after sowing and T₂=Top dressed at sowing.

The fertilizers were sprayed 5 times at an interval of 3 days to make up the total amount.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 25' × 22'. (b) 23' × 20'. (v) 1' × 1'. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of dry jute fibre. (iv) (a) to (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 1022 lb./ac. (ii) 224.9 lb./ac. (iii) "Control vs. others" alone is significant. (iv) Av. yield of dry fibre in lb./ac.

Control = 816 lb./ac.

	T ₁	T ₂	Mean
S ₁	1041	1157	1099
S ₂	1078	1021	1049
	1059	1089	1074

S.E. of any marginal mean = 92.7 lb./ac.
 S.E. of body of table or control mean = 112.4 lb./ac.

Crop :- Jute (Kharif).**Ref :- J.A.R.I. 59(26).****Site :- Jute Res. Sub. Stn., Kendrapara.****Type :- 'M'.**

Object :- To study the effect of different sources and times of application of N on Jute.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jute. (c) Nil. (ii) (a) Recent alluvium. (b) N.A. (iii) 31.5.1959. (iv) (a) 5 ploughings, laddering and harrowings. (b) Drilling. (c) 3.5 lb./ac. (d) 12"×3". (e) N.A. (v) 4000 lb./ac. of compost (vi) J.R.C.—212 (late). (vii) Unirrigated. (viii) 3 weedings, 2 thinnings and 3 wheel hoeings. (ix) N.A. (x) 13.10.1959.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 59(25) on page 228.

5. RESULTS :

(i) 1143 lb./ac. (ii) 586.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of dry fibre in lb./ac.

Control = 849 lb./ac.

	T ₁	T ₂	Mean
S ₁	677	1473	1075
S ₂	1226	1488	1357
Mean	952	1480	1216

S.E. of any marginal mean = 241.8 lb/ac
 S.E. of body of table or control mean = 293.2 lb./ac.

Crop :- Jute (Kharif).**Ref :- J.A.R.I. 59(27).****Site :- Jute Res. Sub. Stn., Kendrapara.****Type :- 'M'.**

Object :- To study the effect of N, P and K on Jute yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Recent alluvium. (b) N.A. (iii) 12.6.1959. (iv) (a) 4 to 5 ploughings, laddering and harrowing by country method. (b) Drilling. (c) 4.5 lb./ac. (d) 12"×3". (e) N.A. (v) 4000 lb./ac. of cowdung. (vi) J.R.C.—212 (late). (vii) Unirrigated. (viii) 3 weedings, 3 thinnings and 5 wheel hoeings. (ix) N.A. (x) 25, 26 and 28.9.1959.

2. TREATMENTS :

12 levels of manure : $M_0=0$, $M_1=20$ lb./ac. of N, $M_2=40$ lb./ac. of N, $M_3=60$ lb./ac. of N, $M_4=80$ lb./ac. of N, $M_5=160$ lb./ac. of N, $M_6=10$ lb./ac. of P_2O_5+10 lb./ac. of K_2O , $M_7=20$ lb./ac. of N+10 lb./ac. of P_2O_5+10 lb./ac. of K_2O , $M_8=40$ lb./ac. of N+20 lb./ac. of P_2O_5+20 lb./ac. of K_2O , $M_9=60$ lb./ac. of N+30 lb./ac. of P_2O_5+30 lb./ac. of K_2O , $M_{10}=80$ lb./ac. of N+40 lb./ac. of P_2O_5+40 lb./ac. of K_2O and $M_{11}=160$ lb./ac. of N+80 lb./ac. of P_2O_5+80 lb./ac. of K_2O .

P_2O_5 as Super and K_2O as Pot. Sul. applied at sowing. N as A/S top dressed in 2 doses, half 3 to 4 weeks and other half 6 to 7 weeks after sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) $26' \times 24'$. (b) $22' \times 20'$. (v) $2' \times 2'$. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Incidence of semilooper insects. Endrex spraying was done. (iii) Yield of dry jute fibre. (iv) (a) to (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 1560 lb./ac. (ii) 209.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8	M_9	M_{10}	M_{11}
Av. yield	659	1093	1726	1984	1984	1838	478	1139	1717	2130	2023	1953

S.E./mean = 85.5 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 56(6).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :—To study the effect of foliar application of different sources of N on Jute yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jute. (c) 3 tons/ac. of compost. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 18.5.1956. (iv) (a) 4 to 6 ploughings and ladderings. (b) Drilling. (c) 3.5 lb./ac. (d) $12'' \times 4''$. (e) 1. (v) Nil. (vi) C.G. (medium). (vii) Unirrigated. (viii) 2 weedings and 1 thinning. (ix) N.A. (x) 31.8.1956.

2. TREATMENTS :

4 sources of 0.1 % of available N as foliar spray : S_0 =Control (no spray) S_1 =A/S, S_2 =Pot. Nitrate and S_3 =Urea

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 3. (iv) (a) $10' \times 15'$. (b) $8' \times 13'$. (v) $1' \times 1'$. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of dry jute fibre and stick. (iv) (a) 1956—1960 (with changed treatments). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1374 lb./ac. (ii) 283.7 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of dry jute fibre in lb./ac.

Treatment	S_0	S_1	S_2	S_3
Av. yield	1219	1242	1102	1934

S.E./mean = 163.8 lb./ac.

Crop :- Jute (Kharif).**Ref :- J.A.R.I. 56(5).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'M'.**

Object :- To study the effect of foliar application of different sources of N on Jute yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jute. (c) 3 tons/ac. of compost. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 18.5 1956. (iv) (a) 4 to 6 ploughings and ladderings. (b) Drilling. (c) 5 srs./ac. (d) 12" x 4". (e) 1. (v) Nil. (vi) D-154 (medium). (vii) Unirrigated. (viii) 2 weedings and 1 thinning. (ix) N.A. (x) 18.9.1956.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(6) on page 230.

5. RESULTS :

(i) 1639 lb./ac. (ii) 218.4 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	S ₀	S ₁	S ₂	S ₃
Av. yield	1290	1620	1529	2197

S.E./mean = 126.1 lb./ac.

Crop :- Jute (Kharif).**Ref :- J.A.R.I. 57(5).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'M'.**

Object :- To study the effect of foliar application of different sources of N on Jute yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jute. (c) 3 tons/ac. of compost. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 9.6 1957. (iv) (a) 4 to 6 ploughings and ladderings. (b) Drilling. (c) 3.5 srs./ac. (d) 12" x 4". (e) 1. (v) Nil. (vi) J.R.O-632 (medium). (vii) Unirrigated. (viii) 2 weedings and 1 thinning. (ix) N.A. (x) 25.9.1957.

2. TREATMENTS :5 sources of 0.1 % of available N as foliar spray : S₀= Control (no spray), S₁= A/S, S₂= Pot. Nitrate, S₃= Urea and S₄= A/C.**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 8' x 12'. (b) 6' x 10'. (v) 1' x 1'. (vi) Yes,

4. GENERAL ;

(i) Good. (ii) Nil. (iii) Yield of dry jute fibre and stick. (iv) (a) 1956-1960 (with changed treatments). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3821 lb./ac. (ii) 662.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄
Av. yield	3724	3758	4166	4293	3163

S.E./mean = 331.4 lb./ac.

Crop :- Jute (Kharif).**Ref :- J.A.R.I. 57(6).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'M'.**

Object :- To study the effect of foliar application of different sources of N on Jute yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jute. (c) 3 tons/ac. of compost. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 9.6.1957. (iv) (a) 4 to 6 ploughings and ladderings. (b) Drilling. (c) 5 lb./ac. (d) 12"×4". (e) 1. (v) Nil. (vi) D-154 (medium). (vii) Unirrigated. (viii) 2 weedings and 1 thinning. (ix) N.A. (x) 25.9.1957.

2. TREATMENTS to 4. GENERAL:

Same as in expt. no. 57(5) on page 231.

5. RESULTS :

(i) 3527 lb./ac. (ii) 864.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄
Av. yield	3574	3753	3668	4381	2258

S.E./mean = 432.4 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 58(2).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :- To study the effect of foliar application of different sources of N on Jute yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jute. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 6.5.1958. (iv) (a) 4 to 6 ploughings and ladderings. (b) Drilling. (c) 3.5 lb./ac. (d) 12"×4". (e) 1. (v) Nil. (vi) J.R.O-632 (medium). (vii) Unirrigated. (viii) 2 weedings and 1 thinning. (ix) N.A. (x) 3.9.1958.

2. TREATMENTS :

6 sources of 0.1 % of available N as foliar spray : S₀=Control (no spray), S₁=A/S, S₂=Pot. Nitrate, S₃=Urea, S₄=A/C and S₅=A/S/N.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 12'×10'. (b) 10'×8'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of dry fibre and stick. (iv) (a) 1956-1960 (with changed treatments). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 5686 lb./ac. (ii) 554.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅
Av. yield	5554	5907	5630	5753	5538	5737

S.E./mean = 277.3 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 58(3).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :- To study the effect of foliar application of different sources of N on Jute yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jute. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 6.5.1958. (iv) (a) 4 to 6 ploughings and ladderings. (b) Drilling. (c) 5 lb./ac. (d) 12" × 4". (e) 1. (v) Nil. (vi) D.—154. (medium). (vii) Unirrigated. (viii) 2 weedings and 1 thinning. (ix) N.A. (x) 3.9.1958.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(2) on page 232.

5. RESULTS :

(i) 4891 lb./ac. (ii) 694.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅
Av. yield	4500	5001	5366	4787	4979	4714

S.E./mean = 347.2 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 59(2).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :—To compare the effect of foliar application and top dressing of different sources of N on the yield of Jute fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jute. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 28.5.1959. (iv) (a) 4 to 6 ploughings and ladderings. (b) Broadcast. (c) N.A. (d) 4" × 4". (e) 1. (v) Super at 30 lb./ac. of P₂O₅ and Mur. Pot. at 40 lb./ac. of K₂O. (vi) J.R.O—632. (vii) Unirrigated. (viii) 2 weedings and 1 thinning. (ix) 84.72%. (x) 8.9.1959.

2. TREATMENTS :

5 sources of 20 lb./ac. of N : N₀=Control (no application), N₁=A/S foliar spray, N₂=A/S top dressed, N₃=Urea foliar spray and N₄=Urea top dressed.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 25' × 22'. (b) 23' × 20'. (v) 1' × 1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Green and dry fibre yield, plant height, stand count and base diameter. (iv) (a) 1956—1960 (with changed treatments). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2229 lb./ac. (ii) 153.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	N ₀	N ₁	N ₂	N ₃	N ₄
Av. yield	2161	2218	2280	2256	2231

S.E./mean = 76.5 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 59(3).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :—To compare the effect of foliar application and top dressing of different sources of N on the yield of Jute fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jute. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 28.5.1959. (iv) (a) 4 to 6 ploughings and ladderings. (b) Broadcast. (c) N.A. (d) 4"×4". (e) 1. (v) Super at 30 lb./ac. of P₂O₅ and Mur. Pot. at 40 lb./ac. of K₂O. (vi) I.R.C.—212. (vii) Unirrigated. (viii) 2 weedings and 1 thinning. (ix) 84.72". (x) 9.9.1959.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 59(2) on page 233.

5. RESULTS :

(i) 2306 lb./ac. (ii) 139.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	N ₀	N ₁	N ₂	N ₃	N ₄
Av. yield	2153	2231	2398	2385	2359

S.E./mean = 70.0 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 54(11).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :- To study the effect of different levels of N, P and K on the yield of Jute fibre.

1. BASAL CONDITIONS :

(i) (a) Jute—Mustard. (b) Mustard. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 10.5.1954. (iv) (a) 4 to 5 ploughings and ladderings. (b) Drilling. (c) 5 lb./ac. (d) 12"×3". (e) 1. (v) Nil. (vi) D.—154 (early). (vii) Unirrigated. (viii) 1 weeding, 1 thinning and 4 wheel hoeings. (ix) 43.68". (x) 21.0.1954.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S : N₀=0, N₁=20 and N₂=40 lb./ac.

(2) 2 levels P₂O₅ as Super : P₀=0 and P₁=40 lb./ac.

(3) 2 levels of K₂O as Mur. Pot. : K₀=0 and K₁=25 lb./ac.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) 130'×70' (iii) 4. (iv) (a) 20'×34'. (b) 18'×32'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Dusting and spraying of DDT and other insecticides. (iii) Green and dry fibre yield, stand counts and average height. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1862 lb./ac. (ii) 206.7 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of dry fibre in lb./ac.

	P ₀	P ₁	Mean	K ₀	K ₁
N ₀	1606	1647	1626	1600	1653
N ₁	1750	1852	1801	1817	1786
N ₂	2241	2070	2155	2057	2254
Mean	1866	1556	1861	1825	1898
K ₀	1842	1808			
K ₁	1890	1905			

S.E. of N marginal mean	= 51.7 lb./ac.
S.E. of P or K marginal mean	= 42.2 lb./ac.
S.E. of body of N×P or N×K table	= 73.1 lb./ac.
S.E. of body of P×K table	= 59.7 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 55(9).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :— To study the effect of different levels of N, P and K on the yield of Jute fibre.

1. BASAL CONDITIONS :

(i) (a) Jute—Mustard. (b) Mustard. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 6.6.1955. (iv) (a) 4 to 5 ploughings and laddering. (b) Drilling. (c) 5 lb./ac. (d) 12"×3". (e) 1. (v) Nil. (vi) D—154 (early). (vii) Unirrigated. (viii) 1 weeding, 1 thinning and 4 wheel hoeings. (ix) 61.75". (x) 6 and 7.10.1955.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(11) on page 234.

5. RESULTS :

(i) 1593 lb./ac. (ii) 186.1 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of dry fibre in lb./ac.

	P ₀	P ₁	Mean	K ₀	K ₁
N ₀	1361	1439	1400	1401	1400
N ₁	1557	1554	1556	1560	1551
N ₂	1842	1802	1822	1820	1824
Mean	1587	1598	1593	1594	1592
K ₀	1579	1609			
K ₁	1595	1589			

S.E. of N marginal mean	= 46.5 lb./ac.
S.E. of P or K marginal mean	= 38.0 lb./ac.
S.E. of body of N×P or N×K table	= 65.8 lb./ac.
S.E. of body of P×K table	= 53.7 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 54(12).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :—To study the effect of different levels of N, P and K on the yield of Jute fibre.

1. BASAL CONDITIONS :

(i) (a) Jute—Mustard. (b) Mustard. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 25.5.1954. (iv) (a) 4 to 5 ploughings and laddering. (b) Drilling. (c) 5 lb./ac. (d) 12"×3". (e) 1. (v) Nil. (vi) J.R.O.—632 (medium). (vii) Unirrigated. (viii) 1 weeding, 1 thinning and 4 wheel hoeings. (ix) 43.68". (x) 30.9.1954.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(11) on page 234.

5. RESULTS :

(i) 2016 lb./ac. (ii) 201.5 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of dry fibre in lb./ac.

	P ₀	P ₁	Mean	K ₀	K ₁
N ₀	1776	1962	1869	1874	1864
N ₁	2161	2150	2155	2162	2149
N ₂	2048	2000	2024	1960	2088
Mean	1995	2037	2016	1999	2034
K ₀	1969	2029			
K ₁	2022	2046			

S.E. of N marginal mean = 50.4 lb./ac.
 S.E. of P or K marginal mean = 41.1 lb./ac.
 S.E. of body of N×P or N×K table = 71.2 lb./ac.
 S.E. of body of K×P table = 58.2 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 55(10).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :- To study the effect of different levels of N, P and K on the yield of Jute fibre.

1. BASAL CONDITIONS :

(i) (a) Jute—Mustard. (b) Mustard. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 4 6.1955. (iv) (a) 4 to 5 ploughings and ladderings. (b) Drilling. (c) 5 lb/ac. (d) 12"×3". (e) 1. (v) Nil. (vi) J.R.O.—632 (medium). (vii) Unirrigated. (viii) 1 weeding, 1 thinning and 4 wheel hoeings. (ix) 61.75%. (x) 27.9.1955.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(11) on page 234.

5. RESULTS :

(i) 1900 lb./ac. (ii) 142.1 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of dry fibre in lb./ac.

	P ₀	P ₁	Mean	K ₀	K ₁
N ₀	1702	1851	1776	1671	1882
N ₁	1943	1941	1942	1947	1937
N ₂	1931	2032	1981	1991	1972
Mean	1859	1941	1900	1870	1930
K ₀	1788	1952			
K ₁	1930	1931			

S.E. of N marginal mean = 35.5 lb./ac.
 S.E. of P or K marginal mean = 29.0 lb./ac.
 S.E. of body of N×P or N×K table = 50.2 lb./ac.
 S.E. of body of P×K table = 41.0 lb./ac.

Crop :- Jute (*Kharif*).

Ref :- J.A.R.I. 56(11).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :- To study the effect of different sources and times of application of N on the yield of Jute fibre.

1. BASAL CONDITIONS :

(i) (a) Jute—Mustard. (b) Mustard. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 14.6.1956. (iv) (a) 4 to 5 ploughings and ladderings. (b) Drilling. (c) 5 lb./ac. (d) 12"×3". (e) 1. (v) Nil. (vi) J.R.C.—212 (medium). (vii) Unirrigated. (viii) 2 weedings, 2 thinnings and 4 to 6 wheel hoeings. (ix) N.A. (x) 25.10.1956.

2. TREATMENTS :

Main-plot treatments :

5 sources of 40 lb./ac. of N : $S_1=A/S$, $S_2=A/C$, $S_3=Urea$, $S_4=C/N$ and $S_5=A/S/N$.

Sub-plot treatments :

7 times of application : $T_1=At$ sowing, $T_2=3$ weeks after sowing, $T_3=6$ weeks after sowing, $T_4=Half$ at sowing+half 3 weeks after sowing, $T_5=Half$ at sowing+half 6 weeks after sowing, $T_6=Half$ 3 weeks after sowing+half 6 weeks after sowing and $T_7=1/4$ dose at sowing $1/4$ dose 3 weeks after sowing and $1/4$ dose 6 weeks after sowing.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 7 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 18'×23'. (b) 16'×21'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Dusting and spraying of DDT and other insecticides. (iii) Stand count, average height, green and dry fibre yield. (iv) (a) 1956—1960. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1855 lb./ac. (ii) (a) 857.7 lb./ac. (b) 286.6 lb./ac. (iii) Main effect of T alone is significant. (iv) Av. yield of dry fibre in lb./ac.

	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Mean
S_1	1841	1821	2144	1987	2130	2203	2185	2045
S_2	2254	1659	1648	1977	1929	2004	1962	1919
S_3	1819	1851	1785	1805	1972	1951	2014	1885
S_4	1369	1639	1669	1562	1768	1999	2058	1723
S_5	1714	1526	1293	1735	1839	1758	2058	1703
Mean	1799	1699	1708	1813	1928	1983	2056	1855

S.E. of difference of two

1. S marginal means = 264.7 lb./ac.
2. T marginal means = 104.6 lb./ac.
3. T means at the same level of S = 234.0 lb./ac.
4. S means at the same level of T = 342.0 lb./ac.

Crop :- Jute (*Kharif*).

Ref :- J.A.R.I. 57(9).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :- To study the effect of different sources and times of application of N on the yield of Jute fibre.

1. BASAL CONDITIONS :

(i) (a) Jute—Mustard. (b) Mustard. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 11.6.1957. (iv) (a) 4 to 5 ploughings and ladderings. (b) Drilling. (c) 5 lb./ac. (d) 12"×3". (e) 1. (v) Nil. (vi) J.R.C.—212 (medium). (vii) Unirrigated. (viii) 2 weedings, 2 thinnings and 4 to 6 wheel hoeings. (ix) N.A. (x) 24.10.1957.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(11) on page 237.

5. RESULTS :

(i) 1725 lb./ac. (ii) (a) 153.8 lb./ac. (b) 213.6 lb./ac. (iii) Main effect of S alone is significant. (iv) Av. yield of dry fibre in lb./ac.

	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	Mean
S ₁	1794	1638	1744	1687	1827	1744	1860	1756
S ₂	1938	1670	1687	1860	1827	1786	2000	1827
S ₃	1580	1827	1489	1555	2695	1876	1810	1690
S ₄	1695	1786	1761	1720	1687	1786	1679	1731
S ₅	1613	1498	1736	1489	1440	1777	1794	1621
Mean	1728	1684	1683	1662	1695	1794	1829	1725

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. S marginal means | = 47.5 lb./ac. |
| 2. T marginal means | = 78.0 lb./ac. |
| 3. T means at the same level of S | = 174.4 lb./ac. |
| 4. S means at the same level of T | = 168.3 lb./ac. |

Crop :- Jute (Kharif).

Ref :- J.A.R.I.59(6).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :- To study the effect of different sources and times of application of N on the yield of Jute fibre

1. BASAL CONDITIONS :

(i) (a) Jute—Mustard. (b) Mustard. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 28.5.1959. (iv) (a) 4 to 5 ploughings and ladderings. (b) Drilling. (c) 5 lb./ac. (d) 12"×3". (e) 1. (v) Nil. (vi) J.R.C.—212 (medium). (vii) Unirrigated. (viii) 2 weedings, 2 thinnings and 4 to 6 wheel hoeings. (ix) 84.72". (x) 20.10.1959.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(11) on page 237.

5. RESULTS :

(i) 2428 lb./ac. (ii) (a) 480.0 lb./ac. (b) 140.0 lb./ac. (iii) Main effect of T alone is highly significant. (iv) Av. yield of dry fibre in lb./ac.

	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	Mean
S ₁	2680	2335	2172	2488	2607	2417	2412	2444
S ₂	2503	2309	2200	2376	2295	2362	2418	2352
S ₃	2641	2530	2497	2478	2461	2545	2604	2537
S ₄	2572	2395	2321	2390	2493	2376	2419	2424
S ₅	2586	2343	2207	2356	2488	2388	2301	2381
Mean	2597	2382	2279	2418	2469	2418	2431	2428

S.E. of difference of two

1. S marginal means	= 148.1 lb./ac.
2. T marginal means	= 51.1 lb./ac.
3. T means at the same level of S	= 114.3 lb./ac.
4. S means at the same level of T	= 182.0 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 54(7).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :- To study the effect of different times of application of A/S on the yield of Jute fibre.

1. BASAL CONDITIONS :

(i) (a) Jute - Mustard. (b) Mustard. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 24.5.1954. (iv) (a) 4 to 5 ploughings and ladderings. (b) Drilling. (c) 5 lb./ac. (d) 12" × 3". (e) 1. (v) Nil. (vi) J.R.C.—212 (medium). (vii) Unirrigated. (viii) 2 weedings, 4 thinnings and 4 to 6 wheel hoeings. (ix) 43.68". (x) 12.10.1954.

2. TREATMENTS :

8 times of application of 30 lb./ac. of N as A/S : T_0 = Control, T_1 = Before sowing, T_2 = $\frac{1}{3}$ before sowing + $\frac{2}{3}$ after 1st weeding, T_3 = $\frac{1}{3}$ before sowing + $\frac{1}{3}$ after 1st weeding + $\frac{1}{3}$ after 2nd weeding, T_4 = After 1st weeding, T_5 = After 2nd weeding, T_6 = $\frac{1}{3}$ before sowing + $\frac{2}{3}$ after 2nd weeding and T_7 = $\frac{2}{3}$ after 1st weeding + $\frac{1}{3}$ after 2nd weeding.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) 78' × 66'. (iii) 4. (iv) (a) 18' × 32'. (b) 16' × 30'. (v) 1' × 1'. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Dusting and spraying of DDT and other insecticides. (iii) Stand count, average height, green and dry fibre yield. (iv) (a) 1951—1955. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1674 lb./ac. (ii) 198.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	1543	1559	1671	1575	1813	1788	1739	1706

S.E./mean = 99.3 lb/ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 54(8).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :- To study the effect of different times of application of A/S on the yield of Jute fibre.

1. BASAL CONDITIONS :

(i) (a) Jute - Mustard. (b) Mustard. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 26.5.1954. (iv) (a) 4 to 5 ploughings and ladderings. (b) Drilling. (c) 5 lb./ac. (d) 12" × 3". (e) 1. (v) Nil. (vi) J.R.O. - 632 (medium). (vii) Unirrigated. (viii) 2 weedings, thinnings and 4 to 6 wheel hoeings. (ix) 43.68". (x) 13.10.1954.

2. TREATMENTS to 4 GENERAL :

Same as in expt. no. 54(7) above.

5. RESULTS :

(i) (a) 1493 lb./ac. (ii) 362.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Av. yield	1682	1430	1344	1478	1607	1345	1349	1712

S.E./mean = 181.2 lb./ac.

Crop :- Jute (*Kharif*).

Ref :- J.A.R.I. 59(10)

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :—To study the effect of different sources of N, P and K on the yield of Jute.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 31.5.1959. (iv) (a) Ploughing and laddering. (b) Line sowing. (c) 4 to 5 lb./ac. (d) 1' between rows. (e) N.A. (v) Nil. (vi) J.R.C. -212. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 82.6". (x) 14.9.1959.

2. TREATMENTS :

10 manurial treatments : M₀=Control, M₁=30 lb./ac. of N as A/S, M₂=30 lb./ac. of N as A/S+30 lb./ac. of P₂O₅ as Super, M₃=M₂+30 lb./ac. of K₂O as Mur. Pot., M₄=M₂+47.5 lb./ac. of K₂O as Mur. Pot., M₅=Complezal giving 30 lb./ac each of N and P₂O₅, M₆=M₅+47.5 lb./ac. of K₂O as Mur. Pot., M₇=Nitrophoska blue giving 30 lb./ac. of N, 30 lb./ac. of P₂O₅ and 47.5 lb./ac. of K₂O, M₈=Nitrophoska green giving 30 lb./ac. each of N, P₂O₅ and K₂O and M₉=M₈+17.5 lb./ac. of K₂O as Mur. Pot.

A/S applied in two instalments 3 to 4 weeks and 6 to 7 weeks after sowing. Other manures were applied at the time of sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) 93'×42'. (iii) 3. (iv) (a) 20'×17'. (b) 18'×15'. (v) 1'×1'. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fibre. (iv) (a) 1959—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2138 lb./ac. (ii) 182.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉
Av. yield	1710	2513	2176	2443	23.4	2014	2230	2004	1879	2049

S.E./mean = 105.6 lb./ac.

Crop :- Jute (*Kharif*).

Ref :- J.A.R.I. 59(11).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :—To study the effect of different sources of N, P and K on the yield of Jute.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 31.5.1959. (iv) (a) Ploughing and laddering. (b) Line sowing. (c) N.A. (d) 1' between rows. (e) N.A. (v) Nil. (vi) J.R.O.—632. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 82.6". (x) 6.10.1959.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 59(10) above.

5. RESULTS :

(i) 2101 lb./ac. (ii) 249.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of fibre in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉
Av. yield	1815	2246	2285	2197	2013	2151	2208	2023	2190	1884

S.E./mean = 143.8 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.L 59(12).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :—To study the effect of N alone and in combinations with P and K on the yield of Jute.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 29.5.1959. (iv) (a) Ploughing and laddering. (b) Line sowing by drill. (c) 5 to 6 srs./ac. (d) 1' between rows. (e) N.A. (v) 4000 lb./ac. of cowdung. (vi) J.R.C.—212. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 82.6%. (x) 23.10.1959.

2. TREATMENTS :

12 manurial treatments: M₀=Control, M₁=20 lb./ac. of N, M₂=40 lb./ac. of N, M₃=60 lb./ac. of N, M₄=80 lb./ac. of N, M₅=160 lb./ac. of N, M₆=10 lb./ac. of P₂O₅+10 lb./ac. of K₂O, M₇=M₁+M₆, M₈=M₂+20 lb./ac. of P₂O₅+20 lb./ac. of K₂O, M₉=M₃+30 lb./ac. of P₂O₅+30 lb./ac. of K₂O, M₁₀=M₄+40 lb./ac. of P₂O₅+40 lb./ac. of K₂O and M₁₁=M₅+80 lb./ac. of P₂O₅+80 lb./ac. of K₂O.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) 124'×58'. (iii) 4. (iv) (a) 29.5'×18'. (b) 27.5'×16'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of jute fibre. (iv) (a) 1959—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2040 lb./ac. (ii) 170.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of fibre in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀	M ₁₁
Av. yield	1737	1992	2208	2241	2337	1988	1513	1954	2218	2166	2096	2029

S.E./mean = 85.2 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 59(13).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'M'.

Object :—To study the effect of N alone and in combinations with P and K on the yield of Jute.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 30.5.1959. (iv) (a) Ploughing and laddering. (b) Line sowing by drill. (c) 3 to 5 srs./ac. (d) 1' between rows. (e) N.A. (v) 4000 lb./ac. of cowdung. (vi) J.R.O.—632. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 82.6%. (x) 5.10.1959.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 59(12) above.

5. RESULTS :

(i) 2013 lb./ac. (ii) 207.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of fibre in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀	M ₁₁
Av. yield	1806	1988	2172	2066	1961	1869	1797	2086	2195	2157	2149	1907

S.E./mean = 103.7 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 56(22).

Site :- Seed Multiplication Farm, Panagarh.

Type :- 'M'.

Object :- To study the effect of N, P, K and lime on the yield of Jute seed.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Panagarh. (iii) 11.7.1956. (iv) (a) Ploughing by tractor. (b) Broadcast. (c) 3.5 lb./ac. (d) 1' apart. (e) N.A. (v) Nil. (vi) J.R.O.—632. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 6.29%. (x) Middle of December, 1956.

2. TREATMENTS :

Main-plot treatments :

2 levels of lime: L₀=0 and L₁=3 mds./ac.

Sub-plot treatments :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S: N₀=0 and N₁=30 lb./ac.

(2) 2 levels of P₂O₅ as Super: P₀=0 and P₁=40 lb./ac.

(3) 2 levels of K₂O as Mur. Pot.: K₀=0 and K₁=40 lb./ac.

Lime applied 3 weeks before sowing. Super and Mur. Pot. applied before sowing and N as top-dressing.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication; 8 sub-plots/main-plot. (b) 87'×106'. (iii) 4. (iv) (a) 20'×25'. (b) 18'×23'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of jute seed. (iv) (a) 1956—1958. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 217 lb./ac. (ii) (a) 52.0 lb./ac. (b) 83.9 lb./ac. (iii) Main effects of N and P are highly significant and interaction N×P is significant. (iv) Av. yield of jute seed in lb./ac.

	L ₀	L ₁	N ₀	N ₁	P ₀	P ₁	Mean
K ₀	191	215	149	257	159	247	203
K ₁	230	230	179	281	188	273	230
Mean	210	223	164	269	174	260	217
P ₀	163	184	147	200			
P ₁	258	262	181	338			
N ₀	162	165					
N ₁	259	280					

S.E. of difference of two

- | | |
|---|----------------|
| 1. L marginal means | = 13.0 lb./ac. |
| 2. N, P or K marginal means | = 21.0 lb./ac. |
| 3. N, P or K means at the same level of L | = 29.7 lb./ac. |
| 4. L means at the same level of N, P or K | = 24.7 lb./ac. |
| S.E. of body of N×P, N×K or P×K table | = 21.0 lb./ac. |

Crop :- Jute (Kharif).**Ref :- J.A.R.I. 58(15).****Site :- Seed Multiplication Farm, Panagarh.****Type :- 'M'.**

Object :— To study the effect of N, P, K and lime on the yield of Jute seed.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Panagarh. (iii) 30.6.1958. (iv) (a) Ploughing and laddering. (b) Broadcast. (c) 10 lb./ac. (d) 1' apart. (e) N.A. (v) Nil. (vi) J.R.C.—212. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 45.26%. (x) 12.12.1958.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(22) on page 242.

5. RESULTS :

(i) 483 lb./ac. (ii) (a) 139.4 lb./ac. (b) 68.0 lb./ac. (iii) Main effects of N and P and interaction N×P are highly significant. (iv) Av. yield of jute seed in lb./ac.

	L ₀	L ₁	N ₀	N ₁	P ₀	P ₁	Mean
K ₀	443	506	397	552	318	631	474
K ₁	486	496	435	547	358	624	491
Mean	464	501	416	549	338	628	483
P ₀	315	361	329	347			
P ₁	615	610	503	752			
N ₀	406	426					
N ₁	524	575					

S.E. of difference of two

1. L marginal means = 34.8 lb./ac.
 2. N, P or K marginal means = 17.0 lb./ac.
 3. N, P or K means at the same level of L = 24.0 lb./ac.
 4. L means at the same level of N, P or K = 38.8 lb./ac.
- S.E. of body of N×P, N×K or P×K table = 17.0 lb./ac.

Crop :- Jute (Kharif).**Ref :- J.A.R.I. 55(19).****Site :- Seed Multiplication Farm, Panagarh.****Type :- 'M'.**

Object :— To study the effect of N, P, K and lime on the yield of Jute seed.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Panagarh. (iii) 6.7.1956 to 7.7.1956. (iv) (a) Ploughing and laddering. (b) Broadcast. (c) 3.5 lb./ac. (d) 1' apart. (e) N.A. (v) Nil. (vi) J.R.C.—212. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 69.29%. (x) Last week of November, 1956.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(22) on page 242.

Lime applied 3 to 7 days before sowing. Super and Mur. Pot. applied at the time of sowing.

5. RESULTS :

(i) 403 lb./ac. (ii) (a) 47.1 lb./ac. (b) 61.5 lb./ac. (iii) Main effects of N, P and interaction N×P are highly significant. Interaction N×K is significant. (iv) Av. yield of jute seed in lb./ac.

	N ₀	N	P ₀	P ₁	K ₀	K ₁	Mean
L ₀	352	447	329	470	387	412	400
L ₁	372	441	321	492	418	395	406
Mean	362	444	325	481	402	404	403
PK ₀	345	460	337	468			
K ₁	379	428	313	494			
P ₀	311	339					
P ₁	413	549					

S.E. of difference of two

1. L marginal means = 11.8 lb./ac.
 2. N, P or K marginal means = 15.4 lb./ac.
 3. N, P or K means at the same level of L = 21.7 lb./ac.
 4. L mean at the same level of N, P or K = 19.4 lb./ac.
- S.E. of the body of N×P, N×K or P×K table = 15.4 lb./ac.

Crop :- Jute (*Kharif*).

Ref :- J.A.R.I. 57(14).

Site :- Seed Multiplication Farm, Panagarh.

Type :- 'M'.

Object :- To study the effect of N, P, K and lime on the yield of Jute seed.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Panagarh. (iii) 12.7.1957. (iv) (a) Ploughing and laddering. (b) Broadcast. (c) 3 to 4 lb./ac. (d) 1' apart. (e) N.A. (v) Nil. (vi) J.R.C.—212. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 48.33%. (x) 9.12.1957.

2. TREATMENTS :

9 manurial treatments: T₀=Control, T₁=30 lb./ac. of N, T₂=30 lb./ac. of N+40 lb./ac. of P₂O₅, T₃=30 lb./ac. of N+40 lb./ac. of K₂O, T₄=30 lb./ac. of N+40 lb./ac. of K₂O+40 lb./ac. of P₂O₅, T₅=T₁+3 mds./ac. of lime, T₆=T₂+3 mds./ac. of lime, T₇=T₃+3 mds./ac. of lime and T₈=T₄+3 mds./ac. of lime.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) 52'×28'. (iii) 3. (iv) (a) 15'×7'. (b) 13'×5'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of jute seed. (iv) (a) 1956—1958. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 619 lb./ac. (ii) 101.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of jute seed in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	729	509	602	679	626	582	597	683	567

S.E./mean = 58.5 lb./ac.

Crop :- Jute (Kharif).**Ref :- J.A.R.I. 57(15).****Site :- Seed Multiplication Farm, Panagarh.****Type :- 'M'.****Object :-** To study the effect of N, P, K and lime on the yield of Jute seed.**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Panagarh. (iii) 10.7.1957. (iv) (a) Ploughing and laddering. (b) Broadcast. (c) N.A. (d) 1' apart. (e) N.A. (v) Nil. (vi) J.R.O.—632. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 48.33". (x) 15.11.1957.

2. TREATMENTS :

Same as in expt. no. 57(14) on page 244.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) 55' × 34'. (iii) 3. (iv) (a) 17' × 10'. (b) 15' × 8'. (v) 1' × 1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of jute seed. (iv) (a) 1956—1958. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 590 lb./ac. (ii) 86.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of jute seed in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	545	560	588	670	618	553	648	563	562

S.E./mean = 50.1 lb./ac.

Crop :- Jute (Kharif).**Ref :- J.A.R.I. 54(13).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'MV'.****Object :-** To study the effect of N through different sources on different varieties of Jute.**1. BASAL CONDITIONS :**

(i) (a) Jute—Mustard. (b) Mustard. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 23.5.1954. (iv) (a) 4 to 5 ploughings and laddering. (b) Drilling. (c) 5 lb./ac. (d) 12" × 3". (e) 1. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 2 weedings, 2 thinnings and 4 to 6 wheel hoeings. (ix) 43.6%. (x) 8 and 9.10.1954.

2. TREATMENTS :**Main-plot treatments :**2 varieties : V₁=J.R.C.—212 (medium) and V₂=J.R.O.—632 (medium).**Sub-plot treatments :**9 sources of 30 lb./ac. of N : S₀=Control, S₁=Pau's mixture, S₂=Talukdar's mixture, S₃=A/S, S₄=Sodium Nitrate, S₅=Potassium Nitrate, S₆=Urea, S₇=A/S/N and S₈=C/N.**3. DESIGN :**

(i) Split-plot. (ii) (a) 2 main-plots/block ; 9 sub-plots/main-plot. (b) 179' × 76. (iii) 4. (iv) (a) 28' × 24'. (b) 25' × 21'. (v) 1.5' × 1.5'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Green plant and dry fibre yield, stand count and average height. (iv) (a) 1954—1958. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2222 lb./ac. (ii) (a) 511.4 lb./ac. (b) 233.5 lb./ac. (iii) Main effect of V alone is highly significant. (iv) Av. yield of dry fibre in lb./ac.

	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	Mean
V ₁	2117	2389	2198	2478	2203	2355	2198	1955	2292	2243
V ₂	1991	2178	2244	2409	2238	2300	2174	2148	2128	2201
Mean	2054	2284	2221	2444	2220	2328	2186	2052	2210	2222

S.E. of difference of two

1. V marginal means = 120.5 lb./ac.
2. S marginal means = 116.8 lb./ac.
3. S means at the same level of V = 165.1 lb./ac.
4. V means at the same level of S = 170.8 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 55(13).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'MV'.

Object :- To study the effect of N through different sources on different varieties of Jute.

1. BASAL CONDITIONS :

(i) (a) Jute—Mustard. (b) Mustard. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 5.6.1955. (iv) (a) 4 to 5 ploughings and ladderings. (b) Drilling. (c) 5 lb./ac. (d) 12"×3". (e) 1. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 2 weedings, 4 thinnings and 4 to 6 wheel hoeings. (ix) 61.75". (x) 7.9.1955.

2. TREATMENTS :

Main-plot treatments :

2 varieties : V₁=J.R.C.—212 (medium) and V₂=J.R.O.—632 (medium).

Sub-plot treatments :

9 sources of 30 lb./ac. of N : S₀=Control, S₁=Paul's mixture, S₂=Talukdar's mixture, S₃=A/S, S₄=Sodium Nitrate, S₅=Potassium Nitrate, S₆=Urea, S₇=A/S/N and S₈=C/N.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 9 sub-plots/main-plot. (b) 203'×67'. (iii) 4. (iv) (a) 21'×32'. (b) 17'×28'. (v) 2'×2'. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Green plant and dry fibre yield, stand count and average height. (iv) (a) 1954—1958. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1716 lb./ac. (ii) (a) 29.6 lb./ac. (b) 25.6 lb./ac. (iii) Main effect of S alone is highly significant. (iv) Av. yield of jute seed in lb./ac.

	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	Mean
V ₁	1570	1584	1800	1817	1328	1812	1702	1764	1788	1741
V ₂	1564	1793	1634	1742	1667	1767	1632	1744	1677	1691
Mean	1567	1689	1717	1779	1748	1790	1667	1754	1733	1716

S.E. of difference of two

1. V marginal means	= 6.9 lb./ac.
2. S marginal means	= 12.7 lb./ac.
3. S means at the same level of V	= 18.1 lb./ac.
4. V means at the same level of S	= 18.4 lb./ac.

Crop :- Jute (Kharif).**Ref :- J.A.R.I. 56(10).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'MV'.**

Object :—To study the effect of N through different sources on different varieties of Jute.

1. BASAL CONDITIONS :

(i) (a) Jute—Mustard. (b) Mustard. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 13.6.1956. (iv) (a) 4 to 5 ploughings and ladderings. (b) Drilling. (c) 5 lb./ac. (d) 12"×3". (e) 1. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 2 weedings, 2 thinnings and 4 to 6 weedings. (ix) N.A. (x) 8.10.1956.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(13) on page 246.

5. RESULTS :

(i) 1361 lb./ac. (ii) (a) 606.5 lb./ac. (b) 258.1 lb./ac. (iii) Main effect of V alone is significant. (iv) Av. yield of dry fibre in lb./ac.

	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	Mean
V ₁	858	1168	1020	1110	1012	1074	1296	855	1081	1056
V ₂	1443	1675	1495	1796	1831	1777	1732	1585	1660	1666
Mean	1150	1421	1258	1453	1422	1425	1514	1235	1370	1361

S.E. of difference of two

1. V marginal means	= 143.0 lb./ac.
2. S marginal means	= 129.1 lb./ac.
3. S means at the same level of V	= 182.5 lb./ac.
4. V means at the same level of S	= 223.7 lb./ac.

Crop :- Jute (Kharif).**Ref :- J.A.R.I. 57(8).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'MV'.**

Object :—To study the effect of N through different sources on different varieties of Jute.

1. BASAL CONDITIONS :

(i) (a) Jute—Mustard. (b) Mustard. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 8.6.1957. (iv) (a) 4 to 5 ploughings and ladderings. (b) Drilling. (c) 5 lb./ac. (d) 12"×3". (e) 1. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 2 weedings, 2 thinnings and 4 to 6 weedings. (ix) N.A. (x) 26.9.1957. and 17.10.1957.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(13) on page 246.

5. RESULTS :

(i) 1431 lb./ac. (ii) (a) 53.9 lb./ac. (b) 18.8 lb./ac. (iii) Main effect of S alone is highly significant. (iv) Av. yield of dry fibre in lb./ac.

	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	Mean
V ₁	1204	1697	1486	1647	1642	1590	1554	1356	1466	1520
V ₂	1050	1445	1154	1509	1497	1542	1276	1280	1325	1342
Mean	1127	1571	1320	1578	1569	1566	1435	1318	1395	1431

S.E. of difference of two

1. V marginal means = 12.7 lb./ac.
2. S marginal means' = 9.3 lb./ac.
3. S means at the same level of V = 13.3 lb./ac.
4. V means at the same level of S = 17.9 lb./ac.

Crop :- Jute (Kharif).**Ref :- J.A.R.I. 58(5).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'MV'.**

Object :- To study the effect of N through different sources on different varieties of Jute.

1. BASAL CONDITIONS :

(i) (a) Jute—Mustard. (b) Mustard. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 1.5.1958. (iv) (a) 4 to 5 ploughings and laddering. (b) Drilling. (c) 5 lb./ac. (d) 12" × 3". (e) 1. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 2 weeding, 2 thinnings and 4 to 6 weeding. (ix) 35.71". (x) 24 and 25.9.1958.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(13) on page 246.

5. RESULTS :

(i) 2034 lb./ac. (ii) (a) 52.9 lb./ac. (b) 22.4 lb./ac. (iii) Main effect of S alone is highly significant. (iv) Av. yield of dry fibre in lb./ac.

	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	Mean
V ₁	1597	2138	1960	2139	2099	2146	2056	2075	1908	2013
V ₂	1888	2286	1908	2231	1900	1998	1986	2071	2219	2054
Mean	1742	2212	1934	2185	1999	2072	2021	2073	2064	2034

S.E. of difference of two

1. V marginal means = 12.5 lb./ac.
2. S marginal means = 11.2 lb./ac.
3. S means at the same level of V = 15.8 lb./ac.
4. V means at the same level of S = 19.4 lb./ac.

Crop :- Jute (Kharif).**Ref :- J.A.R.I. 56(24).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'MV'.**

Object :- To study the effect of different levels of N on different varieties of Jute.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 29.5.1956. (iv) (a) Ploughing and laddering. (b) Line sowing by drill. (c) 3 to 4 lb./ac. (d) Rows 1' apart. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 69.29". (x) 10.9.1956.

2. TREATMENTS:

Treatments in one direction:

4 varieties: $V_1=J.R.O.-632$, $V_2=J.R.O.-620$, $V_3=C.G.$ and $V_4=Local (oli)$.

Treatments in orthogonal direction:

4 levels of N as A/S: $N_0=0$, $N_1=20$, $N_2=40$ and $N_3=60$ lb./ac.

3. DESIGN:

(i) Strip-plot. (ii) (a) 4 strips in one direction and 4 in orthogonal direction. (b) $86' \times 138'$. (iii) 4. (iv) (a) $20' \times 33'$. (b) $16' \times 19'$. (v) $2' \times 2'$. (vi) Yes.

4. GENERAL:

(i) Good. (ii) N.A. (iii) Yield of fibre. (iv) (a) 1956-1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 1553 lb./ac. (ii) S.E. (V)=215.6 lb./ac., S.E. (N)=155.5 lb./ac., S.E. (V×N)=125.9 lb./ac. (iii) Main effects of N and V are highly significant. (iv) Av. yield of dry fibre in lb./ac.

	N_0	N_1	N_2	N_3	Mean
V_1	1717	1770	2016	2156	1915
V_2	1182	1607	1570	1699	1514
V_3	1001	1306	1456	1532	1324
V_4	1117	1378	1698	1648	1460
Mean	1254	1515	1685	1759	1553

S.E. of difference of two

1. V marginal means = 76.2 lb./ac.
2. N marginal means = 55.0 lb./ac.
3. N means at the same level of V = 94.7 lb./ac.
4. V means at the same level of N = 108.4 lb./ac.

Crop :- Jute (*Kharif*).

Ref :- J.A.R.I. 57(12).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Jute.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 2.6.1957. (iv) (a) 5 to 6 ploughings and laddering. (b) Line sowing by drill. (c) 3 to 4 lb./ac. (d) Rows 1' apart. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) 2 weedings and thinning. (ix) 48.33%. (x) 25.9.1957.

2. TREATMENTS to 4. GENERAL:

Same as in expt. no. 56(24) on page 248.

5. RESULTS:

(i) 796 lb./ac. (ii) S.E. (V)=261.0 lb./ac., S.E. (N)=147.4 lb./ac., S.E. (V×N)=181.2 lb./ac. (iii) Main effects of N and V are highly significant. (iv) Av. yield of dry fibre in lb./ac.

	N_0	N_1	N_2	N_3	Mean
V_1	673	695	544	318	558
V_2	1038	1058	709	607	853
V_3	1055	1071	780	592	874
V_4	1077	1111	818	597	901
Mean	961	984	713	528	796

S.E. of difference of two

1. V marginal means	= 92.3 lb./ac.
2. N marginal means	= 52.1 lb./ac.
3. V means at the same level of N	= 126.7 lb./ac.
4. N means at the same level of V	= 107.8 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 58(13).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'MV'.

Object :—To study the effect of different levels of N on different varieties of Jute.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 4.6.1958. (iv) (a) Ploughing and laddering. (b) Line sowing by drill. (c) 3 to 4 lb./ac. (d) Rows 1' apart. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 45.26%. (x) 11.9.1958 to 4.10.1958.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(24) on page 248.

5. RESULTS :

(i) 1377 lb./ac. (ii) S.E. (V)=252.9 lb./ac, S.E. (N)=194.7 lb./ac., S.E. (N×V)=131.4 lb./ac. (iii) Main effect of V is highly significant and main effect of N is significant. (iv) Av. yield of dry fibre in lb./ac.

	N ₀	N ₁	N ₂	N ₃	Mean
V ₁	1480	1477	1104	852	1228
V ₂	1882	1625	1467	1050	1506
V ₃	1778	1551	1269	1023	1405
V ₄	1599	1545	1382	938	1367
Mean	1685	1550	1305	966	1377

S.E. of difference of two

1. V marginal means	= 89.4 lb./ac.
2. N marginal means	= 68.8 lb./ac.
3. V means at the same level of N	= 87.3 lb./ac.
4. N means at the same level of V	= 78.9 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 59(9).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'MV'.

Object :—To study the effect of different levels of N on different varieties of Jute.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 29.5.1959. (iv) (a) Ploughing and laddering. (b) Drilling. (c) 3 to 4 lb./ac. (d) Rows 1' apart. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 82.6%. (x) 29.9.1959.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(24) on page 248.

5. RESULTS :

(i) 1714 lb./ac. (ii) S.E. (V)=129.6 lb./ac., S.E. (N)=125.8 lb./ac. S.E., (V×N)=184.9 lb./ac. (iii) Main effects of V and N are highly significant. (iv) Av. yield of dry fibre in lb./ac.

	N ₀	N ₁	N ₂	N ₃	Mean
V ₁	2201	2365	2218	2251	2259
V ₂	1652	1960	1801	1883	1824
V ₃	1298	1727	1758	1523	1577
V ₄	1165	1396	1226	996	1196
Mean	1579	1862	1751	1663	1714

S.E. of difference of two

1. V marginal means = 45.8 lb./ac.
2. N marginal mean = 4.5 lb./ac.
3. V means at the same level of N = 122.1 lb./ac.
4. N means at the same level of V = 121.7 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 55(14).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Jute.

1. BASAL CONDITIONS :

(i) (a) Jute—Mustard. (b) Mustard. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 29.5.1955. (iv) (a) 4 to 5 ploughings and ladderings. (b) Drilling. (c) 5 lb./ac. (d) 12" × 3". (e) 1. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 2 weedings and 2 thinnings. (ix) 61.75". (x) 10.10.1955 for V₁, V₂, V₃, V₄ and 16.9.1954 for V₂.

2. TREATMENTS :

Treatments in one direction :

4 varieties : V₁=J.R.C.—212, V₂=J.R.C.—321, V₃=D—154 and N₄=Local.

Treatments in orthogonal direction :

4 levels of N as A.S : N₀=0, N₁=20, N₂=40 and N₃=60 lb./ac.

3. DESIGN :

(i) Strip-plot. (ii) (a) 4 strips in one direction and 4 strips in orthogonal direction. (b) 86' × 138'. (iii) 4. (iv) (a) 20' × 33'. (b) 16' × 29'. (v) 2' × 2'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Stand count, average height, green and dry fibre yield. (iv) (a) 1955—1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1608 lb./ac. (ii) N.A. (iii) None of the effects is significant. (iv) Av. yield of dry fibre in lb./ac.

	V ₁	V ₂	V ₃	V ₄	Mean
N ₀	1456	1483	1619	1243	1450
N ₁	1694	1483	1754	1341	1568
N ₂	1895	1549	1826	1556	1706
N ₃	2121	1512	1671	1521	1706
Mean	1791	1507	1718	1415	1608

S.E.'s = N.A.

Crop :- Jute (Kharif).**Ref :- J.A.R.I. 56(14).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'MV'.**

Object :—To study the effect of different levels of N on different varieties of Jute.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 28.5.1956. (iv) (a) 5 to 6 ploughings and 2 laddering. (b) Line sowing by drill. (c) 5 to 6 lb./ac. (d) 12"×3". (e) 1. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 2 to 3 weedings and thinnings. (ix) 69.29". (x) 5.9.1956 to 16.10.1956.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(14) on page 251.

5. RESULTS :

(i) 1157 lb./ac. (ii) S.E.=(V) 470.7 lb./ac., S.E. (N)=233.7 lb./ac., S.E. (V×N)=165.4 lb./ac. (iii) Main effects of N and V are highly significant. Interaction N×V is significant. (iv) Av. yield of dry fibre in lb./ac.

	N ₀	N ₁	N ₂	N ₃	Mean
V ₁	750	290	740	1243	756
V ₂	1020	483	912	1347	940
V ₃	1573	774	1195	1786	1332
V ₄	2042	985	1423	1954	1601
Mean	1346	633	1068	1582	1157

S.E. of difference of two

1. V marginal means = 166.4 lb./ac.
2. N marginal means = 82.6 lb./ac.
3. V means at the same level of N = 194.8 lb./ac.
4. N means at the same level of V = 130.7 lb./ac.

Crop :- Jute (Kharif).**Ref :- J.A.R.I. 57(11).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'MV'.**

Object :—To study the effect of different levels of N on different varieties of Jute.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 3.6.1957. (iv) (a) Ploughing and laddering. (b) Line sowing by drill. (c) 5 to 6 lb./ac. (d) 12"×3". (e) 1. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) 2 weedings and 2 thinnings. (ix) 48.33". (x) V₂ and V₄ on 14.10.1957 and V₁ and V₃ on 21.10.1957.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(14) on page 251.

5. RESULTS :

(i) 766 lb./ac. (ii) S.E. (V)=537.9 lb./ac., S.E. (N)=232.8 lb./ac., S.E. (V×N)=207.5 lb./ac. (iii) Main effect of N is highly significant. Main effect of V is significant. (iv) Av. yield of dry fibre in lb./ac.

	N ₀	N ₁	N ₂	N ₃	Mean
V ₁	683	278	374	561	474
V ₂	1052	360	619	369	600
V ₃	1553	655	922	738	967
V ₄	1601	763	820	904	1022
Mean	1222	514	684	643	766

S.E. of difference of two

1. V marginal means	= 190.2 lb./ac.
2. N marginal means	= 82.3 lb./ac.
3. V means at the same level of N	= 228.1 lb./ac.
4. N means at the same level of V	= 151.2 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 58(6).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'MV'.

Object :—To study the effect of different levels of N on different varieties of Jute.

1. BASAL CONDITIONS :

(i) (a) Jute—Mustard. (b) Mustard. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 5.5.1958. (iv) (a) 4 to 5 ploughings and ladderings. (b) Drilling. (c) 5 lb./ac. (d) 12"×3". (e) 1. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 2 weedings and 2 thinnings. (ix) 35.71". (x) 3.9.1958 to 26.9.1958.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(14) on page 251.

5. RESULTS :

(i) 1892 lb./ac. (ii) S.E. (V)=262.0 lb./ac., S.E. (N)=159.9 lb./ac. S.E. (V×N)=127.2 lb./ac. (iii) Main effect of N is highly significant. Main effect of V and interaction V×N are significant. (iv) Av. yield of dry fibre in lb./ac.

	V ₁	V ₂	V ₃	V ₄	Mean
N ₀	1805	1571	1681	1870	1732
N ₁	1931	1730	1732	1950	1836
N ₂	1967	1794	1927	2085	1943
N ₃	2115	1878	1989	2244	2056
Mean	1954	1743	1832	2037	1892

S.E. of difference of two

1. V marginal means	= 92.6 lb./ac.
2. N marginal means	= 56.6 lb./ac.
3. N means at the same level of V	= 96.2 lb./ac.
4. V means at the same level of N	= 121.0 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.R.A.I. 59(8).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'MV'.

Object :—To study the effect of different levels of N on different varieties of Jute.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 24.5.1959. (iv) (a) Ploughing, spading and laddering. (b) Drilling. (c) 5 to 6 lb./ac. (d) 12"×3". (e) 1. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 84.72". (x) 7.9.1959 to 7.10.1959.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(14) on page 251.

5. RESULTS :

(i) 1274 lb./ac. (ii) S.E. (V)=435.6 lb./ac., S.E. (N)=254.9 lb./ac., S.E. (V×N)=138.0 lb./ac. (iii) Main effect of V is significant and main effect of N is highly significant. (iv) Av. yield of dry fibre in lb./ac.

	N ₀	N ₁	N ₂	N ₃	Mean
V ₁	950	1343	1729	2021	1511
V ₂	500	897	1147	1286	957
V ₃	839	1420	1549	1777	1396
V ₄	885	1183	1289	1567	1231
Mean	794	1211	1429	1663	1274

S.E. of difference of two

1. V marginal means = 154.0 lb./ac.
2. N marginal means = 90.1 lb./ac.
3. V means at the same level of N = 175.6 lb./ac.
4. N means at the same level of V = 123.5 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 56(26).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'C'.

Object :-To study the effect of different spacings in plants grown in single and double rows for Jute.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 27.5.1956. (iv) (a) Ploughings. (b) Line sowing by drill. (c) N.A. (d) As per treatments. (e) N.A. (v) 0.55 lb./plot of A/S. (vi) J.R.C.—212. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 69.29". (x) 5.10.1956.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 arrangements of rows : M₁=Single row and M₂=Double row.

(2) 3 spacings between rows : R₁=12", R₂=16" and R₃=20".

(3) 3 spacings between plants : S₁=1", S₂=3" and S₃=5".

4" spacing kept between the double rows in case of M₂.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 18. (b) 82'×64'. (iii) 3. (iv) (a) 14'×22'. (b) 12'×20'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of jute fibre. (iv) (a) 1956—1958. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2172 lb./ac. (ii) 383.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of fibre in lb./ac.

	R ₁	R ₂	R ₃	Mean	S ₁	S ₂	S ₃
M ₁	2415	2220	2003	2213	2302	2289	2048
M ₂	2055	2157	2180	2130	1987	2282	2122
Mean	2235	2188	2092	2172	2144	2286	2085
S ₁	2190	2230	2010				
S ₂	2241	2344	2272				
S ₃	2273	1988	1993				

S.E. of M marginal mean	= 73.9 lb./ac.
S.E. of R or S marginal mean	= 90.5 lb./ac.
S.E. of body of M×R or M×S table	= 127.9 lb./ac.
S.E. of body of R×S table	= 156.7 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 57(21).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'C'.

Object :—To study the effect of different spacings in plants grown in single and double rows for Jute.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 11.6.1957. (iv) (a) 4 to 5 ploughings. (b) Line sowing by drill. (c) N.A. (d) As per treatments. (e) N.A. (v) N.A. (vi) J.R.C.—212. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 48.33". (x) 18.10.1957.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(26) on page 254.

5. RESULTS :

(i) 1848 lb./ac. (ii) 307.8 lb./ac. (iii) Only main effect of R is highly significant. (iv) Av. yield of fibre in lb./ac.

	R ₁	R ₂	R ₃	Mean	S ₁	S ₂	S ₃
M ₁	2226	1641	1486	1784	1859	1845	1649
M ₂	2136	1948	1652	1912	1819	1973	1943
Mean	2181	1794	1569	1848	1839	1909	1796
S ₁	2062	1898	1558				
S ₂	2288	1767	1671				
S ₃	2193	1718	1478				

S.E. of M marginal mean	= 59.2 lb./ac.
S.E. of R or S marginal mean	= 72.6 lb./ac.
S.E. of body of M×R or M×S table	= 102.6 lb./ac.
S.E. of body of R×S table	= 125.7 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 58(17).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'C'.

Object :— To study the effect of different spacings in plants grown in single and double rows for Jute.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 8.5.1958. (iv) (a) Ploughing. (b) Line sowing by drill. (c) N.A. (d) As per treatments. (e) N.A. (v) N.A. (vi) J.R.C.—212. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 45.26". (x) 6.10.1958.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(26) on page 254.

3. RESULTS

(i) 2904 lb./ac. (ii) 351.6 lb./ac. (iii) Main effect of S alone is highly significant. (iv) Av. yield of fibre in lb./ac.

	R ₁	R ₂	R ₃	Mean	S ₁	S ₂	S ₃
M ₁	2810	3138	2874	2941	2681	3158	2984
M ₂	2916	2881	2803	2867	2590	2985	3025
Mean	2863	3010	2839	2904	2636	3072	3004
S ₁	2543	2743	2621				
S ₂	3108	3185	2922				
S ₃	2938	3102	2973				

S.E. of M marginal mean = 67.7 lb./ac.
 S.E. of R or S marginal mean = 82.9 lb./ac.
 S.E. of body of M × R or M × S table = 117.2 lb./ac.
 S.E. of body of R × S table = 143.5 lb./ac.

Crop :- Jute (*Kharif*).

Ref :- J.A.R.I. 56(27).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'C'.

Object :- To study the effect of different spacings in plants grown between single and double rows for Jute.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 27.5.1956. (iv) (a) 4 to 5 ploughings. (b) Line sowing by drill. (c) N.A. (d) As per treatments. (e) N.A. (v) 78 lb./ac. of A/S. (vi) J.R.O.—632. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 69.29". (x) 21.9.1956.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(26) on page 254.

5. RESULTS :

(i) 2507 lb./ac. (ii) 211.9 lb./ac. (iii) Only main effect of R is highly significant. (iv) Av. yield of fibre in lb./ac.

	R ₁	R ₂	R ₃	Mean	S ₁	S ₂	S ₃
M ₁	2635	2545	2377	2519	2594	2473	2489
M ₂	2558	2629	2301	2496	2538	2536	2413
Mean	2596	2587	2339	2507	2566	2504	2451
S ₁	2585	2679	2435				
S ₂	2643	2560	2310				
S ₃	2561	2522	2271				

S.E. of M marginal mean = 40.8 lb./ac.
 S.E. of R or S marginal mean = 49.9 lb./ac.
 S.E. of body of M × R or M × S table = 70.6 lb./ac.
 S.E. of body of R × S table = 86.5 lb./ac.

Crop :- Jute (Kharif).**Ref :- J.A.R.I. 57(22).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'C'.**

Object :- To study the effect of different spacings between plants grown in single and double rows for Jute.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 12.6.1957. (iv) (a) 4 to 5 ploughings. (b) Line sowing by drill. (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) J.R.O.—632. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 48.33". (x) 27.9.1957.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(26) on page 254.

5. RESULTS :

(i) 1397 lb./ac. (ii) 186.4 lb./ac. (iii) Main effect of S is highly significant and interaction $M \times S$ is significant. (iv) Av. yield of fibre in lb./ac.

	R ₁	R ₂	R ₃	Mean	S ₁	S ₂	S ₃
M ₁	1572	1460	1294	1442	1608	1448	1270
M ₂	1337	1396	1320	1351	1330	1461	1263
Mean	1455	1428	1307	1397	1469	1454	1267
S ₁	1415	1606	1386				
S ₂	1561	1477	1325				
S ₃	1389	1200	1211				

S.E. of M marginal mean = 35.9 lb./ac.
 S.E. of R or S marginal mean = 43.6 lb./ac.
 S.E. of body of $M \times R$ or $M \times S$ table = 62.1 lb./ac.
 S.E. of body of $R \times S$ table = 76.1 lb./ac.

Crop :- Jute (Kharif).**Ref :- J.A.R.I. 58(18).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'C'.**

Object :- To study the effect of different spacings between plants grown in single and double rows for Jute.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 8.5.1958. Resown on 3.6.1958. (iv) (a) Ploughing. (b) Line sowing by drill. (c) N.A. (d) As per treatments. (e) N.A. (v) N.A. (vi) J.R.O. 632. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 45.26". (x) 17.10.1958.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(26) on page 254.

5. RESULTS :

(i) 2126 lb./ac. (ii) 165.9 lb./ac. (iii) Main effect of M is highly significant and that of R and S are significant. (iv) Av. yield of fibre in lb./ac.

	R ₁	R ₂	R ₃	Mean	S ₁	S ₂	S ₃
M ₁	2176	2033	1978	2062	2159	2110	1917
M ₂	2244	2195	2133	2191	2205	2231	2136
Mean	2210	2114	2055	2126	2182	2170	2027
S ₁	2177	2185	2184				
S ₂	2310	2204	1997				
S ₃	2143	1953	1985				

S.E. of M marginal mean	= 31.9 lb./ac.
S.E. of R or S marginal mean	= 39.1 lb./ac.
S.E. of body of M × R or M × S table	= 55.3 lb./ac.
S.E. of body of R × S table	= 67.7 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 55(15).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'C'.

Object :- To study the effect of growing Jute in rows.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Jute. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 3.6.1955. (iv) (a) 4 to 5 ploughings and ladderings. (b) As per treatments. (c) 5 lb./ac. (d) As per treatments. (e) 1. (v) N.A. (vi) D-154. (vii) Unirrigated. (viii) 2 weedings and thinning. (ix) N.A. (x) 4.10.1955.

2. TREATMENTS :

5 methods of sowing : M₁=Broadcast, M₂=Line sowing and light thinning to 12" spacing, M₃=Line sowing at 2" × 12" spacing, M₄=Line sowing at 3" × 12" spacing and M₅=Gradual hand thinning to 3" × 12" spacing.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 88' × 50'. (iii) 4. (iv) (a) 50' × 16'. (b) 48' × 14'. (v) 1' × 1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Green plant and dry fibre yield, stand count and height. (iv) (a) 1951-1955. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1771 lb./ac. (ii) 146.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	M ₁	M ₂	M ₃	M ₄	M ₅
Av. yield	1510	1780	1806	1896	1863

S.E./mean = 73.0 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 55(16).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'C'.

Object :- To study the effect of growing Jute in rows.

1. BASAL CONDITIONS :

- (i) (a) Jute—Jute. (b) Jute. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 4.6.1955. (iv) (a) 4 to 5 ploughings and laddering. (b) As per treatments. (c) 5 lb./ac. (d) As per treatments. (e) 1. (v) N.A. (vi) C—G. (vii) Unirrigated. (viii) 2 weedings and 2 thinnings. (ix) N.A. (x) 19.9.1955.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(15) on page 258.

5. RESULTS :

- (i) 1421 lb./ac. (ii) 73.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	M ₁	M ₂	M ₃	M ₄	M ₅
Av. yield	1320	1540	1346	1427	1473

S.E./mean = 36.8 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 58(16).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'C'.

Object :—To study the effect of post-sowing cultural operations on the yield of Jute fibre.

1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 29.4.1958. (iv) (a) Ploughing and laddering. (b) Line sowing. (c) N.A. (d) Rows 1' apart. (e) N.A. (v) N.A. (vi) J.R.O. 632. (vii) Unirrigated. (viii) As per treatments. (ix) 45.26". (x) 8.10.1958.

2. TREATMENTS :

12 cultural treatments : T₁=1 weeding+2 thinnings+2 wheel hoeings, T₂=1 weeding+2 thinnings+4 wheel hoeings, T₃=1 weeding+2 thinnings+6 wheel hoeings, T₄=2 weedings+2 thinnings+2 wheel hoeings, T₅=2 weedings+2 thinnings+4 wheel hoeings, T₆=2 weedings+2 thinnings+6 wheel hoeings, T₇=4 weedings+2 thinnings+2 wheel hoeings, T₈=4 weedings+2 thinnings+4 wheel hoeings, T₉=4 weedings+2 thinnings+6 wheel hoeings, T₁₀=2 across rakings+2 wheel hoeings, T₁₁=2 across rakings+4 wheel hoeings and T₁₂=2 across rakings+6 wheel hoeings.

3. DESIGN :

- (i) R.B.D. (ii) (a) 12. (b) 82'×70'. (iii) 4. (iv) (a) 26'×16'. (b) 24'×14'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

- (i) Good. (ii) N.A. (iii) Yield of fibre. (iv) (a) 1958—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

- (i) 378 lb./ac. (ii) 61.9 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of fibre in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂
Av. yield	352	369	323	391	397	360	371	384	296	389	399	509

S.E./mean = 30.9 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 59(15).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'C'.

Object :—To study the effect of post-sowing cultural operations on the yield of Jute fibre.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 28.5.1959. (iv) (a) Ploughings and laddering. (b) Line sowing. (c) 3 to 4 srs./ac. (d) Rows 1' apart. (e) N.A. (v) Nil. (vi) J.R.O.—632. (vii) Unirrigated. (viii) As per treatments. (ix) 82.6". (x) 26.8.1959.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(16) on page 259.

5. RESULTS :

(i) 1334 lb./ac. (ii) 112.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of fibre in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂
Av. yield	1337	1351	1401	1291	1403	1405	1485	1567	1564	990	1081	1127

S.E./mean = 56.0 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 56(25).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'C'.

Object :—To study the effect of different post-sowing cultural operations on the yield of Jute fibre.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 16.5.1956. (iv) (a) Ploughing and laddering. (b) Line sowing. (c) 3 to 4 srs./ac. (d) Rows 1' apart. (e) N.A. (v) N.A. (vi) J.R.O.—632 (early). (vii) Unirrigated. (viii) As per treatments. (ix) 69.29". (x) 28.8.1956.

2. TREATMENTS :

14 cultural treatments: T₁=One weeding and 1 thinning, T₂=2 weedings and 2 thinnings, T₃=T₁+4 wheel hoeings, T₄=T₁+6 wheel hoeings, T₅=T₂+4 wheel hoeings, T₆=T₂+6 wheel hoeings, T₇=One across wheel hoeing+4 wheel hoeings, T₈=One across wheel hoeing+6 wheel hoeings, T₉=2 across wheel hoeings+4 wheel hoeings, T₁₀=2 across wheel hoeings+6 wheel hoeings, T₁₁=One thinning+4 wheel hoeings, T₁₂=One thinning+6 wheel hoeings, T₁₃=2 thinnings+4 wheel hoeings and T₁₄=2 thinnings+6 wheel hoeings.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) 110'×74'. (iii) 3. (iv) (a) 36'×14'. (b) 34'×12'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of fibre. (iv) (a) 1956—1957. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1326 lb./ac. (ii) 793.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of fibre in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Av. yield	1459	1711	1819	1676	1917	1756	962
Treatment	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂	T ₁₃	T ₁₄
Av. yield	1172	795	810	918	1046	844	1682

S.E./mean = 457.9 lb./ac.

Crop :- Jute (Kharif).**Ref :- J.A.R.I. 57(18).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'C'.**

Object :—To study the effect of different post-sowing cultural operations on the yield of Jute fibre.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 2.6.1957. (iv) (a) Ploughing and laddering. (b) Line sowing. (c) 3 to 4 srs./ac. (d) Rows 1' apart. (e) N.A. (v) N.A. (vi) J.R.O.—632 (early). (vii) Unirrigated. (viii) As per treatments. (ix) 48 33". (x) 27.9.1957.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(25) on page 260.

5. RESULTS :

(i) 798 lb./ac. (ii) 364.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of fibre in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Av. yield	942	998	945	1121	1429	1388	442
Treatment	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂	T ₁₃	T ₁₄
Av. yield	618	400	665	471	294	424	983

S.E./mean = 210.6 lb./ac.

Crop :- Jute (Kharif).**Ref :- J.A.R.I. 56(20).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'C'.**

Object :—To find out the optimum time of thinning for Jute fibre.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 23.6.1956. (iv) (a) Ploughing and laddering. (b) Line sowing. (c) N.A. (d) Rows 1' apart. (e) N.A. (v) N.A. (vi) J.R.C. 212. (vii) Unirrigated. (viii) Weeding and thinning as per treatments. (ix) 69.29". (x) 18.10.1956.

2. TREATMENTS :8 stages of thinning : T₁=1, T₂=2, T₃=3, T₄=4, T₅=5, T₆=6, T₇=7 and T₈=8 weeks after sowing.**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) 62' × 42'. (iii) 3. (iv) (a) 20' × 14'. (b) 18' × 12'. (v) 1' × 1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of fibre. (iv) (a) 1956—1958. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 984 lb./ac. (ii) 306.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of fibre in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	1324	1335	1206	772	873	732	944	683

S.E./mean = 177.1 lb./ac.

Crop :- Jute (Kharif).**Ref :- J.A.R.I. 57(16).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'C'.**

Object :—To find out the optimum time of thinning for Jute fibre.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 3.6.1957. (iv) (a) Ploughing and laddering. (b) Line sowing. (c) N.A. (d) Rows 1' apart. (e) N.A. (v) Nil. (vi) J.R.C.—212. (vii) Unirrigated. (viii) Weeding and thinning as per treatments. (ix) 48.33%. (x) 16.10.1957.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(20) on page 261.

5. RESULTS :

(i) 1329 lb./ac. (ii) 431.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of fibre in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	1530	1294	1627	1533	1249	1212	1266	923

S.E./mean = 239.0 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 58(10).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'C'.

Object :—To find out the optimum time of thinning for Jute fibre.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 28.4.1958. (iv) (a) Ploughing and laddering. (b) Line sowing. (c) to (e) N.A. (v) N.A. (vi) J.R.C. 212. (vii) Unirrigated. (viii) Weeding and thinning as per treatments. (ix) 45.26%. (x) 3.10.1958.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(20) on page 261.

5. RESULTS :

(i) 1859 lb./ac. (ii) 311.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of fibre in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	2711	2373	2161	1753	1712	1445	1678	1039

S.E./mean = 179.7 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 56(21).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'C'.

Object :— To find out the optimum time of thinning for Jute fibre.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 23.6.1956. (iv) (a) Ploughing and laddering. (b) Line sowing. (c) N.A. (d) Row 1' apart. (e) N.A. (v) Nil. (vi) J.R.O.—632. (vii) Unirrigated. (viii) Weeding and thinning as per treatments. (ix) 69.29%. (x) 4.10.1956.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(20) on page 261.

5. RESULTS :

(i) 717 lb./ac. (ii) 223.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of fibre in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	911	960	1128	777	817	635	311	357

S.E./mean = 129.2 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 57(17).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'C'.

Object :— To find out the optimum time of interculture for Jute fibre.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 3.6.1957. (iv) (a) Ploughing and laddering. (b) Line sowing. (c) to (e) N.A. (v) Nil. (vi) J.R.O. 632. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 48.33". (x) 29.6.1957.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(20) on page 261.

5. RESULTS :

(i) 1772 lb./ac. (ii) 124.5 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of fibre in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	1817	1996	2056	1839	1642	1659	1595	1570

S.E./mean = 71.9 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 58(11).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'C'.

Object :— To find out the optimum time of interculture for Jute fibre.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 28.4.1958. (iv) (a) Ploughing and laddering. (b) Line sowing. (c) to (e) N.A. (v) Nil. (vi) J.R.O. 632. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 45.26". (x) 30.9.1958.

2. TREATMENTS :

8 stages of thinning : T₁=2, T₂=3, T₃=4, T₄=5, T₅=6, T₆=6, T₇=8 and T₈=9 weeks after sowing.

3. DESIGN and 4. GENERAL :

Same as in expt. no. 56(20) on page 261.

5. RESULTS :

(i) 1973 lb./ac. (ii) 155.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of fibre in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	2712	2244	2062	1811	1819	1799	1753	1586

S.E./mean = 89.8 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 54(14).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'CV'.

Object :— To study the effect of different dates of sowing on the yield of different varieties of Jute fibre.

1. BASAL CONDITIONS:

(i) (a) Jute—Mustard. (b) Mustard. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) As per treatments. (iv) (a) 4 to 5 ploughings and ladderings. (b) Drilling. (c) 5 lb./ac. (d) 12" × 3". (e) 1. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings, 2 thinnings and 4 to 5 wheel hoeings. (ix) N.A. (x) 3.8.1954 to 23.10.1954.

2. TREATMENTS:**Main-plot treatments:**

6 dates of sowing: $D_1=16.3.1954$, $D_2=5.4.1954$, $D_3=25.4.1954$, $D_4=15.5.1954$, $D_5=4.6.1954$ and $D_6=24.6.1954$.

Sub-plot treatments:

2 varieties: $V_1=D-154$ and $V_2=Fanduk$.

3. DESIGN:

(i) Split-plot. (ii) (a) 6 main-plots/block; 2 sub-plots/main-plot. (b) 45' × 51'. (iii) 6. (iv) (a) 7' × 24'. (b) 5' × 22'. (v) 1' × 1'. (vi) Yes.

4. GENERAL:

(i) Good. (ii) N.A. (iii) Stand count, height, green and dry fibre yield. (iv) (a) 1954—1955. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 1414 lb./ac. (ii) (a) and (b) N.A. (iii) Main effect of D and V are highly significant. (iv) Av. yield of fibre in lb./ac.

	D_1	D_2	D_3	D_4	D_5	D_6	Mean
V_1	1882	2233	2586	1451	781	335	1545
V_2	1549	2105	2255	1089	475	225	1283
Mean	1716	2169	2421	1270	628	280	1414

S.E.'s—N.A.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 55(11).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'CV'.

Object :- To study the effect of different dates of sowing on the yield of different varieties of Jute fibre.

1. BASAL CONDITIONS:

(i) (a) Jute—Mustard. (b) Mustard. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) As per treatments. (iv) (a) 4 to 5 ploughings and ladderings. (b) Drilling. (c) 5 lb./ac. (d) 12" × 3". (e) 1. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings, 2 thinnings and 4 to 5 wheel hoeings. (ix) 61.75". (x) 13.8.1955 to 8.10.1955.

2. TREATMENTS:**Main-plot treatments:**

6 dates of sowing; $D_1=16.3.1955$, $D_2=5.4.1955$, $D_3=25.4.1955$, $D_4=15.5.1955$, $D_5=4.6.1955$ and $D_6=24.6.1955$.

Sub-plot treatments:

2 varieties: $V_1=D-154$ and $V_2=Fanduk$.

3. DESIGN and 4. GENERAL:

Same as in expt. no. 54(14) on page 263.

5. RESULTS:

(i) 1673 lb./ac. (ii) (a) 338.4 lb./ac. (b) 214.3 lb./ac. (iii) Main effects of V and D are highly significant. (iv) Av. yield of fibre in lb./ac.

	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	Mean
V ₁	1715	2133	1837	2335	1607	597	1704
V ₂	1522	1995	2218	2283	1409	419	1641
Mean	1619	2064	2028	2309	1508	508	1673

S.E. of difference of two

1. D marginal means = 138.2 lb./ac.
2. V marginal means = 50.5 lb./ac.
3. V means at the same level of D = 123.7 lb./ac.
4. D means at the same level of V = 163.5 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 55(12).

Site - Jute Agri. Res. Instt., Nilganj.

Type :- 'CV'.

Object :- To study the effect of different dates of sowing on the yield of different varieties of Jute fibre.

1. BASAL CONDITIONS :

(i) (a) Jute—Mustard. (b) Mustard. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) As per treatments. (iv) (a) 4 to 5 ploughings and ladderings. (b) Drilling. (c) 5 lb./ac. (d) 12" × 3". (e) 1. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings, 2 thinnings and 4 to 5 wheel hoeings. (ix) 61.75". (x) 13.8.1955 to 8.10.1955.

2. TREATMENTS :

Main-plot treatments :

6 dates of sowing : D₁=16.3.1955, D₂=5.4.1955, D₃=25.4.1955, D₄=15.5.1955, D₅=4.6.1955 and D₆=24.6.1955.

Sub-plot treatments :

2 varieties : V₁=C.G. and V₂=J.R.O.—632.

3. DESIGN and 4. GENERAL :

Same as in expt. no. 54(14) on page 263.

5. RESULTS :

(i) 1424 lb./ac. (ii) (a) 399.2 lb./ac. (b) 182.0 lb./ac. (iii) Main effects of V and D are highly significant and interaction V × D is significant. (iv) Av. yield of fibre in lb./ac.

	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	Mean
V ₁	541	1541	1670	1545	1189	663	1192
V ₂	1065	2415	1973	1926	1689	867	1656
Mean	803	1978	1822	1736	1439	765	1424

S.E. of difference of two

1. D marginal means = 163.0 lb./ac.
2. V marginal means = 42.9 lb./ac.
3. V means at the same level of D = 105.1 lb./ac.
4. D means at the same level of V = 179.1 lb./ac.

Crop :- Jute (Kharif).**Ref :- J.A.R.I., 56(29).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'CV'.**

Object :- To study the optimum date of sowing and optimum stage of harvest of different varieties of Jute.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) As per treatments. (iv) (a) 4 to 5 ploughings and 2 ladderings. (b) Line sowing by drill. (c) V_1 at 41 gms./plot and V_2 at 43 gms./plot. (d) Rows 1' apart. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) 4 to 5 weedings, hoeings and thinnings. (ix) N.A. (x) As per treatments.

2. TREATMENTS :**Main-plot treatments :**

2 varieties of jute : V_1 =J.R.C.—321 (early) and V_2 =J.R.C.—212 (late).

Sub-plot treatments :**Treatments in one direction :**

6 dates of sowing : S_1 =21.3.1956, S_2 =5.4.1956, S_3 =20.4.1956, S_4 =5.5.1956, S_5 =20.5.1956 and S_6 =4.6.1956.

Treatments in orthogonal direction :

4 stages of harvest : D_1 =100 days, D_2 =120 days, D_3 =140 days after sowing and D_4 =Small pod stage.

3. DESIGN :

(i) Split-cum-strip-plot. (ii) (a) 2 main-plots/block, 6 strips in one direction and 4' in orthogonal direction/main-plot. (b) 151'×141'. (iii) 3. (iv) (a) 21'×17'. (b) 19'×15'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of fibre. (iv) (a) 1956—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1017 lb./ac. (ii) S.E. (V)=1479.1 lb./ac. S.E. (S)=860.9 lb./ac. S.E. (D)=772.7 lb./ac. S.E. (S×D)=1307.0 lb./ac. (iii) Main effect of S is highly significant and effect of D is significant. (iv) Av. yield of jute fibre in lb./ac.

	S_1	S_2	S_3	S_4	S_5	S_6	Mean	D_1	D_2	D_3	D_4
V_1	1215	1227	1393	714	239	67	809	578	851	889	918
V_2	1722	1898	1873	1479	273	106	1225	777	1169	1327	1628
Mean	1469	1562	1633	1096	256	87	1017	678	1010	1108	1273
D_1	914	1010	1103	738	170	133					
D_2	1491	1419	1736	1111	250	52					
D_3	1781	1722	1641	1170	278	57					
D_4	1689	2099	2053	1367	327	104					

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. V marginal means | = 246.5 lb./ac. | 6. D means at the same level of V | = 257.6 lb./ac. |
| 2. S marginal means | = 248.5 lb./ac. | 7. V means at the same level of D | = 332.5 lb./ac. |
| 3. D marginal means | = 182.1 lb./ac. | 8. D means at the same level of S | = 712.5 lb./ac. |
| 4. S means at the same level of V | = 351.5 lb./ac. | 9. S means at the same level of D | = 699.2 lb./ac. |
| 5. V means at the same level of S | = 404.6 lb./ac. | | |

Crop :- Jute (Kharif).**Ref :- J.A.R.I., 57(23).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'CV'.**

Object :- To study the optimum date of sowing and stage of harvest of different varieties of Jute.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) As per treatments. (iv) (a) Ploughing and laddering. (b) Line sowing by drill. (c) N.A. (d) 1' between rows. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and thinning. (ix) N.A. (x) As per treatments.

2. TREATMENTS to 4. GENERAL:

Same as in expt. no. 56(29) on page 266.

Dates of sowing are: $S_1=21.3.1957$, $S_2=5.4.1957$, $S_3=20.4.1957$, $S_4=5.5.1957$, $S_5=20.5.1957$ and $S_6=4.6.1957$.

5. RESULTS:

(i) 1404 lb./ac. (ii) S.E. (V)=638.8 lb./ac., S.E. (S)=637.5 lb./ac., S.E. (D)=427.0 lb./ac. S.E. (S×D)=1072.9 lb./ac. (iii) Main effects of S and D are highly significant. (iv) Av. yield of jute fibre in lb./ac.

	S_1	S_2	S_3	S_4	S_5	S_6	Mean	D_1	D_2	D_3	D_4
V_1	578	685	1080	1615	1979	1142	1180	812	1230	1384	1293
V_2	1217	1115	1421	1772	2177	2069	1629	1141	1578	1829	1967
Mean	898	900	1251	1693	2078	1606	1404	976	1404	1607	1630
D_1	579	713	791	831	1559	1386					
D_2	760	811	1126	1907	2132	1686					
D_3	961	760	1483	2275	2503	1659					
D_4	1291	1317	1603	1760	2118	1691					

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. V marginal means | = 106.5 lb./ac. | 6. D means at the same level of V | = 142.3 lb./ac. |
| 2. S marginal means | = 184.0 lb./ac. | 7. V means at the same level of D | = 162.9 lb./ac. |
| 3. D marginal means | = 100.6 lb./ac. | 8. D means at the same level of S | = 574.4 lb./ac. |
| 4. S means at the same level of V | = 260.3 lb./ac. | 9. S means at the same level of D | = 567.1 lb./ac. |
| 5. V means at the same level of S | = 260.3 lb./ac. | | |

Crop :- Jute (*Kharif*).

Site :- Jute Agri. Res. Instt., Nilganj.

Ref :- J.A.R.I. 53(20).

Type :- 'CV'.

Object :- To study the optimum date of sowing and stage of harvest of different varieties of Jute.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) As per treatments. (iv) (a) Ploughing and laddering. (b) Line sowing by drill. (c) N.A. (d) Rows 1' apart. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and thinning. (ix) N.A. (x) As per treatments.

2. TREATMENTS to 4. GENERAL:

Same as in expt. no. 56(29) on page 266.

Dates of sowing are: $S_1=21.3.1958$, $S_2=5.4.1958$, $S_3=20.4.1958$, $S_4=5.5.1958$, $S_5=20.5.1958$ and $S_6=4.6.1958$.

5. RESULTS:

(i) 1173 lb./ac. (ii) S.E. (V)=454.2 lb./ac. S.E. (S)=407.9 lb./ac. S.E. (D)=251.4 lb./ac. S.E. (S×D)=890.7 lb./ac. (iii) Main effect of V is significant. Main effects of S, D and interaction D×V are highly significant. (iv) Av. yield of jute fibre in lb./ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	Mean	D ₁	D ₂	D ₃	D ₄
V ₁	547	604	823	1274	1368	1092	951	701	909	1087	1108
V ₂	815	1029	1174	1689	2071	1590	1395	877	1235	1762	1705
Mean	681	817	999	1481	1720	1341	1173	789	1072	1424	1407
D ₁	335	420	633	1060	1209	1079					
D ₂	654	732	878	1297	1568	1303					
D ₃	800	958	1181	1988	2101	1518					
D ₄	936	1157	1302	1581	2000	1465					

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. V marginal means | = 75.7 lb./ac. | 6. D means at the same level of V | = 83.8 lb./ac. |
| 2. S marginal means | = 117.8 lb./ac. | 7. V means at the same level of D | = 104.9 lb./ac. |
| 3. D marginal means | = 59.3 lb./ac. | 8. D means at the same level of S | = 473.1 lb./ac. |
| 4. S means at the same level of V | = 166.5 lb./ac. | 9. S means at the same level of D | = 460.7 lb./ac. |
| 5. V means at the same level of S | = 169.8 lb./ac. | | |

Crop :- Jute (*Kharif*).

Ref :- I.A.R.I. 59(17).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'CV'.

Object :- To study the optimum date of sowing and stage of harvest of different varieties of Jute

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) As per treatments. (iv) (a) 4 to 5 ploughings and laddering. (b) Line sowing by drill. (c) to (e) N.A. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and thinning. (ix) N.A. (x) As per treatments.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(29) on page 266.

Dates of sowing are : S₁=21.3.1959, S₂=5.4.1959, S₃=20.4.1959, S₄=5.5.1959, S₅=20.5.1959 and S₆=4.6.1959.

5. RESULTS :

(i) 612 lb./ac. (ii) S.E. (V)=640.2 lb./ac. S.E. (S)=436.0 lb./ac. S.E. (D)=339.1 lb./ac. S.E. (S×D)=578.3 lb./ac. (iii) Main effect of D alone is highly significant. (iv) Av. yield of jute fibre in lb./ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	Mean	D ₁	D ₂	D ₃	D ₄
V ₁	425	444	639	282	615	379	464	309	424	553	569
V ₂	799	734	907	586	696	844	761	488	626	896	1035
Mean	612	589	773	434	656	611	612	398	525	724	802
D ₁	391	267	715	294	268	455					
D ₂	495	578	526	328	722	500					
D ₃	649	548	950	517	870	814					
D ₄	914	963	900	597	762	676					

S.E. of difference of two

1. V marginal means	= 106.7 lb./ac.	6. D means at the same level of V	= 113.0 lb./ac.
2. S marginal means	= 125.9 lb./ac.	7. V means at the same level of D	= 144.8 lb./ac.
3. D marginal means	= 79.9 lb./ac.	8. D means at the same level of S	= 315.1 lb./ac.
4. S means at the same level of V	= 178.0 lb./ac.	9. S means at the same level of D	= 315.3 lb./ac.
5. V means at the same level of S	= 194.4 lb./ac.		

Crop :- Jute (*Kharif*).

Ref :- J.A.R.I. 56(28).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'CV'.

Object :- To study the optimum date of sowing and stage of harvest of different varieties of Jute.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) As per treatments. (iv) (a) 5 to 6 ploughings and ladderings. (b) Line sowing by drill. (c) N.A. (d) Row 1' apart. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 4 to 5 weedings and thinnings. (ix) N.A. (x) As per treatments.

2. TREATMENTS ;

Main-plot treatments :

2 varieties of jute : V_1 = C.G. (local) and V_2 = J.R.O.—632 (late).

Sub-plot treatment :

Treatment in one direction :

6 dates of sowing : S_1 = 21.3.1956, S_2 = 5.4.1956, S_3 = 20.4.1956, S_4 = 5.5.1956, S_5 = 20.5.1956 and S_6 = 4.6.1956.

Treatment in orthogonal direction :

4 stages of harvest : D_1 = 100 days, D_2 = 120 days, D_3 = 140 days after sowing and D_4 = Small Pod stage.

3. DESIGN :

(i) Split-cum-strip-plot. (ii) (a) 2 main-plots/block ; 6 strips in one direction and 4 in orthogonal direction/main-plot. (b) 151' x 141'. (iii) 3. (iv) (a) 21' x 17'. (b) 19' x 15'. (v) 1' x 1'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of fibre. (iv) (a) 1956—contd. (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 1222 lb./ac. (ii) S.E. (V) = 390.4 lb./ac., S.E. (S) = 410.9 lb./ac. S.E. (D) = 267.9 lb./ac. S.E. (S x D) = 1369.1 lb./ac. (iii) Main effect of V and interaction S x V are significant. Main effects of S and D are highly significant. (iv) Av. yield of jute fibre in lb./ac.

	S_1	S_2	S_3	S_4	S_5	S_6	Mean	D_1	D_2	D_3	D_4
V_1	1128	1662	1822	1444	274	71	1067	787	1034	1310	1137
V_2	1679	2182	2566	1513	251	73	1377	1030	1404	1551	1524
Mean	1403	1922	2194	1478	263	72	1222	909	1219	1430	1330
D_1	1073	1392	1683	1076	150	79					
D_2	1343	1940	2185	1504	268	75					
D_3	1758	1286	2539	1663	358	78					
D_4	1441	2170	2370	1671	274	56					

S.E. of difference of two

1. V marginal means	= 65.1 lb./ac.	6. D means at the same level of V	= 89.3 lb./ac.
2. S marginal means	= 118.6 lb./ac.	7. V means at the same level of D	= 101.1 lb./ac.
3. D marginal means	= 63.1 lb./ac.	8. D means at the same level of S	= 724.3 lb./ac.
4. S means at the same level of V	= 167.7 lb./ac.	9. S means at the same level of D	= 694.8 lb./ac.
5. V means at the same level of S	= 166.4 lb./ac.		

Crop :- Jute (*Kharif*).

Ref :- J.A.R.I. 57(24).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'CV'.

Object :— To study the optimum date of sowing and stage of harvest of different varieties of Jute.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) As per treatments. (iv) (a) Ploughing and laddering. (b) Line sowing by drill. (c) N.A. (d) Row 1' apart. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and thinning. (ix) N.A. (x) As per treatments.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(28) on page 269.

Dates of sowing are : $S_1=21.3.1957$, $S_2=5.4.1957$, $S_3=20.4.1957$, $S_4=5.5.1957$, $S_5=20.5.1957$ and $S_6=4.6.1957$.

5. RESULTS :

(i) 1792 lb./ac. (ii) S.E. (V)=466.6 lb./ac. S.E. (S)=423.1 lb./ac. S.E. (D)=440.4 lb./ac. S.E. (S×D)=723.9 lb./ac. (iii) Main effects of S and D are highly significant. Main effect of V and interaction S×V are significant. (iv) Av. yield of jute in lb./ac.

	S_1	S_2	S_3	S_4	S_5	S_6	Mean	D_1	D_2	D_3	D_4
V_1	907	1472	1824	1912	1935	1682	1622	1311	1681	1757	1738
V_2	1729	1861	2315	2102	1980	1784	1962	1694	1958	2144	2051
Mean	1318	1667	2069	2007	1957	1733	1792	1503	1820	1951	1894
D_1	937	1376	1635	1621	1858	1589					
D_2	1373	1634	2024	2091	1961	1834					
D_3	1453	1743	2390	2144	2158	1818					
D_4	1510	1914	2227	2172	1853	1691					

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. V marginal means | = 77.8 lb./ac. | 6. D means at the same level of V | = 146.8 lb./ac. |
| 2. S marginal means | = 122.2 lb./ac. | 7. V means at the same level of D | = 149.0 lb./ac. |
| 3. D marginal means | = 103.8 lb./ac. | 8. D means at the same level of S | = 395.4 lb./ac. |
| 4. S means at the same level of V | = 172.7 lb./ac. | 9. S means at the same level of D | = 382.0 lb./ac. |
| 5. V means at the same level of S | = 175.8 lb./ac. | | |

Crop :- Jute (*Kharif*).

Ref :- I.A.R.I. 58(19).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'CV'.

Object :—To study the optimum date of sowing and stage of harvest of different varieties of Jute.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) As per treatments. (iv) (a) 4 to 5 ploughings and laddering. (b) Line sowing by drill. (c) N.A. (d) Rows 1' apart. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and thinning. (ix) N.A. (x) As per treatments.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(28) on page 269.

Dates of sowing are : $S_1=21.3.1958$, $S_2=5.4.1958$, $S_3=20.4.1958$, $S_4=5.5.1958$, $S_5=20.5.1958$ and $S_6=4.6.1958$.

5. RESULTS :

(i) 1885 lb./ac. (ii) S.E.(V)=176.0 lb./ac. S.E.(S)=432.7 lb./ac. S.E.(D)=368.0 lb./ac. S.E.(S×D)=737.0 lb./ac. (iii) Main effects of V, S and D are highly significant. Interaction S×V is significant. (iv) Av. yield of jute fibre in lb./ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	Mean	D ₁	D ₂	D ₃	D ₄
V ₁	913	1542	1877	2017	2035	1668	1675	1351	1682	1863	1805
V ₂	1920	2110	2146	2166	2228	1992	2094	1820	1997	2368	2190
Mean	1416	1826	2011	2092	2132	1830	1885	1585	1840	2116	1998
D ₁	1062	1444	1684	1867	1868	1586					
D ₂	1370	1781	1983	1994	2014	1896					
D ₃	1554	1980	2203	2310	2479	2167					
D ₄	1680	2100	2176	2195	2165	1670					

S.E. of difference of two

1. V marginal means = 29.3 lb./ac.
2. S marginal means = 124.9 lb./ac.
3. D marginal means = 86.7 lb./ac.
4. S means at the same level of V = 176.6 lb./ac.
5. V means at the same level of S = 163.9 lb./ac.
6. D means at the same level of V = 122.7 lb./ac.
7. V means at the same level of D = 110.2 lb./ac.
8. D means at the same level of S = 398.0 lb./ac.
9. S means at the same level of D = 389.1 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 59(16).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'CV'.

Object :- To study the optimum date of sowing and stage of harvest of different varieties of Jute.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) As per treatments. (iv) (a) Ploughing and laddering. (b) Line sowing by drill. (c) to (e) N.A. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and thinning. (ix) N.A. (x) As per treatments.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(28) on page 269.

Dates of sowing are: S₁=21.3.1959, S₂=5.4.1959, S₃=20.4.1959, S₄=5.5.1959, S₅=20.5.1959 and S₆=4.6.1959.

5. RESULTS :

(i) 1302 lb./ac. (ii) S.E. (V)=870.4 lb./ac. S.E. (S)=574.9 lb./ac. S.E. (D)=433.4 lb./ac. S.E. (S×D)=763.4 lb./ac. (iii) Main effects of S and D are significant. (iv) Av. yield of jute fibre in lb./ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	Mean	D ₁	D ₂	D ₃	D ₄
V ₁	525	938	1285	1305	1265	914	1039	862	1026	1178	1088
V ₂	1288	1772	1832	1687	1366	1443	1565	1272	1553	1771	1662
Mean	907	1355	1558	1496	1315	1178	1302	1067	1290	1475	1375
D ₁	744	1007	1455	1228	930	1035					
D ₂	787	1442	1332	1447	1449	1282					
D ₃	1069	1268	1758	1758	1668	1326					
D ₄	1027	1700	1689	1549	1215	1070					

S.E. of difference of two

1. V marginal means	= 145.1 lb./ac.	6. D means at the same level of V	= 144.5 lb./ac.
2. S marginal means	= 166.0 lb./ac.	7. V means at the same level of D	= 191.6 lb./ac.
3. D marginal means	= 102.2 lb./ac.	8. D means at the same level of S	= 415.1 lb./ac.
4. S means at the same level of V	= 234.7 lb./ac.	9. S means at the same level of D	= 416.2 lb./ac.
5. V means at the same level of S	= 258.8 lb./ac.		

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 54(9).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'CMV'.

Object :- To study the effect of different levels of N and spacings on different varieties of Jute.

1. BASAL CONDITIONS :

(i) (a) Jute—Mustard. (b) Mustard. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 8.5.1954. (iv) (a) 4 to 5 ploughings and ladderings. (b) As per treatments. (c) 5 lb./ac. (d) As per treatments. (e) 1. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 2 weedings, 2 thinning and 4 to 6 wheel hoeings. (ix) 43.68°. (x) 16, 28.9.1954.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 varieties : $V_1 = \text{C.G. (early)}$ and $V_2 = \text{J.R.O.—632 (medium)}$.

(2) 2 levels of N as compost and A/S in 1 : 1 ratio : $N_0 = 0$ and $N_1 = 40$ lb./ac.

(3) 4 spacings : $S_1 = \text{Irregular (broadcast)}$, $S_2 = \text{Irregular with light thinning}$, $S_3 = 2'' \times 12''$ and $S_4 = 3'' \times 12''$.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 16. (b) $142' \times 102'$. (iii) 4. (iv) (a) $50' \times 16'$. (b) $48' \times 14'$. (v) $1' \times 1'$. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Green plant and dry fibre yield, stand count and average height. (iv) (a) 1953–1954. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1485 lb./ac. (ii) 250.3 lb./ac. (iii) Main effects of V, N and interaction $V \times N$ are highly significant. (iv) Av. yield of dry fibre in lb./ac.

	S_1	S_2	S_3	S_4	Mean	N_0	N_1
V_1	1267	1306	1272	1358	1301	1013	1589
V_2	1670	1869	1605	1534	1670	1473	1867
Mean	1469	1588	1439	1446	1485	1243	1728
N_0	1245	1307	1280	1141			
N_1	1693	1869	1597	1751			

S.E. of S marginal mean	= 62.5 lb./ac.
S.E. of V or N marginal mean	= 44.2 lb./ac.
S.E. of body of $N \times S$ or $V \times S$ table	= 88.5 lb./ac.
S.E. of body of $N \times V$ table	= 62.5 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 54(10).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'CMV'.

Object :- To study the effect of different levels of N and spacings on different varieties of Jute.

1. BASAL CONDITIONS :

(i) (a) Jute—Mustard. (b) Mustard. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 7.5.1954. (iv) (a) 4 to 5 ploughings and laddering. (b) As per treatments. (c) 5 lb./ac. (d) As per treatments. (e) 1. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 2 weedings, thinnings and 4 to 6 wheel hoeings. (ix) 43.68". (x) 6 and 23.9.1954.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 varieties : V_1 =Fanduk (medium) and V_2 =D—154 (medium).

(2) 2 levels of N as compost and A/S in 1 : 1 ratio : $N_0=0$ and $N_1=40$ lb./ac.

(3) 4 spacings : S_1 =Broadcast, S_2 =Broadcast with light thinning, $S_3=2' \times 12'$ and $S_4=3' \times 12'$.

3. DESIGN and 4. GENERAL :

Same as in expt. no. 54 (9) on page 272.

5. RESULTS :

(i) 1726 lb./ac. (ii) 241.6 lb./ac. (iii) Main effects of V and N are highly significant. Interaction $V \times N$ is significant. (iv) Av. yield of dry fibre in lb./ac.

	S_1	S_2	S_3	S_4	Mean	N_0	N_1
V_1	1348	1522	1477	1542	1472	1109	1835
V_2	1863	21.4	2051	1883	1980	1771	2189
Mean	1606	1823	1764	1713	1726	1440	2012
N_0	1215	1555	1503	1488			
N_1	1996	2091	2024	1937			

S.E. of S marginal mean = 60.4 lb./ac.
 S.E. of V or N marginal mean = 42.7 lb./ac.
 S.E. of body of $S \times V$ or $S \times N$ table = 85.4 lb./ac.
 S.E. of body of $V \times N$ table = 60.4 lb./ac.

Crop :- Jute (Kharif).

Ref :- J.A.R.I. 59(14).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'CMV'.

Object :—To study the effect of different levels of N and methods of sowing on different varieties of Jute.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 5.6.1959. (iv) (a) Ploughing and laddering. (b) As per treatments. (c) 4 to 5 srs./ac. (d) and (e) N.A. (v) N.A. (v) As per treatments. (vii) Unirrigated. (viii) Weeding and thinning. (ix) 82.6". (x) 18.9.1959 to 7.10.1959.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V_1 =Local (cap.), V_2 =D—154 and V_3 =J.R.C.—212.

(2) 3 levels of N as A/S : $N_0=0$, $N_1=40$ and $N_2=80$ lb./ac.

(3) 2 methods of sowing : S_1 =Broadcast and S_2 =Line sowing.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 18. (b) $118' \times 82'$. (iii) 3. (iv) (a) $38' \times 12'$. (b) $36' \times 10'$. (v) $1' \times 1'$. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of fibre. (iv) (a) 1959—contd. (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 2007 lb./ac. (ii) 171.2 lb./ac. (iii) Main effects of V and S are highly significant. (iv) Av. yield of fibre in lb./ac.

	N ₀	N ₁	N ₂	Mean	S ₁	S ₂
V ₁	1855	1919	1950	1908	1832	1984
V ₂	1926	1999	2081	2002	1893	2112
V ₃	2037	2161	2135	2111	1940	2282
Mean	1939	2026	2055	2007	1888	2126
S ₁	1856	1853	1956			
S ₂	2023	2200	2155			

S.E. of V or N marginal mean = 40.4 lb./ac.
 S.E. of S marginal mean = 32.9 lb./ac.
 S.E. of body of V×N table = 69.9 lb./ac.
 S.E. of body of V×S or N×S table = 57.1 lb./ac.

Crop :- Jute (*Kharif*).

Ref :- J.A.R.I. 55(8).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'D'.

Object :—To study the efficacy of fungicides against stem-rot of Jute.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Pea. (c) 3 tons/ac. of compost. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 3.6.1955. (iv) (a) 4 to 6 ploughings and laddering. (b) Broadcast. (c) 10 lb./ac. (d) 4' between plants. (e) 1. (v) 3 tons/ac. of T.C.+A/S at 20 lb./ac. of N. (vi) J.R.C.—412 (medium). (vii) Unirrigated. (viii) 2 weedings and 1 thinning. (ix) 61.75". (x) 6.10.1955.

2. TREATMENTS :

11 fungicides : F₀=Control (no fungicide), F₁=Perenox (0.6 %), F₂=Colloidal copper (0.5 %), F₃=Cupravit (0.5 %), F₄=Agricop (0.5 %), F₅=Shell copper fungicide (0.5 %), F₆=Bordeaux mixture 4 : 4 : 50, F₇=Lime Sulphur (1 %), F₈=Dithane Z—78 (0.4 %), F₉=Dithane D—14 with Zinc Sulphate (0.4 %) and F₁₀=Menzate (0.4 %).

3. DESIGN :

(i) R.B.D. (ii) (a) 11. (b) N.A. (iii) 4. (iv) (a) 12'×32'. (b) 10'×30'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Stem rot, control measures as per treatments. (iii) Number of diseased plants and fibre yield. (iv) (a) 1955—1957. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1729 lb./ac. (ii) 354.0 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	F ₀	F ₁	F ₂	F ₃	F ₄	F ₅	F ₆	F ₇	F ₈	F ₉	F ₁₀
Av. yield	1776	2117	1609	1738	1831	1963	1995	1565	1593	1025	1812

S.E./mean = 177.0 lb./ac.

Crop :- Jute (Kharif).**Ref :- J.A.R.L. 56(9).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'D'.**

Object :—To study the efficacy of fungicides against stem-rot of Jute.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Pea. (c) 3 tons/ac. of compost. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 17.5 1956. (iv) (a) 4 to 6 ploughings and 1 adderings. (b) Broadcast. (c) 10 lb./ac. (d) 4" between plants. (e) 1. (v) 3 tons/ac. of compost and A/S at 20 lb./ac. (vi) J.R.C.—412 (medium). (vii) Unirrigated. (viii) 2 weedings and 1 thinning. (ix) N.A. (x) 2.9.1956.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(8) on page 274.

5. RESULTS :

(i) 1164 lb./ac. (ii) 232.3 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	F ₀	F ₁	F ₂	F ₃	F ₄	F ₅	F ₆	F ₇	F ₈	F ₉	F ₁₀
Av. yield	871	1433	1172	1427	1376	1212	1253	1321	1239	1353	1243

S.E./mean = 116.2 lb/ac.

Crop :- Jute (Kharif).**Ref :- J.A.R.I. 57(7).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'D'.**

Object :—To study the efficacy of fungicides against stem-rot of Jute.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Pea. (c) 3 tons/ac. of compost. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) 8.6.1957. (iv) (a) 4 to 6 ploughings and ladderings. (b) Broadcast. (c) 10 lb./ac. (d) 4" between plants. (e) 1. (v) 3 tons/ac. of T.C+A/S at 20 lb./ac. of N. (vi) J.R.C.—412 (medium). (vii) Unirrigated. (viii) 2 weedings and 1 thinning. (ix) N.A. (x) 19.9.1957.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(8) on page 274.

5. RESULTS :

(i) 1896 lb./ac. (ii) 410.3 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of dry fibre in lb./ac.

Treatment	F ₀	F ₁	F ₂	F ₃	F ₄	F ₅	F ₆	F ₇	F ₈	F ₉	F ₁₀
Av. yield	1093	1742	2162	1779	1437	1742	2325	2312	1988	2574	1699

S.E./mean = 205.2 lb./ac.

Crop :- Jute, Paddy and Pulse.**Ref :- J.A.R.I. 57(26).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'CM'.**

Object :—To study the possibilities of triple cropping with Jute, Paddy and Pulse with varying dates of transplanting of Paddy.

1. BASAL CONDITIONS :

(i) (a) and (b) Jute—Paddy—Pulse. (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) Jute : 25.4.1957, paddy : as per treatments and pulse : N.A. (iv) (a) 3 to 4 ploughings, laddering and harrowing. (b) Line sowing for jute, transplanting for paddy and broadcast for pulse. (c) Jute at 5 to 6 lb./ac., paddy at 12 to 15 srs./ac. and pulse at 20 srs./ac. (d) 12" × 3". (e) 3 to 4 for paddy. (v) N.A. (vi) Jute : J.R.C.—212 (late), paddy : *patnai*—23 and pulse : *khasari*. (vii) Unirrigated. (viii) 2 to 3 weedings and thinnings. (ix) 48.33%. (x) Jute on 24.7.1957, 8.8.1957 and 23.8.1957, paddy on 14 and 15.12.1957 and pulse on 8.3.1958.

2. TREATMENTS :

All combinations of (1) and (2)+2 extra treatments for paddy and pulse

(1) 3 dates of transplanting of paddy : $T_1=1\text{st August}$, $T_2=16\text{th August}$ and $T_3=31\text{st August}$.

(2) 2 levels of manuring to Paddy crop : $M_1=50\text{ mds./ac. of F.Y.M. and } M_2=200\text{ mds./ac. of F.Y.M. + } 1.5\text{ mds./ac. of Super}+25\text{ srs./ac. of A/S during puddling}+25\text{ srs./ac. of A/S after transplanting.}$

Extra treatments to paddy and pulse : $E_1=M_1\text{ only and } E_2=M_2\text{ only.}$

3. DESIGN :

(i) R.B.D. (ii) (a) 8 for paddy and pulse : 6 for jute. (b) 70' × 46'. (iii) 6. (iv) (a) 16' × 22'. (b) 14' × 20'. (v) 1' × 1'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grains and fibre. (iv) (a) 1957—1961. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Jute crop during 1957, the starting year of the expt., was sown in the same plot just to maintain the cropping pattern.

5. RESULTS :

Paddy

(i) 3011 lb./ac. (ii) 738.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

$E_1=3150\text{ lb./ac. and } E_2=2797\text{ lb./ac.}$

	T_1	T_2	T_3	Mean
M_1	3030	3083	2650	2921
M_2	3016	3080	3383	3160
Mean	3023	3082	3016	3040

S.E. of T marginal mean = 213.3 lb./ac.

S.E. of M marginal mean = 174.1 lb./ac.

S.E. of body of table or E mean = 301.6 lb./ac.

Khasari

(i) 458 lb./ac. (ii) 201.1 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

$E_1=377\text{ lb./ac. and } E_2=388\text{ lb./ac.}$

	T_1	T_2	T_3	Mean
M_1	466	542	547	518
M_2	389	507	446	447
Mean	428	524	496	483

S.E. of T marginal mean	= 58.1 lb./ac.
S.E. of M marginal mean	= 47.4 lb./ac.
S.E. of body of table or E mean	= 82.1 lb./ac.

Crop :- Jute, Paddy and Pulse.

Ref :- J.A.R.I. 58(22).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'CM'.

Object :- To study the possibilities of triple cropping with Jute, Paddy and Pulse with varying dates of transplanting of Paddy.

1. BASAL CONDITIONS :

(i) (a) and (b) Jute—Paddy—Pulse. (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) Jute : 25.4.1958, paddy : as per treatments and pulse : N.A. (iv) (a) 3 to 4 ploughings, 2 ladderings and 1 harrowing. (b) Line sowing for jute, transplanting for paddy and broadcast for pulse. (c) Jute at 5 to 6 lb./ac., paddy at 35 lb./ac. and pulse at 40 lb./ac. (d) N.A. (e) 3 to 4 for paddy. (v) N.A. (vi) Jute : J.R.C.—212 (late), paddy : *patnai*—23 and pulse : *khasari*. (vii) Unirrigated. (viii) 3 to 4 weedings. (ix) 45.26". (x) Jute on 24.7.1958, 8.8.1958 and 23.8.1958, paddy on 15.12.1958 and pulse on 19.3.1958.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(26) on page 275.

5. RESULTS :

Jute

(i) 1525 lb./ac. (ii) 185.6 lb./ac. (iii) Main effect of T alone is highly significant. (iv) Av. yield of fibre in lb./ac.

	T ₁	T ₂	T ₃	Mean
M ₁	1202	1490	1771	1488
M ₂	1293	1702	1690	1562
Mean	1248	1596	1730	1525

S.E. of T marginal mean	= 53.6 lb./ac.
S.E. of M marginal mean	= 43.7 lb./ac.
S.E. of body of table	= 75.8 lb./ac.

Paddy

(i) 2286 lb./ac. (ii) 802.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

E₁=1947 lb./ac. and E₂=2187 lb./ac.

	T ₁	T ₂	T ₃	Mean
M ₁	1886	2144	2503	2178
M ₂	2470	2473	2677	2540
Mean	2178	2308	2590	2359

S.E. of T marginal mean	= 231.5 lb./ac.
S.E. of M marginal mean	= 189.0 lb./ac.
S.E. of body of table or E mean	= 327.4 lb./ac.

Khasari

(i) 325 lb./ac. (ii) 98.8 lb./ac. (iii) Interaction T × M alone is significant. (iv) Av. yield of grain in lb./ac.

E₁=342 lb./ac. and E₂=395 lb./ac.

	T ₁	T ₂	T ₃	Mean
M ₁	289	402	326	339
M ₂	366	261	215	281
Mean	328	331	270	310

S.E. of T marginal mean = 28.5 lb./ac.
 S.E. of M marginal mean = 23.3 lb./ac.
 S.E. of body of table or E mean = 40.3 lb./ac.

Crop :- Jute, Paddy and Pulse.**Ref :- J.A.R.I. 59(19).****Site :- Jute Agri. Res. Instt., Nilganj.****Type :- 'CM'.**

Object :—To study the possibilities of triple cropping with Jute, Paddy and Pulse with varying dates of transplantation of Paddy.

1. BASAL CONDITIONS :

(i) (a) and (b) Jute—Paddy—Pulse. (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) Jute : 25.4.1959, paddy : as per treatments and pulse : N.A. (iv) (a) 4 ploughings, 2 ladderings and 1 harrowing. (b) Line sowing for jute, transplanting for paddy and broadcast for pulse. (c) Jute at 5 to 6 lb./ac., paddy at 35 lb./ac. and pulse at 40 lb./ac. (d) N.A. (e) 3 to 4 for paddy. (v) N.A. (vi) Jute : J.R.C. 212 (late), paddy : *patnai*—23 and pulse : *khasari*. (vii) Unirrigated. (viii) 3 to 7 weedings and thinning. (ix) 82.6°. (x) 24.7.1959 to 23.8.1959 for jute, 26.11.1959 to 7.12.1959 for paddy and 23.3.1960 for pulse.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(26) on page 275.

5. RESULTS :**Jute**

(i) 1993 lb./ac. (ii) 174.2 lb./ac. (iii) Main effect of T alone is highly significant. (iv) Av. yield of fibre in lb./ac.

	T ₁	T ₂	T ₃	Mean
M ₁	1935	1825	2147	1969
M ₂	1950	1836	2267	2018
Mean	1942	1830	2207	1993

S.E. of T marginal mean = 50.3 lb./ac.
 S.E. of M marginal mean = 41.0 lb./ac.
 S.E. of body of table = 71.1 lb./ac.

Paddy

(i) 2057 lb./ac. (ii) 361.8 lb./ac. (iii) Interaction T × M alone is significant. (iv) Av. yield of grain in lb./ac.

$E_1=2198$ lb./ac. and $E_2=1925$ lb./ac.

	T ₁	T ₂	T ₃	Mean
M ₁	2278	1769	2455	2167
M ₂	1835	2003	1989	1942
Mean	2056	1886	2222	2055

S.E. of T marginal mean = 104.4 lb./ac.

S.E. of M marginal mean = 85.3 lb./ac.

S.E. of body of table or E mean = 147.7 lb./ac.

Khasari

- (i) 760 lb./ac. (ii) 145.5 lb./ac. (iii) Main effect of T is significant and main effect of M is highly significant.
(iv) Av. yield of grain in lb./ac.

$E_1=763$ lb./ac. and $E_2=831$ lb./ac.

	T ₁	T ₂	T ₃	Mean
M ₁	907	859	711	826
M ₂	669	738	601	669
Mean	788	798	656	747

S.E. of T marginal mean = 42.0 lb./ac.

S.E. of M marginal mean = 34.3 lb./ac.

S.E. of body of table or E mean = 59.4 lb./ac.

Crop :- Jute, Paddy and Pulse.

Ref :- J.A.R.I. 56(30).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'CMV'.

Object :—To study the possibilities of triple cropping with Jute, Paddy and Pulse.

1. BASAL CONDITIONS :

- (i) (a) and (b) Jute—Paddy—Pulse. (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) Jute : as per treatments, paddy : 14.8.1956 and pulse : N.A. (iv) (a) 3 to 4 ploughings, laddering and harrowing. (b) Line sowing for jute, transplanting for paddy and broadcast for pulse. (c) Jute at 7 lb./ac. and paddy at 32 lb./ac. (d) 3" × 1'. (e) 3 to 4 for paddy. (v) 200 mds./ac. of cowdung + 60 srs./ac. of Super + 25 srs./ac. of A/S. (vi) Jute : as per treatments, paddy : *patnai*—23 and pulse : *khasari*. (vii) Irrigated. (viii) 2 to 3 weedings and thinning. (ix) 69.29%. (x) Jute on 11.8.1956 and paddy on 9.1.1957.

2. TREATMENTS :

All combinations of (1), (2) and (3) + 2 extra treatments for paddy

(1) 2 varieties of jute : V₁=J.R.C. 321 (early) and V₂=J.R.C. 212 (late).

(2) 3 dates of sowing of jute : S₁=13th April, S₂=28th. April and S₃=13 th May.

(3) 2 levels of manuring to Paddy crop : M₁=50 mds./ac. of F.Y.M., M₂=200 mds./ac. of F.Y.M. + 1.5 mds./ac. of Super + 25 srs./ac. of A/S during puddling + 25 srs./ac. of A/S after transplanting.

Extra treatments for paddy : E₁=Paddy transplanted with M₁ alone and E₂=Paddy transplanted with M₂ alone.

3. DESIGN :

- (i) R.B.D. (ii) (a) 12 for jute and pulse and 14 for paddy. (b) 90' × 96'. (iii) 3. (iv) (a) 44' × 12'. (b) 42' × 10'. (v) 1' × 1'. (vi) Yes.

4. GENERAL:

(i) Good. Pulse crop failed completely. (ii) N.A. (iii) Yield of grain and fibre. (iv) (a) 1956-1959. (b) Yes. (c) Nil. (v) and (vi) Nil. For Jute crop during 1956, the starting year of the expt., there are actually 6 treatments (2 varieties \times 3 dates of sowing) each obtained from two plots in each replication.

5. RESULTS:

Jute

(i) 780 lb./ac. (ii) 149.0 lb./ac. (iii) Main effect of S alone is highly significant. (iv) Av. yield of fibre in lb./ac.

	S ₁	S ₂	S ₃	Mean
V ₁	1192	1016	136	781
V ₂	1268	942	128	779
Mean	1230	979	132	780

S.E. of S marginal mean = 43.0 lb./ac.
 S.E. of V marginal mean = 35.1 lb./ac.
 S.E. of body of S \times V table = 60.8 lb./ac.

Paddy

(i) 2558 lb./ac. (ii) 192.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

E₁ = 2489 lb./ac. and E₂ = 2626 lb./ac.

	S ₁	S ₂	S ₃	Mean	V ₁	V ₂
M ₁	2498	2573	2589	2553	2608	2498
M ₂	2616	2493	2580	2563	2529	2597
Mean	2557	2533	2584	2558	2568	2548
V ₁	2617	2491	2597			
V ₂	2496	2576	2571			

S.E. of S marginal mean = 55.4 lb./ac.
 S.E. of V or M marginal mean = 45.3 lb./ac.
 S.E. of body of S \times V or S \times M table = 78.4 lb./ac.
 S.E. of body of V \times M table = 64.0 lb./ac.
 S.E. of E mean = 110.9 lb./ac.

Crop :- Jute, Paddy and Pulse.

Ref :- J.A.R.I. 57(25).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'CMV'.

Object :- To study the possibilities of triple cropping with Jute, Paddy and Pulse.

1. BASAL CONDITIONS:

(i) (a) and (b) Jute-Paddy-Pulse. (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) Jute: as per treatments. paddy: 14.8.1959 and pulse: N.A. (iv) (a) 3 to 4 ploughings, ladderings and harrowing. (b) Line sowing for jute transplanting for paddy, and broadcast for pulse. (c) Jute at 5 to 6 lb./ac., paddy at 16 to 18 srs./ac. and pulse at 20 srs./ac. (d) 3" \times 1". (e) 3 to 4 for paddy. (v) 200 mds./ac. of cowdung + 60 srs./ac. of Super + 25 srs./ac. of A/S. (vi) Jute: as per treatments, paddy: *patnai-23* and pulse *khasari*. (vii) Irrigated. (viii) 3 to 4 weedings and thinning. (ix) 48.33". (x) Jute on 11.8.1957, paddy on 7.1.1958 and pulse on 28.3.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(30) on page 279.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain and fibre. (iv) (a) 1956-1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :**Jute**

(i) 1108 lb./ac. (ii) 148.3 lb./ac. (iii) Main effects of S and V are highly significant. (iv) Av. yield of fibre in lb./ac.

	S ₁	S ₂	S ₃	Mean	V ₁	V ₂
M ₁	1026	1062	1216	1101	975	1228
M ₂	1005	1114	1226	1115	1033	1197
Mean	1016	1088	1221	1108	1004	1212
V ₁	962	974	1076			
V ₂	1069	1202	1366			

S.E. of S marginal mean = 42.8 lb./ac.

S.E. of M or V marginal mean = 35.0 lb./ac.

S.E. of body of S×M or S×V_i table = 60.5 lb./ac.

S.E. of body of V×M table = 49.4 lb./ac.

Paddy

(i) 3244 lb./ac. (ii) 334.6 lb./ac. (iii) Main effect of M alone is highly significant. (iv) Av. yield of grain in lb./ac.

E₁ = 2975 lb./ac. and E₂ = 3532 lb./ac.

	S ₁	S ₂	S ₃	Mean	V ₁	V ₂
M ₁	3067	2950	2964	2994	3009	2978
M ₂	3551	3310	3613	3491	3527	3486
Mean	3309	3130	3288	3242	3268	3217
V ₁	3367	3210	3228			
V ₂	3251	3051	3350			

S.E. of S marginal mean = 96.6 lb./ac.

S.E. of M or V marginal mean = 78.9 lb./ac.

S.E. of body of S×V or S×M table = 136.6 lb./ac.

S.E. of body of V×M table = 111.5 lb./ac.

S.E. of E mean = 193.2 lb./ac.

Khasari

(i) 556 lb./ac. (ii) 154.4 lb./ac. (iii) Main effect of M alone is significant. (iv) Av. yield of grain in lb./ac.

	S ₁	S ₂	S ₃	Mean	V ₁	V ₂
M ₁	686	624	541	617	637	597
M ₂	478	511	497	495	508	483
Mean	582	568	519	556	572	540
V ₁	512	645	560			
V ₂	652	490	478			

S.E. of S marginal mean	= 44.6 lb./ac.
S.E. of M or V marginal mean	= 36.4 lb./ac.
S.E. of body of S × V or S × M table	= 63.0 lb./ac.
S.E. of body of V × M table	= 51.5 lb./ac.

Crop :- Jute, Paddy and Pulse.

Ref :- J.A.R.I. 58(21).

Site :- Jute Agri. Res. Instt., Nilganj.

Type :- 'CMV'.

Object :-To study the possibilities of triple cropping with Jute, Paddy and Pulse.

1. BASAL CONDITIONS :

(i) (a) Jute—Paddy—Pulse. (b) and (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) Jute: As per treatments, Paddy : 14.8.1958 and Pulse : December, 1958. (iv) (a) 3 ploughings and laddering. (b) Line sowing for jute, transplanting for paddy and broadcast for pulse. (c) Jute at 5 to 6 lb./ac., paddy at 16 to 18 srs./ac. and pulse at 20 srs./ac. (d) 3" × 1'. (e) 3 for paddy. (v) 200 mds./ac. of cowdung+60 srs./ac. of Super+25 srs./ac. of A/S. (vi) Jute : as per treatments, paddy : *patnai*—23 and pulse : *khasari*. (vii) Irrigated. (viii) Weeding and thinning. (ix) 45.26". (x) Jute on 11.8.1958, paddy on 14.12.1958 and pulse on 18.3.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(30) on page 279.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain and fibre. (iv) (a) 1956—1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Jute

(i) 1090 lb./ac. (ii) 161.7 lb./ac. (iii) Main effects of S and V are highly significant. (iv) Av. yield of fibre in lb./ac.

	S ₁	S ₂	S ₃	Mean	V ₁	V ₂
M ₁	853	1281	1007	1047	927	1168
M ₂	955	1332	1111	1133	1030	1236
Mean	904	1307	1059	1090	978	1202
V ₁	856	1163	916			
V ₂	952	1450	1203			

S.E. of S marginal mean	= 46.7 lb./ac.
S.E. of V or M marginal mean	= 38.1 lb./ac.
S.E. of body of S × V or S × M table	= 66.0 lb./ac.
S.E. of body of V × M table	= 53.9 lb./ac.

Paddy

(i) 2917 lb./ac. (ii) 470.3 lb./ac. (iii) Interaction V × M is significant. (iv) Av. yield of grain in lb./ac.

E₁ = 3111 lb./ac. and E₂ = 2956 lb./ac.

	S ₁	S ₂	S ₃	Mean	V ₁	V ₂
M ₁	2913	2995	2885	2931	3181	2682
M ₂	2791	2842	2961	2865	2698	3031
Mean	2852	2918	2923	2898	2939	2856
V ₁	2967	2862	2989			
V ₂	2738	2975	2856			

of S marginal mean	= 135.8 lb./ac.
of V or M marginal mean	= 110.8 lb./ac.
of body of S×M or S×V table	= 192.0 lb./ac.
of body of V×M table	= 156.8 lb./ac.
E mean	= 271.5 lb./ac.

Khasari

(i) 338 lb./ac. (ii) δ_{ac} . (iii) Main effect of V alone is significant. (iv) Av. yield of grain in lb./ac.

	1	S ₂	S ₃	Mean	V ₁	V ₂
M ₁	3	315	352	353	299	408
M ₂	7	329	333	323	304	342
Mean)	322	342	338	302	375
V ₁		271	307			
V ₂		373	378			

S.E. of marginal mean	= 24.9 lb./ac.
S.E. of M marginal mean	= 20.4 lb./ac.
S.E. of of S×V or S×M table	= 35.3 lb./ac.
S.E. of of V×M table	= 28.8 lb./ac.

Crop :- Jute, Paddy and Pulse.

Ref :- J.A.R.I. 59(18).

Site :- Jute Agri. Res. Stt., Nilganj.

Type :- 'CMV'.

Object :—To study the possibility of triple cropping with Jute, Paddy and Pulse.

1. BASAL CONDITIONS :

(i) (a) Jute—Paddy—Pulse. (b) (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Nilganj. (iii) Jute : As per treatments, Paddy : 14.8.1959 and Pulse : 1st. week of Dec., 1959. (iv) (a) 3 to 4 ploughings and 2 harrowings. (Line sowing for jute, transplanting for paddy and broadcast for pulse. (c) N.A. (d) 1'×3". (e) 3 to 4 paddy. (v) 200 mds./ac. of cowdung+60 srs./ac. of Super+25 srs./ac. of A/S. (vi) Jute : As per treatments, paddy : *patna*—23 and pulse : *khasari*. (vii) N.A. (viii) 3 to 4 weedings and 2 thinnings. (ix) 82.6". (x) Jute on 11.8.1959, paddy on 25.11.1959 and pulse on 23.3.1960.

2. TREATMENTS and 3. DESIGN.

Same as in expt. no. 56(30) on page 2.

GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grain and fibre. (iv) (a) 1956—1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Jute

(i) 1792 lb./ac. (ii) 221.1 lb./ac. (iii) Main effects of S and V are highly significant. Interaction S×V is significant. (iv) Av. yield of fibre in lb./ac.

	S ₁	S ₂	S ₃	Mean	V ₁	V ₂
M ₁	1819	1950	1730	1833	1606	2061
M ₂	1795	2043	1415	1751	1631	1872
Mean	1807	1996	1572	1792	1618	1966
V ₁	1525	1777	1553			
V ₂	2090	2217	1592			

S.E. of S marginal mean	=	4c.
S.E. of V or M marginal mean	=	4c.
S.E. of body of S×V or S×M table	=	4c.
S.E. of body of V×M table	=	4c.

Paddy

(i) 2419 lb./ac. (ii) 290.2 lb./ac. (iii) None of the effects is significant. yield of grain in lb./ac.

$$E_1 = 2481 \text{ lb./ac. and } E_2 = 2203 \text{ lb./ac}$$

	S ₁	S ₂	S ₃	Mean	V ₂	
M ₁	2545	2513	2410	2489	306	2472
M ₂	2252	2510	2162	2375	365	2384
Mean	2398	2512	2386	2432	2435	2428
V ₁	2504	2408	2394			
V ₂	2293	2614	2377			

S.E. of S marginal mean	=	8 lb./ac.
S.E. of V or M marginal mean	=	4 lb./ac.
S.E. of body of S×V or S×M table	=	3.5 lb./ac.
S.E. of body of V×M table	=	6.7 lb./ac.
S.E. of E mean	=	7.6 lb./ac.

Khasari

(i) 695 lb./ac. (ii) 115.7 lb./ac. (iii) Interaction S×M alone is highgnificant. (iv) Av. yield of grain in lb./ac.

	S ₁	S ₂	S ₃	Mean	V ₁	V ₂
M ₁	773	762	587	707	703	712
M ₂	676	627	747	683	688	678
Mean	724	694	667	695	695	695
V ₁	686	740	660			
V ₂	763	649	674			

S.E. of S marginal mean	=	33.4 lb./ac.
S.E. of V or M marginal mean	=	27.3 lb./ac.
S.E. of body of S×V or S×M table	=	47.2 lb./ac.
S.E. of body of V×M table	=	38.6 lb./ac.

Central Arid Zone Research Institute
JODHPUR

CENTRAL ARID ZONE RESEARCH INSTITUTE, JODHPUR.

1. Name of the experimental station : Central Arid Zone Research Institute, Jodhpur.
2. Tehsil of Taluka : Jodhpur.
3. District : Jodhpur.
4. Address : Central Arid Zone Research Institute, Jodhpur.
5. Year of establishment : N.A.
6. Latitude Longitude Altitude
 28.18°N 73.01°E 224.33 metres.
7. Whether research, multiplication or demonstration farm : Research Farm
8. Whether State, University or private managed : Indian Council of Agricultural Research, New Delhi.
9. Programme of research : To carry out research on the proper utilization and improvement of existing resources of the region in the fields of Agronomy, Silviculture, Agrostology and range management.
10. Normal cropping pattern : Crops of *bajra*, *guar*, *moong*, *moth*, *lobia*, groundnut and castor are grown under rainfed conditions.
11. Type of tract it represents : Desert soils of Western Rajasthan.
12. A general description of the topography of the experimental area : Areas vary from flat to undulating, where experimental work is carried out under different topographical and edaphic conditions.
13. Soils.
 - (a) Broad soil types : Desert soil (transported alluvial rhyolite and sand stone rock origion).
 - (b) Chemical analysis and
 - (c) Mechanical analysis : As given below :

Profile description :

0-15 cm.	Brown (IOYR 5/3 dry) loamy sand, single grain, dry and loose, non-calcareous, abundant roots present, rapid permeability, diffused boundry.
15-38 cm.	Dark brown (IOYR 3/3 dry) sandy loam, very weak granular structure, dry and loose, moist and friable, non-calcareous, abundant roots, rapid permeability, diffused boundry.
38-94 cm.	Dark brown (IOYR 3/3 dry) sandy loam, very weak sub angular blocky structure, dry and loose, moist and friable, slightly more compact than above, non calcareous, fewer roots present, rapid permeability, diffused boundary.

94-112 cm.	Dark brown (IOYR 3/3 dry) sandy loam, very weak sub angular blocky structure, dry and loose, moist and friable, slight effervescence with HCl, very few roots, fairly rapid permeability, diffused boundry.
112-127 cm.	Dark brown (IOYR 3/3 dry) loamy sand, very weak sub angular blocky structure, dry and slightly hard, moist and friable, plenty of lime concretions present giving violent effervescence with HCl, more compact than above, clear boundry.
127 cm. above	Concretionary zone of rhyolite and sand stone fragment coated with calcium carbonate, mixed with some soil.

Depth in cm.	Mechanical composition %				CaCO ₃ %	pH 1 : 2.5 (in water)	Organic Carbon %	Moisture Eq %	Elec. conductivity millimhos/cm.
	Coarse sand	Fine sand	Silt	Clay					
0-15	18.1	68.0	6.5	7.4	0	7.7	0.12	7.1	0.120
15-38	30.1	50.5	7.8	11.6	0	7.6	0.13	6.0	0.10
38-94	31.5	45.2	8.6	14.7	0	7.7	(not done)	7.7	0.160
94-112	41.9	36.8	6.5	14.7	0.1	7.8	0.13	7.6	0.155
112-127	38.4	42.7	11.0	7.9	0.2	7.9	0.09	7.5	0.155

14. Normal rainfall in mm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
30.5	108.5	125.4	58.1	8.2	2.3	1.4	4.8	5.3	2.8	3.1	9.7	360.1

(Average rainfall data is based on the period 1901-1960).

15. Whether irrigation facilities available : Nil.

Year from which the facilities were made available.

16. Whether any proper drainage system exists. Nil.

Crop :- Bajra (Kharif).

Ref :- C.A.Z.R.I. 59(7).

Site :- Central Arid Zone Res. Instt., Jodhpur.

Type :- 'C'.

Object :-To study the effect of various depths of placement of seed on germination, growth and yield of Bajra in Arid Zone soils.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy. (b) Refer soil analysis, Jodhpur. (iii) 2.8.1959. (iv) (a) 2 ploughings. (b) As per treatments. (c) 3 lb./ac. (d) Row to row 1'. (e) N.A. (v) 10 lb./ac. of N as F.Y.M. (vi) R.S.K. (vii) Unirrigated. (viii) 4 weedings. (ix) N.A. (x) 26.10.1959.

2. TREATMENTS :

5 depths of seed placement : $D_1=2''$, $D_2=3''$, $D_3=4''$, $D_4=5''$ and $D_5=6''$ soil depth.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) $20' \times 10\frac{1}{2}'$. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—1962. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1406 lb./ac. (ii) 195.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5
Av. yield	1391	1486	1405	1369	1380

S.E./mean = 79.6 lb./ac.

Crop :- Bajra (Kharif).

Ref :- C.A.Z.R.I. 58(1).

Site :- Central Arid Zone Res. Instt., Jodhpur.

Type :- 'CM'.

Object :-To study the effect of different seed rates, spacings and levels of F.Y.M. on Bajra.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) (a) Sandy. (b) Refer soil analysis, Jodhpur. (iii) 16.7.1958. (iv) (a) 2 ploughings. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) R.S.K. (vii) Unirrigated. (viii) 4 weedings. (ix) N.A. (x) 25 and 26.10.1958.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 seed rates : $R_1=3$, $R_2=6$ and $R_3=9$ lb./ac.

(2) 3 row spacings : $S_1=12''$, $S_2=18''$ and $S_3=24''$.

(3) 3 levels of F.Y.M. : $F_0=0$, $F_1=1000$ and $F_2=2000$ lb./ac.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grain. (iv) (a) 1958—1961. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 528 lb./ac. (ii) 288.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	S ₁	S ₂	S ₃	Mean	F ₀	F ₁	F ₂
R ₁	607	507	537	550	607	513	530
R ₂	450	507	543	500	417	497	587
R ₃	547	433	623	534	497	537	569
Mean	535	482	568	528	507	516	562
F ₀	574	440	507				
F ₁	487	483	577				
F ₂	543	523	620				

S.E. of any marginal mean
S.E. of body of any table

= 68.0 lb./ac.
= 117.8 lb./ac.

Crop :- Bajra (Kharif).

Ref :- C.A.Z.R.I. 59(1).

Site :- Central Arid Zone Res. Instt., Jodhpur.

Type :- 'CM'.

Object :—To study the effect of different seed rates, spacings and levels of F.Y.M. on Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy. (b) Refer soil analysis, Jodhpur. (iii) 14.7.1959. (iv) (a) 2 ploughings. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) N.A. (vi) R.S.K. (vii) Unirrigated. (viii) 4 weedings. (ix) N.A. (x) 20 and 21.10.1959.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 seed rates : R₁=4½, R₂=6 and R₃=7½ lb./ac.

(2) 3 row spacings : S₁=1', S₂=1½' and S₃=2'.

(3) 3 levels of F.Y.M. : F₀=0, F₁=2000 and F₂=4000 lb./ac.

3. DESIGN :

(i) 3³ confd. (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grain. (iv) (a) 1958—1961. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 929 lb./ac. (ii) 361.5 lb./ac. (iii) Only main effect of N is significant. (iv) Av. yield of grain in lb./ac.

	S ₁	S ₂	S ₃	Mean	F ₀	F ₁	F ₂
R ₁	869	938	831	879	636	1060	942
R ₂	863	1124	876	954	771	1046	1045
R ₃	1112	897	853	954	821	987	1055
Mean	948	986	853	929	743	1031	1014
F ₀	778	818	632				
F ₁	1002	1067	1024				
F ₂	1064	1074	904				

S.E. of any marginal mean
S.E. of body of any table

= 85.2 lb./ac.
= 147.6 lb./ac.

Crop :- Mung (Kharif).

Ref :- C.A.Z.R.I. 59(2).

Site :- Central Arid Zone Res. Instt., Jodhpur.

Type :- 'M'.

Object :-To find out the optimum level of P for obtaining maximum yield of Mung.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy. (b) Refer soil analysis, Jodhpur. (iii) 10.7.1959. (iv) (a) 2 ploughings. (b) Drilling. (c) 8 lb./ac. (d) Row to row 1'. (e) N.A. (v) N.A. (vi) R.S.—4. (vii) Unirrigated. (viii) 4 weedings. (ix) N.A. (x) 10.10.1959.

2. TREATMENTS :

4 levels of P_2O_5 as Super : $P_0=0$, $P_1=20$, $P_2=40$ and $P_3=60$ lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 452 lb./ac. (ii) 109.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	P_0	P_1	P_2	P_3
Av. yield	548	503	468	450

S.E./mean = 44.7 lb./ac.

Crop :- Mung (Kharif).

Ref :- C.A.Z.R.I. 59(8).

Site :- Central Arid Zone Res. Instt., Pali.

Type :- 'C'.

Object :-To find out the optimum seed rate of Mung for the Arid tract and frequencies of weeding for proper conservation of soil moisture.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy. (b) Refer soil analysis, Pali. (iii) July, 1959. (iv) (a) 2 ploughings. (b) Drilling. (c) As per treatments. (d) Row to row 1'. (e) N.A. (v) 18 lb./ac. of N as F.Y.M. (vi) Local. (vii) Unirrigated. (viii) As per treatments. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

3 seed rates : $S_1=8$, $S_2=10$ and $S_3=12$ lb./ac.

Sub-plot treatments :

3 levels of weeding : W_0 =Control (no weeding), $W_1=1$ weeding after 2 weeks of sowing and $W_2=2$ weedings after 4 weeks of sowing.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) $50' \times 25'$. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 820 lb./ac. (ii) (a) 43.8 lb./ac. (b) 34.6 lb./ac. (iii) Main effect of W alone is significant. (iv) Av. yield of grain in lb./ac.

	S ₁	S ₂	S ₃	Mean
W ₀	754	846	689	763
W ₁	751	771	831	784
W ₂	874	915	947	912
Mean	793	844	822	820

S.E. of difference of two

- | | |
|-----------------------------------|----------------|
| 1. S marginal means | = 17.9 lb./ac. |
| 2. W marginal means | = 14.1 lb./ac. |
| 3. W means at the same level of S | = 24.5 lb./ac. |
| 4. S means at the same level of W | = 26.8 lb./ac. |

Crop :- Cowpea (Kharif).**Ref :- C.A.Z.R.I. 59(4).****Site :- Central Arid Zone Res. Instt., Jodhpur.****Type :- 'M'.**

Object :—To find out the optimum level of P for obtaining maximum yield of Cowpea.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy. (b) Refer soil analysis, Jodhpur. (iii) 10.7.1959. (iv) (a) 2 ploughings. (b) Drilling. (c) 8 lb./ac. (d) Row to row 1'. (e) N.A. (v) and (vi) N.A. (vii) Unirrigated. (viii) 4 weedings. (ix) N.A. (x) October, 1959.

2. TREATMENTS :

4 levels of P₂O₅ as Super : P₀=0, P₁=20, P₂=40 and P₃=60 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

4. GENERAL ;

(i) Normal. (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 86 lb./ac. (ii) 42.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	P ₀	P ₁	P ₂	P ₃
Av. yield	81	99	65	97

S.E./mean = 17.3 lb./ac.

Crop :- Moth (Kharif).**Ref :- C.A.Z.R.I. 59(6).****Site :- Central Arid Zone Res. Instt., Jodhpur.****Type :- 'M'.**

Object :—To find out the optimum levels of P for obtaining maximum yield of Moth.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy. (b) Refer soil analysis, Jodhpur. (iii) 10.7.1959. (iv) (a) 2 ploughings. (b) Drilling. (c) 8 lb./ac. (d) Row to row 1'. (e) N.A. (v) and (vi) N.A. (vii) Unirrigated. (viii) 4 weedings. (ix) N.A. (x) October, 1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 59(4) above.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—contd. (b) Yes. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

(i) 408 lb./ac. (ii) 79.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	P ₀	P ₁	P ₂	P ₃
Av. yield	369	400	432	430

S.E./mean = 32.4 lb./ac.

Crop :- Guar (Kharif).

Ref :- C.A.Z.R.I. 59(3).

Site :- Central Arid Zone Res. Instt., Jodhpur.

Type :- 'M'.

Object :—To find out the optimum level of P for obtaining maximum yield of Guar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy. (b) Refer soil analysis, Jodhpur. (iii) 16.7.1959. (iv) (a) 2 ploughings. (b) Drilling. (c) 8 lb./ac. (d) Row to row 1'. (e) N.A. (v) and (vi) N.A. (vii) Unirrigated. (viii) 4 weedings. (ix) N.A. (x) October, 1959.

2. TREATMENTS :

4 levels of P₂O₅ as Super : P₀=0, P₁=20, P₂=40 and P₃=60 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—contd. (b) Yes. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

(i) 588 lb./ac. (ii) 106.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	P ₀	P ₁	P ₂	P ₃
Av. yield	585	532	604	632

S.E./mean = 43.6 lb./ac.

Crop :- Groundnut (Kharif).

Ref :- C.A.Z.R.I. 59(5).

Site :- Central Arid Zone Res. Instt., Jodhpur.

Type :- 'M'.

Object :—To find out the optimum level of P for obtaining maximum yield of Groundnut.

1. BASAL CONDITIONS :

(i) (a) No. (b) Fallow. (c) Nil. (ii) (a) Sandy. (b) Refer soil analysis, Jodhpur. (iii) 10.7.1959. (iv) (a) 2 ploughings. (b) Drilling. (c) 8 lb./ac. (d) Row to row 1'. (e) N.A. (v) and (vi) N.A. (vii) Unirrigated. (viii) 4 weedings. (ix) N.A. (x) October, 1959.

2. TREATMENTS :

4 levels of P₂O₅ as Super : P₀=0, P₁=20, P₂=40 and P₃=60 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—contd. (b) Yes. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

(i) 449 lb./ac. (ii) 126.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	P ₀	P ₁	P ₂	P ₃
Av. yield	421	445	412	517

S.E./mean = 51.5 lb./ac.

Crop :- Til (*Kharif*).

Ref :- C.A.Z.R.I. 59(9).

Site :- Central Arid Zone Res. Instt. Res. Farm, Pali.

Type :- 'M'.

Object :- To study the effect of different levels of F.Y.M. on the yield of Til.

1. BASAL CONDITIONS :

(i) (a) No. (b) Fallow. (c) Nil. (ii) (a) Sandy. (b) Refer soil analysis, Pali. (iii) 7.8.1959. (iv) (a) 2 ploughings. (b) Broadcast. (c) 3 lb./ac. (d) Row to row 1'. (e) N.A. (v) 18 lb./ac. of N as F.Y.M. (vi) Local (white). (vii) Unirrigated. (viii) 4 weedings. (ix) N.A. (x) 4.10.1959.

2. TREATMENTS :

5 levels of N as F.Y.M. : N₀=0, N₁=10, N₂=20, N₃=30 and N₄=40 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 50' × 8'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—contd. (b) Yes. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

(i) 321 lb./ac. (ii) 88.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	N ₀	N ₁	N ₂	N ₃	N ₄
Av. yield	225	327	332	351	371

S.E./mean = 44.4 lb./ac.

Indian Agricultural Research Institute

NEW DELHI

INDIAN AGRICULTURAL RESEARCH INSTITUTE, NEW DELHI.

1. Name of the experimental station : Indian Agricultural Research Institute (Division of Agronomy).
2. Tehsil or Taluka : —
3. District : —
4. Address : Indian Agricultural Research Institute, New Delhi.
5. Year of establishment : 1904.
6. Latitude 28.4°N Longitude 77.1°E Altitude 227 m. above M.S.L.
7. Whether research, multiplication or demonstration farm ; Research farm.
8. Whether State, University or private managed : The station is I.A.R.I. managed which has got the status of a University.
9. Programme of research : To conduct agronomical research on the crops of North India.
10. Normal cropping pattern : Maize/Jowar/Bajra—Wheat ; Paddy—Wheat.
11. Type of tract it represents : It is representative of the areas comprising of Punjab, Hariyana, western districts of U.P. and adjoining area of Rajasthan.
12. General description of the topography of the experimental area :
 The experimental station is located in the semi-arid, sub-tropical climatic zone, having extremely hot and dry summers and very severe winters with occasional frosts in December-January.
 The soil of the farm is of Jamuna—alluvial origin having pH of 7.9 to 8.5 or above and has abundant supplies of calcium carbonate in the surface layer and with occasional impregnation of clay and/or *kankar* layer at depths of 60-100 cm. with deep alluvial soils of Gangetic origin. The area is surrounded with the ranges of Shiwalik hills and is virtually located in the midst of these ranges and thus getting very badly water logged during monsoons and has very shallow water table varying from 2 to 5 ft. in most of the experimental fields even during *rabi* season. The saline area also constitute a sizeable portion of the farm.
13. Soils :
 - (a) Broad soil types : Sandy loam to clay-loam
 - (i) Depth : Very deep (depth ranging more than twenty ft. or so).
 - (ii) Colour : Light brown to dark brown.
 - (iii) Structure : Single grained to cloddy fible.
 - (b) Chemical analysis : pH : 7.99 to 8.51 ; CaCO₃ : 1.21 to 11.83% ; organic nitrogen : .015 to .027% ; organic carbon ; .07 to .20% ; C/N : 4.8 to 8.0.

(c) Mechanical analysis :	Sand	Silt	Clay
	50-60%	12.5%	22.8%

14. Normal average rainfall in inches :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
39.3	252.7	266.8	152.9	19.1	4.4	6.9	21.2	11.1	13.0	3.6	15.6	67.2

(The figures are based on the period of last 10 years)

15. Irrigation facilities available ; Canal and tube wells ; N.A.
 year from which the facilities were made available :

16. Whether any proper drainage system exists : Well laid out drainage system exists on the farm.

Crop :- Paddy (Kharif).**Ref :- I.A.R.I. 54(1).****Site :- Botanical Sub-Stn., Pusa (Bihar).****Type :- 'M'.****Object :-**To determine the nutritional requirements of the soil for Paddy.**1. BASAL CONDITIONS :**

(i) and (ii) N.A. (iii) 28.7.1954. (iv) (a) Puddling. (b) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 21 to 23.12.1954.

2. TREATMENTS :

11 manurial treatments : T_0 =Control (no manure), T_1 =40 lb./ac. of N+60 lb./ac. of P_2O_5 +30 lb./ac. of K_2O applied as soil application, T_2 = T_1 +50 lb./ac. of Zn as soil application and 5 lb./ac. of Zn as spray, T_3 = T_1 +50 lb./ac. of Mn as soil application and 5 lb./ac. of Mn as spray, T_4 = T_1 +20 lb./ac. of Cu as soil application and 3 lb./ac. of Cu as spray, T_5 = T_1 +100 lb./ac. of Fe as soil application and 5 lb./ac. of Fe as spray, T_6 = T_1 +100 lb./ac. of Mg as soil application and 10 lb./ac. of Mg as spray, T_7 = T_1 +15 lb./ac. of Borax as soil application and 3 lb./ac. of Borax as spray, T_8 = T_1 +2 lb./ac. of M_0O_3 as soil application and 1 lb./ac. of M_0O_3 as spray, T_9 = T_1 +all micro-nutrients from T_2 to T_8 and T_{10} =All micro-nutrients only (no fertilizers).

3. DESIGN :

(i) R.B.D. (ii) (a) 11. (b) N.A. (iii) 4. (iv) (a) 48.5'×9'. (b) 46.5'×7'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Grain yield. (iv) to (vi) N.A.

5. RESULTS :

(i) 2863 lb./ac. (ii) 401.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}
Av. yield	2082	3101	3018	3026	3140	3103	3119	2826	2918	3060	2099

S.E./mean = 200.8 lb./ac.

Crop :- Paddy (Kharif).**Ref :- I.A.R.I. 57(1).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'CM'.****Object :-**To determine the efficiency of methods of applying varying levels of nitrogen to paddy in conjunction with spacing and ridging of Paddy plants.**1. BASAL CONDITIONS :**

(i) and (ii) N.A. (iii) 18 to 20.7.1957. (iv) (a) 1 ploughing with victory plough. (b) Transplanting. (c) N.A. (d) As per treatments. (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 3 weedings and interculturing. (ix) N.A. (x) 21 to 23.10.1957.

2. TREATMENTS :**Main-plot treatments :**

All combinations of (1) and (2)

(1) 3 spacings : $S_1=10''\times 10''$, $S_2=15''\times 6.7''$ and $S_3=20''\times 5''$.(2) 3 levels of N : $N_1=30$, $N_2=60$ and $N_3=90$ lb./ac.**Sub-plot treatments :**2 methods of application of N : M_1 =Broadcast and M_2 =Placed 4" below seedlings.**Sub-sub-plot treatments :**2 cultural practices : R_1 =Plant rows ridged and R_2 =Plant rows flat.**3. DESIGN :**

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 2 sub-plots/main-plot and 2 sub-sub-plots/sub-plot. (b) N.A. (iii) 3. (iv) 21'×13'. (b) 19'×11'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Gundhi bug at flowering stage. (iii) Grain yield. (iv) 1957—N.A. (b) and (c) N.A. (v) and (vi) N.A. (vii) Two-way tables N.A.

5. RESULTS :

(i) 5332 lb./ac. (ii) (a) 1389.6 lb./ac. (b) 556.0 lb./ac. (c) 381.2 lb./ac. (iii) Main effects of M and R are highly significant and main effects of S and N are significant. (iv) Av. yield of grain in lb./ac.

Treatment	S ₁	S ₂	S ₃	N ₁	N ₂	N ₃	M ₁	M ₂	R ₁	R ₂
Av. yield	5823	5178	4994	4807	5490	5700	5037	5627	5581	5083

S.E. of S or N marginal mean = 231.6 lb./ac.

S.E. of M marginal mean = 75.7 lb./ac.

S.E. of R marginal mean = 51.9 lb./ac.

Crop :- Paddy (Kharif).

Ref :- I.A.R.I. 58(1).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object :-To determine the efficiency of methods of applying varying levels of nitrogen to Paddy in conjunction with spacing and ridging of Paddy plants.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 14 to 16.7.1958. (iv) (a) Grubbing twice and 2 ploughings. (b) Transplanted. (c) N.A. (d) As per treatments. (e) N.A. (v) 40 lb./ac. of P₂O₅+20 C.L./ac. of F.Y.M. (vi) N.A. (vii) Irrigated. (viii) 2 weedings and ridging up of plants. (ix) N.A. (x) 28 to 31.10.1958.

2. TREATMENTS :

Same as in expt. no. 57(1) on page 291.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 2 sub-plots/main-plot and 2 sub-sub-plots/sub-plot. (b) N.A. (iii) 3. (iv) (a) 25.5' × 13'. (b) 19' × 11'. (v) 3.25' × 1.0'. (vi) Yes.

4. GENERAL :

(i) Good growth. The unridged crop lodged heavily from 24 to 26.9.1958. (ii) Serious attack of Gundhi bug controlled by dusting 5% B.H.C. (iii) Yield of grain. (iv) 1957—N.A. (b) N.A. (c) No. (v) and (vii) N.A. (vii) Two-way tables N.A.

5. RESULTS :

(i) 6031 lb./ac. (ii) (a) 562.8 lb./ac. (b) 705.5 lb./ac. (c) 255.7 lb./ac. (iii) Main effects of S, N, M and R are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S ₁	S ₂	S ₃	N ₁	N ₂	N ₃	M ₁	M ₂	R ₁	R ₂
Av. yield	6693	6045	5354	5418	5907	6768	5682	6379	6254	5808

S.E. of S or N marginal mean = 93.8 lb./ac.

S.E. of M marginal mean = 96.0 lb./ac.

S.E. of R marginal mean = 34.8 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 54(2).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :-To study the effect of compost on humus formation and its effect on Wheat yield in Maize—Wheat rotation.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Maize. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 13.11.1954. (iv) and (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 4 weedings, 1 roguing and 1 *bakhering*. (ix) N.A. (x) 9.4.1955.

2. TREATMENTS :

All combinations of (1) and (2)+3 extra treatments

(1) 3 types of compost : C_1 =Plastered trench compost, C_2 =Over ground heap compost and C_3 =Exposed pit compost.(2) 3 levels of N : $N_1=40$, $N_2=80$ and $N_3=120$ lb./ac.Extra treatments : E_0 =Control, $E_1=20$ lb./ac. of N as A/S to maize+20 lb./ac. of N as A/S to wheat and $E_2=40$ lb./ac. of N as A/S to maize+40 lb./ac. of N as A/S to wheat.**3. DESIGN :**

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) 24.66'×30'. (b) 22.66'×28'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1952—1954. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1150 lb./ac. (ii) 168.8 lb./ac. (iii) Main effects of N, E and 'E vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

 $E_0=504$ lb./ac., $E_1=1524$ lb./ac. and $E_2=1743$ lb./ac.

	N_1	N_2	N_3	Mean
C_1	904	1168	1211	1094
C_2	872	1128	1057	1019
C_3	1068	1065	1154	1096
Mean	948	1120	1141	1070

S.E. of C or N marginal mean = 39.8 lb./ac.

S.E. of body of table or E mean = 68.6 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 54(3).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :- To study the effect of organic and inorganic manures on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil, (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 8.11.1954. (iv) (a) 2 ploughings and 3 harrowings. (b) to (e) N.A. (v) N.A. (vi) N.P.—710. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 13 to 16.4.1955.

2. TREATMENTS :**Main-plot treatments :**4 levels of organic manure : M_0 =Control, M_1 =Guar (G.M.), $M_2=60$ lb./ac. of N as Castor cake and $M_3=60$ lb./ac. of N as F.Y.M.**Sub-plot treatments :**5 levels of inorganic manure : I_1 =Control, $L_1=40$ lb./ac. of N as A/S, $L_2=80$ lb./ac. of P_2O_5 as Super, $I_3=L_1+L_2$ and $L_4=L_1+L_2+60$ lb./ac. of K_2O as Pot. Sul.**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) and (b) 51'×24'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. In some plots growth was poor. (ii) Attack of white ants and rats. (iii) Yield of grain. (iv) (a) 1950—N.A. (b) Yes. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :(i) 1569 lb./ac. (ii) (a) 466.1 lb./ac. (b) 186.4 lb./ac. (iii) Only interaction $M \times L$ is significant. (iv) Av. yield of grain in lb./ac.

	L ₀	L ₁	L ₂	L ₃	L ₄	Mean
M ₀	1220	1479	1290	1612	1572	1435
M ₁	1763	1644	1534	1737	1589	1653
M ₂	1542	1744	1560	1498	1643	1597
M ₃	1517	1600	1657	1532	1643	1590
Mean	1510	1618	1510	1595	1612	1569

S.E. of difference of two

1. M marginal means = 120.3 lb./ac.
2. L marginal means = 53.8 lb./ac.
3. L means at the same level of M = 107.6 lb./ac.
4. M means at the same level of L = 154.8 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 54(4).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :- To study the effect of Wheat straw buried with and without artificials on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) 3.11.1954. (iv) (a) 3 ploughings and 2 discings. (b) to (e) N.A. (v) Nil. (vi) N.P.—760. (vii) Irrigated. (viii) 2 weedings and 1 rouging. (ix) N.A. (x) 11.4.1955.

2. TREATMENTS :**Main-plots treatments :**3 levels of straw : S₀=0, S₁=20 and S₂=30 mds./ac.**Sub-plot treatments :**5 manurial treatments : M₀=Control, M₁=20 lb./ac. of N as A/S, M₂=40 lb./ac. of N as A/S, M₃=60 lb./ac. of N as A/S and M₄=40 lb./ac. of N as A/S+60 lb./ac. of P₂O₅ as Super+40 lb./ac. of K₂O₂ as Pot. Sul.**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 37.5' × 29'. (b) 35.5' × 27'. (v) 1' × 1'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1952—N.A. (b) Yes. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 1905 lb./ac. (ii) (a) 286.9 lb./ac. (b) 313.3 lb./ac. (iii) Main effect of M alone is highly significant. (iv) Av. yield of grain in lb./ac.

	M ₀	M ₁	M ₂	M ₃	M ₄	Mean
S ₀	1617	2175	2012	2344	2091	2048
S ₁	1600	1529	1992	1888	1816	1765
S ₂	1728	1722	2139	2110	1817	1903
Mean	1648	1809	2048	2114	1908	1905

S.E. of difference of two

1. S marginal means = 90.5 lb./ac.
2. M marginal means = 127.9 lb./ac.
3. M means at the same level of S = 222.2 lb./ac.
4. S means at the same level of M = 210.0 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 54(5).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.****Object :-** To find out the optimum dose of N and P for Wheat.**1. BASAL CONDITIONS :**

(i) (a) No. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) November, 1954. (iv) and (v) N.A. (vi) N.P.—718. (vii) Irrigated. (viii) and (ix) N.A. (x) March, 1955.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=60$ lb./ac.(2) 6 levels of N as A/S : $N_0=0$, $N_1=20$, $N_2=40$, $N_3=60$, $N_4=80$ and $N_5=100$ lb./ac.**3. DESIGN :**(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 8. (iv) (a) $41.5' \times 19.5'$. (b) $39' \times 17'$. (v) N.A. (vi) Yes.**4. GENERAL :**

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1953—N.A. (modified in 1954). (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 2586 lb./ac. (ii) 320.6 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	N_3	N_4	N_5	Mean
P_0	2111	2595	2727	2538	2587	2677	2539
P_1	2521	2497	2924	2513	2562	2784	2633
Mean	2316	2546	2826	2525	2574	2730	2586

S.E. of P marginal mean = 46.3 lb./ac.

S.E. of N marginal mean = 80.2 lb./ac.

S.E. of body of table = 113.4 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 54(6).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.****Object :-** To study the effect of different sources of N applied at different times on the yield of Wheat.**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Jowar. (c) N.A. (ii) (a) and (b) N.A. (iii) 2.11.1954. (iv) (a) 6 ploughings. (b) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 18.4.1955.

2. TREATMENTS :

All combinations of (1) and (2)+a control

(1) 3 sources of N at 20 lb./ac. : $S_1=A/S$, $S_2=A/N$ and $S_3=Urea$.(2) 2 times of application of N : $T_1=At$ sowing and $T_2=At$ first irrigation.**3. DESIGN :**(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) $37.5' \times 27'$. (b) $34.5' \times 21'$. (v) $1\frac{1}{2}' \times 3'$. (vi) Yes.**4. GENERAL :**

(i) Stunted growth. (ii) Nil. (iii) Yield of grain. (iv) (a) 1953—N.A. (b) Yes. (c) N.A. (v) (a) 8 centres under Indo-American Agreement—'Fertilizer use project'. (vi) and (vii) Nil.

5. RESULTS :

(i) 1338 lb./ac. (ii) 195.4 lb./ac. (iii) Main effect of S and 'control vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

Control = 767 lb./ac.

	S ₁	S ₂	S ₃	Mean
T ₁	1413	1623	1443	1493
T ₂	1202	1668	1248	1373
Mean	1308	1646	1346	1433

S.E. of T marginal mean = 56.4 lb./ac.
 S.E. of S marginal mean = 69.1 lb./ac.
 S.E. of body of table or control mean = 97.7 lb./ac.

Crop :- Wheat.**Ref :- I.A.R.I. 56(1).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :—To study the effect of different sources of N applied at different times on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) (a) Sandy loam to loam. (b) N.A. (iii) 22.11.1956. (iv) (a) 3 discings and 2 grubblings. (b) to (e) N.A. (v) Nil. (vi) N.P.—710 (medium). (vii) Irrigated. (viii) Nil. (ix) 15.59". (x) 2.5.1957.

2. TREATMENTS :

Same as in expt. no. 54(6) on page 295.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 54.5' × 20'. (b) 45.3' × 16'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Hail storm occurred in early milk stage and damaged the crop considerably. (ii) Nil. (iii) Population count, height of main shoot and tiller at fortnightly interval of 10 plants and ear head study. (iv) (a) 1953—N.A. (b) No. (c) Nil. (v) (a) 8 centres under Indo—American Agreement—'Fertilizer use projec't. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 583 lb./ac. (ii) 76.6 lb./ac. (iii) Main effect of S is highly significant and interaction 'control vs. others' is significant. (iv) Av. yield of grain in lb./ac.

Control = 499 lb./ac.

	S ₁	S ₂	S ₃	Mean
T ₁	566	660	578	601
T ₂	495	680	606	594
Mean	530	670	592	597

S.E. of T marginal mean = 22.1 lb./ac.
 S.E. of S marginal mean = 27.1 lb./ac.
 S.E. of body of table or control mean = 38.2 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 57(2).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :—To study the effect of different sources of N applied at different times on the yield of Wheat.

1. BASAL CONDITIONS :

(i) to (x) N.A.

2. TREATMENTS :

Same as in expt. no. 54(6) on page 295.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 32.5' × 27'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) to (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 1792 lb./ac (ii) 361.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 1837 lb./ac.

	S ₁	S ₂	S ₃	Mean
T ₁	1522	1971	1896	1796
T ₂	1866	1505	1946	1772
Mean	1694	1738	1921	1784

S.E. of T marginal mean = 104.3 lb./ac.

S.E. of S marginal mean = 127.8 lb./ac.

S.E. of body of table or control mean = 180.7 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 54(7).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :- To determine the optimum dose and time of application of F.Y.M. to Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Maize. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 12.11.1954. (iv) (a) 2 ploughings. (b) Tractor sowing. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 5 weedings. (ix) N.A. (x) 14 to 19.4.1955.

2. TREATMENTS :**Main-plot treatments :**

All combinations of (1) and (2)+control

4 times of application of F.Y.M. : T₁=3 months, T₂=2 months, T₃=1 month and T₄=1 week before sowing of Wheat.3 levels of F.Y.M. : F₁=2½, F₂=5 and F₃=10 tons/ac.**Sub-plot treatments :**2 levels of N as A/S : N₀=0 and N₁=10 lb./ac.**3. DESIGN :**

(i) Split-plot. (ii) (a) 13 main-plots/replication, 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 32' × 18'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1952—contd. (b) Yes. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 1229 lb./ac. (ii) (a) 316.1 lb./ac. (b) 231.4 lb./ac. (iii) Main effect of F and 'control vs. others' are significant. (iv) Av. yield of grain in lb./ac.

Control (N_0+N_1) = 971 lb./ac.

	T ₁	T ₂	T ₃	T ₄	Mean	N ₀	N ₁
F ₁	1052	1335	1242	1059	1172	1189	1155
F ₂	1376	1160	1169	1091	1199	1136	1262
F ₃	1466	1409	1305	1348	1382	1386	1378
Mean	1298	1301	1239	1166	1251	1237	1265
N ₀	1202	1327	1236	1181			
N ₁	1394	1275	1241	1151			

S.E. of difference of two

1. F marginal means = 79.0 lb./ac. 5. F means at the same level of N = 97.9 lb./ac.
2. T marginal means = 91.2 lb./ac. 6. N means at the same level of T = 94.5 lb./ac.
3. N marginal means = 47.2 lb./ac. 7. T means at the same level of N = 113.1 lb./ac.
4. N means at the same level of D = 81.8 lb./ac. S.E. of body of F × T table or control mean = 111.8 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- I.A.R.I. 55(1).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To determine the optimum dose and time of application of F.Y.M. to Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Maize -Wheat. (b) Maize. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 17.11.1955. (iv) (a) 2 ploughings, 1 beaming and 1 discing. (b) N.A. (c) 76 lb./ac. (d) and (e) N.A. (v) Nil. (vi) N.P.—710. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 20 and 21.4.1955.

2. TREATMENTS :

Same as in expt. no. 54(7) on page 297.

3. DESIGN :

(i) Split-plot. (ii) (a) 13 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 34' × 20'. (b) 31' × 16'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. Severe lodging took place due to heavy winds. (ii) Brown rust. (iii) Yield of grain. (iv) (a) 1952—contd. (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 2269 lb./ac. (ii) (a) 442.6 lb./ac. (b) 390.8 lb./ac. (iii) Main effect of F alone is significant. (iv) Av. yield of grain in lb./ac.

Control (N_0+N_1) = 2028 lb./ac.

	T ₁	T ₂	T ₃	T ₄	Mean	F ₁	F ₂	F ₃
N ₀	2308	2313	2253	2168	2260	2076	2325	2380
N ₁	2427	2245	2289	2307	2317	2224	2228	2498
Mean	2368	2279	2271	2237	2289	2150	2277	2439
F ₁	2245	2158	2156	2041				
F ₂	2414	2130	2305	2258				
F ₃	2444	2549	2351	2412				

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|---|-----------------|
| 1. T marginal means | = 127.8 lb./ac. | 5. T means at the same level of N | = 170.4 lb./ac. |
| 2. F marginal means | = 110.6 lb./ac. | 6. N means at the same level of F | = 138.2 lb./ac. |
| 3. N marginal means | = 79.8 lb./ac. | 7. F means at the same level of N | = 147.6 lb./ac. |
| 4. N means at the same level of T | = 159.5 lb./ac. | S.E. of body of T×F table or control mean | = 156.5 lb./ac. |

Crop :- Wheat (*Rabi*).

Ref :- I.A.R.I. 56(2).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :— To determine the optimum dose and time of application of F.Y.M. to Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) Nil. (ii) (a) and (b) N.A. (iii) 15.11.1956. (iv) (a) 3 ploughings and 1 tractor discing. (b) to (e) N.A. (v) N.A. (vi) N.P.—710. (vii) Irrigated. (viii) 2 hand hoeings. (ix) N.A. (x) 28 to 30.4.1957.

2. TREATMENTS :

Same as in expt. no. 54(7) on page 297.

3. DESIGN :

(i) Split-plot. (ii) (a) 13 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 20'×34'. (b) 18'×32'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Good, crop damaged due to hail storm. (ii) No. (iii) Yield of grain. (iv) (a) 1952—contd. (b) Yes. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 720 lb./ac. (ii) (a) 264.7 lb./ac. (b) 152.0 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

Control ($N_0 + N_1$) = 610 lb./ac.

	T ₁	T ₂	T ₃	T ₄	Mean	F ₁	F ₂	F ₃
N ₀	600	610	691	625	632	584	555	716
N ₁	846	801	867	794	827	768	811	902
Mean	723	706	779	710	729	676	703	809
F ₁	696	648	693	668				
F ₂	645	672	749	746				
F ₃	829	797	895	715				

S.E. of difference of two

- | | | | |
|-----------------------------------|----------------|---|----------------|
| 1. T marginal means | = 76.4 lb./ac. | 5. T means at the same level of N | = 88.1 lb./ac. |
| 2. F marginal means | = 66.2 lb./ac. | 6. N means at the same level of F | = 53.7 lb./ac. |
| 3. N marginal means | = 31.0 lb./ac. | 7. F means at the same level of N | = 76.3 lb./ac. |
| 4. N means at the same level of T | = 62.1 lb./ac. | S.E. of body of T×F table or control mean | = 93.6 lb./ac. |

Crop :- Wheat (*Rabi*).

Ref :- I.A.R.I. 57(3).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :— To determine the optimum dose and time of application of F.Y.M. to Wheat crop.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 12.11.1957. (iv) (a) 5 tractor discings and 1 grubbing. (b) to (e) N.A. (v) Nil. (vi) N.P.—710. (vii) Unirrigated. (viii) 1 hoeing. (ix) N.A. (x) 9 to 11.4.1958.

2. TREATMENTS :

Same as in expt. no. 54(7) on page 297.

3. DESIGN :

(i) Split-plot. (ii) (a) 13 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 34'×20'. (b) 32'×18'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1952—cont'd. (b) Yes. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 1182 lb./ac. (ii) (a) 312.3 lb./ac. (b) 135.4 lb./ac. (iii) Main effect of N is highly significant and interaction $N \times T \times F$ and ' $N \times$ control vs. others' are significant. (iv) Av. yield of grain in lb./ac.

Control ($N_0 + N_1$) = 1042 lb./ac.

	T ₁	T ₂	T ₃	T ₄	Mean	F ₁	F ₂	F ₃
N ₀	1105	1115	1245	1143	1152	1068	1104	1283
N ₁	1276	1142	1323	1205	1236	1236	1186	1287
Mean	1190	1128	1284	1174	1194	1152	1145	1285
F ₁	1108	1144	1159	1197				
F ₂	1211	978	1244	1147				
F ₃	1251	1263	1450	1177				

S.E. of difference of two

1. T marginal means = 90.2 lb./ac. 5. T means at the same level of N = 98.3 lb./ac.
2. F marginal means = 78.1 lb./ac. 6. N means at the same level of F = 47.9 lb./ac.
3. N marginal means = 27.6 lb./ac. 7. F means at the same level of N = 85.1 lb./ac.
4. N means at the same level of T = 55.3 lb./ac. S.E. of body of $T \times F$ table or control mean = 110.4 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 54(8).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study the relative efficiency of different commercial nitrogenous fertilizers, their doses and time of application on Wheat.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 30 and 31.10.1954. (iv) (a) 1 grubbing, 2 *sohaga* and 1 discing. (b) to (e) N.A. (v) N.A. (vi) N.P.—718. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 20 to 22.4.1955.

2. TREATMENTS :

Main-plot treatments :

4 sources of N : S₁=A/S, S₂=A/N, S₃=C/N and S₄=Urea.

Sub-plot treatments :

All combinations of (1) and (2)+2 extra treatments

(1) 2 doses of fertilizers : F₁=20 lb./ac. of N+60 lb./ac. of P₂O₅ and F₂=40 lb./ac. of N+60 lb./ac. of P₂O₅.

(2) 7 times and methods of application of N : T₁=Full at sowing, T₂=Full four weeks after sowing, T₃=Full 8 weeks after sowing, T₄=½ at sowing+½ after 4 weeks of sowing, T₅=½ at sowing+½ after 8 weeks of sowing, T₆=½ after 4 weeks of sowing+½ after 8 weeks of sowing and T₇=½ at sowing+½ after 4 weeks of sowing+½ after 8 weeks of sowing.

2 extra treatments : P₀=0 and P₁=60 lb./ac. of P₂O₅.

3. DESIGN :

(i) Split-plot in L. Sq. (ii) (a) 4 main-plots/replication ; 16 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 24.5'×19.5'. (b) 23'×18'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. Lodging occurred in most plots in last week of Feb., 1955. (ii) Slight appearance of rusts in later stages. (iii) Rat menace. Zinc phosphide applied. (iii) Yield of grain. (iv) (a) and (b) N.A. (c) Nil. (v) (a) and (b) Nil. (vi) Rain and strong winds. (vii) Nil.

5. RESULTS :

(i) 2954 lb./ac. (ii) (a) 184.0 lb./ac. (b) 256.8 lb./ac. (iii) Main effect of T is highly significant. Main effect of F and interaction F×T are significant. (iv) Av. yield of grain in lb./ac.

$$P_0 = 2766 \text{ lb./ac.}, P_1 = 3020 \text{ lb./ac.}$$

	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	Mean	S ₁	S ₂	S ₃	S ₄
F ₁	2775	2942	2978	2913	3009	2868	2997	2926	2926	2927	2917	2934
F ₂	2909	2958	3152	2849	2973	3302	2957	3000	3052	2963	3071	2914
Mean	2842	2950	3065	2881	2991	3035	2977	2963	2989	2945	2994	2924
S ₁	2837	3062	3083	2866	3049	3065	2961					
S ₂	2724	2935	3026	2985	2962	3041	2942					
S ₃	2975	2905	3147	2847	3073	2973	3038					
S ₄	2832	2898	3004	2826	2880	3061	2967					

S.E. of difference of two

- | | | | |
|-----------------------------------|----------------|-----------------------------------|-----------------|
| 1. S marginal means | = 34.8 lb./ac. | 6. T means at the same level of S | = 128.4 lb./ac. |
| 2. F marginal means | = 34.3 lb./ac. | 7. S means at the same level of T | = 123.9 lb./ac. |
| 3. T marginal means | = 64.2 lb./ac. | S.E. of body of F×T table | = 64.2 lb./ac. |
| 4. F means at the same level of S | = 68.2 lb./ac. | S.E. of P mean | = 64.2 lb./ac. |
| 5. S means at the same level of F | = 59.7 lb./ac. | | |

Crop :- Wheat.

Ref :- I.A.R.I. 56(3).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the relative value of different nitrogenous fertilizers and time of application of nitrogen for Wheat.

1. BASAL CONDITIONS:

(i) (a) Fallow—Wheat. (b) and (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 19.11.1956. (iv) and (v) N.A. (vi) N.P —718 (early). (vii) Irrigated. (viii) 1 hand hoeing and 1 hand weeding. (ix) 5.59%. (x) 18 to 20.4.1957.

2. TREATMENTS :

Same as in expt. no. 54(8) on page 300.

3. DESIGN :

(i) Split-plot in L. Sq.. (ii) (a) 4 main-plots/block ; 16 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 24.5'×19.5'. (b) 22'×17'. (v) 1 row on either side. (vi) Yes.

4. GENERAL :

(i) Satisfactory. Lodging in wheat occurred in March accompanied by hail storm in all treatments. (ii) Nil. (iii) Yield of grain. (iv) (a) 1957—1958. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 793 lb./ac. (ii) (a) 399.2 lb./ac. (b) 236.8 lb./ac. (iii) Main effect of F alone is highly significant. (iv) Av. yield of grain in lb./ac.

$P_0=602$ lb./ac. and $P_1=579$ lb./ac.

	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	Mean	S ₁	S ₂	S ₃	S ₄
F ₁	733	678	775	759	746	637	775	729	725	692	750	749
F ₂	911	936	927	981	958	871	821	915	941	892	966	861
Mean	822	807	851	870	852	754	798	822	833	792	858	805
S ₁	880	836	864	892	866	690	803					
S ₂	711	764	870	742	738	816	903					
S ₃	862	813	867	902	976	853	733					
S ₄	835	815	803	944	828	657	753					

S.E. of difference of two

- | | | | |
|-----------------------------------|----------------|---|-----------------|
| 1. S marginal means | = 75.4 lb./ac. | 5. S means at the same level of F | = 87.7 lb./ac. |
| 2. F marginal means | = 31.6 lb./ac. | 6. T means at the same level of S | = 118.4 lb./ac. |
| 3. T marginal means | = 59.2 lb./ac. | 7. S means at the same level of T | = 133.1 lb./ac. |
| 4. F means at the same level of S | = 63.3 lb./ac. | S.E. of body of F×T table or extra treatment mean | = 59.2 lb./ac. |

Crop :- Wheat.

Ref :- I.A.R.I. 54(9).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object:—To see whether fertility can be maintained or improved under intensive cropping and heavy manuring.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Maize. (c) Nil. (ii) (a) and (b) N.A. (iii) 15.11.1954. (iv) (a) 1 ploughing with victory plough, 3 ploughings with *desi* plough and 1 grubbing with tractor. (b) to (e) N.A. (v) Nil. (vi) N.P.—710. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 9 and 10.4.1955.

2. TREATMENTS :

5 manurial treatments: M_0 =Control, M_1 =60 lb./ac. of N as A/S+100 lb./ac. of P_2O_5 as Super, M_2 = M_1 +100 lb./ac. of K_2O as Pot. Sul., M_3 =60 lb./ac. of N as F.Y.M.+100 lb./ac. of P_2O_5 as Super+100 lb./ac. of K_2O as Pot. Sul. and M_4 =60 lb./ac. of N as castor cake+100 lb./ac. of P_2O_5 as Super+100 lb./ac. of K_2O as Pot. Sul.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 38'×29'. (b) 32'×23'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1952—1956. (b) Yes. (c) No. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 1881 lb./ac. (ii) 209.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M_0	M_1	M_2	M_3	M_4
Av. yield	1468	2253	2324	1746	1614

S.E./mean = 85.5 lb./ac.

Crop :- Wheat.**Ref :- I.A.R.I. 54(10).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :- To see whether fertility can be maintained or improved under intensive cropping and heavy manuring.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat—Maize—Pea. (b) Maize. (c) Nil. (ii) (a) and (b) N.A. (iii) 15.11.1954. (iv) (a) 1 ploughing with victory plough, 2 ploughings with *desi* plough, 3 grubblings with tractor. (b) to (c) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Thorough weeding. (ix) N.A. (x) 10.4.1955.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(9) on page 302.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1952—1956. (b) Yes (except 1956 *rabi*). (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 2080 lb./ac. (ii) 430.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄
Av. yield	1636	2398	2544	1893	1929

S.E./mean = 175.7 lb./ac.

Crop :- Wheat.**Ref :- I.A.R.I. 55(2).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :- To see whether fertility can be maintained or improved under intensive cropping and heavy manuring.

1. BASAL CONDITIONS :

(i) (a) Wheat—Maize. (b) Maize. (c) Nil. (ii) (a) and (b) N.A. (iii) 7.11.1955. (iv) (a) 1 ploughing with victory plough, 2 ploughings with *desi* plough and 3 ploughings with *triphala* and 1 tractor ploughing. (b) to (c) N.A. (v) Nil. (vi) N.P.—760. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 22 and 23.4.1956.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(9) on page 302.

4. GENERAL :

(i) Good lodging. (ii) Yellow rest. (iii) Yield of grain. (iv) (a) 1952—1956. (b) Yes. (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 1789 lb./ac. (ii) 147.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄
Av. yield	1372	2170	2159	1753	1493

S.E./mean = 60.0 lb./ac.

Crop :- Wheat.**Ref :- I.A.R.I. 56(4).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.****Object :-**To study the effect of inorganic and organic manures on Wheat in Maize—Wheat rotation.**1. BASAL CONDITIONS :**

(i) (a) Maize—Wheat. (b) Maize. (c) As per treatments. (ii) (a) Alluvial loam. (b) N.A. (iii) 16.11.1956. (iv) (a) 1 ploughing with victory plough, two harrowings, 3 ploughings with *desi* plough and double discing by tractor. (b) to (e) N.A. (v) Nil. (vi) N.P.—760. (vii) Irrigated. (viii) 1 hoeing. (ix) 3.72'. (x) 17.4.1957.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(9) on page 302.

4. GENERAL :

(i) The loss of yield due to hail storm on 20.3.1957 and rust was about 64%. (ii) Rust attack. (iii) Yield of grain and straw, height, tiller etc. was recorded. (iv) (a) 1952—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 369 lb./ac. (ii) 89.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄
Av. yield	193	528	505	295	322

S.E./mean = 36.7 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 57(4).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.****Object :-**To study the effect of organic manures and inorganic fertilizers in building up soil fertility as judged from the yield of Wheat crop.**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 19.11.1957. (iv) (a) 1 victory ploughing, 2 tractor discing and 3 tractor grubblings. (b) to (e) N.A. (v) Nil. (vi) N.P.—760. (vii) Irrigated. (viii) Hoeings. (ix) N.A. (x) 2 to 4.4.1958.

2. TREATMENTS :

Same as in expt. no. 54(9) on page 302.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 38'×29'. (b) 36'×27'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1952—contd. (b) Yes. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

RESULTS :

(i) 1284 lb./ac. (ii) 186.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄
Av. yield	1011	1540	1538	1041	1288

S.E./mean = 76.3 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 58(2).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :—To study the effect of organic manures and inorganic fertilizers in building up soil fertility as judged from the yield of Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 21.11.1958. (iv) (a) 2 ploughings 1 discing and 1 tractor grubbing. (b) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 9.4.1959.

2. TREATMENTS :

Same as in expt. no. 54(9) on page 302.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 38'×29'. (b) 32'×23'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1952--contd. (b) and (c) N.A. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1569 lb./ac. (ii) 127.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄
Av. yield	1114	1796	1589	1587	1760

S.E./mean = 51.9 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 58(3).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :—To study the effect of organic manures and inorganic fertilizers in building up soil fertility as judged from the yield of Wheat crop.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 21.11.1958. (iv) (a) 2 ploughings, 2 discings and passing the tractor thrice. (b) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 9.4.1959.

2. TREATMENTS :

Same as in expt. no. 54(9) on page 302.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 38'×29'. (b) 32'×23'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) (a) Attack of black, brown and yellow rust. (iii) Yield of grain. (iv) 1952--contd. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1862 lb./ac. (ii) 445.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄
Av. yield	1427	2064	1898	1921	2000

S.E./mean = 181.9 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 59(1).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :—To study the effect of organic manures and inorganic fertilizers in building up soil fertility as judged from the yield of Wheat crop.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 9.11.1959. (iv) (a) 1 tractor grubbing and 1 tractor discing. (b) to (e) N.A. (v) N.A. (vi) N.P. - 760. (vii) Irrigated. (viii) 2 hoeings. (ix) N.A. (x) 2 to 4.4.1960.

2. TREATMENTS :

Same as in expt. no. 54(9) on page 30.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 38' × 29'. (b) 36' × 27'. (v) 1' × 1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1952—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1790 lb./ac. (ii) 257.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄
Av. yield	1414	2207	1996	1591	1744

S.E./mean = 105.3 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 54(11).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :—To compare the effect of A/S and F.Y.M. on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize (c) Nil. (ii) to (x) N.A.

2. TREATMENTS :

12 manurial treatments : M₀=Control, M₁=40 lb./ac. of N as F.Y.M., M₂=80 lb./ac. of N as F.Y.M., M₃=120 lb./ac. of N as F.Y.M., M₄=20 lb./ac. of N as A/S, M₅=40 lb./ac. of N as A/S, M₆=60 lb./ac. of N as A/S, M₇=20 lb./ac. of N as F.Y.M.+20 lb./ac. of N as A/S, M₈=40 lb./ac. of N as F.Y.M.+40 lb./ac. of N as A/S, M₉=60 lb./ac. of N as F.Y.M.+60 lb./ac. of N as A/S, M₁₀=80 lb./ac. of N as F.Y.M.+M₅ and M₁₁=120 lb./ac. of N as F.Y.M.+M₅.

F.Y.M. applied 8 weeks before sowing and A/S half at sowing and half at 1st irrigation.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 8. (iv) (a) 24' × 34.5'. (b) 22' × 33'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1953—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1211 lb./ac. (ii) 256.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀	M ₁₁
Av. yield	922	840	885	1050	1102	1372	1598	1200	1440	1478	1230	1418

S.E./mean = 90.6 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 55(3).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :—To compare the effect of A/S and F.Y.M. on the yield of wheat.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) Nil. (ii) (a) and (b) N.A. (iii) 10 and 11.11.1955. (iv) (a) 2 Victory ploughings, double tractor discing and grubbing. (b) to (e) N.A. (v) Nil. (vi) NP.—710. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 24.4.1956.

2. TREATMENTS :

Same as in expt. no. 54(11) on page 306.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 8. (iv) (a) 24' × 35.5'. (b) 22' × 33'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1953—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1324 lb./ac. (ii) 225.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀	M ₁₁
Av. yield	1344	1159	1233	1180	1413	1329	1376	1316	1348	1325	1407	1458

S.E./mean = 79.9 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 56(5).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :—To compare the effect of A/S and F.Y.M. on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) and (b) N.A. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 7.11.1956. (iv) (a) to (c) N.A. (d) Rows 1' apart. (e) N.A. (v) Nil. (vi) N.P.—710 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) 5.59". (x) 16 to 18.4.1957.

2. TREATMENTS :

Same as in expt. no. 54(11) on page 306.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 8. (iv) (a) 1/60 ac. (b) 1/70 ac. (v) 1 row on either side. (vi) Yes.

4. GENERAL :

(i) Satisfactory, lodging occurred in March. (ii) N.A. (iii) Yield of grain. (iv) (a) 1953—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 940 lb./ac. (ii) 237.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀	M ₁₁
Av. yield	726	717	773	846	952	931	1168	938	932	989	1155	1153

S.E./mean = 93.9 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.R.A.I. 58(4).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :—To compare the effect of A/S and F.Y.M. on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 8.11.1958. (iv) (a) 1 tractor ploughing, 1 Victory ploughing and 2 double tractor grubbing. (b) Sowing with simplex drill. (c) to (e) N.A. (v) Nil. (vi) NP.—710. (vii) Irrigated. (viii) 1 weeding and 3 rougings. (ix) N.A. (x) 13.4.1959.

2. TREATMENTS :

Same as in expt. no. 54(11) on page 306.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 8. (iv) (a) 22'×33'. (b) 20'×31'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1953—contd. (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 1466 lb./ac. (ii) 323.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀	M ₁₁
Av. yield	1428	1454	1640	1736	1256	1244	1468	1460	1402	1601	1409	1497

S.E./mean = 114.5 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 54(12).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :—To study the effect of soil need fertilizer on Wheat.

1. BASAL CONDITIONS :(i) (a) Nil. (b) Maize. (c) N.A. (ii) (a) and (b) N.A. (iii) 27.11.1954. (iv) (a) 2 ploughings with *desi* plough and 1 ploughing by Victory plough. (b) N.A. (c) 70 lb./ac. (d) and (e) N.A. (v) Nil. (vi) N.P.—710. (vii) Irrigated. (viii) 1 rouging. (ix) N.A. (x) 20 to 24.4.1955.**2. TREATMENTS :**5 manurial treatments : M₀=Control, M₁=30 lb./ac. of N as soil need fertilizer, M₂=30 lb./ac. of N as A/S, M₃=M₂+28.8 lb./ac. of P₂O₅ as triple Super and M₄=M₃+21.3 lb./ac. of K₂O as Pot Sul.**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) 28'×24'. (b) 25.1'×22'. (v) 1½'×1'. (vi) Yes.

4. GENERAL :

(i) Normal. Lodging occurred in some plots. (ii) Nil. (iii) Yield of grain. (iv) (a) 1954—contd. (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 902 lb./ac. (ii) 126.7 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄
Av. yield	700	1006	862	994	947

S.E./mean = 51.7 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 55(4).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.****Object :-**To study the effect of soil need fertilizer on Wheat.**1. BASAL CONDITIONS :**(i) (a) Nil. (b) Maize. (c) N.A. (ii) (a) and (b) N.A. (iii) 27.10.1955. (iv) (a) 2 *desi* ploughings, 1 Victory ploughing and tractor grubbing. (b) N.A. (c) 70 lb./ac. (d) and (e) N.A. (v) Nil. (vi) N.P.—710. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 12 and 13.4.1956.**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 54(12) on page 308.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1954—contd. (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 2371 lb./ac. (ii) 301.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄
Av. yield	2185	2449	2475	2416	2330

S.E./mean = 123.2 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 56(6).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.****Object :-**To study the effect of soil need fertilizer on Wheat.**1. BASAL CONDITIONS :**(i) and (ii) N.A. (iii) 15.11.1956. (iv) (a) 1 ploughing by Victory plough and 1 *desi* ploughing. (b) to (e) N.A. (v) N.A. (vi) N.P.—710. (vii) Irrigated. (viii) 2 weedngs. (ix) N.A. (x) 22 and 23.4.1957.**2. TREATMENTS :**

Same as in expt. no. 54(12) on page 308.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) and (b) 28' × 25'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1954—contd. (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 1137 lb./ac. (ii) 207.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄
Av. yield	643	1415	1137	1300	1191

S.E./mean = 84.6 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 56(7).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.****Object :-**To study the efficiency of nitrogenous fertilizers at different levels on Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 23.11.1956. (iv) (a) 3 to 4 ploughings. (b) to (e) N.A. (v) Nil. (vi) N.P.—710 (medium). (vii) Irrigated. (viii) Nil. (ix) 15.59°. (x) 6.5.1957.

2. TREATMENTS :

All combination of (1) and (2) with 20 lb./ac. of P_2O_5 +2 extra treatments

(1) 5 sources of N : $S_1=A/S$, $S_2=A/S/N$, $S_3=A/C$, $S_4=A/N$ and $S_5=Urea$.

(2) 3 levels of N : $N_1=20$, $N_2=40$ and $N_3=60$ lb./ac.

Extra treatments : $P_0=Control$ (2 plots) and $P_1=20$ lb./ac. of P_2O_5 .

3. DESIGN :

(i) R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a) $36' \times 16'$. (b) 1/60 ac. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) ϵ nd (iii) Nil. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 454 lb./ac. (ii) 166.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

$P_0 = 314$ lb./ac. and $P_1 = 501$ lb./ac.

	S_1	S_2	S_3	S_4	S_5	Mean
N_1	537	469	453	330	505	459
N_2	397	429	532	451	522	466
N_3	524	406	309	558	523	482
Mean	486	435	461	446	517	469

S.E. of N marginal mean = 37.2 lb./ac.
 S.E. of S marginal mean = 48.0 lb./ac.
 S.E. of P_0 mean = 58.8 lb./ac.
 S.E. of body of table or P_1 mean = 83.1 lb./ac.

Crop :- Wheat (*Rabt*).

Ref :- I.A.R.I. 57(5).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the relative effect of different sources of N at different levels on the yield of Wheat.

1.5 BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 5 and 6.11.1957. (iv) (a) 1 tractor ploughing, 2 double discings and 1 grubbing. (b) to (e) N.A. (v) Nil. (vi) N.P.—710. (vii) to (ix) N.A. (x) 12 and 13.4.1958.

2. TREATMENTS :

All combinations of (1) and (2) with 30 lb./ac. of P_2O_5 as Super+2 extra treatments.

(1) 5 sources of N : $S_1=A/S$, $S_2=A/S/N$, $S_3=A/S$, $S_4=A/N$ and $S_5=Urea$.

(2) 3 levels of N : $N_1=20$, $N_2=40$ and $N_3=60$ lb./ac.

Extra treatments : $P_0=Control$ (2 plots) and $P_1=30$ lb./ac. of P_2O_5 as Super.

3. DESIGN :

(i) R.B.D. (ii) (a) 18. (b) N.A. (iii) 4 (effective replications are 2). (iv) (a) $36' \times 18'$. (b) $33' \times 16\frac{1}{2}'$. (v) $1\frac{1}{2}' \times \frac{3}{4}'$. (vi) Yes.

4. GENERAL :

(i) Very good growth. Due to heavy rains and wind the crop was lodged in March. (ii) Rust with low intensity was observed in March, 1958. (iii) Grain yield. (iv) (a) 1957—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2531 lb./ac. (ii) 354.4 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in lb./ac.

$P_0 = 2355 \text{ lb./ac. and } P_1 = 2427 \text{ lb./ac.}$

	S_1	S_2	S_3	S_4	S_5	Mean
N_1	2667	2134	2017	2625	2232	2335
N_2	2677	2557	2555	2185	2585	2572
N_3	2547	2925	2807	2842	2760	2776
Mean	2630	2539	2460	2651	2526	2561

S.E. of N marginal mean = 112.1 lb./ac.
 S.E. of S marginal mean = 144.7 lb./ac.
 S.E. of P_0 mean = 177.2 lb./ac.
 S.E. of body of table or P_1 mean = 250.6 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- I.A.R.I. 58(5).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study the relative efficiency of nitrogeous fertilizers under dry condition for Wheat.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 4.11.1958. (iv) (a) 1 ploughing with Victory plough, double cultivation, 2 ploughings with *desi* plough and with *tripali*. (b) Sown by *pora*. (c) to (e) N.A. (v) Nil. (vi) N.P.—718. (vii) Unirrigated. (viii) and (ix) N.A. (x) 1 and 2.4.1959.

2. TREATMENTS :

All combinations of (1) and (2) with 20 lb./ac. of P_2O_5 + 2 extra treatments

(1) 5 sources of N : $S_1=A/S$, $S_2=A/N$, $S_3=A/C$, $S_4=A/S/N$ and $S_5=Urea$.

(2) 2 levels of N : $N_1=15$ and $N_2=30$ lb./ac.

Extra treatments : $E_0=Control$ and $E_1=20$ lb./ac. of P_2O_5 .

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 22'×21'. (b) 20'×19'. (v) 1½'×1'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) 1956—N.A.* (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 828 lb./ac. (ii) 248.8 lb./ac. (iii) Main effect of N and interaction 'E vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

$E_0 = 432 \text{ lb./ac. and } E_1 = 718 \text{ lb./ac.}$

	S_1	S_2	S_3	S_4	S_5	Mean
N_1	1073	883	1021	1125	847	990
N_2	657	835	802	815	729	768
Mean	865	859	912	970	788	879

S.E. of N marginal mean	= 55.6 lb./ac.
S.E. of S marginal mean	= 88.0 lb./ac.
S.E. of body of table or E mean	= 124.4 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 55(5).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To find out the efficiency of different methods of placement of phosphatic fertilizers at different levels on growth, development and yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 26.11.1954. (iv) (a) 1 ploughing with Victory plough, 2 double discing and double grubbing by tractor and 3 picking of *guava* stulls. (b) Sowing. (c) to (e) N.A. (v) Nil. (vi) N.P.-710. (vii) Irrigated. (viii) 3 hand weedings. (ix) N.A. (x) 18.4.1955.

2. TREATMENTS :

All combinations of (1), (2) and (3) with 30 lb./ac. of N as A/S+2 extra treatments

(1) 2 sources of P_2O_5 : S_1 =Triple Super and S_2 =Ammono. Phos.

(2) 2 levels of P_2O_5 : P_1 =20 and P_2 =40 lb./ac.

(3) 3 methods of fertilizer placement: M_1 =Broadcast before final cultivation, M_2 =Band placement and M_3 = $2\frac{1}{2}$ " below seed.

Extra treatments: N_0 =0 and N_1 =30 lb./ac. of N as A/S.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) $38.75' \times 28'$. (b) $33' \times 22'$. (v) $2\frac{1}{2}' \times 2\frac{1}{2}'$. (vi) Yes.

4. GENERAL :

(i) and (ii) Nil. (iii) Yield of grain. (iv) (a) 1954—N.A. (b) and (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 1733 lb./ac. (ii) 216 lb./ac. (iii) Main effect of S and ' N_0 vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

$$N_0 = 953 \text{ lb./ac. and } N_1 = 1731 \text{ lb./ac.}$$

	P_1	P_2	Mean	M_1	M_2	M_3
S_1	1908	1895	1501	1799	1986	1918
S_2	1718	1669	1694	1604	1713	1763
Mean	1813	1782	1798	1702	1850	1840
M_1	1684	1720				
M_2	1889	1810				
M_3	1866	1816				

S.E. of P or S marginal mean	= 44.1 lb./ac.
S.E. of M marginal mean	= 54.0 lb./ac.
S.E. of body of $S \times M$ or $P \times M$ table	= 76.4 lb./ac.
S.E. of body of $S \times P$ table	= 62.3 lb./ac.
S.E. of N mean	= 108.0 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 56(8).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of different methods of placement of different sources of P on Wheat yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy loam to loam. (b) N.A. (iii) 28.11.1956. (iv) (a) 3 discings and 2 grubblings. (b) to (e) N.A. (v) Nil. (vi) N.P.—710 (medium). (vii) Irrigated. (viii) Nil. (ix) 15.59". (x) 4.5.1957.

2. TREATMENTS :

Same as in expt. no. 55(5) on page 312.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 3. (iv) (a) 1/40 ac. (b) 1/60 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Hail storm occurred on 2.3.1957 when wheat was in milk stage. This reduced grain yield considerably. (ii) Nil. (iii) Plant population, height of main shoot, tiller counts and yield of grain. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 770 lb./ac. (ii) 112.0 lb./ac. (iii) Main effect of M alone is significant. (iv) Av. yield of grain in lb./ac.

Treatment	S ₁	S ₂	P ₁	P ₂	M ₁	M ₂	M ₃	N ₀	N ₁
Av. yield	798	790	767	821	705	898	779	555	693

S.E. of S or P mean = 22.2 lb./ac.
S.E. of M mean = 28.0 lb./ac.
S.E. of N mean = 56.0 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 57(6).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To find out the efficiency of different methods of placement of phosphatic fertilizers at different levels on growth, development and yield of Wheat.

1. BASAL CONDITIONS :

(i) to (x) N.A.

2. TREATMENTS :

All combinations of (1), (2) and (3) +2 extra treatments

(1) 3 modes of application: M₁=Broadcast, M₂=Band placement and M₃=Placement 2½" below seed.

(2) 2 sources of P₂O₅: S₁=Super and S₂=Ammono. Phos.

(3) 2 levels of P₂O₅: P₁=20 and P₂=40 lb./ac.

Extra treatments: C₀=No manure and C₁=30 lb./ac. of N as B.D.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 3. (iv) (a) and (b) 46'×15'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) to (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 1849 lb./ac. (ii) 887.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

$C_0 = 1806 \text{ lb./ac. and } C_1 = 2217 \text{ lb./ac.}$

	M ₁	M ₂	M ₃	Mean	P ₁	P ₂
S ₁	1920	1769	1545	1745	1557	1932
S ₂	1800	1861	2038	1900	1889	1910
Mean	1860	1815	1792	1822	1723	1921
P ₁	1843	1783	1543			
P ₂	1877	1847	2040			

S.E. of S or P marginal mean	= 209.2 lb./ac.
S.E. of M marginal mean	= 256.2 lb./ac.
S.E. of body of S×P table	= 295.9 lb./ac.
S.E. of body of S×M or P×M table	= 362.4 lb./ac.
S.E. of C mean	= 512.5 lb./ac.

Crop :- Wheat (*Rabi*).¹

Ref :- I.A.R.I. 58(6).

Site :- Indian Agr. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To find out the efficiency of different methods of placement of phosphatic fertilizers at different levels on growth, development and yield of Wheat.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 1 and 2.12.1958. (iv) (a) 1 ploughing with victory plough, 1 planking, 1 double grubbing and 2 double discings. (b) to (e) N.A. (v) N.A. (vi) N.P.—710. (vii) to (ix) N.A. (x) 21 and 22.4.1959.

2. TREATMENTS :

Same as in expt. no. 57(6) on page 313.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 3. (iv) (a) 47'7"×9'6". (b) 45'0"×7.75'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) to (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 2131 lb./ac. (ii) 333.5 lb./ac. (iii) Only extra treatments difference is significant. (iv) Av. yield of grain in lb./ac.

 $C_0 = 1621 \text{ lb./ac. and } C_1 = 2368 \text{ lb./ac.}$

	M ₁	M ₂	M ₃	Mean	P ₁	P ₂
S ₁	2148	2177	2154	2160	2209	2110
S ₂	2345	2174	1928	2149	2150	2147
Mean	2246	2175	2041	2154	2179	2129
P ₁	2170	2300	2068			
P ₂	2322	2050	2014			

S.E. of S or P marginal mean	= 78.6 lb./ac.
S.E. of M marginal mean	= 96.3 lb./ac.
S.E. of body of S×P table	= 111.2 lb./ac.
S.E. of body of S×M or P×M table	= 136.2 lb./ac.
S.E. of C mean	= 192.5 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 56(9).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study the effect of different levels of N and P and different sources of N on Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy loam to loam. (b) N.A. (iii) 24.11.1956. (iv) (a) 3 discings and 2 grubblings. (b) to (e) N.A. (v) Nil. (vi) N.P.—710 (medium). (vii) Irrigated. (viii) Nil. (ix) 15 59°. (x) 1.5.1957.

2. TREATMENTS :

All combinations of (1), (2) and (3)+3 extra treatments/block

(1) 3 levels of N : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.

(2) 3 sources of N : $S_1=A/S$, $S_2=A/N$ and $S_3=Urea$.

(3) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=20$ and $P_2=40$ lb./ac.

Extra treatments : $E_1=60$ lb./ac. of N as A/S+40 lb./ac. of P_2O_5 as Super, $E_2=40$ lb./ac. of N as A/S+80 lb./ac. of P_2O_5 as Super and $E_3=60$ lb./ac. of N as A/S+80 lb./ac. of P_2O_5 as Super.

3. DESIGN :

(i) 3*+3 confd. (ii) (a) 12 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 1/40 ac. (b) 1/60 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Hail storm occurred on 2.3.1957, when wheat was in milk stage. This reduced grain yield considerably. (ii) Nil. (iii) Yield of grain. (iv) (a) 1953—N.A. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Raw data and two way tables N.A.

5. RESULTS :

(i) 534 lb./ac. (ii) 111.7 lb./ac. (iii) Main effect of P and E are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	N_0	N_1	N_2	S_1	S_2	S_3	P_0	P_1	P_2	E_1	E_2	E_3
Av. yield	386	477	614	564	551	519	421	545	510	615	600	759

S.E. of N or P mean	= 26.3 lb./ac.
S.E. of S mean	= 32.2 lb./ac.
S.E. of E mean	= 45.6 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 58(7).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study the effect of different sources of N at different levels of P_2O_5 on the yield of Wheat.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 20 and 21.11.1958. (iv) (a) 1 ploughing with victory plough, 1 ploughing with *desi* plough, double grubbing, 2 double discings and 2 plankings. (b) Sowing with drill. (c) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 18 and 20.4.1959.

2. TREATMENTS :

All combinations of (1), (2) and (3)+3 extra treatments/block

(1) 3 levels of N : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.

(2) 3 sources of N : $S_1=A/S$, $S_2=A/N$ and $S_3=Urea$.

(3) 3 levels of P_2O_5 : $P_0=0$, $P_1=20$ and $P_2=40$ lb./ac.

3 extra treatments : $E_1=60$ lb./ac. of N+40 lb./ac. of P_2O_5 , $E_2=40$ lb./ac. of N+80 lb./ac. of P_2O_5 and $E_3=60$ lb./ac. of N+80 lb./ac. of P_2O_5 .

3. DESIGN :

(i) 3^3+3 confd. (ii) (a) 12 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 1/70.7 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) to (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 1555 lb./ac. (ii) 569.9 lb./ac. (iii) Main effect of S and interaction 'E vs. others' are significant. (iv) Av. yield of grain in lb./ac.

$E_1 = 2022$ lb./ac. ; $E_2 = 1520$ lb./ac. and $E_3 = 1891$ lb./ac.

	P_0	P_1	P_2	Mean	S_1	S_2	S_3
N_0	1316	1164	1129	1203	—	—	—
N_1	1467	1366	1779	1537	1838	1592	1181
N_2	1416	1668	1925	1669	1944	1148	1216
Mean	1400	1399	1611	1470	1891	1720	1198
S_1	1630	1681	2393				
S_2	1560	1719	1881				
S_3	1164	1150	1280				
Mean	1441	1517	1851				

S.E. of N or P ($N \times P$ table) marginal mean = 134.3 lb./ac.

S.E. of S or P ($S \times P$ table) marginal mean = 164.5 lb./ac.

S.E. of body of $S \times P$ table = 285.0 lb./ac.

S.E. of body of $N \times P$ or $N \times S$ table or E mean = 232.7 lb./ac.

Crop :- Wheat.

Ref :- I.A.R.I. 55(6).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To find out the fertilizer value of dicalcium phosphate for Wheat and its residual effect on maize as compared to that of Super.

1. BASAL CONDITIONS :

(i) (a) Wheat—Maize. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 11.11.1955. (iv) (a) 2 tractor discings, tractor grubbing and 1 ploughing with *desi* plough. (b) to (c) N.A. (v) No. (vi) N.P.—718. (vii) Irrigated. (viii) and (ix) N.A. (x) 27 to 30.4.1956.

2. TREATMENTS :

4 manurial treatments : $M_0=Control$, $M_1=40$ lb./ac. of N as A/S/N, $M_2=M_1+60$ lb./ac. of P_2O_5 as Super and $M_3=M_1+60$ lb./ac. of P_2O_5 as dicalcium phos.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) $42' \times 27'$. (b) $41' \times 26'$. (v) $\frac{1}{2}' \times \frac{1}{2}'$. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 1791 lb./ac. (ii) 250.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃
Av. yield	1345	1870	1933	2016

S.E./mean = 102.1 lb./ac.

Crop :- Wheat.

Ref :- I.A.R.I. 56(10).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To find out the fertilizer value of dicalcium phos. for Wheat and its residual effect on maize as compared to that of Super.

1. BASAL CONDITIONS :

(i) (a) No. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 16.11.1956. (iv) (a) 2 tractor discings, grubbing and *desi* ploughing. (b) to (e) N.A. (v) N.A. (vi) N.P.—710. (vii) Irrigated. (viii) 1 hand hoeing. (ix) N.A. (x) 26 and 27.4.1957.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(6) on page 316.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) No. (vi) Crop was damaged by hail storm on 20.3.1957 to the extent of 75%. (vii) Nil.

5. RESULTS :

(i) 456 lb./ac. (ii) 69.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃
Av. yield	196	397	642	588

S.E./mean = 28.5 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 57(7).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the fertilizer value of dicalcium phos. on maize and Wheat.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) N.A. (ii) (a) and (b) N.A. (iii) 6.12.1957. (iv) (a) 1 victory ploughing, 2 *desi* ploughings, 1 *iriphali* ploughing and 1 tractor discing. (b) to (e) N.A. (v) Nil. (vi) N.P.—710. (vii) Irrigated. (viii) and (ix) N.A. (x) 17.4.1958.

2. TREATMENTS :

4 manurial treatments : M₀ = Control, M₁ = 40 lb./ac. of N as A/S/N, M₂ = M₁ + 80 lb./ac. of P₂O₅ as Super and M₃ = M₁ + 80 lb./ac. of P₂O₅ as dicalcium phos.

3. DESIGN :

(i) R.B.D. (b) N.A. (iii) 6. (iv) (a) 24' × 30'. (b) 22' × 28'. (v) 1' × 1'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—contd. (b) Yes. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 888 lb./ac. (ii) 110.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃
Av. yield	544	813	1113	1081

S.E./mean = 45.2 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 58(8).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study the fertilizer value of dicalcium phos. on Wheat and maize.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Maize. (c) N.A. (ii) (a) and (b) N.A. (iii) 5.12.1958. (iv) (a) 5 ploughings and 1 rolling. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 14.4.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(7) on page 317.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—contd. (b) Yes. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 924 lb./ac. (ii) 215.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃
Av. yield	556	907	1251	981

S.E./mean = 87.8 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 54(13).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :— To study the effect of guar as G.M. with P and micronutrients on Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) As per treatments. (ii) (a) and (b) N.A. (iii) 16.11.1954. (iv) to (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 19.4.1955.

2. TREATMENTS :

10 cultural treatments : C₀ = Fallow in *kharif*, C₁ = *Guar* without P₂O₅ removed, C₂ = *Guar* without P₂O₅ burried, C₃ = *Guar* with 60 lb./ac. of P₂O₅ removed, C₄ = *Guar* with 60 lb./ac. of P₂O₅ burried, C₅ = *Guar* with 60 lb./ac. of P₂O₅ + 5 lb./ac. of Borax + 1 lb./ac. of Molybdenum removed, C₆ = *Guar* with 60 lb./ac. of P₂O₅ + 5 lb./ac. of Borax + 1 lb./ac. of Molybdenum burried, C₇ = *Guar* burried from C₁, C₈ = *Guar* burried from C₃ and C₉ = *Guar* burried from C₅.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 45' × 15'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1951—1954. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 901 lb./ac. (ii) 127.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	C ₀	C ₁	C ₂	C ₃	C ₄	C ₅	C ₆	C ₇	C ₈	C ₉
Av. yield	715	796	946	839	968	903	1086	860	914	979

S.E./mean = 52.2 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- I.A.R.I. 59(2).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of organic manures and fertilizers on Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Wheat—Maize. (b) and (c) N.A. (ii) to (x) N.A.

2. TREATMENTS :

Main-plot treatments :

4 organic manurial treatments : T₀=No manure, T₁=Guar (G.M.), T₂=60 lb./ac. of N as Castor cake and T₃=60 lb./ac. of N as F.Y.M.

Sub-plot treatments :

5 inorganic manurial treatments : M₀=No manure, M₁=40 lb./ac. of N as A/S, M₂=80 lb./ac. of P₂O₅ as Super, M₃=40 lb./ac. of N as A/S+80 lb./ac. of P₂O₅ as Super and M₄=M₃+60 lb./ac. of K₂O as Pot. Sul.

Sub-sub-plot treatments :

2 levels of fertilizer : N₀=0 (no fertilizer) and N₁=30 lb./ac. of N as A/S.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication : 5 sub-plots/main-plot and 2 sub-sub-plots/sub-plot. (b) N.A. (iii) 6. (iv) (a) 51'×12'. (b) 49'×10'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1950—N.A. (b) and (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 1382 lb./ac. (ii) (a) 267.6 lb./ac. (b) 265.4 lb./ac. (c) 201.1 lb./ac. (iii) Main effect of M is highly significant and those of T and N are significant. (iv) Av. yield of grain in lb./ac.

	M ₀	M ₁	M ₂	M ₃	M ₄	Mean	N ₀	N ₁
T ₀	1281	1317	1233	1402	1256	1294	1137	1451
T ₁	1282	1355	1446	1462	1480	1404	1275	1534
T ₂	1357	1434	1392	1546	1460	1438	1331	1545
T ₃	1275	1400	1278	1545	1454	1391	1266	1515
Mean	1299	1376	1337	1489	1408	1382	1252	1511
N ₀	1185	1223	1160	1398	1296			
N ₁	1412	1530	1514	1580	1519			

S.E. of difference of two

1. T marginal means	= 48.9 lb./ac.	6. N means at the same level of M	= 58.1 lb./ac.
2. M marginal means	= 54.2 lb./ac.	7. M means at the same level of N	= 68.0 lb./ac.
3. N marginal means	= 26.0 lb./ac.	8. N means at the same level of T	= 51.9 lb./ac.
4. M means at the same level of T	= 108.3 lb./ac.	9. T means at the same level of N	= 61.1 lb./ac.
5. T means at the same level of M	= 108.5 lb./ac.		

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 57(8).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of different levels and sources of N on Wheat.

1. BASAL CONDITIONS :

(i) to (v) N.A. (vi) N.P.—710. (vii) to (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)+a control

(1) 4 sources of N : S₁=A/S, S₂=A/N, S₃=Urea and S₄=Nitromagnesia.(2) 3 levels of N : N₁=20, N₂=40 and N₃=60 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 4. (iv) (a) 22' × 29'. (b) 20' × 27'. (v) 1' × 1'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1957—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2015 lb./ac. (ii) 227.7 lb./ac. (iii) Main effect of N and interaction N × S are significant. "Control vs. others" is highly significant. (iv) Av. yield of grain in lb./ac.

Control = 1446 lb./ac.

	S ₁	S ₂	S ₃	S ₄	Mean
N ₁	1817	2266	2069	1796	1987
N ₂	2067	2381	2220	2063	2183
N ₃	1981	1851	1996	2238	2017
Mean	1955	2166	2095	2032	2062

S.E. of N marginal mean = 56.9 lb./ac.

S.E. of S marginal mean = 65.7 lb./ac.

S.E. of body of table or control mean = 113.8 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 58(9).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of different levels and sources of N on Wheat.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 25.11.1958. (iv) (a) 2 ploughings with victory plough, 1 double grubbing and 2 double discings. (b) Drilling. (c) to (e) N.A. (v) N.A. (vi) N.P.—710. (vii) Irrigated. (viii) and (ix) N.A. (x) 15 to 17.4.1959.

2. TREATMENTS :

Same as in expt. no. 57(8) above.

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 4. (iv) (a) 29'×22'. (b) 25'×20'. (v) 2'×1'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1957—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2524 lb./ac. (ii) 428.5 lb./ac. (iii) Main effect of N is significant and "control vs. others" is highly significant. (iv) Av. yield of grain in lb./ac.

Control = 1870 lb./ac.

	S ₁	S ₂	S ₃	S ₄	Mean
N ₁	2449	2084	2284	2468	2321
N ₂	3003	2729	2548	2799	2770
N ₃	2510	2735	3075	2266	2646
Mean	2654	2516	2636	2511	2579

S.E. of N marginal mean = 107.1 lb./ac.

S.E. of S marginal mean = 123.7 lb./ac.

S.E. of body of table or control mean = 214.2 lb./ac.

Crop :- Wheat (*Rabi*).

Ref : I.A.R.I. 58(10).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of different methods of application of different fertilizers on Wheat.

1. BASAL CONDITIONS :

(i) to (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)+a control

(1) 7 manurial treatments : M₁=20 lb./ac. of N, M₂=40 lb./ac. of N, M₃=20 lb./ac. of P₂O₅, M₄=20 lb./ac. of K₂O, M₅=20 lb./ac. of N+20 lb./ac. of P₂O₅, M₆=20 lb./ac. of N+20 lb./ac. of P₂O₅+20 lb./ac. of K₂O and M₇=40 lb./ac. of N+20 lb./ac. of P₂O₅+20 lb./ac. of K₂O.(2) 2 methods of application : S₁=Soil application and S₂=Spraying thrice at 6% concentration solution of fertilizers.

3. DESIGN :

(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) and (b) 1/120 ac. (v) Nil. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1958—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2312 lb./ac. (ii) 246.9 lb./ac. (iii) Main effect of M and 'control vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

Control = 1650 lb./ac.

	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	Mean
S ₁	2417	2496	1986	1983	2622	2629	2803	2419
S ₂	2332	2433	2139	1892	2319	2343	2633	2299
Mean	2374	2464	2062	1938	2470	2486	2718	2359

S.E. of S marginal mean	= 46.6 lb./ac.
S.E. of M marginal mean	= 87.3 lb./ac.
S.E. of body of table or control mean	= 123.5 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- I.A.R.I. 59(3).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of different methods of application of different fertilizers on Wheat.

1. BASAL CONDITIONS:

(i) and (ii) N.A. (iii) 7.11.1959. (iv) (a) 1 Victory ploughing, 1 *desi* ploughing and 1 double discing with tractor. (b) to (e) N.A. (v) N.A. (vi) N.P.—823. (vii) Irrigated. (viii) 1 hand weeding and 1 hand hoeing. (ix) N.A. (x) 2 and 3 4.1960.

2. TREATMENTS:

All combinations of (1) and (2) + a control

(1) 7 manurial treatments : $M_1=20$ lb./ac. of N, $M_2=40$ lb./ac. of N, $M_3=20$ lb./ac. of P_2O_5 , $M_4=20$ lb./ac. of K_2O , $M_5=20$ lb./ac. of N+20 lb./ac. of P_2O_5 , $M_6=20$ lb./ac. of N+20 lb./ac. of P_2O_5 +20 lb./ac. of K_2O and $M_7=40$ lb./ac. of N+20 lb./ac. of P_2O_5 +20 lb./ac. of K_2O .

(2) 2 methods of application : S_1 =Soil application and S_2 =Foliar spray.

N applied as Urea, P_2O_5 as triple Super and K_2O as Pot. Sul.

3. DESIGN:

(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) 1/100 ac. (b) 1/120 ac. (v) N.A. (vi) Yes.

4. GENERAL:

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 2376 lb./ac. (ii) 335.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 2553 lb./ac.

	M_1	M_2	M_3	M_4	M_5	M_6	M_7	Mean
S_1	2576	2235	2358	2122	2441	2220	2276	2318
S_2	2231	2396	2535	2610	2422	2269	2384	2407
Mean	2404	2316	2447	2366	2432	2245	2330	2363

S.E. of S marginal mean	= 72.9 lb./ac.
S.E. of M marginal mean	= 136.4 lb./ac.
S.E. of body of table or control mean	= 192.9 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- I.A.R.I. 54(14)..

Site :- Bot. Sub-Stn., Pusa.

Type :- 'M'.

Object :- To study the effect of N, P and K on Wheat.

1. BASAL CONDITIONS:

(i) (a) Wheat—Maize. (b) Maize. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 20 to 23.11.1954. (iv) (a) 4 ploughings with *desi* plough and 1 harrowing. (b) to (e) N.A. (v) Nil. (vi) and (vii) N.A. (viii) Weeding. (ix) 2.45°. (x) 7 to 13.4.1955.

2. TREATMENTS:

10 manurial treatments : $M_1=8000$ lb./ac. of F.Y.M., $M_2=40$ lb./ac. of N as Rape cake, $M_3=20$ lb./ac. of N as A/S, $M_4=25$ lb./ac. of K_2O as Pot. Sul., $M_5=40$ lb./ac. of P_2O_5 as Super, $M_6=M_4+M_5$, $M_7=M_3+M_4+M_5$, $M_8=M_3+M_5$ and $M_9=M_3+M_4$.
 M_1 and M_2 were applied only to previous *kharif* crop.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 10. (iv) (a) $44' \times 24'$. (b) $42' \times 22'$. (v) $1' \times 1'$. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain. (iv) (a) 1930—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 519 lb./ac. (ii) 127.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8	M_9
Av. yield	428	620	481	569	444	473	401	599	592	582

S.E./mean = 40.3 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 58(11).

Site :- Bot. Sub-Stn., Pusa.

Type :- 'M'.

Object :—To study the effect of N, P and K on Wheat.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Maize. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 3.11.1958. (iv) (a) 3 ploughings, 3 beamings and harrowing. (b) to (e) N.A. (v) N.A. (vi) N.P.—52. (vii) Unirrigated. (viii) 2 weedings. (ix) N.A. (x) 28.3.1959.

2. TREATMENTS :

10 manurial treatments : T_0 =No manure, $T_1=8000$ lb./ac. of F.Y.M., $T_2=40$ lb./ac. of N as Rape cake, $T_3=40$ lb./ac. of N as A/S, $T_4=50$ lb./ac. of K_2O as Pot. Sul., $T_5=80$ lb./ac. of P_2O_5 as Super, $T_6=T_4+T_5$, $T_7=T_3+T_4+T_5$, $T_8=T_3+T_5$ and $T_9=T_3+T_4$.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 10. (iv) (a) N.A. (b) $42' \times 22'$. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Yellow and brown rust. (ii) N.A. (iii) Yield of grain. (iv) (a) 1930—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 488 lb./ac. (ii) 137.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	330	882	537	456	387	427	345	491	515	515

S.E./mean = 43.6 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 54(15).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'MV'.

Object :— To study the effect of different levels of N, P and K on two varieties of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 14.11.1954. (iv) (a) 4 ploughing and 1 grubbing. (b) to (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 17.4.1954.

2. TREATMENTS :**Main-plot treatments :**

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S : $N_0=0$, $N_1=30$ and $N_2=60$ lb./ac.

(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=40$ and $P_2=80$ lb./ac.

(3) 3 levels of K_2O as Pot. Sul. : $K_0=0$, $K_1=30$ and $K_2=60$ lb./ac.

Sub-plot treatments :

2 varieties : $V_1=N.P.-718$ and $V_2=C-518$.

The fertilizers were mixed with soil and put in the furrows opened by country plough.

3. DESIGN :

(i) $3^3 \times 2$ split-plot confd. (ii) (a) 3 blocks/replication ; 9 main-plots/block and 2 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) $26' \times 21'$. (b) $21' \times 16'7''$. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Yellow and brown rust appeared. (iii) Yield of grain. (iv) (a) 1953—1958. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1973 lb./ac. (ii) (a) 351.5 lb./ac. (b) 240.2 lb./ac. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
V_1	1834	1815	1869	1761	1873	1884	1824	1857	1837	1839
V_2	2107	2014	2196	2041	2126	2151	2078	2086	2154	2106
Mean	1971	1914	2033	1901	1999	2018	1951	1971	1996	1973
K_0	1856	1882	2115	2002	1937	1914				
K_1	2002	1921	1991	1820	2070	2024				
K_2	2055	1940	1992	1882	1990	2115				
P_0	1860	1835	2009							
P_1	1948	1975	2074							
P_2	2105	1933	2015							

S.E. of difference of two

- | | |
|---|-----------------|
| 1. N, P or K marginal means | = 82.9 lb./ac. |
| 2. V marginal means | = 46.2 lb./ac. |
| 3. V means at the same level of N, P or K | = 80.1 lb./ac. |
| 4. N, P or K means at the same level of V | = 100.3 lb./ac. |
| S.E. of body of $N \times P$, $N \times K$ or $P \times K$ table | = 101.5 lb./ac. |

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 55(7).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'MV'.

Object :- To study the effect of different levels of N, P and K on different varieties of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 4 and 5.11.1955. (iv) (a) 2 discings, 2 grubblings and 3 ploughings. (b) to (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 1 hoeing. (ix) N.A. (x) 16 and 17.4.1956.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S : $N_0=0$, $N_1=30$ and $N_2=60$ lb./ac.(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=30$ and $P_2=60$ lb./ac.(3) 3 levels of K_2O as Pot. Sul. : $K_0=0$, $K_1=30$ and $K_2=60$ lb./ac.**Sub-plot treatments :**2 varieties : $V_1=N.P.-718$ and $V_2=C.-518$.

The fertilizers were mixed with soil and put in the furrows opened by country plough.

3. DESIGN :

(i) $3^3 \times 2$ split-plot confd. (ii) (a) 3 blocks/replication, 9 main-plots/block and 2 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) N.A. (b) $26' \times 21'$. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1953-1958. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1624 lb./ac. (ii) (a) 322.3 lb./ac. (b) 255.3 lb./ac. (iii) Main effects of N, P and V are highly significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
V_1	1253	1440	1697	1304	1469	1622	1401	1442	1552	1465
V_2	1500	1853	1998	1618	1887	1846	1851	1745	1754	1784
Mean	1379	1646	1848	1461	1678	1734	1626	1594	1653	1624
K_0	1334	1662	1882	1374	1741	1762				
K_1	1367	1547	1869	1470	1664	1648				
K_2	1435	1730	1753	1538	1630	1792				
P_0	1319	1490	1573							
P_1	1450	1736	1848							
P_2	1367	1713	2122							

S.E. of difference of two

1. N, P or K marginal means	= 76.0 lb./ac.
2. V marginal means	= 49.1 lb./ac.
3. V means at the same level of N, P or K	= 85.1 lb./ac.
4. N, P or K means at the same level of V	= 96.9 lb./ac.
S.E. of body of $N \times P$, $N \times K$ or $P \times K$ table	= 93.0 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 56(11).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'MV'.**

Object :- To study the effect of different levels of N, P or K on different varieties of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy loam to loam. (b) N.A. (iii) 23 and 24.11.1956. (iv) (a) 3 discings and 2 grubblings. (b) Drilling. (c) to (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Nil. (ix) 15.59". (x) 6.5.1957.

2. TREATMENTS :

Main-plot treatments :

All combination of (1), (2) and (3)

(1) 3 levels of N as A/S : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=20$ and $P_2=40$ lb./ac.(3) 3 levels of K_2O as Pot. Sul. : $K_0=0$, $K_1=20$ and $K_2=40$ lb./ac.

Sub-plot treatments :2 varieties : $V_1 = \text{N.P.}-710$ and $V_2 = \text{N.P.}-718$.**3. DESIGN :**(i) $3^2 \times 2$ split-plot confd. (ii) (a) 3 blocks/replication ; 9 main-plots/block and 2 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 1/40 ac. (b) 1/60 ac. (v) N.A. (vi) Yes.**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1953-1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Hail storm on 2.3.1957, when wheat was in milk stage. This considerably reduced the grain yield. (vii) Nil.

5. RESULTS :

(i) 543 lb./ac. (ii) (a) 144.4 lb./ac. (b) 144.8 lb./ac. (iii) Main effects of N and V are highly significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
V_1	347	465	482	437	430	426	425	419	450	431
V_2	556	636	775	658	637	671	644	653	669	655
Mean	451	550	628	548	534	548	534	536	559	543
K_0	451	481	671	517	515	571				
K_1	439	578	591	548	515	545				
K_2	464	591	622	578	571	529				
P_0	423	590	630							
P_1	455	490	655							
P_2	475	571	599							

S.E. of difference of two

- | | |
|---|----------------|
| 1. N, P or K marginal means | = 34.1 lb./ac. |
| 2. V marginal means | = 27.9 lb./ac. |
| 3. V means at the same level of N, P or K | = 48.3 lb./ac. |
| 4. N, P or K means at the same level of V | = 48.3 lb./ac. |
| S.E. of body of $N \times P$, $N \times K$ or $P \times K$ table | = 41.7 lb./ac. |

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 57(10).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'MV'.****Object :-**To study the effect of different levels of N, P and K on different varieties of Wheat.**1. BASAL CONDITIONS :**

(i) and (ii) N.A. (iii) 4 and 5.11.1957. (iv) (a) 1 grubbing, 1 ploughing with country plough, 1 discing and 1 planking. (b) to (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) and (ix) N.A. (x) 14 to 17.4.1958.

2. TREATMENTS :**Treatments in one direction :**

All combinations of (1), (2) and (3)

- 3 levels of N as A/S : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.
- 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=20$ and $P_2=40$ lb./ac.
- 3 levels of K_2O as Pot Sul. : $K_0=0$, $K_1=20$ and $K_2=40$ lb./ac.

Treatments in orthogonal direction :2 varieties : $V_1 = \text{N.P.}-710$ and $V_2 = \text{N.P.}-718$.

3. DESIGN :

(i) $3^3 \times 2$ strip-plot confd. (ii) (a) 3 blocks/replication ; 9 plots/block in one direction and 2 plots in orthogonal direction. (b) N.A. (iii) 2. (iv) (a) $37' \times 19.5'$. (b) $32' \times 17'$. (v) $2.5' \times 0.75'$. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Incidence of brown rust. (iii) Yield of grain. (iv) (a) 1953—1958. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2776 lb./ac. (ii) (a) 81.1 lb./ac. for N, P or K. (b) 352.3 lb./ac. for V. (c) 289.1 lb./ac. for interactions of N, P and K with V. (iii) Main effect of P alone is highly significant. (iv) Av. yield of grain in lb./ac.

	N ₀	N ₁	N ₂	P ₀	P ₁	P ₂	K ₀	K ₁	K ₂	Mean
V ₁	2686	2800	2864	2540	2864	2946	2782	2711	2857	2783
V ₂	2700	2734	2873	2604	2794	2909	2760	2745	2803	2769
Mean	2693	2767	2869	2572	2829	2928	2771	2728	2830	2776
K ₀	2649	2834	2829	2639	2742	2931				
K ₁	2767	2695	2723	2428	2883	2874				
K ₂	2664	2771	3055	2649	2862	2979				
P ₀	2595	2510	2611							
P ₁	2681	2870	2936							
P ₂	2804	2921	3059							

S.E. of difference of two

1. N, P or K marginal means = 89.8 lb./ac.
 2. V marginal means = 67.8 lb./ac.
 3. V means at the same level of N, P or K = 103.9 lb./ac.
 4. N, P or K means at the same level of V = 112.7 lb./ac.
- S.E. of body of $N \times P$, $N \times K$ or $P \times K$ table = 110.0 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- I.A.R.I. 58(13).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'MV'.

Object :- To study the effect of different levels of N, P and K on different varieties of Wheat.

1. BASAL CONDITIONS :

(i) to (v) N.A. (vi) As per treatments. (vii) to (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 varieties : V₁=N.P.—710 and V₂=N.P.—718.

Sub-plot treatments :

All combinations of (1), (2) and (3)

- (1) 3 levels of N as A/S : N₀=0, N₁=20 and N₂=40 lb./ac.
- (2) 3 levels of P₂O₅ as Super : P₀=0, P₁=20 and P₂=40 lb./ac.
- (3) 3 levels of K₂O as Pot. Sul. : K₀=0, K₁=20 and K₂=40 lb./ac.

3. DESIGN :

(i) 2×3^3 split-plot confd. (ii) (a) 2 main-plots/replication ; 27 sub-plots/main-plot and 9 sub-plots/block. (b) N.A. (iii) 2. (iv) (a) N.A. (b) $32' \times 14.25'$. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1953—1958. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1913 lb./ac. (ii) (a) 294.8 lb./ac. (b) 405.4 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	N ₀	N ₁	N ₂	K ₀	K ₁	K ₂	P ₀	P ₁	P ₂	Mean
V ₁	1320	1827	2209	1752	1826	1778	1889	1729	1738	1785
V ₂	1436	2119	2566	2026	2066	2029	2014	2046	2061	2040
Mean	1378	1973	2388	1889	1946	1904	1952	1888	1900	1913
P ₀	1518	1905	2432	1937	2029	1889				
P ₁	1353	2031	2279	1872	1934	1857				
P ₂	1263	1983	2453	1859	1875	1965				
K ₀	1306	1946	2335							
K ₁	1499	1937	2402							
K ₂	1329	1956	2426							

S.E. of difference of two

1. V marginal means = 56.7 lb./ac.
 2. N, P or K marginal means = 95.6 lb./ac.
 3. N, P or K means at the same level of V = 135.1 lb./ac.
 4. V means at the same level of N, P or K = 391.5 lb./ac.
- S.E. of body of N×P, P×K, or N×K table = 117.0 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 54(16).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'MV'.

Object :- To study the responses of different varieties of Wheat to different levels of N and P.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 18.11.1954. (iv) (a) 2 ploughings, 2 tractor discings, 1 tractor grubbing and 1 double discing. (b) By *kera*. (c) to (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 17 to 19.4.1955.

2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 varieties : V₁=Local, V₂=N.P.—718 and V₃=N.P.—775.
- (2) 3 levels of N as A/S : N₀=0, N₁=20 and N₂=40 lb./ac.
- (3) 3 levels of P₂O₅ as triple Super : P₀=0, P₁=20 and P₂=40 lb./ac.

3. DESIGN :

(i) 3³ confd. (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 53'×14'. (b) 48.5'×9'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. Lodging observed in plots treated with high dose of fertilizer. (ii) Smut appeared in V₁ and V₃. Slight attack of brown and yellow rusts in V₁ and V₃ in later stage. (iii) Yield of grain. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2158 lb./ac. (ii) 201.9 lb./ac. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in lb./ac.

	P ₀	P ₁	P ₂	Mean	V ₁	V ₂	V ₃
N ₀	2091	2159	2204	2151	1826	2362	2266
N ₁	1901	2182	2215	2099	1886	2307	2104
N ₂	2244	2293	2135	2224	2136	2265	2271
Mean	2079	2211	2185	2158	1949	2311	2214
V ₁	1796	2108	1944				
V ₂	2226	2336	2372				
V ₃	2213	2191	2238				

S.E. of any marginal mean
S.E. of body of any table

= 47.6 lb./ac.
= 82.4 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 55(8).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'MV'.

Object :-To find out the optimum level of manuring for different varieties of Wheat.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 17.11.1955. (iv) (a) 2 grubblings and 1 tractor discing. (b) N.A. (c) 35 srs./ac. (d) and (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 28.4.1956 and 1.5.1956.

2. TREATMENTS :

Main-plot treatments :

5 varieties in L. Sq. : V₁=N.P.—710, V₂=N.P.—718, V₃=N.P.—720, V₄=N.P.—792 and V₅=N.P.—799.

Sub-plot treatments :

6 manurial treatments : M₀=0, M₁=60 lb./ac. of P₂O₅, M₂=20 lb./ac. of N, M₃=40 lb./ac. of N, M₄=80 lb./ac. of N and M₅=M₁+M₄.

3. DESIGN :

(i) Split-plot with main-plots in L. Sq. (ii) (a) 5 main-plots/replication and 6 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) 24.5' × 19.5'. (b) 23' × 18'. (v) 0.75' × 0.75'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1954—N.A. (b) Yes. (c) N.I. (v) to (vii) Nil.

5. RESULTS :

(i) 2562 lb./ac. (ii) (a) 570.6 lb./ac. (b) 287.6 lb./ac. (iii) All effects are highly significant. (iv) Av. yield of grain in lb./ac.

	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	Mean
V ₁	2111	2051	2486	2578	2313	2569	2351
V ₂	2670	2440	2882	3231	2866	3277	2894
V ₃	2675	2827	3392	3082	2887	2739	2934
V ₄	2249	2341	2048	2399	2209	2548	2299
V ₅	2217	2177	2037	2756	2399	2417	2334
Mean	2384	2367	2569	2809	2535	2710	2562

S.E. of difference of two

1. V marginal means	= 147.3 lb./ac.
2. M marginal means	= 81.3 lb./ac.
3. M means at the same level of V	= 181.9 lb./ac.
4. V means at the same level of M	= 221.9 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- I.A.R.J. 57(11).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'MV'.

Object :—To find out the optimum level of manuring for different varieties of Wheat.

1. BASAL CONDITIONS :

(i) (a) Fallow—Wheat. (b) Fallow. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 20.11.1957. (iv) (a) 3 grubblings and 3 discings. (b) to (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Nil. (ix) 5.59". (x) N.A.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(8) on page 329.

5. RESULTS :

(i) 935 lb./ac. (ii) (a) 365.1 lb./ac. (b) 201.6 lb./ac. (iii) Main effect of V is significant and that of M and interaction $M \times V$ are highly significant. (iv) Av. yield of grain in lb./ac.

	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	Mean
V ₁	834	726	714	943	812	666	782
V ₂	690	720	1072	1140	1176	1192	998
V ₃	593	442	832	922	1057	1117	827
V ₄	823	690	1146	1190	1354	1326	1088
V ₅	940	914	839	1086	994	1111	981
Mean	776	698	921	1056	1079	1082	935

S.E. of difference of two

1. V marginal means	= 94.3 lb./ac.
2. M marginal means	= 57.0 lb./ac.
3. M means at the same level of V	= 127.5 lb./ac.
4. V means at the same level of M	= 149.8 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- I.A.R.I. 59(5).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'MV'.

Object :—To study the effect of different levels of N on different varieties of Wheat.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 4.11.1959. (iv) (a) 1 Victory ploughing, 2 *desi* ploughings, 2 tractor double grubblings and 1 tractor double discing. (b) to (e) N.A. (v) 20 lb./ac. of P₂O₅ as Super + 20 lb./ac. of K₂O as Pot. Sul. (vi) As per treatments. (vii) Irrigated. (viii) and (ix) N.A. (x) 21.4.1960.

2. TREATMENTS :

Main-plot treatments :

6 varieties : V₁=N.P.—718, V₂=N.P.—823, V₃=N.P.—824, V₄=N.P.—825, V₅=N.P.—770 and V₆=Ridley.

Sub-plot treatments :

4 levels of N : N₀=0, N₁=20, N₂=40 and N₃=60 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 40'×15'.
(b) 36'×11'. (v) 2'×2'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1959—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3120 lb./ac. (ii) (a) 411.4 lb./ac. (b) 149.1 lb./ac. (iii) All the effects are highly significant. (iv) Av. yield of grain in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	Mean
N ₀	3362	3543	3403	3243	2691	2451	3116
N ₁	3350	3358	3385	3698	2937	2596	3221
N ₂	3418	3343	3241	3535	2713	2476	3121
N ₃	3604	3215	3178	3376	2488	2285	3024
Mean	3434	3365	3302	3463	2707	2452	3120

S.E. of difference of two

1. V marginal means = 145.4 lb./ac.
2. N marginal means = 43.0 lb./ac.
3. N means at the same level of V = 105.4 lb./ac.
4. V means at the same level of N = 171.7 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 57(12).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'C'.

Object :- To study the effect of depths of cultivation and interculturalures on the yield of Wheat.

1. BASAL CONDITIONS :

(i) to (iii) N.A. (iv) (a) As per treatments. (b) to (e) N.A. (v) N.A. (vi) N.P.—718. (vii) Unirrigated. (viii) As per treatments. (ix) and (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 depths of cultivation: D₁=Tractor ploughing 9" to 10" deep followed by grubbing and discing,
D₂=Victory ploughing 5" to 6" deep followed by country ploughing and
D₃=Surface cultivation by harrow.

(2) 3 interculture treatments: C₀=Control (no interculture), C₁=Interculture with bullock hoe and
C₂=Weeding with *khurpi*.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 50'×12'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1957—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 315 lb./ac. (ii) 93.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	C ₀	C ₁	C ₂	Mean
D ₁	371	335	321	342
D ₂	273	365	373	337
D ₃	330	228	237	265
Mean	325	309	310	315

S.E. of any marginal mean = 27.0 lb./ac.
S.E. of body of table = 46.8 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- I.A.R.I. 58(14).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'C'.

Object :- To study the effect of depths of cultivation and interculturalures on the yield of Wheat.

1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 57(12) on page 331.

5. RESULTS :

(i) 612 lb./ac. (ii) 198.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	C ₀	C ₁	C ₂	Mean
D ₁	499	691	661	617
D ₂	650	517	749	639
D ₃	553	640	548	580
Mean	567	616	653	612

S.E. of any marginal mean = 57.4 lb./ac.
S.E. of body of table = 99.4 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- I.A.R.I. 57(13).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'C'.

Object :- To study the effect of different seed rates, sowing dates and spacings of Hubam clover sown mixed with Wheat.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) As per treatments. (iv) (a) 1 Victory ploughing, 1 *desi* ploughing and 1 discing with tractor. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 3 weedings and 1 roguing. (ix) N.A. (x) 5.4.1958 and 10.5.1958.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 dates of sowing : D₁=5th Nov, and D₂=20th Nov.

(2) 2 seed rates of *hubam* clover : R₁=10 and R₂=15 lb./ac.

(3) 2 spacings : S₁=6" between wheat rows and S₂=Broadcast.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 29'×18.5'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1957—N.A. (b) N.A. (c) Nil. (v) and (vi) Nil. (vii) Yield data for *hubam* clover N.A.

5. RESULTS :

(i) 2308 lb./ac. (ii) 383.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	D ₁	D ₂	Mean	R ₁	R ₂
S ₁	2339	2334	2336	2359	2314
S ₂	2312	2247	2280	2252	2307
Mean	2326	2290	2308	2306	2310
R ₁	2384	2228			
R ₂	2267	2353			

S.E. of any marginal mean = 95.8 lb./ac.
S.E. of body of any table = 135.5 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 58(15).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'C'.

Object :—To study the effect of different dates of sowing, seed rates and spacings of Hubam clover sown mixed with Wheat.

1. BASAL CONDITIONS:

(i) and (ii) N.A. (iii) As per treatments. (iv) (a)-1 Victory ploughing and 3 *desi* ploughings. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 8.4.1959.

2. TREATMENTS to 4. GENERAL:

Same as in expt. no. 57(13) on page 332.

5. RESULTS:

(i) 1129 lb./ac. (ii) 385.2 lb./ac. (iii) Main effect of D alone is significant. (iv) Av. yield of grain in lb./ac.

	R ₁	R ₂	Mean	S ₁	S ₂
D ₁	822	1118	970	1158	782
D ₂	1334	1242	1288	1302	1274
Mean	1078	1180	1129	1230	1028
S ₁	1198	1262			
S ₂	958	1098			

S.E. of any marginal mean = 96.3 lb./ac.
S.E. of body of any table = 136.2 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 57(9).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object :—To assess the soil fertility status built up by the phosphate manured berseem during last three years on the yield of Wheat crop in different crop rotation.

1. BASAL CONDITIONS:

(i) (a) As per treatments. (b) *Berseem* during *rabi* seasons of 1954, 1955 and 1956 and as per treatments in *kharif* 1956. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 13.11.1957. (iv) (a) 1 ploughing by Victory plough, 2 discings by tractor plough and 1 grubbing. (b) Seed drilled. (c) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 1 hand hoeing. (ix) N.A. (x) 14.4.1958.

2. TREATMENTS :

Main-plot treatments :

2 crop rotations : R_1 =Cowpeas—Wheat and R_2 =Fallow—Wheat.

Sub-plot treatments :

13 manurial treatments : M_0 =No manure, M_1 =No manure and fallow in *rabi*, $M_2=16$, $M_3=32$ and $M_4=64$ lb./ac. of P_2O_5 as F.Y.M., $M_5=16$, $M_6=32$ and $M_7=64$ lb./ac. of P_2O_5 as Super, M_8 =Super at 8 lb./ac. of P_2O_5 +F.Y.M. at 8 lb./ac. of P_2O_5 , M_9 =Super at 8 lb./ac. of P_2O_5 +F.Y.M. at 24 lb./ac. of P_2O_5 , M_{10} =Super at 8 lb./ac. of P_2O_5 +F.Y.M. at 56 lb./ac. P_2O_5 , M_{11} =F.Y.M. at 8 lb./ac. of P_2O_5 +Super at 24 lb./ac. of P_2O_5 and M_{12} =F.Y.M. at 8 lb./ac. of P_2O_5 +Super at 56 lb./ac. of P_2O_5 .

Manures applied to *berseem* crop during the *rabi* seasons of 1954, 1955 and 1956.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 13 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 65'×17' (b) 60'×12'. (v) 2.5'×2.5'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Slight attack of loose smut and rats. (iii) Grain yield. (iv) to (vii) N.A.

5. RESULTS :

(i) 1728 lb./ac. (ii) (a) 381.2 lb./ac. (b) 203.3 lb./ac. (iii) Main effect of M is highly significant. (iv) Av. yield of grain in lb./ac.

	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8	M_9	M_{10}	M_{11}	M_{12}	Mean
R_1	1157	1117	1339	1611	2017	1651	1583	1995	1329	1540	2081	1813	1830	1620
R_2	1376	1666	1702	1630	2047	1707	2060	2105	1722	1927	1934	1911	2075	1836
Mean	1266	1392	1520	1620	2032	1679	1822	2050	1526	1734	2008	1862	1952	1728

S.E. of difference of two

1. R marginal means = 86.5 lb./ac.
2. M marginal means = 117.4 lb./ac.
3. M means at the same level of R = 166.4 lb./ac.
4. R means at the same level of M = 181.5 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- I.A.R.I. 58(12).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object:—To assess the soil fertility status built up by the phosphate manured *berseem* [during previous years on the yield of Wheat crop in different crop rotations.

1. BASAL CONDITIONS :

(i) (a) As per treatments. (b) *Berseem* during *rabi* seasons of 1954, 1955 and 1956 and as per treatments. main *khari* 1956 on words. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 5.11.1958. (iv) (a) 3 ploughings. (b) Sowing by drilling. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 hoeing. (ix) N.A. (x) 6 to 8.4.1959.

2. TREATMENTS :

Same as in expt. no. 57(9) on page 333.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 13 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 65'×17'. (b) 59'×11'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) to (vii) N.A.

5. RESULTS :

(i) 1800 lb./ac. (ii) (a) 689.3 lb./ac. (b) 275.0 lb./ac. (iii) Main effect of M is highly significant and interaction $R \times M$ is significant. (iv) Av. yield of grain in lb./ac.

	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀	M ₁₁	M ₁₂	Mean
R ₁	1238	1450	1116	1457	2122	1409	1451	2058	1566	1267	2352	2021	1717	1633
R ₂	1451	1770	1650	2321	2052	1762	2095	2120	1689	1686	2316	2097	2567	1967
Mean	1344	1610	1383	1889	2087	1586	1773	2089	1628	1476	2334	2059	2142	1800

S.E. of difference of two

1. R marginal means = 156.1 lb./ac.
2. M marginal means = 158.8 lb./ac.
3. M means at the same level of R = 224.5 lb./ac.
4. R means at the same level of M = 266.3 lb./ac.

Crop :- Wheat

Ref :- I.A.R.I. 59(4).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object:—To assess the soil fertility status built up by the phosphate manured berseem during previous years on the yield of Wheat crop in different crop rotation.

1. BASAL CONDITIONS :

(i) (a) As per treatments. (b) *Berseem* during *rabi* seasons of 1954, 1955 and 1956 and as per treatments from *kharif* 1956 onwards. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 12.11.1959. (iv) (a) 1 Victory ploughing, 1 discing by bullock, 2 discing with tractor, 1 tractor grubbing and 1 *desi* plough. (b) to (c) N.A. (v) N.A. (vi) C.—518. (vii) Irrigated. (viii) and (ix) N.A. (x) 16 to 18.4.1960.

2. TREATMENTS :

Same as in expt. no. 57(9) on page 333.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 13 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 65' × 17'. (b) 63' × 15'. (v) 1' × 1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) to (vii) N.A.

5. RESULTS :

(i) 1189 lb./ac. (ii) (a) 435.1 lb./ac. (b) 267.3 lb./ac. (iii) Main effect of M alone is significant. (iv) Av. yield of grain in lb./ac.

	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀	M ₁₁	M ₁₂	Mean
R ₁	980	1149	742	1151	1201	893	1028	1120	866	1089	1312	1230	983	1057
R ₂	1098	1201	1130	1350	1220	1228	1229	1750	1145	1191	1635	1395	1612	1322
Mean	1039	1175	936	1250	1210	1060	1128	1435	1005	1140	1473	1312	1297	1189

S.E. of difference of two

1. R marginal means = 98.5 lb./ac.
2. M marginal means = 154.3 lb./ac.
3. M means at the same level of R = 218.2 lb./ac.
4. R means at the same level of M = 231.7 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 54(17).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'CM'.**

Object :- To study the effect of different crops grown in previous season on Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) 27.10.1954. (iv) (a) 4 ploughings and 1 harrowing. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 4.4.1955.

2. TREATMENTS :7 crop rotations: R₁=Maize—Fallow, R₂=Maize—Pea, R₃=Fallow—Wheat, R₄=Fallow—Wheat+20 lb./ac. of N as A/S, R₅=Maize+10 tons/ac. of F.Y.M.—Wheat, R₆=Guar (G.M.)—Wheat, R₇=Cowpea—Wheat and R₈=Maize+Guar (G.M.) in alternate rows—Wheat.**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 33'×31'. (b) 31'×29'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1954—N.A. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 763 lb./ac. (ii) 93.5 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	R ₁	R ₂	R ₃	R ₄	R ₅	R ₆	R ₇	
Av. yield	—	—	790	1004	684	988	573	541

S.E./mean = 38.2 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 55(9).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'CM'.**

Object :- To study the effect of different crops grown in previous season on Wheat.

1. BASAL CONDITIONS :(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) 1.11.1955. (iv) (a) 1 Victory ploughing, 2 *desi* ploughings. (b) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 10.4.1956.**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 54(17) above.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1954—N.A. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1496 lb./ac. (ii) 2660 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	R ₁	R ₂	R ₃	R ₄	R ₅	R ₆	R ₇	R ₈
Av. yield	—	—	1518	1760	1316	1728	1421	1236

S.E./mean = 108.6 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 54(18).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'CM'.**

Object :- To study the effect of F.Y.M., A/S and crop rotations on Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) 9.11.1954. (iv) (a) to (c) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

3 crop rotations : $R_1 = Bajra - Wheat$, $R_2 = Fallow - Wheat$ and $R_3 = Bajra - Fallow$.

Sub-plot treatments :

5 levels of F.Y.M. : $F_0 = 0$, $F_1 = 2.5$, $F_2 = 5$, $F_3 = 10$ and $F_4 = 20$ tons/ac.

Sub-sub-plot treatments :

3 levels of N as A/S : $N_0 = 0$, $N_1 = 20$ and $N_2 = 40$ lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 5 sub-plots/main-plot and 3 sub-sub-plots/sub-plot. (b) N.A. (iii) 3. (iv) (a) $58' \times 12\frac{1}{2}'$. (b) 1/83.34 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1952—N.A. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1585 lb./ac. (ii) (a) 636.7 lb./ac. (b) 247.5 lb./ac. (c) 227.5 lb./ac. (iii) Main effects of R, F and interaction $F \times R$ are significant. (iv) Av. yield of grain in lb./ac.

	F_0	F_1	F_2	F_3	F_4	Mean	N_0	N_1	N_2
R_1	945	949	911	1139	1429	1075	985	1115	1126
R_2	1971	2146	2105	2229	2029	2096	2068	2135	2084
Mean	1458	1547	1508	1684	1729	1585	1526	1625	1605
N_0	1435	1378	1507	1640	1670				
N_1	1552	1558	1564	1697	1745				
N_2	1388	1696	1453	1714	1772				

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. R marginal means | = 134.2 lb./ac. | 6. N means at the same level of R | = 83.1 lb./ac. |
| 2. F marginal means | = 82.5 lb./ac. | 7. R means at the same level of N | = 150.4 lb./ac. |
| 3. N marginal means | = 58.7 lb./ac. | 8. N means at the same level of F | = 131.4 lb./ac. |
| 4. F means at the same level of R | = 116.7 lb./ac. | 9. F means at the same level of N | = 135.3 lb./ac. |
| 5. R means at the same level of F | = 170.0 lb./ac. | | |

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 59(6).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object :- To study the effect of Azatobacter seed culture alone and in combination with manures on Wheat.

1. BASAL CONDITIONS :

(i) to (x) N.A.

2. TREATMENTS :

9 treatments : $T_0 = \text{Control}$, $T_1 = \text{F.Y.M. at 5 tons/ac.}$, $T_2 = \text{Azatobacter seed culture}$, $T_3 = \text{Azatobacter seed culture + cellulose decomposing organism}$, $T_4 = \text{5 tons/ac. of F.Y.M. + Azatobacter seed culture}$, $T_5 = T_4 + \text{cellulose decomposing organism}$, $T_6 = \text{Super}$, $T_7 = \text{Super + Azatobacter seed culture}$ and $T_8 = T_7 + \text{cellulose decomposing organism}$.

Azatobacter seed culture is carried out through two methods Indian and Russian.

3. DESIGN :

(i) R.B.D. (ii) (a) 8 for each method of seed culture. (b) N.A. (iii) 4. (iv) (a) For Indian culture : $27.3' \times 20'$ and for Russian $21.3' \times 20'$. (b) For Indian culture : $25.3' \times 18'$ and for Russian $19.3' \times 18'$. (v) $1' \times 1'$. (vi) Yes.

4. GENERAL:

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1958—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Indian culture

(i) 1575 lb./ac. (ii) 258.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	1589	1819	1556	1462	1435	1785	1420	1427	1677

S.E./mean = 129.4 lb./ac.

Russian culture

(i) 1732 lb./ac. (ii) 265.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	1571	1742	1746	1871	1900	1738	1638	1644	1738

S.E./mean = 132.8 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 55(10).

Site :- Indian Agri. Res. Instt, New Delhi.

Type :- 'CM'.

Object :- To study the effect of Hubam clover as a mixed crop in Wheat—Maize rotation.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) to (x) N.A.

2. TREATMENTS :

12 crop rotations with m muring: T₁=Fallow—Wheat, T₂=Maize—Fallow, T₃=Maize with 30 lb./ac. of N—Wheat, T₄=Maize with 30 lb./ac. of N—Wheat with 30 lb./ac. of N, T₅=Maize—Wheat+Hubam clover for fodder and G.M., T₆=T₅ with 30 lb./ac. of N to maize, T₇=T₅ with 80 lb./ac. of P₂O₅ to Hubam clover, T₈=Maize—Wheat+Hubam clover for G.M. alone, T₉=T₈ with 30 lb./ac. of N to maize, T₁₀=T₈ with 80 lb./ac. of P₂O₅ to Hubam clover, T₁₁=Maize—Hubam clover for G.M. and T₁₂=Sannhemp for G.M.—Wheat.

Hubam clover mixed with soil before sowing the wheat crop.

3. DESIGN :

(i) R.B.D. (ii) (a) 12 (effective treatments 10 for wheat crop). (b) N.A. (iii) 4. (iv) (a) N.A. (b) 63' × 115'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of wheat grain. (iv) (a) 1955—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1468 lb./ac. (ii) 732.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂
Av. yield	1653	--	1398	2315	1540	1300	1255	1127	1390	1466	--	1237

S.E./mean = 366.2 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- I.A.R.I. 56(12).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object :—To study the effect of Hubam clover as a mixed crop in Wheat—Maize rotation.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) 1.11.1956. (iv) (a) 3 ploughings and 3 grubblings. (b) to (e) N.A. (v) N.A. (vi) N.P.—718. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 24.4.1957.

2. TREATMENTS :

12 crop rotations with manuring : T₁=Fallow—Wheat, T₂=Maize—Wheat with 40 lb./ac. of N as A/S, T₃=Maize with 40 lb./ac. of N as A/S—Wheat, T₄=Maize with 40 lb./ac. of N as A/S—Wheat with 40 lb./ac. of N as A/S, T₅=Maize—Wheat+Hubam clover for fodder and G.M., T₆=T₅ with 40 lb./ac. of N as A/S to maize, T₇=T₅ with 80 lb./ac. of P₂O₅ to Hubam clover, T₈=Maize—Wheat+Hubam clover for G.M. only, T₉=T₈ with 40 lb./ac. of N as A/S to maize, T₁₀=T₈ with 80 lb./ac. of P₂O₅ to Hubam clover, T₁₁=Maize—Hubam clover for G.M. and T₁₂=Sannhemp for G.M.—Wheat.

Hubam clover mixed with soil before sowing the Wheat crop.

3. DESIGN :

(i) R.B.D. (ii) (a) 12 (effective treatments 11 for wheat crop). (b) N.A. (iii) 4. (iv) (a) N.A. (b) 63'×11½'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of wheat grain. (iv) (a) 1955—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 925 lb./ac. (ii) 325.9 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂
Av. yield	1154	1186	571	1351	748	629	724	891	656	981	—	1281

S.E./mean = 163.0 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- I.A.R.I. 57(14).

Site :- Indian Agri Res. Instt., New Delhi.

Type :- 'CM'.

Object :—To study the effect of Hubam clover as a mixed crop in Wheat—Maize rotation.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) 9.11.1957. (iv) (a) 1 ploughing by Victory plough, 3 discings and 1 planking by tractor. (b) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 1 hoeing and 1 weeding. (ix) N.A. (x) 4.4.1958.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(12) above.

5. RESULTS :

(i) 1790 lb./ac. (ii) 353.4 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂
Av. yield	1958	2205	1395	2149	1591	1526	1573	1634	1545	1884	—	2235

S.E./mean = 176.7 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 58(16).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'CM'.**

Object :-To study the effect of Hubam clover as a mixed crop in Wheat—Maize rotation.

1. BASAL CONDITIONS :(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) 13.11.1958. (iv) (a) 1 Victory ploughing, 2 discings and 2 *desi* ploughings. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 3 weedings. (ix) N.A. (x) 14 and 15.4.1959.**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 56(12) on page 339.

5. RESULTS :

(i) 1030 lb./ac. (ii) 212.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂
Av. yield	766	1358	1122	1602	710	976	836	1129	1199	1104	—	1189

S.E./mean = 106.4 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 59(7).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'CM'.**

Object :-To study the effect of Hubam clover as a mixed crop in Wheat—Maize rotation.

1. BASAL CONDITIONS :(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) 17.11.1959. (iv) (a) 1 Victory ploughing, 1 ploughing with *tripali*, 2 tractor grubbing, 1 discing, 1 planking and 1 beming. (b) Drilling. (c) to (e) N.A. (v) N.A. (vi) N.P.—718. (vii) Irrigated. (viii) 1 hand weeding. (ix) N.A. (x) 6 and 7.4.1960.**2. TREATMENTS :**

Same as in expt. no. 56(12) on page 339.

3. DESIGN :

(i) R.B.D. (ii) (a) 12 (effective treatments for wheat crop are 11). (b) N.A. (iii) 4. (iv) (a) 63' × 11.5'. (b) 59' × 9'. (v) 2' × 1.25'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of wheat grain. (iv) (a) 1955—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2240 lb./ac. (ii) 324.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂
Av. yield	2430	2473	1985	2586	1947	1967	1960	1711	1867	2792	—	2919

S.E./mean = 162.1 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 59(5).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'CM'.**

Object :-To study the effect of spacings and levels of N on Wheat transplanted on different dates.

1. BASAL CONDITIONS:

(i) and (ii) N.A. (iii) As per treatments. (iv) (a) 1 Victory ploughing, 2 *desi* ploughings, 1 tractor double discing and 1 tractor double grubbing. (b) Transplanted. (c) N.A. (d) As per treatments. (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 3 hoeings and 1 weeding. (ix) N.A. (x) 15.4.1960 to 19.4.1960.

2. TREATMENTS:

All combinations of (1), (2) and (3)+3 extra treatments

(1) 3 dates of transplanting: D_1 =Nursery sown on 18th Oct. and transplanted on 2nd Dec., D_2 =Nursery sown on 2nd Nov. and transplanted on 17th Dec., and D_3 =Nursery sown on 17th Nov. and transplanted on 2nd January.

(2) 3 spacings: $S_1=10'' \times 10''$, $S_2=15'' \times 6\frac{1}{2}''$ and $S_3=20'' \times 5''$.

(3) 3 levels of N: $N_0=0$, $N_1=30$ and $N_2=60$ lb./ac.

Extra treatments: E_1 =Drilling of wheat on 18th Oct., E_2 =Drilling of wheat on 2nd Nov. and E_3 =Drilling of wheat on 17th Nov.

3. DESIGN:

(i) 3^3 confd. (DS^2N^2 and DSN are confd.). (ii) (a) 12 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) $26' \times 21'$. (b) $23' \times 18'$. (v) $1\frac{1}{2}' \times 1\frac{1}{2}'$. (vi) Yes.

4. GENERAL:

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1959-1960. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 1152 lb./ac. (ii) 239.7 lb./ac. (iii) Main effect of S is significant and "extra treatments vs. others" is highly significant. Interaction DS^2N^2 is significant. (iv) Av. yield of grain in lb./ac.

$E_1=1639$, $E_2=1868$ and $E_3=1708$ lb./ac.

	S_1	S_2	S_3	Mean	N_0	N_1	N_2
D_1	1429	1140	1192	1254	1263	1219	1280
D_2	1289	1131	1026	1149	1219	1184	1043
D_3	1087	1210	859	1052	1157	1017	982
Mean	1268	1160	1026	1152	1213	1140	1102
N_0	1438	1175	1026				
N_1	1236	1061	1122				
N_2	1131	1245	929				

S.E. of any marginal mean

= 56.5 lb./ac.

S.E. of body of any table or E mean

= 97.8 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- I.A.R.I. 58(19).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object :- To study the effect of N, P and cultural treatments on the yield of Wheat.

1. BASAL CONDITIONS:

(i) and (ii) N.A. (iii) 1.12.1958. (iv) (a) Ploughing with *tripali*. (b) to (e) N.A. (v) 30 lb./ac. of N as A/S. (vi) N.A. (vii) Irrigated. (viii) 1 hoeing. (ix) and (x) N.A.

2. TREATMENTS:

All combinations of (1) and (2)

(1) 5 manurial treatments: M_0 =Control, $M_1=30$ lb./ac. of N as F.Y.M., $M_2=M_1+60$ lb./ac. of P_2O_5 as Super, $M_3=M_1+60$ lb./ac. of P_2O_5 as Rock Phos. and $M_4=M_1+60$ lb./ac. of P_2O_5 as B.M.

(2) 4 cultural treatments: C_0 =No bacterial culture, C_1 =Phospho bacteria, C_2 =Fosfo 24 and C_3 =Indian culture.

3. DESIGN :

(i) Fact. in R.B.D (ii) (a) 20. (b) N.A. (iii) 4. (iv) and (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grain. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2013 lb./ac. (ii) 362.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	M ₀	M ₁	M ₂	M ₃	M ₄	Mean
C ₀	1629	2337	2032	1983	1835	1963
C ₁	1925	2106	1991	1991	2329	2068
C ₂	2148	2189	1539	2090	2172	2028
C ₃	2090	1769	2041	2057	1999	1991
Mean	1948	2100	1901	2030	2084	2013

S.E. of M marginal mean = 90.5 lb./ac.

S.E. of C marginal mean = 94.6 lb./ac.

S.E. of body of table = 181.0 lb./ac.

Crop :- Wheat.**Ref :- I.A.R.I. 54(19).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'CM'.****Object :—**To study the effect of depth of cultivation with and without F.Y.M. on the yield of Wheat.**1. BASAL CONDITIONS :**(i) (a) to (c) N.A. (ii) (a) Heavy soil. (b) N.A. (iii) 2.11.1954. (iv) (a) As per treatments. (b) With *kera*. (c) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 4 weedings. (ix) N.A. (x) 19 and 20.4.1955.**2. TREATMENTS :****Main-plot treatments :**4 cultural treatments : C₁=Tractor ploughing 10" deep followed by tractor grubber, C₂=Bullock soil inverting plough 5" to 6" deep followed by country plough, C₃=4" to 5" deep country plough and C₄=3" to 4" deep tractor disc.**Sub-plot treatments :**4 levels of N as F.Y.M. : N₀=0, N₁=40, N₂=80 and N₃=120 lb./ac.

F.Y.M. applied on 20 to 23.9.1954.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 40'×27'. (b) 38'×25'. (v) 1'×1'. (vi) N.A.

4. GENERAL :(i) Germination was uniform. Crop growth was normal except in C₄ plots. (ii) N.A. (iii) Yield of grain. (iv) (a) 1950—1954. (b) Yes. (c) N.A. (v) to (vii) Nil.**5. RESULTS:**

(i) 2628 lb./ac. (ii) (a) 330.1 lb./ac. (b) 366.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	N ₀	N ₁	N ₂	N ₃	Mean
C ₁	2705	2831	2727	2544	2702
C ₂	2521	2544	2934	2922	2730
C ₃	2452	2876	2590	2819	2684
C ₄	2613	2441	1902	2636	2398
Mean	2573	2673	2538	2730	2628

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. C marginal means | = 116.7 lb./ac. |
| 2. N marginal means | = 129.7 lb./ac. |
| 3. N means at the same level of C | = 259.3 lb./ac. |
| 4. C means at the same level of N | = 253.1 lb./ac. |

Crop :- Wheat (*Rabi*).

Ref :- I.A.R.I. 58(18).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object :—To study the effect of manuring on legumes under rainfed conditions and its residual effect on Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) 23.10.1959. (iv) (a) 5 ploughings. (b) to (e) N.A. (v) and (vi) N.A. (vii) Unirrigated. (viii) 2 weedings. (ix) N.A. (x) 28.3.1959.

2. TREATMENTS :

	<i>Kharif</i>	Manures	<i>Rabi</i>	Manures
T ₁ =	<i>Guar</i>	No manure	Wheat	No manure
T ₂ =	<i>Guar</i>	25 lb./ac. of P ₂ O ₅	Wheat	No manure
T ₃ =	<i>Guar</i>	50 lb./ac. of P ₂ O ₅	Wheat	No manure
T ₄ =	<i>Guar</i>	75 lb./ac. of P ₂ O ₅	Wheat	No manure
T ₅ =	<i>Guar</i>	No manure	Wheat	20 lb./ac. of N
T ₆ =	<i>Guar</i>	25 lb./ac. of P ₂ O ₅	Wheat	20 lb./ac. of N
T ₇ =	<i>Guar</i>	50 lb./ac. of P ₂ O ₅	Wheat	20 lb./ac. of N
T ₈ =	<i>Guar</i>	75 lb./ac. of P ₂ O ₅	Wheat	20 lb./ac. of N
T ₉ =	Fallow	—	Wheat	No manure
T ₁₀ =	Fallow	—	Wheat	20 lb./ac. of N
T ₁₁ =	Fallow	—	Wheat	20 lb./ac. of N + 25 lb./ac. of P ₂ O ₅ .
T ₁₂ =	Fallow	—	Wheat	No manure

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) 26' × 22'. (b) 20' × 16'. (v) 3' × 3'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of white ants. (iii) Yield of grain. (iv) (a) N.A. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Crop severely damaged by the birds.

5. RESULTS :

(i) 443 lb./ac. (ii) 278.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂
Av. yield	357	397	424	435	398	338	346	503	471	551	696	406

S.E./mean = 113.7 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- I.A.R.I. 58(20).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'IM'.

Object :—To study the effect of N, P, K and frequencies of irrigation on the yield of Wheat.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 24 and 25.11.1958. (iv) (a) 1 grubbing, tractor discing double, tractor grubbing double and 1 *desi* ploughing. (b) to (e) N.A. (v) and (vi) N.A. (vii) As per treatments. (viii) 1 weeding. (ix) N.A. (x) 13.4.1959.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 frequencies of irrigation : $I_1=1$, $I_2=2$ and $I_3=3$ irrigations.

(2) 3 levels of N as A/S : $N_0=0$, $N_1=30$ and $N_2=60$ lb./ac.

(3) 3 manurial treatments : $M_0=0$, $M_1=40$ lb./ac. of P_2O_5 as Super and $M_2=M_1+40$ lb./ac. of K_2O as Pot. Sul.

3. DESIGN :

(i) 3³ confd. (INM is completely confd.). (ii) (a) 3 blocks/replication and 9 plots/block. (b) N.A. (iii) 2. (iv) (a) 40' × 18'. (b) 1/139.6 ac. (v) N.A. (vi) res.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2821 lb./ac. (ii) 367.0 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	Mean	I_1	I_2	I_3
M_0	2476	2937	2995	2803	2593	2757	3059
M_1	2521	2844	2960	2775	2718	2839	2768
M_2	2629	3019	3011	2886	2828	2924	2907
Mean	2542	2933	2989	2821	2713	2840	2911
I_1	2379	2802	2958				
I_2	2460	2949	3111				
I_3	2787	3049	2898				

S.E. of any marginal mean = 86.5 lb./ac.
S.E. of body of any table = 149.8 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 58(23).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'IM'.

Object :- To study the effect of different levels of N, P and irrigations on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 6.8.1958. (iv) (a) 4 ploughings and planking with wooden beam. (b) N.A. (c) 35 srs./ac. (d) and (e) N.A. (v) Nil. (vi) N.P.—718. (vii) As per treatments. (viii) Weeding and hoeing. (ix) N.A. (x) 10, 11.4.1959.

2. TREATMENTS :

All combinations of (1), (2), (3), (4) and (5)

(1) 3 frequencies of irrigation : $I_1=2$, $I_2=3$ and $I_3=4$ irrigations.

(2) 3 depths of irrigation : $D_1=2''$, $D_2=3''$ and $D_3=4''$ depth.

(3) 3 levels of N as A/S : $N_0=0$, $N_1=30$ and $N_2=60$ lb./ac.

(4) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=30$ and $P_2=60$ lb./ac.

(5) 3 levels of P_2O_5 as Super applied to wheat in 1957 : $Q_0=0$, $Q_1=30$ and $Q_2=60$ lb./ac.

3. DESIGN :

(i) 3⁵ confd. (ii) (a) 9 blocks of 9 plots each. (b) N.A. (iii) 1/3. (iv) (a) N.A. (b) 49' × 15'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Slight attack of loose smut. (iii) Yield of grain. (iv) (a) 1957—contd. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 1777 lb./ac. (ii) 157.8 lb./ac. (iii) Main effect of N is highly significant and that of Q is significant. (iv) Av. yield of grain in lb./ac.

	D ₁	D ₂	D ₃	N ₁	N ₂	N	P ₀	P ₁	P ₂	Q ₀	Q ₁	Q ₂	Mean
I ₁	1821	1859	1777	1740	1809	1908	1827	1842	1787	1713	1903	1840	1819
I ₂	1714	1735	1795	1638	1777	1829	1699	1773	1772	1757	1732	1755	1748
I ₃	1697	1810	1786	1534	1830	1930	1715	1743	1836	1658	1856	1780	1765
Mean	1744	1801	1786	1637	1805	1889	1747	1786	1798	1709	1830	1792	1777
Q ₀	1689	1743	1696	1667	1727	1734	1638	1746	1744				
Q ₁	1824	1849	1819	1671	1850	1970	1739	1851	1902				
Q ₂	1718	1813	1843	1573	1840	1962	1865	1761	1749				
P ₀	1730	1738	1744	1564	1787	1891							
P ₁	1713	1895	1749	1671	1764	1923							
P ₂	1789	1771	1835	1677	1866	1852							
N ₀	1608	1621	1683										
N ₁	1765	1897	1754										
N ₂	1859	1886	1922										

S.E. of any marginal mean
S.E. of body of any table

= 30.4 lb./ac.
= 52.6 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 55(11).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'IMV'.

Object :- To study the effect of irrigation and levels of N on different varieties of Wheat.

1. BASAL CONDITIONS :

- (i) (a) Nil. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 1.11.1955. (iv) (a) 1 Victory ploughing and 5 *desi* ploughings. (b) to (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) and (ix) N.A. (x) 24.4.1956.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V₁=N.P.—710, V₂=N.P.—718 and V₃=N.P.—775.

(2) 3 levels of N as A/S : N₀=0, N₁=20 and N₂=40 lb./ac.

(3) 3 levels of irrigation : I₁=One irrigation on 19.1.1956, I₂=2 irrigation on 27.12.1956 and 9.3.1956 and I₃=3 irrigations on 27.12.1956, 9.3.1956 and 18.3.1956.

3. DESIGN :

- (i) 3³ confd. (VN²I³ and VN²I are confd.). (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 51'×18'. (b) 49'×16'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

- (i) Normal. (ii) Dusting with BHC against white ants. (iii) Yield of grain. (iv) (a) 1952—1955. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 1031 lb./ac. (ii) 207.2 lb./ac. (iii) Main effect of N is highly significant and that of V is significant. (iv) Av. yield of grain in lb./ac.

	N ₀	N ₁	N ₂	Mean	I ₁	I ₂	I ₃
V ₁	954	1194	1171	1106	1097	1167	1056
V ₂	778	903	1102	928	727	926	1130
V ₃	861	1112	1208	1060	1074	1065	1042
Mean	864	1070	1160	1031	966	1053	1076
I ₁	880	1005	1014				
I ₂	769	1213	1176				
I ₃	944	991	1292				

S.E. of any marginal mean = 48.8 lb./ac.
S.E. of body of any table = 84.6 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- I.A.R.I. 54(20).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'IMV'.

Object :- To study the effect of varying levels of irrigation and N on different varieties of Wheat.

1. BASAL CONDITIONS:

(i) (a) No. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 17.11.1954. (iv) (a) 3 ploughings with *desi* plough and levelling. (b) N.A. (c) 70 lb./ac. (d) and (e) N.A. (v) 60 lb./ac. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings and interculturings. (ix) N.A. (x) 16 and 17.4.1955.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V₁=N.P.—710, V₂=N.P.—718 and V₃=N.P.—775.

(2) 3 levels of N as A/S: N₀=0, N₁=20 and N₂=60 lb./ac.

(3) 3 frequencies of irrigation : I₁=1, I₂=2 and I₃=3 irrigations.

3. DESIGN :

(i) 3³ confd. (ii) (a) 3 blocks/replication ; 9 plots/block. (b) N.A. (iii) 2. (iv) (a) 51'×16'. (b) 46'×11'. (v) 2½'×2½'. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) White ants controlled with 5% BHC at 30 lb./ac. (iii) Yield of grain. (iv) (a) 1952—contd. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1846 lb./ac. (ii) 239.3 lb./ac. (iii) V effect is significant. I effect is highly significant. (iv) Av. yield of grain in lb./ac.

	N ₀	N ₁	N ₂	Mean	I ₁	I ₂	I ₃
V ₁	1710	1762	1704	1725	1475	1828	1873
V ₂	1832	1898	2016	1915	1824	1874	2048
V ₃	1758	1855	2080	1898	1722	1970	2001
Mean	1767	1838	1933	1846	1674	1891	1974
I ₁	1640	1654	1726				
I ₂	1795	1792	2085				
I ₃	1865	2069	1990				

S.E. of any marginal mean = 56.4 lb./ac.
S.E. of body of any table = 97.7 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 56(13).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'IMV'.

Object :- To study the effect of different levels of N and irrigation on different varieties of Wheat.

1 BASAL CONDITIONS :

(i) (a) N.A. (b) Cowpea. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 22.11.1956. (iv) (a) Ploughing, grubbing and discing. (b) to (e) N.A. (v) Nil. (vi) and (vii) As per treatments. (viii) Nil. (ix) 16.69". (x) 30.4.1957.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.

(2) 3 frequencies of irrigation : $I_1=1$, $I_2=2$ and $I_3=3$ irrigations.

(3) 3 varieties : $V_1=N.P.-Hy. 52(66)$, $V_2=N.P.-797$ and $V_3=N.P.-718$.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) $32' \times 20'$. (b) $30' \times 18'$. (v) $1' \times 1'$. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1956—N.A. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Raw data and two-way tables : N.A.

5. RESULTS :

(i) 1398 lb./ac. (ii) 237.6 lb./ac. (iii) Main effect of V is highly significant and that of N is significant. (iv) Av. yield of grain in lb./ac.

Treatment	N_0	N_1	N_2	I_1	I_2	I_3	V_1	V_2	V_3
Av. yield	1239	1380	1575	1405	1442	1346	1539	1257	1398

S.E./mean = 56.0 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 59(19).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'IMV'.

Object :- To study the effect of different levels of N and irrigation on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 14.11.1959. (iv) (a) 2 discings and 1 grubbing. (b) Sown by *kerā*. (c) to (e) N.A. (v) N.A. (vi) As per treatments (vii) Irrigated. (viii) 1 hand weeding. (ix) N.A. (x) 14 to 29.4.1960.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 4 varieties : $V_1=N.P.-718$, $V_2=N.P.-823$, $V_3=N.P.-824$ and $V_4=N.P.-828$.

(2) 4 levels of N : $N_0=0$, $N_1=20$, $N_2=40$ and $N_3=80$ lb./ac.

(3) 4 frequencies of irrigation : $I_1=1$, $I_2=2$, $I_3=3$ and $I_4=4$ irrigations.

3. DESIGN :

(i) 4^3 confd. (ii) (a) 16 plots/block and 4 blocks/replication. (b) N.A. (iii) 2. (iv) (a) $40' \times 16'$. (b) $38' \times 14'$. (v) $1' \times 1'$. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1959—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1967 lb./ac. (ii) 291.5 lb./ac. (iii) Main effects of N and I are highly significant. V effect is significant. (iv) Av. yield of grain in lb./ac.

	V ₁	V ₂	V ₃	V ₄	Mean	I ₁	I ₂	I ₃	I ₄
N ₀	1734	1945	1695	1876	1812	1753	1713	1994	1791
N ₁	2044	2019	2073	1948	2021	1808	1980	2119	2176
N ₂	2084	2149	1907	2020	2040	1938	1935	2083	2205
N ₃	2065	2279	1754	1886	1996	1889	1956	2014	2124
Mean	1982	2098	1857	1932	1967	1847	1896	2052	2074
I ₁	1855	2078	1582	1873					
I ₂	1929	2028	1789	1837					
I ₃	2023	2157	2049	1981					
I ₄	2120	2129	2008	2038					

S.E. of any marginal mean = 51.5 lb./ac.
S.E. of body of any table = 103.0 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 58(21).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'IC'.

Object :— To study the effect of inter-row spacings and methods of irrigation on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) No. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 4.11.1958. (iv) (a) to (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) N.A. (vii) As per treatments. (viii) 2 weedings. (ix) N.A. (x) 6.4.1959.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 methods of irrigation : M₁=Flat, M₂=Furrow before the first irrigation and M₃=Furrow after the first irrigation.

(2) 3 average inter-row spacings : S₁=9", S₂=10½" and S₃=12" average.

Sub-plot treatments :

3 levels of irrigation : I₁=No irrigation after the root stage, I₂=One irrigation after the root stage when soil moisture tension in upper one feet layer exceeded 0.750 atmosphere and I₃=Two irrigations after the root stage when the soil moisture tension in upper two feet layer exceeded 0.750 atmosphere.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 13'×40'. (b) 7'×30'. (v) 3'×5'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) and (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 3058 lb./ac. (ii) (a) 406.8 lb./ac. (b) 243.9 lb./ac. (iii) Main effect of I alone is highly significant. (iv) Av. yield of grain in lb./ac.

	S ₁	S ₂	S ₃	Mean	I ₁	I ₂	I ₃
M ₁	2888	3089	3102	3026	2962	2950	3166
M ₂	3094	3094	3190	3126	2944	3116	3317
M ₃	3134	3051	2880	3022	2912	3011	3142
Mean	3039	3078	3057	3058	2939	3026	3208
I ₁	2982	2919	1917				
I ₂	3031	3029	3018				
I ₃	3103	3286	3236				

S E. of difference of two

1. M or S marginal means = 110.7 lb./ac.
 2. I marginal means = 66.4 lb./ac.
 3. I means at the same level M or S = 115.0 lb./ac.
 4. M or S means at the same level of I = 145.2 lb./ac.
- S.E. of body of M×S table = 135.6 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 56(14).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'ICM'.

Object :-To study the effect of different levels of N, irrigation and seed rate on Wheat.

1. BASAL CONDITIONS :

- (i) (a) Potato—Cotton—Sugarcane—Wheat. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 9.11.1956. (iv) (a) 1 Victory ploughing and 1 *dest* ploughing. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) 20 lb./ac. of P₂O₅ at sowing. (vi) N.P. 718 (medium). (vii) As per treatments. (viii) Weeding. (ix) 3.82". (x) 15.4.1957.

2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 levels of N : N₁=20, N₂=40 and N₃=60 lb./ac.
- (2) 3 depths of irrigation : I₁=6", I₂=9" and I₃=12".
- (3) 3 seed rates : S₁=40, S₂=60 and S₃=80 lb./ac.

3. DESIGN :

- (i) 3³ confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 19'×42' [(b) 17.5'×40'. (v) N.A. (vi) Yes.

4. GENERAL :

- (i) Satisfactory. Lodging on 20.3.1957 due to hail storm. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

- (i) 995 lb./ac. (ii) 174.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	S ₁	S ₂	S ₃	Mean	I ₁	I ₂	I ₃
N ₁	1073	1081	887	1014	1006	895	1140
N ₂	983	1053	1062	1033	1067	910	1121
N ₃	992	966	860	939	916	966	936
Mean	1016	1033	936	995	996	924	1066
I ₁	1043	981	965				
I ₂	988	917	865				
I ₃	1016	1201	979				

S.E. of any marginal mean = 41.0 lb./ac.
S.E. of body of any table = 71.0 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 57(15).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'ICM'.

Object :-To study the effect of depths of irrigation, levels of nitrogen and seed rates on Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) and (iii) N.A. (iv) (a) and (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 depths of irrigation : $I_1=10''$, $I_2=13''$ and $I_3=16''$.

(2) 3 levels of N : $N_1=20$, $N_2=40$ and $N_3=60$ lb./ac.

(3) 3 seed rates : $S_1=40$, $S_2=60$ and $S_3=80$ lb./ac.

3. DESIGN :

(i) 3³ confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (t) N.A. (iii) 2. (iv) (a) and (b) 1/60.5 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Very good. (ii) Nil. (iii) Yield of grain. (iv) (a) 195:—1957. (b) and (c) N.A. (v) and (vi) Nil. (vii) Treatments modified in 1957.

5. RESULTS :

(i) 1714 lb./ac. (ii) 124.0 lb./ac. (iii) Main effect of S alone is significant. (iv) Av. yield of grain in lb./ac.

	N_1	N_2	N_3	Mean	S_1	S_2	S_3
I_1	1719	1643	1757	1706	1828	1615	1676
I_2	1642	1750	1727	1706	1702	1767	1650
I_3	1630	1790	1767	1709	1812	1660	1715
Mean	1664	1728	1750	1704	1781	1681	1680
S_1	1692	1800	1850				
S_2	1618	1714	1710				
S_3	1681	1669	1691				

S.E. of any marginal mean = 29.2 lb./ac.
S.E. of body of any table = 50.6 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 59(8).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'ICM'.

Object :-To study the effect of different levels of N, methods of sowing and intensities of irrigation on the yield of Wheat.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 11 to 13.11.1959. (iv) (a) 1 ploughing with bullock, 3 ploughings with planking, 2 double discings and 5 plankings. (b) Sown behind the plough with *para*. (c) N.A. (d) As per treatments. (e) N.A. (v) 40 lb./ac. of P_2O_5 . (vi) N.A. (vii) Irrigated. (viii) 1 hand weeding and 1 earthing. (ix) N.A. (x) 14.4.1960.

2. TREATMENTS:

All combinations of (1), (2) and (3)

(1) 3 levels of irrigation : I_1 =Three irrigations of $2\frac{1}{2}$ " , 2" and $2\frac{1}{2}$ " (water deficit based on root length),
 I_2 =Three irrigations of $3\frac{1}{4}$ " , 2" and $2\frac{1}{2}$ " and I_3 =Three irrigations of $3\frac{1}{4}$ " , 3"
 and $2\frac{1}{2}$ " (cultivator practice as per water deficit in top 3' layer).

(2) 3 levels of N : $N_0=0$, $N_1=30$ and $N_2=60$ lb./ac.

(3) 2 methods of sowing : S_1 =Corrugated system with 1' between double row and 6" in between them
 and S_2 =Flat system with 9" uniform spacing.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b) $46' \times 14'$. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1959—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Due to rain and heavy wind the third irrigation was delayed by 3 days, 1" of rainfall was deducted before applying irrigation water.

5. RESULTS :

(i) 1371 lb./ac. (ii) 183.2 lb./ac. (iii) Main effect of N and interaction $N \times S$ are highly significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	Mean	S_1	S_2
I_1	993	1401	1718	1371	1354	1387
I_2	960	1499	1645	1368	1345	1391
I_3	992	1431	1695	1373	1375	1370
Mean	982	1444	1686	1371	1358	1383
S_1	1048	1441	1584			
S_2	914	1446	1788			

S.E. of I or N marginal mean = 37.4 lb./ac.
 S.E. of S marginal mean = 30.5 lb./ac.
 S.E. of body of $I \times N$ table = 64.8 lb./ac.
 S.E. of body of $S \times N$ or $S \times I$ table = 52.9 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 57(16).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'DC'.

Object :- To study the efficacy of different weedicides alone and in conjunction with cultivation practices for the control of Baru weed in Wheat.

1.5 BASAL CONDITIONS :

(i) to (vii) N.A. (viii) As per treatments. (ix) and (x) N.A.

2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

(1) 3 levels of 2, 4, 5—T : $M_0=0$, $M_1=5$ and $M_2=10$ lb./ac.

(2) 3 levels of 2, 4—D : $D_0=0$, $D_1=5$ and $D_2=10$ lb./ac.

(3) 3 levels of TCA : $T_0=0$, $T_1=30$ and $T_2=60$ lb./ac.

(4) 3 levels of cultivation : $C_1=1$, $C_2=3$ and $C_3=6$ cultivations.

3. DESIGN :

(i) Quasi L. Sq. (ii) (a) 9. (b) N.A. (iii) 1. (iv) (a) 41' × 15'. (b) 37' × 11.5'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) N.A. (c) Nil. (v) and (vi) Nil. (vii) Raw data and two-way tables : N.A.

5. RESULTS :

(i) 1665 lb./ac. (ii) 230.7 lb./ac. (iii) Main effects of M, D, T and C are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	D ₀	D ₁	D ₂	T ₀	T ₁	T ₂	C ₁	C ₂	C ₃
Av. yield	1423	1744	1827	1524	1681	1788	1.28	1829	1936	1344	1451	2200

S.E./mean = 44.4 lb./ac.

Crop :- Wheat.

Ref :- I.A.R.I. 56(16).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'DC'.

Object :- To test the relative effectiveness of post and pre-emergence of 2, 4-D in various doses alone and in conjunction with cultural practices for controlling weeds in Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sannhemp* (c) G.M. with *sannhemp*. (ii) (a) Heavy loam. (b) N.A. (iii) 13.11.1956. (iv) (a) Ploughing with victory plough followed by *desi* plough. (b) to (e) N.A. (v) 30 lb./ac. of N as A/S applied with 1st irrigation. (vi) N.P. 718. (vii) Irrigated. (viii) As per treatments. (ix) 5.59%. (x) 16.4.1957.

2. TREATMENTS :

10 weedicidal treatments : W₀=Control, W₁=Hand weeding, W₂=Hoeling, W₃=Post-emergence spray with 2, 4-D at 8 ozs./ac. W₄=Post-emergence spray with 2, 4-D at 1 lb./ac., W₅=Post-emergence spray with 2, 4-D at 2 lb./ac., W₆=Post-emergence spray with 2, 4-D at 8 ozs./ac.+hoeling, W₇=Pre-emergence spray with 2, 4-D at 8 ozs./ac., W₈=Pre-emergence spray with 2, 4-D at 1 lb./ac. and W₉=Pre-emergence spray with 2, 4-D at 8 ozs./ac.+Post-emergence spray at 8 ozs./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 18.5' × 21.75'. (b) 14.5' × 18.75'. (v) 2' × 1.5'. (vi) Yes.

4. GENERAL :

(i) Crop was damaged by hailstorm on 20.3.1957. (ii) Nil. (iii) No. of tillers, no. of grains per ear head and yield of grain. (iv) (a) 1955—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 954 lb./ac. (ii) 129.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	W ₀	W ₁	W ₂	W ₃	W ₄	W ₅	W ₆	W ₇	W ₈	W ₉
Av. yield	880	1061	930	1004	1053	938	954	880	905	938

S.E./mean = 64.6 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 57(17).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'DC'.

Object :—To test the relative effectiveness of post and pre-emergence use of 2, 4-D in various doses alone and in conjunction with cultural practices for controlling weeds in Wheat.

1. BASAL CONDITIONS :

(i) to (vii) N.A. (viii) As per treatments. (ix) and (x) N.A.

2. TREATMENTS :

10 weedicial treatments : W_0 =Control, W_1 =Hand weeding, W_2 =Hoeing with cultivator, W_3 =Post emergence 2, 4-D at $\frac{1}{2}$ lb./ac., W_4 =Post emergence 2, 4-D at 1 lb./ac., W_5 =Post emergence 2, 4-D at 2 lb./ac., W_6 =Post emergence 2, 4-D at $\frac{1}{2}$ lb./ac.+hoeing, W_7 =Pre-emergence 2, 4-D at $\frac{1}{2}$ lb./ac., W_8 =Pre-emergence 2, 4-D at 1 lb./ac. and W_9 = W_3+W_7 .

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 21.75'×18.5'. (b) 18.75'×16.5'. (v) 1.5'×1'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) to (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 1580 lb./ac. (ii) 146.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	W_0	W_1	W_2	W_3	W_4	W_5	W_6	W_7	W_8	W_9
Av. yield	1308	1777	1382	1687	1695	1572	1514	1563	1588	1712

S.E./mean = 73.2 lb./ac.

Crop :- Wheat.

Ref :- I.A.R.I. 59(10).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'DC'.

Object :—To study the effect of different weedicides and cultural treatments on the yield of Wheat.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 14.11.1959. (iv) (a) 1 tractor ploughing, 1 discing and 2 grubblings followed by beaming. (b) Drilling. (c) N.A. (d) 9". (e) N.A. (v) N.A. (vi) N.P. 718. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 11, 12.4.1960.

2. TREATMENTS :

All combinations of (1), (2) and (3)+4 extra treatments

(1) 3 weedicides : W_1 =Na-2, 4-D, W_2 =Amino. 2, 4-D and W_3 =Ester 2, 4-D.(2) 2 levels of weedicides : L_1 = $\frac{1}{2}$ and L_2 =1 lb./ac.(3) 2 times of application : T_1 =Before irrigation and T_2 =After irrigation.Extra treatments : E_0 =Control, E_1 =1 hoeing, E_2 =1 hand weeding and E_3 =5 hand weedings.

3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 13'×20'. (b) 11'×17'. (v) 1'×1 $\frac{1}{2}$ '. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1959—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1982 lb./ac. (ii) 342.4 lb./ac. (iii) Main effect of W alone is significant. (iv) Av. yield of grain in lb./ac.

$E_0 = 1487, E_1 = 1848, E_2 = 2037$ and $E_3 = 1961$ lb./ac.

	W ₁	W ₂	W ₃	Mean	T ₁	T ₂
L ₁	2018	1978	1925	1974	1855	2093
L ₂	2227	2286	1755	2090	2089	2090
Mean	2123	2132	1840	2032	1972	2092
T ₁	2074	1982	1859			
T ₂	2171	2282	1821			

S.E. of W marginal mean	= 85.6 lb./ac.
S.E. of T or L marginal mean	= 69.9 lb./ac.
S.E. of body of W×L or W×T table	= 121.1 lb./ac.
S.E. of body of T×L table	= 98.8 lb./ac.
S.E. of E mean	= 171.2 lb./ac.

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 58(22).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'DC'.

Object :- To study the efficacy of T.C.A. and cultivations alone and in various combinations for controlling baru weed in Wheat.

1. BASAL CONDITIONS :

(i) to (vii) N.A. (viii) As per treatments. (ix) and (x) N.A.

2. TREATMENTS :

24 weedicidal treatments : T₁=Control untreated followed by Wheat, T₂=Control cultivated followed by Wheat, T₃=Control maize followed by Wheat, T₄=1 cultivation, T₅=3 cultivations, T₆=6 cultivations, T₇=15 lb./ac. of T.C.A., T₈=30 lb./ac. of T.C.A., T₉=60 lb./ac. of T.C.A., T₁₀=1 cultivation+15 lb./ac. of T.C.A., T₁₁=3 cultivations+15 lb./ac. of T.C.A., T₁₂=6 cultivations+15 lb./ac. of T.C.A., T₁₃=1 cultivation+30 lb./ac. of T.C.A., T₁₄=3 cultivations+30 lb./ac. of T.C.A., T₁₅=6 cultivation+30 lb./ac. of T.C.A., T₁₆=1 cultivation+60 lb./ac. of T.C.A., T₁₇=3 cultivations+60 lb./ac. of T.C.A., T₁₈=6 cultivations+60 lb./ac. of T.C.A., T₁₉=6 cultivations+15 lb./ac. of T.C.A.+5 lb./ac. of 2, 4-D, T₂₀=6 cultivations+30 lb./ac. of T.C.A.+5 lb./ac. of 2, 4-D, T₂₁=6 cultivations+60 lb./ac. of T.C.A.+5 lb./ac. of 2, 4-D, T₂₂=6 cultivations+15 lb./ac. of T.C.A.+10 lb./ac. of 2, 4-D, T₂₃=6 cultivations+30 lb./ac. of T.C.A.+10 lb./ac. of 2, 4-D and T₂₄=6 cultivations+60 lb./ac. of T.C.A.+10 lb./ac. 2, 4-D.

3. DESIGN :

(i) R.B.D. (ii) (a) 24. (b) N.A. (iii) 4. (iv) (a) 30'×16'. (b) 26'×15'. (vi) 2'×6". (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Expt. conducted at Agri. Sub-Stn., Karnal.

5. RESULTS :

(i) 759 lb./ac. (ii) 159.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂
Av. yield	112	125	140	154	154	461	279	489	656	279	293	1326
Treatment	T ₁₃	T ₁₄	T ₁₅	T ₁₆	T ₁₇	T ₁₈	T ₁₉	T ₂₀	T ₂₁	T ₂₂	T ₂₃	T ₂₄
Av. yield	503	712	1340	684	1033	1089	1452	1368	1466	1508	1536	1298

S.E./mean = 79.7 lb./ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 56(15).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'DCM'.**

Object :- To study the effect of 2, 4-D-B on weed population in Wheat crop alone and in combination with different cultivation levels and different forms of N.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Mucuna chinensis*. (c) N.A. (ii) (a) Medium loam. (b) N.A. (iii) 10.11.1956. (iv) (a) to (e) N.A. (v) Nil. (vi) N.P.—718. (vii) Irrigated. (viii) As per treatments. (ix) 5.59%. (x) 18.4.1957.

2. TREATMENTS :

All combinations of (1) and (2)

Main-plot treatments :

(1) 3 levels of 2, 4-D Butyric acid : $D_0=0$, $D_1=8$ and $D_2=16$ ozs./ac.

(2) 3 levels of cultivation : $C_0=0$, $C_1=1$ and $C_2=2$ hoeings.

Sub-plot treatments :

3 forms of application of 30 lb./ac. of N : $S_0=0$, $S_1=A/S$ in solid form and $S_2=A/S$ in liquid form.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) $28' \times 16'$. (b) $24' \times 12\frac{1}{2}'$. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Some lodging was caused by hailstorm on 20.3.1957. (ii) Nil. (iii) Yield of grain. (iv) (a) 1956—N.A. (b) N.A. (c) Nil. (v) and (vi) Nil. (vii) Raw-data and two-way tables are not available.

5. RESULTS :

(i) 1347 lb./ac. (ii) (a) 315.6 lb./ac. (b) 244.8 lb./ac. (iii) Main effects of D and S are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	D_0	D_1	D_2	C_0	C_1	C_2	S_0	S_1	S_2
Av. yield	1152	1539	1349	1404	1306	1337	1103	1391	1547

S.E. of difference of two

1. C or D marginal means = 74.4 lb./ac.

2. S marginal means = 57.7 lb./ac.

Crop :- Wheat.**Ref :- I.A.R.I. 57(18).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'DCM'.**

Object :- To study the effect of 2, 4-D-B on weeds in Wheat, in combination with different cultivation levels and forms of N.

1. BASAL CONDITIONS :

(i) to (vii) N.A. (viii) As per treatments. (ix) and (x) N.A.

2. TREATMENTS :**Main-plot treatments :**

All combinations of (1) and (2)

(1) 3 levels of 2,4-D : $D_0=0$, $D_1=\frac{1}{2}$ and $D_2=1$ lb./ac.

(2) 3 levels of cultivations : $C_0=0$, $C_1=1$ and $C_2=2$ cultivations.

Sub-plot treatments :

3 sources of 30 lb./ac. of N : $S_0=No\ N$, $S_1=A/S$ applied as solid and $S_2=A/S$ applied as liquid.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) $24' \times 12\frac{1}{2}'$. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1957—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

- (i) 2468 lb./ac. (ii) (a) 304.9 lb./ac. (b) 258.4 lb./ac. (iii) Main effects of P and S are highly significant.
 (iv) Av. yield of grain in lb./ac.

	D ₀	D ₁	D ₂	Mean	S ₀	S ₁	S ₂
C ₀	2102	2587	2659	2449	2258	2651	2439
C ₁	2320	2438	2492	2417	2162	2571	2517
C ₂	2408	2619	2585	2537	2319	2615	2677
Mean	2277	2548	2579	2468	2246	2612	2544
S ₀	2025	2387	2328				
S ₁	2389	2671	2778				
S ₂	2416	2586	2631				

S.E. of difference of two

- | | |
|--|-----------------|
| 1. D or C marginal means | = 71.9 lb./ac. |
| 2. S marginal means | = 60.9 lb./ac. |
| 3. S means at the same level of D or C | = 105.5 lb./ac. |
| 4. D or C means at the same level of S | = 231.0 lb./ac. |
| S.E. of body of D × C table | = 88.0 lb./ac. |

Crop :- Wheat (Rabi).

Ref :- I.A.R.I. 58(17).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'DCM'.

Object :- To study the effect of 2, 4-D-B on weed population in Wheat crop alone and in combination with different cultivation levels and different forms of application of A/S.

1. BASAL CONDITIONS :

- (i) (a) Nil. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) Nov., 1958. (iv) (a) to (e) N.A. (v) Nil. (vi) to (ix) N.A. (x) March, 1959.

2. TREATMENTS :

Same as in expt. no. 56(15) on page 355.

3. DESIGN :

- (i) Split-plot. (ii) (a) 9 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 10' × 26'. (v) N.A. (vi) Yes.

4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1956 - N.A. (b) N.A. (c) Nil. (v) and (vi) Nil. (vii) Raw data and two-way tables are not available.

5. RESULTS :

- (i) 1578 lb./ac. (ii) (a) 272.4 lb./ac. (b) 240.1 lb./ac. (iii) Main effects of D and S are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	D ₀	D ₁	D ₂	C ₀	C ₁	C ₂	S ₀	S ₁	S ₂
Av. yield	1730	1538	1466	1512	1577	1645	1029	1981	1724

S.E. of difference of two

- | | |
|--------------------------|----------------|
| 1. C or D marginal means | = 64.2 lb./ac. |
| 2. S marginal means | = 56.6 lb./ac. |

Crop :- Maize (Kharif).**Ref :- I.A.R.I. 54(21).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :—To study the effect of Hubam clover grown with P for seed, fodder and G.M. on the succeeding Maize crop.

1. BASAL CONDITIONS :

(i) (a) Maize—Hubam clover. (b) Hubam clover. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 23.7.1954. (iv) (a) 2 discings. (b) to (e) N.A. (v) N.A. (vi) Yellow no. 2. (vii) Irrigated. (viii) 1 hoeing with horse hoe, 1 weeding and 1 thinning. (ix) N.A. (x) 2.11.1954.

2. TREATMENTS :**Main-plot treatments :**

4 levels of P_2O_5 applied to Hubam clover: $P_0=0$, $P_1=40$, $P_2=80$ and $P_3=120$ lb./ac.

Sub-plot treatments :

6 forms of Hubam clover: $G_1=$ Hubam clover grown for seed, $G_2=$ Hubam clover grown for seed after 1 cut, $G_3=$ Hubam clover grown for G.M., $G_4=$ Hubam clover grown for G.M. after 1 cut, $G_5=$ Hubam clover grown for G.M. after 2 cuts and $G_6=$ Hubam clover grown for fodder.

3. DESIGN :

(i) Split plot. (ii) (a) 4 main-plots/replication; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (a) and (b) 1/100 ac. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of stem borer. (iii) Yield of grain. (iv) (a) 1951—1956. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1703 lb./ac. (ii) (a) 311.9 lb./ac. (b) 243.8 lb./ac. (iii) Main effect of G alone is highly significant. (iv) Av. yield of grain in lb./ac.

	G_1	G_2	G_3	G_4	G_5	G_6	Mean
P_0	2273	1833	2310	1567	1467	1257	1784
P_1	1900	1880	2100	1700	1350	1433	1727
P_2	2000	1633	2090	1483	1343	1250	1633
P_3	2145	1840	1950	1417	1443	1217	1669
Mean	2080	1796	2113	1542	1401	1289	1703

S.E. of difference of two

1. P marginal means	= 104.0 lb./ac.
2. G marginal means	= 99.5 lb./ac.
3. G means at the same level of P	= 199.1 lb./ac.
4. P means at the same level of G	= 209.3 lb./ac.

Crop :- Maize.**Ref :- I.A.R.I. 55(14).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :—To study the effect of Hubam clover grown with P for seed, fodder and G.M. on the succeeding Maize crop.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) 16.7.1955. (iv) (a) 1 ploughing with Victory plough and 2 ploughings with desi plough. (b) N.A. (c) 16 lb./ac. (d) and (e) N.A. (v) N.A. (vi) Yellow no—2. (vii) Irrigated. (viii) Hoeing with hand, weeding and thinning. (ix) N.A. (x) 10.10.1955.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(21) on page 357.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grain. (iv) (a) 1951—1956. (b) Yes. (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 1333 lb./ac. (ii) (a) 662.2 lb./ac. (b) 346.2 lb./ac. (iii) Main effect of G is highly significant. (iv) Av. yield of grain in lb./ac.

	G ₁	G ₂	G ₃	G ₄	G ₅	G ₆	Mean
P ₀	1766	1083	1700	1400	1333	1000	1380
P ₁	1800	933	1217	917	1233	1367	1244
P ₂	1800	983	1850	1333	1333	933	1372
P ₃	2150	1133	1450	1000	1333	950	1336
Mean	1879	1033	1554	1163	1308	1062	1333

S.E. of difference of two

1. P marginal means = 220.7 lb./ac.
2. G marginal means = 140.5 lb./ac.
3. G means at the same level of P = 22.7 lb./ac.
4. P means at the same level of G = 339.6 lb./ac.

Crop :- Maize (Kharif).**Ref :- I.A.R.I. 57(19).****Site :- Indian Agri. Res. Instt., New Nelhi.****Type 'M'.****Object :-**To study the effect of Hubam clover grown with P for seed, fodder and G.M. on the succeeding Maize crop.**1. BASAL CONDITIONS :**(i) (a) Hubam clover—Maize. (b) Hubam clover. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 3.8.1957. (iv) (a) 4 ploughings with *desi* plough and 2 tractor discings. (b) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 5 weedings, 2 horse hoeings and 1 thinning. (ix) N.A. (x) 18 to 20.11.1957.**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 54(21) on page 357.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1954—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3236 lb./ac. (ii) (a) 802.0 lb./ac. (b) 562.0 lb./ac. (iii) G effect alone is highly significant. (iv) Av. yield of grain in lb./ac.

	G ₁	G ₂	G ₃	G ₄	G ₅	G ₆	Mean
P ₀	3822	2966	3968	2791	2435	2552	3089
P ₁	2864	2839	3787	2648	2397	2860	2899
P ₂	4012	3306	4294	3143	2904	2691	3392
P ₃	3779	3192	4948	3210	3172	3085	3564
Mean	3619	3076	4249	2948	2727	2797	3236

S.E. of difference of two

1. P marginal means	= 267.3 lb./ac.
2. G marginal means	= 229.1 lb./ac.
3. G means at the same level of P	= 458.3 lb./ac.
4. P means at the same level of G	= 496.4 lb./ac.

Crop :- Maize (Kharif).**Ref :- I.A.R.I. 54(22).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :— To study whether fertility can be maintained or improved through organic and inorganic manures in Maize—Wheat—Pea rotation.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat—Pea. (b) Pea. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 21 and 22.7.1954. (iv) (a) 4 ploughings. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 3 weedings, 1 hoeing and 1 thinning. (ix) N.A. (x) 20 to 22.10.1954.

2. TREATMENTS :

5 manurial treatments : T_0 = Control, T_1 = 60 lb./ac. of N as A/S + 100 lb./ac. of P_2O_5 as Super, T_2 = T_1 + 100 lb./ac. of K_2O as Pot. Sul., T_3 = 60 lb./ac. of N as F.Y.M. + 100 lb./ac. of P_2O_5 as Super + 100 lb./ac. of K_2O as Pot. Sul. and T_4 = 60 lb./ac. of N as castor cake + 100 lb./ac. of P_2O_5 as Super + 100 lb./ac. of K_2O as Pot. Sul.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) $38' \times 25'$. (b) $34' \times 25'$. (v) $2' \times 2'$. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1952—1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1804 lb./ac. (ii) 263.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	1474	2122	2028	1494	1902

S.E./mean = 107.5 lb./ac.

Crop :- Maize (Kharif).**Ref :- I.A.R.I. 55(12).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :— To study whether fertility can be maintained or improved through organic and inorganic manures in Maize—Wheat—Pea rotation.

BASAL CONDITIONS :

(i) (a) Maize—Wheat—Pea. (b) Wheat—Pea. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 5.7.1955. (iv) (a) to (e) N.A. (v) Nil. (vi) Pusa Yellow no. 2. (vii) Irrigated. (viii) 4 weedings. (ix) N.A. (x) 11 and 12.10.1955.

2. TREATMENTS :

Same as in expt. no. 54(22) above.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 33'×29'. (b) 35'×27'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1952—1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 690 lb./ac. (ii) 172.5 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Av. yield	461	712	713	796	767

S.E./mean = 70.4 lb./ac.

Crop :- Maize (Kharif).

Ref :- I.A.R.I. 56(17).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study whether fertility can be maintained or improved through organic and inorganic manures in Maize—Wheat—Pea rotation.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat—Pea. (b) Pea. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 13 and 14.7.1956. (iv) (a) 1 Victory plough and 2 *desi* ploughings. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 2 hoeings with horse hoe, 1 weeding and 1 thinning. (ix) N.A. (x) 25 and 26.10.1956.

2. TREATMENTS :

Same as in expt. no. 54(22) on page 359.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 33'×29'. (b) 36'×27'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Good. Lodging due to rains. (ii) Nil. (iii) Yield of grain. (iv) (a) 1952—1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 575 lb./ac. (ii) 233.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Av. yield	549	644	473	532	679

S.E./mean = 95.3 lb./ac.

Crop :- Maize (Kharif).

Ref :- I.A.R.I. 57(20).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study whether fertility can be maintained or improved through organic and inorganic manures in Maize—Wheat—Pea rotation.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat—Pea. (b) N.A. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 2.8.1957. (iv) (a) 1 Victory ploughing, 1 discing and 1 grubbing. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 2 weedings and 1 hoeing. (ix) N.A. (x) 10.11.1957.

2. TREATMENTS :

Same as in expt. no. 54(22) on page 359.

Organic manures applied in full in *kharif* and inorganic half in *rabi* and half in *kharif*.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 38'×29'. (b) 36'×27'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1952—1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1473 lb./ac. (ii) 224.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Av. yield	1291	1379	1542	1646	1509

*S.E./mean = 91.6 lb./ac.

Crop :- Maize (*Kharif*).

Ref :- I.A.R.I. 58(24).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study whether fertility can be maintained or improved through organic and inorganic manures in Maize—Wheat—Pea rotation.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat—Pea. (b) N.A. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 18.7.1958. (iv) (a) 1 ploughing with Victory plough. (b) to (e) N.A. (v) and (vi) N.A. (vii) Unirrigated. (viii) 2 hoeings, 2 weeding, 2 tractor discings and 2 grubblings. (ix) N.A. (x) 27 to 30.10.1958.

2. TREATMENTS :

Same as in expt. no. 54(22) on page 359.

Organic manures applied in full in *kharif* and inorganic half in *kharif* and half in *rabi*.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 38'×29'. (b) 36'×27'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of stem borer. (iii) Yield of grain. (iv) (a) 1952—1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 497 lb./ac. (ii) 157.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Av. yield	468	503	460	562	491

S.E./mean = 64.1 lb./ac.

Crop :- Maize (*Kharif*).

Ref :- I.A.R.I. 59(11).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study whether fertility can be maintained or improved through organic and inorganic manures in Maize—Wheat—Pea rotation.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat—Pea. (b) N.A. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 16.7.1959. (iv) (a) 1 Victory ploughing, 1 bullock discing and 3 tractor discings. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 2 hoeings and 2 weedings. (ix) N.A. (x) 13 to 17.10.1959.

2. TREATMENTS :

Same as in expt. no. 54(22) on page 359.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 32' × 23'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1952—1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 979 lb./ac. (ii) 268.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Av. yield	707	1148	1053	979	1007

S.E./mean = 109.8 lb./ac.

Crop :- Maize (*Kharif*).

Ref :- I.A.R.I. 54(23).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study whether fertility can be maintained or improved through organic and inorganic manures in Maize—Wheat rotation.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Wheat. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 21 and 22.7.1954. (iv) (a) 1 ploughing with Victory plough. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 3 weedings, 1 hoeing and 1 thinning. (ix) N.A. (x) 20 to 22.10.1954.

2. TREATMENTS :

5 manurial treatments : T₀=Control, T₁=60 lb./ac. of N as A/S+100 lb./ac. of P₂O₅ as Super, T₂=T₁+100 lb./ac. of K₂O as Pot. Sul., T₃=60 lb./ac. of N as F.Y.M.+100 lb./ac. of P₂O₅ as Super+100 lb./ac. of K₂O as Pot. Sul. and T₄=60 lb./ac. of N as castor cake+100 lb./ac. of P₂O₅ as Super+100 lb./ac. of K₂O as Pot. Sul.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 38' × 29'. (b) 34' × 25'. (v) 2' × 2'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1952—1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1313 lb./ac. (ii) 152.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Av. yield	1046	1499	1418	1183	1420

S.E./mean = 62.3 lb./ac.

Crop :- Maize (Kharif).

Ref :- I.A.R.I. 55(13).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :-To study whether fertility can be maintained or improved through organic and inorganic manures in Maize-Wheat rotation.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Wheat. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 5.7.1955. (iv) (a) 1 ploughing with Victory plough and preparation of land with *desi* plough. (b) to (e) N.A. (v) Nil. (vi) Pusa yellow no. 2. (vii) Irrigated. (viii) 2 weedings, 1 horse hoeing, 2 thinnings and 1 earthing up. (ix) N.A. (x) 9 to 15.10.1955.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(23) on page 362.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1952—1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1082 lb./ac. (ii) 237.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Av. yield	782	1009	1075	1280	1265

S.E./mean = 97.0 lb./ac.

Crop :- Maize (Kharif).

Ref :- I.A.R.I. 56(18).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :-To study whether fertility can be maintained or improved through organic and inorganic manures in Maize—Wheat rotation.

1. BASAL CONDITIONS :

(i) (a) Wheat—Maize. (b) Wheat. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 13 and 14.7.1956. (iv) (a) 2 *desi* ploughings and 1 Victory ploughing. (b) to (e) N.A. (v) Nil. (vi) Pusa yellow no. 2. (vii) Irrigated. (viii) 2 hoeings, 2 weedings and 1 thinning. (ix) N.A. (x) 23 and 25.10.1956.

2. TREATMENTS :

Same as in expt. no. 54 (23) on page 362.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 38'×29'. (b) 36'×27'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Good. Lodging due to rains. (ii) Nil. (iii) Yield of grain. (iv) (a) 1952—1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1008 lb./ac. (ii) 213.9 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Av. yield	725	1032	1005	1123	1155

S.E./mean = 87.3 lb./ac.

Crop :- Maize (Kharif).

Ref :- I.A.R.I. 57(21).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :-To study whether fertility can be maintained or improved through organic and inorganic manures in Maize—Wheat rotation.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Wheat. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 2.8.1957. (iv) (a) 1 Victory ploughing. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 2 weedings, 1 hoeing and 1 tractor discing. (ix) N.A. (x) 8.11.1957.

2.

TREATMENTS :

T_0 = Control (no manure), T_1 = 60 lb./ac. of N as A/S + 100 lb./ac. of P_2O_5 as Super, T_2 = T_1 + 100 lb./ac. of K_2O as Pot. Sul., T_3 = 60 lb./ac. of N as F.Y.M. + 100 lb./ac. of P_2O_5 as Super and 100 lb./ac. of K_2O as Pot. Sul. and T_4 = 60 lb./ac. of N as castor cake + 100 lb./ac. of P_2O_5 as Super and 100 lb./ac. of K_2O as Pot. Sul. Organic manures applied in full in *kharif* and inorganic half in *kharif* and half in *rabi*.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 38' × 29'. (b) 36' × 27'. (v) 1' × 1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1952—1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1326 lb./ac. (ii) 200.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	1173	1402	1340	1384	1329

S.E./mean = 81.9 lb./ac.

Crop :- Maize (Kharif).

Ref :- I.A.R.I. 58(25).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :-To study whether fertility can be maintained or improved through organic and inorganic manures in Maize—Wheat rotation.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Wheat. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 18.7.1958. (iv) (a) 1 Victory ploughing, 2 tractor discings and 1 grubbing. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 2 hoeings and 2 weedings. (ix) N.A. (x) 27 to 30.10.1958.

2. TREATMENTS :

Same as in expt. no. 54(23) on page 362.

Organic manures applied in full in *kharif* and inorganic manures half in *kharif* and half in *rabi*.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 38' × 29'. (b) 36' × 27'. (v) 1' × 1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of stem borer. (iii) Yield of grain. (iv) (a) 1952—1959. (b) Yes. (c) Nil. (vi) to (vii) Nil.

5. RESULTS :

(i) 566 lb./ac. (ii) 195.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	551	598	497	520	666

S.E./mean = 80.0 lb./ac.

Crop :- Maize (Kharif).**Ref :- I.A.R.I. 59(12).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :- To study whether fertility can be maintained or improved through organic and inorganic manures in Maize—Wheat rotation.

1. BASAL CONDITIONS :

(i) (a) Wheat—Maize. (b) Wheat. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 16.7.1959. (iv) (a) 1 Victory ploughing, 1 bullock discing and 3 tractor discings. (b) to (e) N.A. (v) and (vi) N.A. (vii) Unirrigated. (viii) 1 thinning, 2 weedings and 1 hoeing. (ix) N.A. (x) 13 to 17.10.1959.

2. TREATMENTS :

Same as in expt. no. 54(23) on page 362.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) and (b) 32'×23'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1957—1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1352 lb./ac. (ii) 228.1 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Av. yield	1045	1382	1481	1344	1508

S.E./mean = 93.1 lb./ac.

Crop :- Maize (Kharif).**Ref :- I.A.R.I. 56(19).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :- To compare the effects of Dicalcium Phos. and Super on Wheat—Maize rotation.

1. BASAL CONDITIONS :

(i) (a) Wheat—Maize. (b) Wheat. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 26.7.1956. (iv) (a) 1 Victory ploughings and 2 *desi* ploughings. (b) to (e) N.A. (v) Nil. (vi) Yellow no. 2. (vii) Unirrigated. (viii) 2 weedings and 1 hand weeding. (ix) N.A. (x) 29 and 30.10.1956.

2. TREATMENTS :

4 manurial treatments : T₀=Control, T₁=40 lb./ac. of N as A/S/N, T₂=T₁+60 lb./ac. of P₂O₅ as Super and T₃=T₁+60 lb./ac. of P₂O₅ as Dicalcium Phos.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 42'×27'. (b) 41'×26'. (v) 6'×6". (vi) Yes.

4. GENERAL :

(i) Good. Lodged due to rains. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—cont'd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 558 lb./ac. (ii) 149.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃
Av. yield	489	590	590	554

S.E./mean = 60.9 lb./ac.

Crop :- Maize (Kharif).**Ref :- I.A.R.I. 57(22).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :—To study whether the fertility can be maintained or improved through organic and inorganic manures in Maize—Wheat rotation.

1. BASAL CONDITIONS :

(i) (a) Wheat—Maize. (b) Wheat. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 5.8.1957. (iv) (a) 1 tractor ploughing and 2 tractor discings. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 1 hoeing. (ix) N.A. (x) 13.11.1957.

2. TREATMENTS :

4 manurial treatments : T_0 = Control, T_1 = 40 lb./ac. of N as A/S/N, T_2 = T_1 + 80 lb./ac. of P_2O_5 as Super and T_3 = T_1 + 80 lb./ac. of P_2O_5 as Dicalcium Phos.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6 (iv) (a) 24' × 30'. (b) 22' × 28'. (v) 1' × 1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1131 lb./ac. (ii) 350.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T_0	T_1	T_2	T_3
Av. yield	978	1156	1082	1309

S.E./mean = 143.0 lb./ac.

Crop :- Maize (Kharif).**Ref :- I.A.R.I. 58(26).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :—To study whether the fertility can be maintained or improved through organic and inorganic manures in Maize—Wheat rotation.

1. BASAL CONDITIONS :

(i) (a) Wheat—Maize. (b) Wheat. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 14.8.1958. (iv) (a) 1 tractor grubbing and 2 *desi* ploughings. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 3 weedings and 1 hoeing. (ix) N.A. (x) 19.11.1958.

2. TREATMENTS :

Same as in expt. no. 57(22) above.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 24' × 30'. (b) 22' × 28'. (v) 1' × 1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955 - contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 533 lb./ac. (ii) 63.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T_0	T_1	T_2	T_3
Av. yield	336	549	649	599

S.E./mean = 26.0 lb./ac.

Crop :- Maize (Kharif).**Ref :- I.A.R.I. 59(13).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :-To study whether the fertility can be maintained or improved through organic and inorganic manures in Maize—Wheat rotation.

1. BASAL CONDITIONS :

(i) (a) Wheat—Maize. (b) Wheat. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 24.7.1959. (iv) (a) 1 victory ploughing, 3 *desi* ploughings and 2 discings with bullock. (b) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 1 hoeing and 2 weedings. (ix) N.A. (x) 27.10.1959.

2. TREATMENTS :

Same as in expt. no. 57(22) on page 366.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 24' × 30'. (b) 18' × 24'. (v) 3' × 3'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1149 lb./ac. (ii) 273.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃
Av. yield	768	1462	1299	1068

S.E./mean = 111.5 lb./ac.

Crop :- Maize (Kharif).**Ref :- I.A.R.I. 54(24).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :-To study the influence of compost on humes formation and crop yield.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Wheat. (c) N.A. (ii) (a) and (b) N.A. (iii) 21.7.1954. (iv) (a) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 2 weedings and 1 hoeing. (ix) N.A. (x) 23.10.1954.

2. TREATMENTS :

All combinations of (1) and (2)+3 extra treatments

(1) 3 types of compost : T₁=Plastered trench, T₂=Overground heap and T₃=Exposed pit.

(2) 3 levels of N as compost : N₁=40, N₂=80 and N₃=120 lb./ac.

E₁=No manure, E₂=A/S at 20 lb./ac. of N to maize+20 lb./ac. of N to succeeding wheat and E₃=A/S at 40 lb./ac. of N to maize+40 lb./ac. of N to succeeding wheat.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) 24.5' × 30'. (b) 20.5' × 26'. (v) 2' × 2'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1952—1954. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1362 lb./ac. (ii) 281.6 lb./ac. (iii) Main effects of N and E are highly significant. (iv) Av. yield of grain in lb./ac.

$$E_1 = 934 \text{ lb./ac.}, E_2 = 1376 \text{ lb./ac. and } E_3 = 1713 \text{ lb./ac.}$$

	T ₁	T ₂	T ₃	Mean
N ₁	1200	1156	1228	1195
N ₂	1410	1376	1467	1418
N ₃	1493	1556	1435	1495
Mean	1368	1363	1377	1369

S.E. of T or N marginal mean = 66.4 lb./ac.
S.E. of body of table or E mean = 115.0 lb./ac.

Crop :- Maize (Kharif).

Ref :- I.A.R.I. 57(23).

Site :- Indian Agri. Res. Instt., New Delhi.

Type 'M'.

Object :— To study the effect of different levels of N and organic and inorganic fertilizers on Maize.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 7.7.1957. (iv) (a) 2 ploughings, 1 discing and 1 beaming. (b) to (e) N.A. (v) N.A. (vi) Yellow No. 2. (vii) Irrigated. (viii) 2 hoeings and 1 weeding. (ix) N.A. (x) 13.10.1957.

2. TREATMENTS :

Main-plot treatments :

7 manurial treatments : M₀=Control, M₁=Sodium silicate at 0.15% silicate on dry soil basis, M₂=Sodium silicate at 0.3% silicate on dry soil basis, M₃=F.Y.M. at 5 tons/ac., M₄=F.Y.M. at 10 tons/ac., M₅=Castor cake at 30 lb./ac. of N and M₆=Castor cake at 60 lb./ac. of N.

Sub-plot treatments :

3 levels of N as A/S : N₀=0, N₁=30 and N₂=60.

3. DESIGN :

(i) Split-plot. (ii) (a) 7 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 21'×17.3'. (b) 21'×10'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Maize borer. (iii) Yield of grain. (iv) (a) 1957—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2140 lb./ac. (ii) (a) 311.1 lb./ac. (b) 360.9 lb./ac. (iii) Main effects of M and N are highly significant. (iv) Av. yield of grain in lb/ac.

	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	Mean
N ₀	1473	1495	1803	1841	1527	1577	2006	1675
N ₁	2239	2161	1631	2320	2723	2145	2464	2240
N ₂	2529	2066	1694	3154	2792	2624	2675	2505
Mean	2080	1907	1709	2438	2347	2115	2382	2140

S.E. of difference of two

1. M marginal means = 146.6 lb./ac.
2. N marginal means = 111.4 lb./ac.
3. N means at the same level of M = 294.6 lb./ac.
4. M means at the same level of N = 281.8 lb./ac.

Crop :- Maize (Kharif).**Ref :- I.A.R.I. 59(22).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :- To test the effect of organic manures and fertilizers on the yield of crops in the rotation of Wheat—Maize—Wheat.

1. BASAL CONDITIONS :

(i) (a) Wheat—Maize—Wheat. (b) Wheat. (c) As per treatment. (ii) to (x) N.A.

2. TREATMENTS :**Main-plot treatments :**4 organic manures : M_0 =No manure, M_1 =Guar (G.M.), M_2 =60 lb./ac. of N as castor cake and M_3 =60 lb./ac. of N as F.Y.M.**Sub-plot treatments :**5 inorganic manures : F_0 =No fertilizer, F_1 =40 lb./ac. of N as A/S, F_2 =80 lb./ac. of P_2O_5 as Super, F_3 = F_1+F_2 and F_4 = F_1+F_2+60 lb./ac. of K_2O as Pot. Sul.**Sub-sub-plot treatments :**2 levels of N as A/S : N_0 =0 and N_1 =30 lb./ac.

Sub-plot treatments were applied to previous crop.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 5 sub-plots/main-plot and 2 sub-sub-plots/sub-plot. (b) N.A. (iii) 6. (iv) (a) 51'×12'. (b) 49'×10'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Grain yield. (iv) (a) 1950—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1874 lb./ac. (ii) (a) 604.5 lb./ac. (b) 584.6 lb./ac. (c) 539.8 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in lb./ac.

	F_0	F_1	F_2	F_3	F_4	Mean	N_0	N_1
M_0	1778	1841	1823	1796	1905	1829	1758	1900
M_1	1825	2021	1880	1965	1905	1919	1864	1974
M_2	1911	1986	1503	1700	1824	1785	1703	1867
M_3	1791	2077	2006	1694	2248	1963	1824	2102
Mean	1826	1981	1803	1789	1970	1874	1787	1961
N_0	1804	1852	1697	1737	1843			
N_1	1849	2111	1909	1840	2098			

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. M marginal means | = 110.3 lb./ac. | 6. N means at the same level of M | = 139.5 lb./ac. |
| 2. F marginal means | = 119.6 lb./ac. | 7. M means at the same level of N | = 147.9 lb./ac. |
| 3. N marginal means | = 69.7 lb./ac. | 8. N means at the same level of F | = 156.0 lb./ac. |
| 4. F means at the same level of M | = 239.6 lb./ac. | 9. F means at the same level of N | = 162.7 lb./ac. |
| 5. M means at the same level of F | = 240.2 lb./ac. | | |

Crop :- Maize (Kharif).**Ref :- I.A.R.I. 56(20).****Site :- Bot. Sub-Stn., Pusa.****Type :- 'M'.**

Object :- To study the effect of N, P and K fertilizers on Maize.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 13.6.1956. (iv) (a) 3 ploughings, 2 beamings and 2 harrowings. (b) to (e) N.A. (v) N.A. (vi) Yellow 2. (vii) N.A. (viii) 1 weeding and 3 hoeings. (ix) N.A. (x) 30.9.1956 to 7.10.1956.

2. TREATMENTS:

10 manurial treatments : T_0 =Control (no manure), T_1 =8000 lb./ac. of F.Y.M., T_2 =40 lb./ac. of N as Rape cake, T_3 =40 lb./ac. of N as A/S, T_4 =50 lb./ac. of K_2O as Pot. Sul., T_5 =80 lb./ac. of P_2O_5 as Super, $T_6=T_4+T_5$, $T_7=T_3+T_6$, $T_8=T_3+T_5$ and $T_9=T_3+T_4$.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 10. (iv) (a) N.A. (b) $37.5' \times 18'$. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1930—contd. (b) N.A. (c) Nil. (v) (a) and (b) Nil. (vi) Continuous rain, cloudy weather and wind damaged the crop to the extent of 50%. (vii) Nil.

5. RESULTS :

(i) 992 lb./ac. (ii) 359.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	618	1526	1065	1065	702	831	112	1196	1202	1002

S.E./mean = 113.8 lb./ac.

Crop :- Maize (Kharif).

Ref :- I.A.R.I. 57(24).

Site :- Bot. Sub-Stn., Pusa.

Type :- 'M'.

Object : - To study the effects of N, P and K fertilizers on Maize.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 21.6.1957. (iv) (a) 1 ploughing with Empire plough and 5 *desi* ploughings. (b) to (e) N.A. (v) to (vii) N.A. (viii) 2 hoeings with hand hoe and 1 weeding. (ix) N.A. (x) 26.9.1957.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(20) on page 369.

4. GENERAL :

(i) Very poor. (ii) Nil. (iii) Grain yield. (iv) (a) 1930—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 737 lb./ac. (ii) 238.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	377	1334	1065	794	413	668	435	907	807	566

S.E./mean = 75.3 lb./ac.

Crop :- Maize (Kharif).

Ref :- I.A.R.I. 58(27).

Site :- Bot. Sub-Stn., Pusa.

Type :- 'M'.

Object : - To study the effects of N, P and K fertilizers on Maize.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 25.6.1958. (iv) (a) 5 ploughings, 1 beaming and harrowing. (b) to (e) N.A. (v) to (vii) N.A. (viii) 2 weedings, 2 hoeings with horse hoe and 1 earthing up. (ix) N.A. (x) 8.10.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(20) on page 369.

4. GENERAL :

(i) Good. (ii) Stem borer, in young stage. (iii) Grain yield. (iv) (a) 1930—contd. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Due to continuous heavy rain followed by strong wind the crop suffered heavily. (vii) Nil.

5. RESULTS :

(i) 560 lb./ac. (ii) 249.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉
Av. yield	413	955	884	542	455	474	329	545	594	413

S.E./mean = 79.0 lb./ac.

Crop :- Maize (Kharif).

Ref :- I.A.R.I. 59(14).

Site :- Bot. Sub.-Stn., Pusa.

Type :- 'M'.

Object :— To study the effect of N, P and K fertilizers on Maize.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 15.6.1959. (iv) (a) 1 ploughing with Empire plough, 2 *desi* ploughings and harrowing with spring hoe. (b) to (e) N.A. (v) and (vi) N.A. (vii) Unirrigated. (viii) 2 earthings, 1 harrowing and 1 thinning. (ix) N.A. (x) 25.9.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(20) on page 369.

4. GENERAL :

(i) Good. (ii) The crop in its early stage was attacked by stem borer. (iii) Grain yield. (iv) (a) 1930—contd. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Scarcity of rains affected the crop very much. (vii) Nil.

5. RESULTS :

(i) 989 lb./ac. (ii) 301.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉
Av. yield	668	1597	1716	984	652	764	551	952	1192	874

S.E./mean = 95.4 lb./ac.

Crop :- Maize (Kharif).

Ref :- I.A.R.I. 57(27).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :— To study the effect of phosphobacterin inoculation of Maize seed and its effect on P₂O₅ availability.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 9.8.1957. (iv) (a) Tractor discing twice. (b) to (e) N.A. (v) to (vii) N.A. (viii) 1 bullock hoe, 1 thinning, spreading and hoeing twice. (ix) N.A. (x) 13 to 15.11.1957.

2. TREATMENTS :

All combinations of (1) and (2) + 2 extra treatments

(1) 5 sources of P₂O₅ at 60 lb./ac. : S₀=Control (No P₂O₅), S₁=B.M., S₂=Rock Phos., S₃=Super and S₄=F.Y.M.

(2) 2 applications of Fosfo. 24 : F₀=No Fosfo. 24 and F₁=Fosfo. 24.

Extra treatments : E₁=Indian culture and E₂=Phosphobacterin.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (ii) 6. (iv) (a) and (b) 31'×23'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) to (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 1760 lb./ac. (ii) 298.3 lb./ac. (iii) Main effect of F alone is significant. (iv) Av. yield of grain in lb./ac.

$E_1=1665$ lb./ac. and $E_2=1929$ lb./ac.

	S ₀	S ₁	S ₂	S ₃	S ₄	Mean
F ₀	1642	1544	1536	1600	1804	1625
F ₁	1851	2010	1977	1674	1384	1879
Mean	1746	1777	1756	1637	1844	1752

S.E. of F marginal mean = 54.5 lb./ac.

S.E. of S marginal mean = 86.1 lb./ac.

S.E. of body of table or E mean = 121.8 lb./ac.

Crop :- Maize (Kharif).

Ref :- I.A.R.I. 59(15).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'MV'.

Object :— To study the effect of different levels and different stages of application of N on different varieties of Maize.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 12 to 14.7.1959. (iv) (a) 1 ploughing, 1 grubbing and levelling. (b) to (e) N.A. (v) to (vii) N.A. (viii) 1 weeding, 2 hoeings and 1 earthing up. (ix) N.A. (x) 15.10.1959.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 varieties : V₁=K.T.—41 and V₂=A.E.S.—805.

(2) 2 levels of N : N₁=60 and N₂=180 lb./ac.

(3) 3 times of application : T₁=At seeding, T₂=Half at seeding+half after 30 days and T₃= $\frac{1}{3}$ at seeding+ $\frac{1}{3}$ after 30 days+ $\frac{1}{3}$ prior to peak flowering.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 29'×15'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of powdery mildew. Spraying of fungicide. (iii) Yield of grain. (iv) (a) 1959—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1377 lb./ac. (ii) 226.0 lb./ac. (iii) Main effect of V is highly significant and effect of T is significant. (iv) Av. yield of grain in lb./ac.

	T ₁	T ₂	T ₃	Mean	N ₁	N ₂
V ₁	1420	1636	1616	1557	1546	1568
V ₂	1110	1166	1317	1198	1216	1179
Mean	1265	1401	1466	1377	1381	1374
N ₁	1213	1404	1527			
N ₂	1317	1398	1406			

S.E. of V or N marginal mean	= 46.1 lb./ac.
S.E. of T marginal mean	= 56.5 lb./ac.
S.E. of body of V×T or T×N table	= 79.9 lb./ac.
S.E. of body of V×N table	= 65.2 lb./ac.

Crop :- Maize (Kharif).

Ref :- I.A.R.I. 54(27).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'MV'.

Object :-To study the effect of different doses of N and P on different varieties of Maize.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 18.4.1954. (iv) (a) 1 ploughing with Victory plough and 1 ploughing with *desi* plough. (b) to (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Hoeing. (ix) N.A. (x) 6 to 8.7.1954.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 varieties : V₁=Pusa N.P.—13 and V₂=Kanpur—251.

(2) 3 levels of N as A/S : N₀=0, N₁=20 and N₂=40 lb./ac.

(3) 3 levels of P₂O₅ as Super : P₀=20, P₁=30 and P₂=40 lb./ac.

3. DESIGN :

(i) 3×3×2 confd. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 38'×25'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1951—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 622 lb./ac. (ii) 101.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	N ₀	N ₁	N ₂	Mean	P ₀	P ₁	P ₂
V ₁	596	614	654	621	607	617	641
V ₂	603	596	668	622	590	625	652
Mean	600	605	661	622	599	621	646
P ₀	589	577	631				
P ₁	602	597	663				
P ₂	609	642	689				

S.E. of N or P marginal mean	= 20.8 lb./ac.
S.E. of V marginal mean	= 17.0 lb./ac.
S.E. of body of V×N or V×P table	= 29.4 lb./ac.
S.E. of body of N×P table	= 36.0 lb./ac.

Crop :- Maize (Kharif).

Ref :- I.A.R.I. 59(16).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CV'.

Object :-To study the effect of piercing the plant stalks before or during reproductive stage on different varieties of Maize.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 21.7.1959. (iv) (a) Ploughing and levelling. (b) to (e) N.A. (v) 40 lb./ac. of N. (vi) and (vii) N.A. (viii) 2 earthings. (ix) N.A. (x) 30.10.1959.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties of Maize : V_1 =K.T.—41 and V_2 =A.E.S.—805.

(2) 2 levels of piercing the stalk : P_0 =No piercing and P_1 =Piercing during tasseling.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 3. (iv) (a) and (b) 15'×66'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1959—N.A. (b) N.A. (c) Nil. (v) and (vi) Nil. (vii) Raw-data as well as two-way tables for average yield: N.A.

5. RESULTS :

(i) 1599 lb./ac. (ii) 143.7 lb./ac. (iii) P effect alone is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	V_1	V_2	P_0	P_1
Av. yield	1560	1638	1374	1822

S.E. of V or P marginal mean = 58.7 lb./ac.

Crop :- Maize (Kharif).

Ref :- I.A.R.I. 54(25).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object :- To study the effect of N and depth of cultivation on the yield of Maize.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Heavy soil. (b) N.A. (iii) to (x) N.A.

2. TREATMENTS :

Main-plot treatments :

4 methods of ploughing : M_1 =Tractor ploughing 10" deep followed by tractor grubber, M_2 =Bullock soil inverting plough 5" to 6" deep followed by country plough, M_3 =4" to 5" deep by country plough and M_4 =3" to 4" deep by tractor disc.

Sub-plot treatments :

4 levels of N as F.Y.M. : N_0 =0, N_1 =40, N_2 =80 and N_3 =120 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 40'×27'. (b) 38'×25'. (v) 1×1'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1950—1954. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1101 lb./ac. (ii) (a) 198.7 lb./ac. (b) 249.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	N_3	Mean
M_1	986	1181	1209	1307	1171
M_2	1046	1072	1227	1198	1136
M_3	986	1066	951	1014	1004
M_4	949	1232	1037	1152	1093
Mean	992	1338	1106	1160	1101

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. M marginal means | = 70.3 lb./ac. |
| 2. N marginal means | = 83.4 lb./ac. |
| 3. N means at the same level of M | = 176.7 lb./ac. |
| 4. M means at the same level of N | = 168.4 lb./ac. |

Crop :- Maize.**Ref :- I.A.R.I. 54(28).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'CM'.**

Object:— To study the effect of different cultural treatments and different methods of application of fertilizers on Maize.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 4 to 6.7.1954. (iv) (a) As per treatments. (b) Sown with *desi* plough in lines. (c) 10 srs./ac. (d) and (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 15 to 18.10.1954.

2. TREATMENTS :**Main-plot treatments :**3 intensities of ploughing : $H_1=2$, $H_2=4$ and $H_3=6$ ploughings.**Sub-plot treatments :**4 intercultural treatments : $I_1=1$, $I_2=2$, $I_3=3$ interculturings with bullock hoe and I_4 = Removal of weeds.**Sub-sub-plot treatments :**3 methods of application of fertilizer : M_1 =Plough sole, M_2 =Lap of furrow and M_3 =Broadcast.

N, P, K fertilizer mixture at 40, 80 and 40 lb./ac. respectively in the ratio 1 : 2 : 1 was applied as above.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 4 sub-plots/main-plot and 3 sub-sub-plots/sub-plot. (b) N.A. (iii) 4. (iv) (a) $48' \times 12.5'$. (b) $46' \times 12.5'$. (v) 1' on either side. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of stem borer and locust. (iii) Yield of grain. (iv) (a) 1950—1954. (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) N.A. (vii) Other two way tables : N.A.

5. RESULTS :

(i) 870 lb./ac. (ii) (a) 285.0 lb./ac. (b) 244.4 lb./ac. (c) 245.9 lb./ac. (iii) Main effects of I and M are highly significant. Main effect of H is significant. (iv) Av. yield of grain in lb./ac.

	I_1	I_2	I_3	I_4	Mean
H_1	813	701	935	723	793
H_2	737	944	1103	1073	964
H_3	765	1003	1039	601	852
Mean	772	883	1026	799	870
Treatment	M_1	M_2	M_3		
Av. yield	979	791	839		

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. H marginal means | = 58.2 lb./ac. |
| 2. I marginal means | = 57.6 lb./ac. |
| 3. M marginal means | = 50.2 lb./ac. |
| 4. I means at the same level of H | = 99.8 lb./ac. |
| 5. H means at the same level of I | = 104.2 lb./ac. |

Crop :- Maize.**Ref :- I.A.R.I. 56(21).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'CM'.**

Object:— To study the effect of pre and post emergence application of 2, 4-D and A/N alone and in combination with hoeings in controlling weeds in Maize crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Berseem*. (c) N.A. (ii) (a) Medium loam. (b) N.A. (iii) 17.7.1956. (iv) (a) to (e) N.A. (v) 60 lb./ac. of P_2O_5 as Super and 30 lb./ac. of K_2O as Pot. Sul. The fertilizers were applied in side bands at the time of planting. (vi) N.A. (vii) Irrigated. (viii) As per treatments. (ix) 16.69". (x) 25.10.1956.

2. TREATMENTS :**Main-plot treatments :**

All combinations of (1), (2) and (3)

- (1) 3 levels of hoeing : $H_0=0$, $H_1=1$ and $H_2=2$ hoeings.
 (2) 3 levels of 2, 4—D : $D_0=0$, $D_1=8$ and $D_2=16$ ozs./ac.
 (3) 3 levels of N as A/N : $N_0=0$, $N_1=40$ and $N_2=80$ lb./ac.

Sub-plot treatments :

2 stages of application of fertilizers : T_1 =Pre-emergence and T_2 =Post-emergence.

3. DESIGN :

(i) Split-plot confd. (ii) (a) 3 blocks/replication ; 9 main-plots/block and 2 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) $28\frac{1}{2}' \times 15\frac{1}{2}'$. (b) $26\frac{1}{2}' \times 10'$. (v) $1.0' \times 2.75'$. (vi) Yes.

4. GENERAL:

(i) Normal. (ii) Powdery mildew affected the crop. Bordeaux mixture was sprayed as a control measure. (iii) Height of the crop, number of cobs per plant, number of grains per cob, test weight and yield of grain and straw. (iv) (a) 1956—contd. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Two way tables : N.A.

5. RESULTS :

(i) 2740 lb./ac. (ii) (a) 508.5 lb./ac. (b) 404.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Treatment	H_0	H_1	H_2	D_0	D_1	D_2	N_0	N_1	N_2	T_1	T_2
Av. yield	2789	2608	2822	2600	2839	2781	2411	2905	2905	2715	2765

S F. of H, D or N marginal mean = 84.7 lb./ac.

S E. of T marginal mean = 55.0 lb./ac.

Crop : Maize (*Kharif*).

Ref :- I.A.R.I. 57(25).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object :—To study the effect of pre and post-emergence application of 2, 4—D and A/N alone and in combination with hoeings in controlling weeds in Maize crop.

1. BASAL CONDITIONS :

(i) to (vii) N.A. (viii) As per treatments. (ix) and (x) N.A.

2. TREATMENTS :**Main-plot treatments:**

All combinations of (1), (2) and (3)

- (1) 3 levels of hoeing : $H_0=0$, $H_1=1$ and $H_2=2$ hoeings with cultivator.
 (2) 3 levels of 2, 4—D : $D_0=0$, $D_1=8$ and $D_2=16$ ozs./ac.
 (3) 3 levels of N as A/N : $N_0=0$, $N_1=40$ and $N_2=80$ lb./ac.

Sub-plot treatments :

2 times of application : T_1 =Pre-emergence and T_2 =Post-emergence.

3. DESIGN :

(i) Split-plot confd. (ii) (a) 3 blocks/replication ; 9 main-plots/block and 2 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) $28.5' \times 15.5'$. (b) $24.5' \times 10.0'$. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 1978 lb./ac. (ii) (a) 453.6 lb./ac. (b) 257.8 lb./ac. (iii) Main effects of N and H are highly significant. (iv) Av. yield of grain in lb./ac.

	D ₀	D ₁	D ₂	N ₀	N ₁	N ₂	T ₁	T ₂	Mean
H ₀	1444	1842	1925	1430	1791	1990	1746	1727	1737
H ₁	2016	2184	2008	1673	2211	2324	2084	2055	2069
H ₂	2108	2096	2174	2019	2318	2042	2101	2151	2126
Mean	1856	2041	2036	1707	2107	2119	1977	1978	1978
T ₁	1859	2036	2036	1691	2083	2157			
T ₂	1852	2045	2035	1723	2130	2080			
N ₀	1478	1749	1894						
N ₁	2046	2189	2085						
N ₂	2044	2184	2128						

S.E. of difference of two

1. H, D or N marginal means = 107.3 lb./ac.
 2. T marginal means = 51.5 lb./ac.
 3. T means at the same level of H, D or N = 89.3 lb./ac.
 4. H, D or N means at the same level of T = 124.6 lb./ac.
- S.E. of body of H×D or H×N or D×N table = 131.5 lb./ac.

Crop :- Maize (Kharif).

Ref :- I.A.R.I. 57(26).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object :- To study the effect of Hubam clover as a mixed crop in Wheat and its green manuring effect on Maize in Wheat—Maize rotation.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) 30.7.1957. (iv) (a) 1 discing by bullock and 2 double discings with tractor. (b) N.A. (c) 10 srs./ac. (d) and (e) N.A. (v) N.A. (vi) Yellow no. 2. (vii) Unirrigated. (viii) 1 weeding and 1 hoieng with hand hoe. (ix) N.A. (x) 2.11.1957.

2. TREATMENTS :

12 crop rotations with manuring : T₁=Fallow—Wheat, T₂=Wheat with 40 lb./ac. of N—Maize, T₃=Wheat—Maize with 40 lb./ac. of N, T₄=Wheat with 40 lb./ac. of N—Maize with 40 lb./ac. of N, T₅=Wheat+Hubam clover for fodder—Maize, T₆=T₅ with 40 lb./ac. of N to maize, T₇=T₅ with 80 lb./ac. of P₂O₅ to Hubam clover, T₈=Wheat+Hubam clover for G.M.—Maize, T₉=T₈ with 40 lb./ac. of N, T₁₀=T₈ with 80 lb./ac. of P₂O₅ to Hubam clover, T₁₁=Hubam clover for G.M.—Maize and T₁₂=Sannhemp for G.M.—Wheat.

N applied as A/S and P₂O₅ as Super.

3. DESIGN :

(i) R.B.D. (ii) (a) 12 (effective treatments 10 for maize crop). (b) N.A. (iii) 4. (iv) (a) 65'×13½'. (b) 63'×11½'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2179 lb./ac. (ii) 374.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂
Av. yield	—	1578	2119	2362	1827	2222	1754	2296	2662	2244	2724	—

S.E./mean = 187.3 lb./ac.

Crop :- Maize (Kharif).**Ref :- I.A.R.I. 58(23).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'CM'.**

Object :—To study the effect of Hubam clover as a mixed crop in Wheat and its green manuring effect on Maize in Wheat—Maize rotation.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) 7.7.1958. (iv) (a) 2 ploughings. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 2 weedings and 2 hoeings. (ix) N.A. (x) 14.10.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(25) on page 377.

4. GENERAL :

(i) Good. (ii) Stem borer attack. (iii) Yield of grain. (iv) (a) 1955—contd. (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) The crop was damaged by continuous rains. (vii) Nil.

5. RESULTS :

(i) 399 lb./ac. (ii) 85.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂
Av. yield	—	381	316	403	424	306	415	425	370	444	504	—

S.E./mean = 42.7 lb./ac

Crop :- Maize (Kharif).**Ref :- I.A.R.I. 59(17).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'CM'.**

Object :—To study the effect of Hubam clover as a mixed crop in Wheat and its green manuring effect on Maize in Wheat—Maize rotation.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) 14.7.1959. (iv) (a) 1 bullock discing, 3 tractor discings and 1 levelling. (b) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 1 tinning, 2 weedings and 1 hoeing. (ix) N.A. (x) 19.10.1959.

2. TREATMENTS :

Same as in expt. no. 57(26) on page 377.

3. DESIGN :

(i) R.B.D. (ii) (a) 12 (effective treatments 10 for maize crop). (b) N.A. (iii) 4. (iv) (a) 63'×11.5'. (b) 59'×8'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1955—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1606 lb./ac. (ii) 360.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂
Av. yield	—	1455	1813	1335	1543	1766	1550	1766	1655	1492	1688	—

S.E./mean = 180.0 lb./ac.

Crop :- Maize (Kharif).**Ref :- I.A.R.I. 54(21).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'CM'.**

Object :—To study the residual effect of different levels of P and number of cuttings of vicia satina on the succeeding Maize crop.

1. BASAL CONDITIONS :

(i) (a) *Vicia satina*—Maize. (b) *Vicia satina*. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 21.7.1954. (iv) (a) 3 *desi* ploughings. (b) to (e) N.A. (v) Nil. (vi) Yellow No 2. (vii) Irrigated. (viii) 1 hoeing with horse hoe, 2 thinnings and 2 weedings. (ix) N.A. (x) 29 and 30.10.1954.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of P_2O_5 to *vicia satina* : $P_0=0$, $P_1=40$, $P_2=80$ and $P_3=120$ lb./ac.

(2) 2 levels of cuttings of *vicia satina* : $C_1=1$ and $C_2=2$.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 1/80 ac. (v) Nil. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of stem borer. (iii) Yield of grain. (iv) (a) 1953—N.A. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1429 lb./ac. (ii) 345.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	P_0	P_1	P_2	P_3	Mean
C_1	1 50	1528	1430	1190	1374
C_2	1376	1476	1632	1452	1484
Mean	1363	1502	1531	1321	1429

S.E. of P marginal mean = 122.1 lb./ac.

S.E. of C marginal mean = 86.4 lb./ac.

S.E. of body of table = 172.7 lb./ac.

Crop :- Maize (Kharif).**Ref :- I.A.R.I. 59(18).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'CMV'.**

Object :—To study the effect of different spacings keeping a definite population with different levels of N on different varieties of Maize.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 17.7.1959. (iv) (a) 1 ploughing with tractor, 2 discing with tractor and levelling. (b) to (e) N.A. (v) 80 lb./ac. of P_2O_5 +80 lb./ac. of K_2O . (vi) to (ix) N.A. (x) 21.10.1959.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : $V_1=K.T. 41$, $V_2=Illinois-1656$ and $V_3=U.S.-578$.

(2) 3 spacings between rows : $S_1=24"$, $S_2=30"$ and $S_3=36"$.

(3) 3 levels of N as A/S : $N_1=40$, $N_2=80$ and $N_3=120$ lb./ac.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 4. (iv) (a) N.A. (b) $15' \times 29'$. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1959—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1947 lb./ac. (ii) 403.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	V ₁	V ₂	V ₃	Mean	N ₁	N ₂	N ₃
S ₁	1900	1834	1964	1899	1878	1960	1860
S ₂	1946	2045	1980	1990	2194	1975	1803
S ₃	2010	1876	1971	1952	2037	1948	1873
Mean	1952	1918	1972	1947	2036	1961	1845
N ₁	2009	2001	2098				
N ₂	2004	1916	1962				
N ₃	1842	1838	1855				

S.E. of any marginal mean

= 66.8 lb./ac.

S.E. of body of any table

= 115.6 lb./ac.

Crop :- Oats (Rabi).**Ref :- I.A.R.I. 56(22)****Site :- Bot. Sub-Stn., Pusa.****Type :- 'M'.**

Object :- To study the effect of N, P and K on Oats.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 14 and 15.11.1956. (iv) (a) 2 *desi* ploughings, beaming and harrowing. (b) to (e) N.A. (v) Nil. (vi) N.P.—I. (vii) N.A. (viii) 1 weeding. (ix) N.A. (x) 1 and 2.4.1957.

2. TREATMENTS :

10 manurial treatments : M₀=Control (no manure), M₁=8000 lb./ac. of F.Y.M., M₂=40 lb./ac. of N as Rape cake, M₃=40 lb./ac. of N as A/S, M₄=50 lb./ac. of K₂O as Pot. Sul., M₅=80 lb./ac. of P₂O₅ as Super, M₆=M₄+M₅, M₇=M₃+M₁+M₅, M₈=M₃+M₅ and M₉=M₃+M₄.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 10. (iv) (a) N.A. (b) 42'×22'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1930—contd. (b) Yes. (c) N.A. (v) to (vii) N.A.

5. RESULTS :

(i) 1209 lb./ac. (ii) 252.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉
Av. yield	872	1739	1018	1357	787	1042	882	1565	1551	1277

S.E./mean = 79.8 lb./ac.

Crop :- Bajra (Kharif).**Ref :- I.A.R.I. 57(28).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'C'.**

Object :- To study the effect of different cultivation practices on the yield of Bajra.

BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 28.7.1957. (iv) (a) As per treatments. (b) to (e) N.A. (v) and (vi) N.A. (vii) Unirrigated. (viii) and (ix) N.A. (x) 21.10.1957 to 5.11.1957.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 3 methods of preparatory cultivation : C₁=Tractor ploughing at 9" to 10" depth followed by grubbing and discing, C₂=Bullock soil inverting ploughing at 5" to 6" depth followed by country plough and C₃=Surface cultivation by harrow.

(2) 3 post sowing cultural operation : I₀=Control, I₁=Interculture with bullock hoe and I₂=Weeding with *khurpi*.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 75'×14'. (b) 73'×12'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1957—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 670 lb./ac. (ii) 87.3 lb./ac. (iii) Main effect of I is highly significant and that of C is significant. (iv) Av. yield of grain in lb./ac.

	C ₁	C ₂	C ₃	Mean
I ₀	668	606	611	628
I ₁	738	622	567	642
I ₂	792	698	731	740
Mean	733	642	636	670

S.E. of any marginal mean = 25.2 lb./ac.
S.E. of body of table = 43.7 lb./ac.

Crop :- Bajra (Kharif).

Ref :- I.A.R.I. 58(28).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'C'.

Object :- To find out the effect of different cultivation practices on Bajra.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 25.7.1958. (iv) (a) As per treatments. (b) to (e) N.A. (v) and (vi) N.A. (vii) Unirrigated. (viii) As per treatments. (ix) N.A. (x) 19.10.1958 to 16.11.1958.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(28) on page 380.

5. RESULTS :

(i) 308 lb./ac. (ii) 131.2 lb./ac. (iii) Main effect of I alone is significant. (iv) Av. yield of grain in lb./ac.

	I ₀	I ₁	I ₂	Mean
C ₁	243	453	482	393
C ₂	212	314	304	277
C ₃	190	208	364	254
Mean	215	325	383	308

S.E. of any marginal mean = 37.8 lb./ac.
S.E. of body of table = 65.6 lb./ac.

Crop :- Bajra (Kharif).

Ref :- I.A.R.I. 54(29).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object :- To study the effect of different levels of F.Y.M., A/S and different crop rotations on Bajra.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) N.A. (ii) (a) and (b) N.A. (iii) 28 and 29.7.1954. (iv) (a) 4 to 6 ploughings. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 weeding and 1 hoeing. (ix) N.A. (x) 11 to 26.10.1954.

2. TREATMENTS :

Main-plot treatments :

3 crop rotations : $R_1 = \text{Bajra—Wheat}$, $R_2 = \text{Fallow—Wheat}$ and $R_3 = \text{Bajra—Fallow}$.

Sub-plot treatments :

5 levels of F.Y.M. : $F_0 = 0$, $F_1 = 2.5$, $F_2 = 5$, $F_3 = 10$ and $F_4 = 20$ tons/ac.

Sub-sub-plot treatments :

3 levels of N as A/S : $N_0 = 0$, $N_1 = 20$ and $N_2 = 40$ lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 5 sub-plots/main-plot and 3 sub-sub-plots/sub-plot. (b) N.A. (iii) 3. (iv) (a) and (b) $58' \times 12.5'$. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Locusts damaged the crop. (iii) Yield of grain. (iv) (a) 1952—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1041 lb./ac. (ii) (a) 126.2 lb./ac. (b) 114.2 lb./ac. (c) 66.1 lb./ac. (iii) Main effect of R is significant. Main effects of F and N are highly significant. (iv) Av. yield of grain in lb./ac.

	F ₀	F ₁	F ₂	F ₃	F ₄	Mean	N ₀	N ₁	N ₂
R ₁	893	913	950	951	1126	967	888	984	1023
R ₂	1027	1049	1065	1167	1273	1116	1021	1107	1214
Mean	960	981	1008	1059	1199	1041	955	1046	1119
N ₀	913	891	937	949	1091				
N ₁	951	1011	1027	1059	1189				
N ₂	1016	1042	1058	1169	1318				

S.E. of difference of two

- | | | | |
|-----------------------------------|----------------|-----------------------------------|----------------|
| 1. R marginal means | = 26.6 lb./ac. | 6. N means at the same level of R | = 24.1 lb./ac. |
| 2. F marginal means | = 38.1 lb./ac. | 7. R means at the same level of N | = 24.5 lb./ac. |
| 3. N marginal means | = 17.1 lb./ac. | 8. N means at the same level of F | = 38.1 lb./ac. |
| 4. F means at the same level of R | = 53.8 lb./ac. | 9. F means at the same level of N | = 49.2 lb./ac. |
| 5. R means at the same level of F | = 55.0 lb./ac. | | |

Crop :- Bajra (Kharif).

Ref :- I.A.R.I. 55(14).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object :- To study the effect of different times of application and levels of N with different spacings between rows on Bajra.

1. BASAL CONDITIGNS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 5.7.1955. (iv) (a) to (e) N.A. (v) Nil. (vi) and (vii) N.A. (viii) Weeding. (ix) N.A. (x) 7.10.1955.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S : $N_1=20$, $N_2=40$ and $N_3=60$ lb./ac.

(2) 3 times of application of N : T_1 =Full dose at sowing, $T_2=\frac{1}{2}$ at sowing + $\frac{1}{2}$ at tillering and $T_3=\frac{1}{2}$ at sowing + $\frac{1}{2}$ at tillering + $\frac{1}{2}$ at earing stage.

(3) 3 spacings between rows : $S_1=9''$, $S_2=12''$ and $S_3=15''$.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9. (b) N.A. (iii) 2. (iv) (a) $62.2' \times 14'$. (b) $60' \times 12'$. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1953—N.A. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1025 lb./ac. (ii) 146.8 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grani in lb./ac.

	T_1	T_2	T_3	Mean	S_1	S_2	S_3
N_1	939	893	823	885	890	848	917
N_2	1066	1127	970	1054	1023	1027	1114
N_3	1080	1228	1096	1135	1194	1114	1096
Mean	1028	1083	963	1025	1036	996	1042
S_1	1072	1079	957				
S_2	932	1090	967				
S_3	1081	1081	965				

S.E. of any marginal mean = 34.6 lb./ac.

S.E. of body of any table = 59.9 lb./ac.

Crop :- Bajra (Kharif).

Ref :- I.A.R.I. 57(29).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'D'.

Object:—To study the effectiveness of 2, 4—D in combinations with local method of weeding on growth and yield of Bajra crop.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 28.7.1957. (iv) to (vi) N.A. (vii) Unirrigated. (viii) As per treatments. (ix) N.A. (x) 4.11.1957.

2. TREATMENTS :

10 weedicidal treatments : T_0 =No weeding (control), T_1 =Weeding only, T_2 =Local method of weeding, T_3 =Pre-emergence application of 2, 4—D at $1\frac{1}{2}$ lb./ac., T_4 =Post emergence application of 2, 4—D at 1 lb./ac., T_5 =Post emergence application of 2, 4—D at 1 lb./ac. in 2 equal doses, T_6 =Combination of pre and post-emergence spraying, T_7 =Pre-emergence spraying+cultural method of weeding, T_8 =Post emergence spraying+cultural method of weeding and T_9 =Pre-emergence+post emergence spraying+cultural method of weeding.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) and (b) $33' \times 22'$. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Nil. (iii) Yield of grain. (iv) (a) 1957—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 406 lb./ac. (ii) 131.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉
Av. yield	435	315	420	450	300	525	518	360	375	360

S.E./mean = 65.7 lb./ac.

Crop :- Bajra (*Kharif*).

Ref :- I.A.R.I. 58(29).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'D'.

Object :—To study the effectiveness of 2, 4—D in combination with local method of weeding on growth and yield of Bajra.

1. BASAL CONDITIONS :

(i) to (vi) N.A. (vii) Unirrigated. (viii) As per treatments. (ix) and (x) N.A.

2. TREATMENTS :

Same as in expt. no. 57(29) on page 383.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (i) 4. (iv) (a) 33'×14'. (b) 31'×11½'. (v) 1'×9". (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) 1957—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 446 lb./ac. (ii) 57.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉
Av. yield	411	527	444	379	469	461	428	444	453	444

S.E./mean = 28.7 lb./ac.

Crop :- Bajra (*Kharif*).

Ref :- I.A.R.I. 54(30).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'DC'.

Object :—To study the effect of some herbicides and cultural treatments for the eradication of baru plants in Bajra yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Baru*. (c) N.A. (ii) (a) and (b) N.A. (iii) N.A. (iv) (a) As per treatments. (b) to (e) N.A. (v) Nil. (vi) to (x) N.A.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 types of ploughings : C₁=Country plough, C₂=Victory plough and C₃=Digging with spades.

(2) 3 seasons of ploughings : T₁=Summer, T₂=Rainy season and T₃=After rainy season.

(3) 3 herbicidal treatments : H₀=Control, H₁=TCA at 40 lb./ac. and H₂=CMV at 20 lb./ac.

3. DESIGN :

(i) 3³ confd. (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) N.A. (b) 1/80 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and stalk. (iv) (a) 1954—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3425 lb./ac. (ii) 508.0 lb./ac. (iii) Only T effect is significant. (iv) Av. yield of grain in lb./ac.

	T ₁	T ₂	T ₃	Mean	H ₀	H ₁	H ₂
C ₁	2693	3760	2800	3084	2693	3280	3280
C ₂	3760	3680	3493	3644	4053	3653	3227
C ₃	2960	4427	3253	3547	3307	4107	3227
Mean	3138	3956	3182	3425	3351	3680	3245
H ₀	2987	3973	3093				
H ₁	3253	4400	3387				
H ₂	3173	3493	3067				

S.E. of any marginal mean = 293.3 lb./ac.
S.E. of body of any table = 169.3 lb./ac.

Crop :- Peas (Rabi).

Ref :- I.A.R.I. 55(15).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To test the effect of intensive and heavy manuring on soil fertility as judged from the yield of Peas.

1. BASAL CONDITIONS :

(i) (a) Maize—Pea. (b) Maize. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 4.11.1955. (iv) (a) 3 ploughings and discing with tractor. (b) to (e) N.A. (v) Nil. (vi) N.P.—29. (vii) Irrigated. (viii) 3 weedings and 3 hoeings with hand hoe. (ix) N.A. (x) 30.3.1956.

2. TREATMENTS :

5 manurial treatments : M₀ = Control, M₁ = 60 lb./ac. of N as A/S + 100 lb./ac. of P₂O₅ as Super, M₂ = M₁ + 100 lb./ac. of K₂O as Pot. Sul., M₃ = 60 lb./ac. of F.Y.M. + 100 lb./ac. of P₂O₅ as Super + 100 lb./ac. of K₂O as Pot. Sul. and M₄ = 60 lb./ac. of N as Castor cake + 100 lb./ac. of P₂O₅ as Super + 100 lb./ac. of K₂O as Pot. Sul.

Fertilizers applied on 4.11.1955.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 38' × 29'. (b) 36' × 27'. (v) 1' × 1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of Peas. (iv) (a) 1952—contd. (b) Yes. (c) Nil. (v) to (vi) Nil.

5. RESULTS :

(i) 2614 lb./ac. (ii) 232.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of peas in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄
Av. yield	2204	2558	2636	2918	2756

S.E /mean = 94.8 lb./ac.

Crop :- Peas (Rabi).**Ref :- I.A.R.I. 57(30).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :— To test the effect of intensive and heavy manuring on soil fertility as judged from the yield of Peas.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 19.11.1957. (iv) (a) 1 Victory ploughing, 2 tractor discings, and 2 grubblings. (b) to (e) N.A. (v) Nil. (vi) N.P.—29. (vii) Irrigated. (viii) 2 hoeings. (ix) N.A. (x) 1.4.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(15) on page 385.

Organic manures applied in full in *kharif* and artificial manures were applied half in *kharif* and half in *rabi*.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of peas. (iv) (a) 1952—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1452 lb./ac. (ii) 45.5 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of peas in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄
Av. yield	1024	1710	1540	1526	1461

S.E./mean = 18.6 lb./ac.

Crop :- Peas (Rabi).**Ref :- I.A.R.I. 59(20).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :— To test the effect on soil fertility of organic manures and inorganic fertilizers as judged from the yield of Peas.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 13.11.1959. (iv) (a) 2 grubblings and 4 discings by tractor. (b) to (e) N.A. (v) N.A. (vi) N.P.—29. (vii) Irrigated. (viii) 1 hoeing and 1 weeding. (ix) N.A. (x) 8.4.1960.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(15) on page 385.

Organic manures applied full in *kharif* and fertilizers half in *kharif* and half in *rabi*.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of peas. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1733 lb./ac. (ii) 191.6 lb./ac. (iii) Treatment differences are highly significant. (v) Av. yield of peas in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄
Av. yield	1259	1795	2046	1809	1757

S.E./mean = 78.2 lb./ac.

Crop :- Peas (Rabi).**Ref :- I.A.R.I. 58(30).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :— To study the comparative efficiency of soil and spray applications of P and micro-nutrients on Peas.

1. BASAL CONDITIONS :

(i) to (iv) N.A. (v) Nil. (vi) to (x) N.A.

2. TREATMENTS :

12 manurial treatments: T_0 =Control, T_1 =40 lb./ac. of P_2O_5 as Super as soil application, T_2 =1 lb./ac. of Mo as soil application, T_3 =2 lb./ac. of B as soil application, T_4 =5 lb./ac. of Cu as soil application, T_5 =5 lb./ac. of Mn as soil application, T_6 =40 lb./ac. of P_2O_5 as triple Super 0.3% solution as spray, T_7 = $\frac{1}{4}$ lb./ac. of Mo as spray, T_8 =1 lb./ac. of B as spray, T_9 =1 lb./ac. of Mn as spray, T_{10} =1 lb./ac. of Cu as spray and T_{11} = $\frac{1}{4}$ lb./ac. of Mo+1 lb./ac. of B as spray.

40 lb./ac. of P_2O_5 as Super was applied in T_2 to T_6 as soil application and 40 lb./ac. of P_2O_5 as triple super 0.3% solution in spray was applied in T_7 to T_{11} .

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 36'×18'. (b) 34'×12'. (v) 1'×3'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of peas. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1968 lb./ac. (ii) 203.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of peas in lb./ac.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}	T_{11}
Av. yield	1951	1909	2005	1894	2051	2105	2058	2068	1694	2024	1680	2175

S.E./mean = 101.9 lb./ac.

Crop :- Peas (Rabi).**Ref :- I.A.R.I. 57(31).****Site :- Bot. Sub-Stn., Pusa.****Type :- 'M'.**

Object :—To study the effect of N, P and K on Peas.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 19 and 20.10.1957. (iv) (a) 2 ploughings 1 harrowing and 4 beamings. (b) to (e) N.A. (v) N.A. (vi) N.P.—29. (vii) Unirrigated. (viii) 1 weeding and 1 hoeing. (ix) N.A. (x) 10.2.1958, 20.2.1958 and 4.3.1958.

2. TREATMENTS :

10 manurial treatments: T_0 =Control, T_1 =8000 lb./ac. of F.Y.M., T_2 =40 lb./ac. of N as rape seed cake, T_3 =40 lb./ac. of N as A/S, T_4 =50 lb./ac. of K_2O as Pot. Sul., T_5 =80 lb./ac. of P_2O_5 as Super, T_6 =50 lb./ac. of K_2O as Pot. Sul.+80 lb./ac. of P_2O_5 as Super, T_7 =40 lb./ac. of N as A/S+50 lb./ac. of K_2O as Pot. Sul.+80 lb./ac. of P_2O_5 as Super, T_8 =40 lb./ac. of N as A/S+80 lb./ac. of P_2O_5 as Super and T_9 =40 lb./ac. of N as A/S+50 lb./ac. of K_2O as Pot. sul.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 10. (iv) (a) N.A. (b) 42'×22'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of peas. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 502 lb./ac. (ii) 199.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	483	948	639	427	450	566	387	394	321	401

S.E./mean = 62.9 lb./ac.

Crop :- Peas (Rabi).**Ref :- I.A.R.I. 56(23).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'MV'.**

Object :—To study the relative response of different varieties of Peas to different levels of N and P under rainfed conditions.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Lobia*. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 9.11.1956. (iv) (a) 2 tractor discings and once *triphali*. (b) to (e) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 3 hoeings. (ix) 5.59'. (x) March-April, 1957.

2. TREATMENTS :

All combinations of (1), (2) and (3).

(1) 3 levels of N as A/S : $N_0=0$, $N_1=10$ and $N_2=20$ lb./ac.

(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=30$ and $P_2=60$ lb./ac.

(3) 3 varieties : $V_1=N.P.-29$, $V_2=Early\ bedger$ and $V_3=Bonneville$.

3. DESIGN :

(i) 3³ partially confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 18'×17'. (b) 15'×15'. (v) 1½'×1'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of peas. (iv) (a) 1956—1958. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Raw-data and two-way tables : N.A.

5. RESULTS :

(i) 2564 lb./ac. (ii) 195.6 lb./ac. (iii) Main effects of N, P and V are highly significant. (iv) Av. yield of peas in lb./ac.

Treatment	N_0	N_1	N_2	P_0	P_1	P_2	V_1	V_2	V_3
Av. yield	2681	2737	2274	2190	2554	2948	2523	1665	3505

S.E./mean = 46.1 lb./ac.

Crop :- Peas (Rabi).**Ref :- I.A.R.I. 58(31).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'MV'.**

Object :—To study the response of different varieties of Peas under rainfed conditions to N and P.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 31.10.1958. (iv) (a) 1 ploughing with *desi* plough. (b) Sowing by *keri*. (c) 48 lb./ac. (d) and (e) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 2 weedings and 2 hoeings. (ix) N.A. (x) 10.3.1959 and 21 to 26.3.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(23) above.

4. GENERAL :

(i) Satisfactory. (ii) Attack of powdery mildew. (iii) Yield of peas. (iv) (a) 1956—1958. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1808 lb./ac. (ii) 219.9 lb./ac. (iii) V effect is highly significant, while N and P effects are significant. (iv) Av. yield of peas in lb./ac.

	P ₀	P ₁	P ₂	Mean	V ₁	V ₂	V ₃
N ₀	1756	1743	1823	1774	2175	692	2454
N ₁	1922	1810	1849	1860	2108	862	2611
N ₂	1756	1897	1720	1791	2134	801	2438
Mean	1811	1817	1797	1808	2139	785	2501
V ₁	2118	2166	2134				
V ₂	734	795	827				
V ₃	2582	2489	2432				

S.E. of any marginal mean
S.E. of body of any table

= 51.8 lb./ac.
= 89.8 lb./ac.

Crop :- Peas (Rabi).

Ref :- I.A.R.I. 59(21).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object :- To study the effect of Azatobacterin alone and in combination with manures and fertilizers on Peas.

1. BASAL CONDITIONS :

(i) to (x) N.A.

2. TREATMENTS :

9 treatments : T₀=Control, T₁=F.Y.M. at 5 tons/ac., T₂=Azatobacterin seed culture, T₃=Azatobacterin+cellulose decomposing organism, T₄=F.Y.M.+Azatobacterin seed culture, T₅=F.Y.M.+Azatobacterin+cellulose decomposing organism, T₆=Super, T₇=Super+Azatobacterin culture and T₈=Super+Azatobacterin culture+cellulose decomposing organism.

Levels of F.Y.M. and Super is N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) and (b) N.A. (iii) 4. (iv) (a) 27.3'×20.0'. (b) 25.3'×18.0'. (v) 1'×1'. (vi) N.A.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of peas. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1497 lb./ac. (ii) 429.6 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of peas in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	1142	1280	1443	1851	1083	2119	1729	1322	1505

S.E./mean = 214.8 lb./ac.

Crop :- Peas.

Ref :- I.A.R.I. 56(24).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'DC'.

Object :- To study the relative effectiveness of different weedcides applied as pre and post-emergence sprays in controlling weeds in Peas.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Medium loam. (b) N.A. (iii) 9.11.1956. (iv) (a) to (c) N.A. (v) Nil. (vi) N.P. 29. (vii) Irrigated. (viii) N.A. (ix) 5.6*. (x) 12.4.1957.

2. TREATMENTS :

All combinations of (1) and (2)+3 extra treatments

(1) 2 stages of application of weedicides : T_1 =Pre-emergence and T_2 =Post-emergence.

(2) 4 different weedicides : W_1 =2, 4-D, W_2 =2, 4-D-B, W_3 =M.C.P.A. and W_4 =M.C.P.B.

3 extra treatments : E_0 =Control, E_1 =Cultivation by bullocks and E_2 =Hand weeding.

Weedicides were applied at 12 oz./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 11. (b) N.A. (iii) 4. (iv) (a) $28' \times 12\frac{1}{2}'$. (b) $28' \times 7.5'$. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Damaged by hailstorm. (ii) Nil. (iii) No. of nodules and wt. of shoots per plant, and yield of peas. (iv)

(a) 1956—1958. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2335 lb./ac. (ii) 409.9 lb./ac. (iii) Interaction $W \times T$ alone is significant. (iv) Av. yield of peas in lb./ac.

$$E_0 = 2205 \text{ lb./ac.}, E_1 = 2584 \text{ lb./ac. and } E_2 = 2674 \text{ lb./ac.}$$

	W_1	W_2	W_3	W_4	Mean
T_1	2263	2444	2288	2288	2321
T_2	2526	1596	2304	2518	2236
Mean	2394	2020	2296	2403	2278

S.E. of T marginal mean = 102.4 lb./ac.

S.E. of W marginal mean = 144.9 lb./ac.

S.E. of body of table or E mean = 204.9 lb./ac.

Crop :- Peas (Rabi).

Ref :- I.A.R.I. 57(32).

Site :- Indian Agri. Res. Inst., New Delhi.

Type :- 'DC'.

Object :—To study the effect of different weedicides when applied at pre and post emergence stage and cultural methods on the control of weeds in Peas.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 26.10.1957 (iv) (a) 1 tractor ploughing, followed by 2 grubblings and 2 discings. (b) to (e) N.A. (v) 40 lb./ac. of P_2O_5 and 20 lb./ac. of K_2O . (vi) N.A. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 31.3.1958 and 1.4.1958.

2. TREATMENTS :

Same as in expt. no. 56(24) on page 389.

3. DESIGN :

(i) R.B.D. (ii) (a) 11. (b) N.A. (iii) 4. (iv) (a) $12.5' \times 28'$. (b) $8.0' \times 24'$. (v) $2'3'' \times 2'$. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of peas. (iv) (a) 1956—1958. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1914 lb./ac. (ii) 272.2 lb./ac. (iii) Main effect of W, interaction $W \times T$ and 'E vs. others' are highly significant. (iv) Av. yield of peas in lb./ac.

$E_0 = 1492 \text{ lb./ac.}$, $E_1 = 1855 \text{ lb./ac.}$ and $E_2 = 3159 \text{ lb./ac.}$

	W_1	W_2	W_3	W_4	Mean
T_1	1826	1911	1798	1770	1826
T_2	1248	1214	1668	3114	1811
Mean	1537	1562	1733	2442	1818

S.E. of W marginal mean = 96.2 lb./ac.

S.E. of T marginal mean = 68.0 lb./ac.

S.E. of body of table or E mean = 136.1 lb./ac.

Crop :- Peas (*Rabi*).

Ref :- I.A.R.I. 58(32).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'DC'.

Object :—To study the relative effectiveness of different weedicides when applied at pre and post-emergence stage in controlling the weeds in Peas.

1. BASAL CONDITIONS :

(i) to (vi) Nil. (vii) Irrigated. (viii) As per treatments. (ix) and (x) N.A.

2. TREATMENTS :

Same as in expt. no. 56(24) on page 389.

3. DESIGN :

(i) R.B.D. (ii) (a) 11. (b) N.A. (iii) 4. (iv) (a) N.A. (b) $24' \times 7.5'$. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Peas yield. (iv) (a) 1956—1958. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1598 lb./ac. (ii) 245.8 lb./ac. (iii) Interaction $T \times W$ is highly significant. Main effect of W and 'extra vs. others' are significant. (iv) Av. yield of Pea in lb./ac.

$E_0 = 1555 \text{ lb./ac.}$, $E_1 = 1744 \text{ lb./ac.}$ and $E_2 = 1901 \text{ lb./ac.}$

	W_1	W_2	W_3	W_4	Mean
T_1	1514	1679	1432	1531	1539
T_2	1621	1144	1465	1991	1555
Mean	1567	1411	1448	1761	1547

S.E. of T marginal mean = 61.4 lb./ac.

S.E. of W marginal mean = 86.9 lb./ac.

S.E. of body of table or E mean = 122.9 lb./ac.

Crop :- Peas.

Ref :- I.A.R.I. 56(25).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'DCM'.

Object :—To study the effect of weedicide, A/S and cultivation in controlling weeds in Peas.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Mucuna chinensis*. (c) N.A. (ii) (a) Medium loam. (b) N.A. (iii) 9.11.1956. (iv) (a) to (e) N.A. (v) Nil. (vi) N.P. 29. (vii) Irrigated. (viii) As per treatments. (ix) 5.59". (x) 15.4.1957.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of weedicide (Tropotox 40% MCPB) : $M_0=0$, $M_1=8$ and $M_2=16$ ozs./ac.

(2) 3 levels of N as A/S : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.

(3) 3 cultivation treatments : $C_0=No$ cultivation, $C_1=1$ and $C_2=2$ cultivations.

Weedicide used is 2 methyl, 4 chlorophenoxy butyric acid.

3. DESIGN :

(i) 3³ partially confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 28' x 16'. (b) 24' x 11½'. (v) 2' x 2½'. (vi) Yes.

4. GENERAL .

(i) N.A. (ii) Nil. (iii) Yield of peas. (iv) (a) 1956—contd. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Raw data and $M \times C$ and $N \times C$ two-way tables: N.A.

5. RESULTS :

(i) 1783 lb./ac. (ii) 253.8 lb./ac. (iii) Main effects of M, C and interaction $M \times N$ are significant. (iv) Av. yield of Peas in lb./ac.

$$C_0 = 1613 \text{ lb./ac.}, C_1 = 1925 \text{ lb./ac. and } C_2 = 1819 \text{ lb./ac.}$$

	M_0	M_1	M_2	Mean
N_0	1481	2049	1975	1835
N_1	1522	1712	2205	1813
N_2	1580	1794	1728	1701
Mean	1528	1852	1969	1783

S.E. of N, M or C marginal mean = 59.8 lb./ac.
S.E. of body of table = 103.6 lb./ac.

Crop :- Peas (*Rabi*).

Ref :- I.A.R.I. 57(33).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'DCM'.

Object :- To study the effect of weedicide, A/S and cultivation in controlling weeds in Peas.

1. BASAL CONDITIONS :

(i) to (vi) N.A. (vii) Irrigated. (viii) As per treatments. (ix) and (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(25) on page 391.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of peas. (iv) (a) 1956—N.A. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Raw data and two-way tables : N.A.

5. RESULTS :

(i) 2145 lb./ac. (ii) 127.7 lb./ac. (iii) Main effects of M, N and C are significant. (iv) Av. yield of peas in lb./ac.

Treatment	M_0	M_1	M_2	N_0	N_1	N_2	C_0	C_1	C_2
Av. yield	1382	2345	2707	2197	2115	2123	2049	2156	2230

S.E./mean = 57.1 lb./ac.

Crop :- Peas (Rabi).**Ref :- I.A.R.I. 58(33).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'DCM'.****Object :-** To study the effect of weedicide, A/S and cultivations in controlling weeds in Peas.**1. BASAL CONDITIONS :**

(i) to (vi) N.A. (vii) Irrigated. (viii) As per treatments. (ix) and (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(25) on page 391.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Peas yield. (iv) (a) 1956—N.A. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1631 lb./ac. (ii) 315.7 lb./ac. (iii) Main effect of M, N, C and interaction M×N are highly significant. Interaction M×C is significant. (iv) Av. yield of peas in lb./ac.

	N ₀	N ₁	N ₂	Mean	C ₀	C ₁	C ₂
M ₀	1385	1406	1468	1420	973	1638	1648
M ₁	1869	1925	1108	1634	1611	1672	1619
M ₂	2364	1955	1197	1839	1716	1748	2052
Mean	1873	1762	1258	1631	1433	1686	1773
C ₀	1694	1721	885				
C ₁	1990	1694	1374				
C ₂	1933	1871	1514				

S.E. of any marginal mean = 74.4 lb./ac.

S.E. of body of any table = 128.9 lb./ac.

Crop :- Potato (Rabi).**Ref :- I.A.R.I. 57(34).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.****Object :-** To study the response of Potato to N, P and K fertilizers.**1. BASAL CONDITIONS :**

(i) and (ii) N.A. (iii) 24.10.1957. (iv) (a) 2 ploughings, double discing and double grubbing. (b) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 1 hoeing and 2 earthings. (ix) N.A. (x) 13 to 15.2.1958.

2. TREATMENTS :

All combinations of (1), (2) and (3) + control (3 plots)

(1) 3 levels of N : N₀=80, N₁=120 and N₂=160 lb./ac.(2) 3 levels of P₂O₅ : P₀=0, P₁=40 and P₂=80 lb./ac.(3) 3 levels of K₂O : K₀=0, K₁=40 and K₂=80 lb./ac.

One control plot was taken in each block.

3. DESIGN :(i) 3³ confd. (ii) (a) 10 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 40'×14'. (b) 38'×8'. (v) 1'×3'. (vi) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) 1957—1958. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 6.88 tons/ac. (ii) 0.71 tons/ac. (iii) Main effect of P is significant and 'control vs. other' is highly significant. (iv) Av. yield of tuber in tons/ac.

Control = 6.02 tons/ac.

	P ₀	P ₁	P ₂	Mean	K ₀	K ₁	K ₂
N ₀	6.65	6.47	7.13	6.75	6.89	6.39	6.98
N ₁	6.37	7.16	7.21	6.91	6.56	7.57	6.62
N ₂	7.12	6.91	7.74	7.28	6.93	7.38	7.46
Mean	6.71	6.85	7.36	6.98	6.79	7.12	7.02
K ₀	6.57	6.71	7.10				
K ₁	6.67	6.83	7.82				
K ₂	6.90	7.00	7.15				

S.E. of any marginal mean = 0.17 tons/ac.
S.E. of body of any table or control mean = 0.29 tons/ac.

Crop :- Potato (Rabi).

Ref :- I.A.R.I. 58(34).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study the response of Potato to N, P and K fertilizers.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 23.10.1958. (iv) (a) Crosswise discing, crosswise grubbing and crosswise beaming. (b) to (e) N.A. (v) *Sannhemp* as G.M. (vi) N.A. (vii) Irrigated (viii) 2 hoeings and 1 earthing. (ix) N.A. (x) 26 to 28.2.1959 and 2.3.1959.

2. TREATMENTS :

Same as in expt. no. 57(34) on page 393.

3. DESIGN :

(i) 3³ confd. (ii) (a) 10 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 40' × 14'. (b) 38' × 12'. (v) 1' × 1'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of tuber. (iv) (a) 1957—1958. (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) Slight frost attack. (vii) Nil.

5. RESULTS :

(i) 3.95 tons/ac. (ii) 0.48 tons/ac. (iii) Only main effect of K and 'control vs. others' are highly significant. (iv) Av. yield of tuber in tons/ac.

Control = 3.20 tons/ac.

	P ₀	P ₁	P ₂	Mean	K ₀	K ₁	K ₂
N ₀	4.12	4.03	4.05	4.07	3.71	4.01	4.48
N ₁	3.85	4.02	4.39	4.09	3.80	4.13	4.33
N ₂	3.73	3.93	4.13	3.93	3.67	3.89	4.23
Mean	3.90	3.99	4.19	4.03	3.73	4.01	4.35
K ₀	3.57	3.68	3.93				
K ₁	4.03	4.06	3.95				
K ₂	4.10	4.25	4.69				

S.E. of any marginal mean = 0.11 tons/ac.
S.E. of body of any table or control mean = 0.19 tons/ac.

Crop :- Potato.

Ref :- I.A.R.I. 58(35).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study the effect of different levels and methods of placement of P on the yield of Potato.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 7 and 8.11.1958. (iv) (a) 1 ploughing by *triphali*. (b) to (e) N.A. (v) 100 lb./ac. of N ($\frac{1}{2}$ at planting + $\frac{1}{2}$ at earthing) and 80 lb./ac. of K_2O . (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) and (x) N.A.

2. TREATMENTS :

Treatments in one direction :

4 levels of P_2O_5 : $P_0=0$, $P_1=30$, $P_2=60$ and $P_3=90$ lb./ac.

Treatments in orthogonal direction :

6 methods of placement : M_1 =Broadcast, M_2 =Double band $2\frac{1}{2}$ " to the sides in level of seed, M_3 =Double band $2\frac{1}{2}$ " to the side 2" below seed, M_4 =Single band in the level of seed, M_5 =Single band 2" below the seed and M_6 =Broadcasting in open furrows followed by splitting back the ridges.

3. DESIGN :

(i) Strip-plot. (ii) (a) 4 plots in one direction and 6 plots in orthogonal direction. (b) N.A. (iii) 5. (iv) (a) and (b) $14' \times 15'$. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Tuber yield. (iv) (a) 1958—contd. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) Frost attack. (vii) Nil.

5. RESULTS :

(i) 2.19 tons/ac. (ii) (a) 0.25 tons/ac. for P. (b) 0.44 tons/ac. for M. (c) 0.23 tons/ac. for $P \times M$. (iii) Main effect of P is highly significant and main effect of M is significant. (iv) Av. yield of tuber in tons/ac.

	M_1	M_2	M_3	M_4	M_5	M_6	Mean
P_0	1.66	1.61	1.82	1.59	1.58	1.74	1.67
P_1	1.81	2.16	2.43	2.03	2.14	2.45	2.17
P_2	2.01	2.33	2.61	2.40	2.56	2.65	2.43
P_3	2.18	2.45	2.87	2.36	2.34	2.69	2.48
Mean	1.92	2.14	2.43	2.09	2.15	2.38	2.19

S.E. of difference of two

1. M marginal means = 0.08 tons/ac.
2. P marginal means = 0.11 tons/ac.
3. P means at the same level of M = 0.17 tons/ac.
4. M means at the same level of P = 0.15 tons/ac.

Crop :- Potato.

Ref :- I.A.R.I. 59(23).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object .—To study the effect of different levels and methods of placement of P on the yield of Potato.

1. BASAL CONDITIONS :(i) to (iv) N.A. (v) 100 lb./ac. of N+80 lb./ac. of K₂O. (vi) to (x) N.A.**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 58(35) on page 395.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Tuber yield. (iv) (a) 1958—contd. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2.45 tons/ac. (ii) (a) 0.45 tons./ac. for M. (b) 0.30 tons/ac. for P. (c) 0.57 tons/ac. for M×P. (iii) Main effect of P is highly significant. (iv) Av. yield of tuber in tons/ac.

	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	Mean
P ₀	2.06	2.17	2.01	1.87	2.10	1.60	1.97
P ₁	2.29	2.60	2.75	2.70	2.52	2.28	2.52
P ₂	2.32	2.74	2.71	2.79	2.94	2.40	2.65
P ₃	2.74	2.86	2.88	2.69	2.62	2.25	2.67
Mean	2.35	2.59	2.59	2.51	2.55	2.13	2.45

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. M marginal means | = 0.14 tons/ac. |
| 2. P marginal means | = 0.08 tons/ac. |
| 3. P means at the same level of M | = 0.34 tons/ac. |
| 4. M means at the same level of P | = 0.34 tons/ac. |

Crop :- Potato (Rabi).**Ref :- I.A.R.I. 54(31).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'CM'.**

Object :—To study the effect of depth of cultivation with different fertilizers mixtures and their method of placement on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) Nil (ii) (a) and (b) N.A. (iii) 19 and 20.10.1954. (iv) (a) As per treatments. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 hoeing and 1 earthing. (ix) N.A. (x) 6 to 22.3.1955.

2. TREATMENTS :**Main-plot treatments :**

All combinations of (1) and (2).

(1) 3 methods of cultivation : C₁=Tractor [ploughing 9" to 10" deep followed by tractor disc, C₂=Victory plough 5" to 6" deep [followed by country plough and C₃=Country plough 4" to 5" deep.(2) 2 methods of application : B₁=Placement in 3 bands (plough hole+2 bands on side) and B₂=Broadcast.**Sub-plot treatments :**4 manurial treatments : M₁=120 lb./ac. of N, M₂=80 lb./ac. of N+80 lb./ac. of P₂O₅+40 lb./ac. of K₂O, M₃=120 lb./ac. of N+80 lb./ac. of P₂O₅+40 lb./ac. of K₂O and M₄=160 lb./ac. of N+80 lb./ac. of P₂O₅+40 lb./ac. of K₂O.

N, P and K were applied in the form of A/S, Super and Pot. Sul. respectively.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 38.5'×12.5'. (b) 38.5'×9'. (v) 21" on either side. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of frost. (iii) Yield of tuber. (iv) (a) 1952-1955. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 10.31 tons/ac. (ii) (a) 1.43 tons/ac. (b) 1.08 tons/ac. (iii) Main effect of M is highly significant and main effect of B and interaction $M \times C \times B$ are significant. (iv) Av. yield of tuber in tons/ac.

	M ₁	M ₂	M ₃	M ₄	Mean	B ₁	B ₂
C ₁	9.34	9.81	10.67	10.60	10.11	10.34	9.88
C ₂	9.66	10.70	10.54	11.67	10.65	11.12	10.18
C ₃	9.46	10.37	10.62	10.28	10.19	10.49	9.89
Mean†	9.49	10.29	10.61	10.85	10.31	10.65	9.98
B ₁	9.97	10.64	11.00	11.00			
B ₂	9.02	9.95	10.23	10.71			

S.E. of difference two

- | | | | |
|-----------------------------------|-----------------|------------------------------------|-----------------|
| 1. C marginal means | = 0.36 tons/ac. | 5. C means at the same level of M | = 0.59 tons/ac. |
| 2. B marginal means | = 0.29 tons/ac. | 6. M means at the same level of B | = 0.44 tons/ac. |
| 3. M marginal means | = 0.31 tons/ac. | 7. B means at the same level of M | = 0.34 tons/ac. |
| 4. M means at the same level of C | = 0.54 tons/ac. | S.E. of body of $C \times B$ table | = 0.51 tons/ac. |

Crop :- Potato (Rabi).

Ref :- I.A.R.I. 55(16).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object :- To study the effect of depth of cultivation with different fertilizer mixtures and their method of application on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 20 and 21.10.1955. (iv) (a) As per treatments. (b) to (e) N.A. (v) G.M. with *sannhemp*. (vi) N.A. (vii) Irrigated. (viii) 1 hoeing and 1 earthing. (ix) N.A. (x) 31.3.1956 to 8.4.1956.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(31) on page 396.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of tuber. (iv) (a) 1952-1955. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 11.84 tons/ac. (ii) (a) 2.39 tons/ac. (b) 1.39 tons/ac. (iii) Main effects of C and M are highly significant. Main effect of B and interaction $C \times B$ are significant. (iv) Av. yield of tuber in tons/ac.

	M ₁	M ₂	M ₃	M ₄	Mean	B ₁	B ₂
C ₁	9.79	10.76	10.26	11.61	10.60	9.05	12.15
C ₂	12.02	12.99	13.41	14.50	13.23	12.80	13.66
C ₃	10.84	11.55	12.51	11.92	11.70	11.79	11.62
Mean	10.88	11.77	12.06	12.68	11.84	11.21	12.48
B ₁	10.11	11.32	11.13	12.31			
B ₂	11.66	12.23	13.00	13.06			

S.E. of difference of two

1. C marginal means	= 0.60 tons/ac.	5. C means at the same level of M	= 0.85 tons/ac.
2. B marginal means	= 0.49 tons/ac.	6. M means at the same level of B	= 0.56 tons/ac.
3. M marginal means	= 0.40 tons/ac.	7. B means at the same level of M	= 0.69 tons/ac.
4. M means at the same level of C	= 0.69 tons/ac.	S.E. of body of C×B table	= 0.84 tons/ac.

Crop :- Potato.

Ref :- I.A.R.I. 56(26).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object :—To study the effect of depth of cultivation with different fertilizers mixtures and their method of application on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sunn hemp*. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 22 and 23.10.1956. (iv) (a) Tractor ploughing, discing, grubbing, victory and country ploughing. (b) to (e) N.A. (v) G.M. by *sunn hemp*. (vi) D.R.R. (medium). (vii) Irrigated. (viii) Weeding, hoeing and earthing. (ix) 5.59". (x) 14.3.1957 to 5.4.1957.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(31) on page 396.

5. RESULTS :

(i) 10.24 tons/ac. (ii) (a) 1.53 tons/ac. (b) 1.22 tons/ac. (iii) M effect alone is highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	C ₁	C ₂	C ₃	B ₁	B ₂	M ₁	M ₂	M ₃	M ₄
Av. yield	10.47	10.03	10.23	10.16	10.33	8.77	9.97	10.79	11.44
S.E./mean	= 0.27 tons/ac.			0.22 tons/ac.		0.25 tons/ac.			

Crop :- Potato.

Ref :- I.A.R.I. 58(36).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object :—To study the effect of MCPA, early and late earthing up and different methods of fertilizer application on weeds and crop.

1. BASAL CONDITIONS :

(i) to (x) N.A.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 4 applications of MCPA : M₀=Control, M₁=Pre-sowing application at 1 lb./ac., M₂=Pre-emergence application at 8 ozs./ac. and M₃=M₁+M₂.

(2) 4 cultural treatments : C₁=Flat sowing with a late earthing up, C₂=Earthing up immediately after planting with no late earthing up, C₃=Planting on ridges with a late earthing up and C₄=Earthing up immediately after planting with a late earthing up.

Sub-plot treatments :

2 methods of application of fertilizer: F₁=Broadcast and F₂=Placement.

Fertilizer : 80 lb./ac. of N+60 lb./ac. of P₂O₅+40 lb./ac. of K₂O.

3. DESIGN :

(i) Split-plot. (ii) (a) 16 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 22'×18'. (b) 16'×12'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Tuber yield. (iv) (a) 1958—N.A. (b) Yes. (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) Other two-way tables N.A.

5. RESULTS :

(i) 9.35 tons/ac. (ii) (a) 0.79 tons/ac. (b) 0.48 tons/ac. (iii) C effect is highly significant and interaction C×M is significant. (iv) Av. yield of tuber in tons/ac.

$F_1 = 9.53$ tons/ac. and $F_2 = 9.18$ tons/ac.

	M_1	M_2	M_3	M_4	Mean
C_1	8.73	9.70	6.98	8.52	8.48
C_2	10.69	8.95	7.48	8.88	9.00
C_3	9.81	11.08	10.72	10.72	10.58
C_4	9.53	9.33	9.93	8.62	9.35
Mean	9.69	9.76	8.78	9.18	9.35

S.E. of M or C marginal mean = 0.14 tons/ac.
 S.E. of F marginal mean = 0.06 tons/ac.
 S.E. of body of M×C table = 0.28 tons/ac.

Crop :- Potato (Rabi).

Ref :- I.A.R.I. 58(37).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'IM'.

Object :—To find out the optimum irrigation interval based on soil moisture tension at different stages of plant development and further to study the inter-relation of soil moisture and fertilizer treatment.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 27 to 29.10.1958. (iv) (a) to (e) N.A. (v) 10 tons/ac. of compost. (vi) N.A. (vii) Irrigated. (viii) 1 weeding, 1 earthing and spraying of copper fungicides. (ix) N.A. (x) 21 to 28.2.1959.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S : $N_0=50$, $N_1=100$ and $N_2=150$ lb./ac.

(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=50$ and $P_2=100$ lb./ac.

(3) 3 levels of K_2O as Pot. Sul. : $K_0=0$, $K_1=75$ and $K_2=150$ lb./ac.

Sub-plot treatments :

3 levels of soil moisture tension for irrigation (atmosphere) : $I_0=0.25$ to 0.3, $I_1=0.5$ to 0.6 and $I_2=0.75$ to 0.9.

3. DESIGN :

(i) Split-plot, confd. (ii) (a) 3 blocks/replication, 9 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 1 (iv) (a) $12' \times 40'$. (b) $9' \times 29'$. (v) $1\frac{1}{2}' \times 5\frac{1}{2}'$. (vi) Restricted randomization of sub-plot treatments.

4. GENERAL :

(i) Very good. (ii) Nil. (iii) Yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 9.03 tons/ac. (ii) (a) 1.04 tons/ac. (b) 0.74 tons/ac. (iii) Main effect of I is highly significant and main effect of K and interactions $N \times I \times P$ and $N \times K \times I$ are significant. (iv) Av. yield of tuber in tons/ac.

	N ₀	N ₁	N ₂	I ₀	I ₁	I ₂	K ₀	K ₁	K ₂	Mean
P ₀	8.83	9.31	8.70	9.46	8.78	8.60	9.04	9.10	8.70	8.95
P ₁	8.24	9.14	8.96	9.43	8.97	7.95	8.34	8.81	9.20	8.78
P ₂	9.38	9.70	9.04	9.48	9.70	8.93	8.13	10.00	9.98	9.37
Mean	8.82	9.38	8.90	9.46	9.15	8.49	8.50	9.30	9.29	9.03
K ₀	8.04	9.22	8.27	8.87	8.43	8.23				
K ₁	8.94	10.00	8.97	9.72	9.37	8.82				
K ₂	9.48	8.93	9.46	9.79	9.66	8.42				
I ₀	9.33	9.34	9.70							
I ₁	8.90	9.89	8.66							
I ₂	8.22	8.91	8.34							

S.E. of difference of two

- | | |
|---|-----------------|
| 1. N, P or K marginal means | = 0.28 tons/ac. |
| 2. I marginal means | = 0.20 tons/ac. |
| 3. I means at the same level of N, P or K | = 0.35 tons/ac. |
| 4. N, P or K means at the same level of I | = 0.40 tons/ac. |
| S.E. of body of N×P, P×K or N×K table | = 0.49 tons/ac. |

Crop :- Potato.

Ref :- I.A.R.I. 56(27).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'IM'.

Object :—To study the relationship of delta of irrigation, depth of irrigation and nitrogen levels on Potato.

1. BASAL CONDITIONS :

(i) (a) Potato—Cotton—Sugarcane—Wheat. (b) Wheat—N.P.—718. (c) 20, 40 and 60 lb./ac. of N+20 lb./ac. of P₂O₅. (ii) (a) Coarse sand 0.88%, fine sand 67.09%, silt 14.12% and clay 13.01%. (b) N.A. (iii) 23.10.1956. (iv) (a) Victory ploughing followed by *desi* ploughing. (b) to (e) N.A. (v) 10 tons/ac. of F.Y.M.+40 lb./ac. of P₂O₅. (vi) Up-to-date (early). (vii) As per treatments. (viii) Earthing up and weeding. (ix) 1.65". (x) 13.2.1957.

2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 deltas of irrigation : I₁=17.5", I₂=23.5" and I₃=29.5".
 (2) 3 depths of irrigation : D₁=2", D₂=3" and D₃=4".
 (3) 3 levels of N : N₁=80, N₂=120 and N₃=160 lb./ac.

3. DESIGN :

(i) 3³ partial confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 17.5'×40'. (b) 1/80.6. (v) Two rows in each plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Occurrence of blight in the month of January 1957. Copper Shell fungicide was used. (iii) Tuber yield. (iv) (a) 1955—1957. (b) No. (c) Yes. (v) (a) and (b) No. (vi) Nil. (vii) Two way tables N.A.

5. RESULTS :

(i) 7.09 tons/ac. (ii) 0.93 tons/ac. (iii) D effect is significant. (iv) Av. yield of tuber in tons/ac.

Treatment	I ₁	I ₂	I ₃	D ₁	D ₂	D ₃	N ₁	N ₂	N ₃
Av. yield	7.05	7.12	7.09	7.46	7.09	6.72	6.84	7.16	7.27

S.E. of any marginal mean = 0.22 tons/ac.

Crop :- Potato.**Ref :- I.A.R.I. 57(35).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'IM'.**

Object :—To study the optimum water requirements in relation to depth of irrigation and nitrogen levels on Potato.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 30.10.1957 and 1.11.1957. (iv) (a) 4 *desi* ploughings, double discing and grubbing. (b) to (e) N.A. (v) Nil. (vi) Up-to-date. (vii) Irrigated. (viii) 1 weeding, earthing before and after irrigation. (ix) N.A. (x) 20.2.1958 to 12.3.1958.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S : $N_1=80$, $N_2=120$ and $N_3=160$ tons/ac.

(2) 3 levels of depth of irrigation : $D_1=2''$, $D_2=3''$ and $D_3=4''$.

(3) 3 levels of irrigation : $I_1=20''$, $I_2=28''$ and $I_3=36''$ per ac.

3. DESIGN :

(i) 3³ confd. partially. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 40'×18'. (b) 33'×9'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of frost and blight. (iii) Yield of tuber. (iv) to (vi) N.A. (vii) Potassium deficiency was observed in early January.

5. RESULTS :

(i) 11.28 tons/ac. (ii) 0.79 tons/ac. (iii) Only main effect of I is significant. (iv) Av. yield of tuber in tons/ac.

	D ₁	D ₂	D ₃	Mean	N ₁	N ₂	N ₃
I ₁	11.25	10.46	10.69	10.80	10.47	11.49	10.43
I ₂	11.07	11.59	10.43	11.03	11.15	10.59	11.34
I ₃	12.01	12.77	11.21	12.00	11.08	12.12	12.78
Mean	11.44	11.61	10.78	11.28	10.90	11.40	11.52
N ₁	10.88	11.11	10.71				
N ₂	12.07	11.87	10.27				
N ₃	11.36	11.83	11.36				

S.E. of any marginal mean = 0.19 tons/ac.

S.E. of body of any table = 0.32 tons/ac.

Crop :- Potato.**Ref :- I.A.R.I. 57(36).****Site : Indian Agri. Res. Instt., New Delhi.****Type :- 'CD'.**

Object :—To study the relative efficacy of 2, 4—D M.C.P.A. and methods of planting on the weeds and yield of Potato.

1. BASAL CONDITIONS :

(i) to (iii) N.A. (iv) (a) N.A. (b) As per treatments. (c) to (e) N.A. (v) to (vii) N.A. (viii) As per treatments. (ix) and (x) N.A.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of 2, 4—D : $D_0=0$, $D_1=6$ and $D_2=12$ ozs./ac.

(2) 3 levels of M.C.P.A. : $M_0=0$, $M_1=6$ and $M_2=12$ ozs./ac.

(3) 3 cultural treatments : C_1 =Sowing on flat and earthing late, C_2 =Early ridging but no earthing and C_3 =Early ridging and earthing late.

3. DESIGN :

(i) 3³ partially confd. confounding DM^2C^2 and DM^2C . (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A.
 (iii) 2. (iv) (a) N.A. (b) 20' × 16'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Tuber yield (iv) (a) 1957—contd. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 9.60 tons/ac. (ii) 0.67 tons/ac. (iii) Main effect of M and interaction DMC^2 are highly significant. Main effect of C and interaction $D \times M$, $D \times C$ and $M \times C$ are significant. (iv) Av. yield of tuber in tons/ac.

	M ₀	M ₁	M ₂	Mean	C ₁	C ₂	C ₃
D ₀	10.03	9.53	9.62	9.72	9.82	9.47	9.88
D ₁	10.02	9.44	9.80	9.75	8.90	10.47	9.89
D ₂	10.58	8.72	8.64	9.31	8.79	9.69	9.47
Mean	10.21	9.23	9.35	9.60	9.17	9.89	9.75
C ₁	10.03	8.17	9.29				
C ₂	10.27	10.00	9.37				
C ₃	10.33	9.51	9.40				

S.E. of any marginal mean = 0.16 tons/ac.
 S.E. of body of any table = 0.27 tons/ac.

Crop :- Potato (Rabi).

Ref :- I.A.R.I. 58(38).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CD'.

Object :-To study the relative efficacy of 2, 4—D, M.C.P.A. and methods of planting on weeds and yield of Potato.

1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 57(36) on page 401.

5. RESULTS :

(i) 8.07 tons/ac. (ii) 0.62 tons/ac. (iii) Main effects of M, C and interaction $D \times M$ are highly significant. Main effect of D and interactions $M \times C$ and $D \times M \times C$ are significant. (iv) Av. yield of tuber in tons/ac.

	M ₀	M ₁	M ₂	Mean	C ₁	C ₂	C ₃
D ₀	7.98	8.43	8.11	8.17	7.62	8.83	8.06
D ₁	9.31	7.73	7.83	8.29	7.29	8.94	8.65
D ₂	8.47	7.70	7.08	7.75	6.95	8.20	8.10
Mean	8.59	7.95	7.67	8.07	7.29	8.66	8.27
C ₁	8.01	7.03	6.82				
C ₂	8.63	8.81	8.53				
C ₃	9.12	8.03	7.66				

S.E. of any marginal mean = 0.15 tons/ac.
 S.E. of body of any table = 0.25 tons/ac.

Crop :- Potato.**Ref :- I.A.R.I. 59(24).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'CD'.**

Object :-To study the relative effectiveness of 2, 4-D, methods of planting and earthing up on the weeds control and yield of Potato.

1. BASAL CONDITIONS:

(i) to (iii) N.A. (iv) (a) N.A. (b) As per treatments. (b) to (e) N.A. (v) to (vii) N.A. (viii) As per treatments. (ix) and (x) N.A.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 methods of planting : M_1 =Flat, M_2 =Early ridge and M_3 =Sowing on ridge.

(2) 2 earthing treatments : E_0 =No earthing and E_1 =earthing.

(3) 2 applications of 2, 4-D : D_1 =No application and D_2 =2, 4-D application.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 20'×12'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Tuber yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 9.03 tons/ac. (ii) 0.21 tons/ac. (iii) All effects are highly significant. (iv) Av. yield of tuber in tons/ac.

	M_1	M_2	M_3	Mean	E_0	E_1
D_0	7.48	8.44	9.39	8.44	6.97	9.91
D_1	8.37	9.64	10.85	9.62	9.15	10.09
Mean	7.92	9.04	10.12	9.03	8.06	10.00
E_0	6.73	8.10	9.35			
E_1	9.12	9.98	10.89			

S.E. of D or E marginal mean = 0.04 tons/ac.
 S.E. of M marginal mean = 0.05 tons/ac.
 S.E. of body of D×E table = 0.06 tons/ac.
 S.E. of body of M×D or M×E table = 0.07 tons/ac.

Crop :- Potato.**Ref :- I.A.R.I. 59(25).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :-To study the effect of cultural and chemical methods for control of weeds in Potato.

1. BASAL CONDITIONS:

(i) to (iii) N.A. (iv) (a) N.A. (b) As per treatments. (c) to (e) N.A. (v) to (vii) N.A. (viii) As per treatments. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 4 weedicidal treatments : M_0 =Control, M_1 =1 lb./ac. of 2, 4-D at pre-sowing stage, M_2 =8 ozs./ac. of 2, 4-D at pre-emergence stage and M_3 =Pre-sowing+pre-emergence.

(2) 4 cultural treatments : C_1 =Flat sowing+earthing late, C_2 =Flat sowing+early earthing, C_3 =Sowing on ridges and earthing late and C_4 =Sowing on ridges+earthing late.

Sub-plot treatments :

2 methods of sowing : B_1 =Placement and B_2 =Broadcast.

3. DESIGN :

(i) Split-plot. (ii) (a) 16 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 20'×12'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Tuber yield. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 8.35 tons/ac. (ii) (a) 1.01 tons/ac. (b) 0.80 tons/ac. (iii) Main effects of C and B are highly significant. (iv) Av. yield of tuber in tons/ac.

	M ₀	M ₁	M ₂	M ₃	Mean	B ₁	B ₂
C ₁	8.09	8.22	8.00	8.69 [†]	8.25	8.32	8.18
C ₂	7.91	8.08	8.59	8.27	8.21	8.54	7.89
C ₃	9.36	8.06	8.96	9.37	8.93	9.39	8.48
C ₄	7.89	7.74	8.46	8.00	8.02	8.32	7.73
Mean	8.31	8.02	8.50	8.00	8.35	8.64	8.07
B ₁	8.44	8.31	8.78	9.06			
B ₂	8.19	7.75	8.23	8.11			

S.E. of difference of two

1. M or C marginal means = 0.25 tons/ac.
 2. B marginal means = 0.14 tons/ac.
 3. B means at the same level of M or C = 0.28 tons/ac.
 4. M or C means at the same level of B = 0.64 tons/ac.
- S.E. of M×C table = 0.50 tons/ac.

Crop :- Potato.

Ref :- I.A.R.I. 56(28).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'DCM'.

Object :-To study the effect of M.C.P.B., A/S and cultural practices on weeds and yield of Potato.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Cowpea. (c) Nil. (ii) (a) Medium loam. (b) N.A. (iii) 21.10.1956. (iv) (a) to (e) N.A. (v) 30 lb./ac. of P₂O₅ as Super+20 lb./ac. of K₂O as Pot. Sul. broadcasted before planting. (vi) D.R.R. (medium). (vii) Irrigated. (viii) N.A. (ix) 5.59°. (x) 27.3.1957.

2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 4 methods of application of 80 lb./ac. of N as A/S : M₀=Control, M₁=As solid, M₂=As liquid and M₃=½ as solid+½ as liquid.
- (2) 2 levels of M.C.P.B. : L₀=0 and L₁=8 oz./ac.
- (3) 2 cultural treatments : C₁=Potato tuber planted on flat and earthed up after 6 weeks and C₂=Potato earthed up immediately after planting.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 26'×22'. (b) 20'×16'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Perenox was sprayed as a preventive measure against early blight. (iii) Tuber yield. (iv) (a) 1956-N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 9.92 tons/ac. (ii) 1.00 tons/ac. (iii) Main effect of M and interaction M×C are highly significant. Main effects of C, L and interaction M×L and C×L are significant. (iv) Av. yield of tuber in tons/ac.

	M ₀	M ₁	M ₂	M ₃	Mean	C ₁	C ₂
L ₀	5.45	12.30	11.45	12.03	10.31	9.84	10.78
L ₁	6.63	10.61	10.45	10.47	9.54	8.26	10.82
Mean	6.04	11.45	10.95	11.25	9.92	9.05	10.80
C ₁	5.35	10.15	9.95	10.76			
C ₂	6.73	12.75	11.95	11.74			

S.E. of M marginal mean = 0.25 tons/ac.
 S.E. of C or L marginal mean = 0.18 tons/ac.
 S.E. of body of C × M or L × M table = 0.35 tons/ac.
 S.E. of body of C × L table = 0.25 tons/ac.

Crop :- Potato.

Ref :- I.A.R.I. 56(29).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'DCM'.

Object :- To study the relative effectiveness of 2, 4-D, M.C.P.A. and methods of planting on weeds and yield of Potato crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cowpeas. (c) Nil. (ii) (a) Medium loam. (b) N.A. (iii) 20.10.1956. (iv) (a) to (e) N.A. (v) 80 lb./ac. of N as A/S $\frac{1}{2}$ applied at planting and $\frac{1}{2}$ at earthing up. 30 lb./ac. of P₂O₅ as Super applied at planting and 20 lb./ac. of K₂O as Pot. Sul. applied broadcast before planting. (vi) D.R.R. (medium). (vii) Irrigated. (viii) N.A. (ix) 5.59%. (x) 26.3 1957.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of 2, 4-D : D₀=0, D₁=6 and D₂=12 ozs./ac.

(2) 3 levels of M C P.A. : M₀=0, M₁=6 and M₂=12 ozs./ac.

(3) 3 cultural treatments : C₁=Customary method of sowing (sowing on flat and then ridged up after 6 weeks), C₂=Sown on flat, then ridged up immediately after planting and left undisturbed till harvest and C₃=Ridged immediately after planting and again ridged up at 6 weeks.

3. DESIGN :

(i) 3³ confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 26' × 22'. (b) 20' × 16'. (v) 3' × 3'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Perenox was sprayed as a preventive measure against early blight. (iii) Weed count was taken at regular intervals. Tuber formation, number and weight of tubers, length and weight of shoot were recorded at fortnightly intervals. (iv) (a) 1956—N.A. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) D × M table is N.A.

5. RESULTS :

(i) 9.50 tons/ac. (ii) 1.15 tons/ac. (iii) N.A. (iv) Av. yield of tubers in tons/ac.

	D ₀	D ₁	D ₂	Mean	M ₀	M ₁	M ₂
C ₁	8.76	8.31	7.11	8.06	8.05	9.51	6.63
C ₂	9.35	10.34	9.75	9.81	10.02	10.30	9.11
C ₃	10.52	11.22	10.12	10.62	10.64	11.51	9.71
Mean	9.54	9.96	8.99	9.50	9.57	10.44	8.48

S.E. of any marginal mean = 0.27 tons/ac.
S.E. of body of any table = 0.47 tons/ac.

Crop :- Carrot.

Ref :- I.A.R.I. 54(32).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object :—To study the effect of depth of cultivation with and without inversion and effect of different fertilizers and their method of application on the yield of Carrot.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 21.10.1954. (iv) (a) As per treatments. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 31.1.1955 to 17.2.1955.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 methods of cultivation : C_1 =Tractor ploughing 9" to 10" deep followed by grubbing, C_2 =Bullock victory plough 5" to 6" deep followed by country plough and C_3 =Country plough 4" to 5" deep.

(2) 2 methods of application : T_1 =Placement with plough hole and T_2 =Broadcast.

Sub-plot treatments :

3 manurial treatments : N_1 =80 lb./ac. of N+80 lb./ac. of P_2O_5 +40 lb./ac. of K_2O , N_2 =120 lb./ac. of N+80 lb./ac. of P_2O_5 +40 lb./ac. of K_2O and N_3 =120 lb./ac. of N.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 52'x13'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of Carrot. (iv) (a) 1952—1956. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 8.20 tons/ac. (ii) (a) 1.827 tons/ac. (b) 1.495 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of carrot in tons/ac.

	C_1	C_2	C_3	Mean	T_1	T_2
N_1	7.81	9.18	7.18	8.06	8.02	8.10
N_2	8.63	8.79	8.78	8.73	8.73	8.73
N_3	7.80	7.95	7.66	7.80	8.13	7.48
Mean	8.08	8.64	7.87	8.20	8.29	8.10
T_1	8.84	8.45	7.59			
T_2	7.32	8.83	8.15			

S.E. of difference of two

- | | | | |
|-----------------------------------|------------------|-----------------------------------|------------------|
| 1. C marginal means | = 0.527 tons/ac. | 5. C means at the same level of N | = 0.807 tons/ac. |
| 2. T marginal means | = 0.431 tons/ac. | 6. N means at the same level of T | = 0.610 tons/ac. |
| 3. N marginal means | = 0.432 tons/ac. | 7. T means at the same level of C | = 0.658 tons/ac. |
| 4. N means at the same level of C | = 0.748 tons/ac. | S.E. of body of CxT table | = 0.527 tons/ac. |

Crop :- Carrot (Rabi).**Ref :- I.A.R.I. 55(17).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'CM'.**

Object :—To study the effect of depth of cultivation with and without inversion and effect of different fertilizers and their method of application on the yield of Carrot.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 27.10.1955 and 28.10.1955. (iv) (a) As per treatments. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 2 weedings and thinnings. (ix) N.A. (x) 27th Feb. to 9 March, 1955.

2. TREATMENTS :

Same as in expt. no. 54(32) on page 406.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 52' × 13'. (b) 50' × 11'. (v) 1' × 1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of carrot. (iv) (a) 1952—1956. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 8.14 tons/ac. (ii) (a) 1.330 tons/ac. (b) 1.06 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of carrot in tons/ac.

	C ₁	C ₂	C ₃	Mean	T ₁	T ₂
N ₁	7.74	8.30	8.77	8.27	8.09	8.44
N ₂	8.22	8.21	7.60	8.01	8.11	7.91
N ₃	8.52	8.25	7.70	8.16	8.40	7.92
Mean	8.16	8.25	8.02	8.14	8.20	8.09
T ₁	8.51	8.59	7.49			
T ₂	7.81	7.91	8.55			

S.E. of difference of two

- | | | | |
|-----------------------------------|------------------|-----------------------------------|------------------|
| 1. C marginal means | = 0.384 tons/ac. | 5. C means at the same level of N | = 0.579 tons/ac. |
| 2. T marginal means | = 0.313 tons/ac. | 6. N means at the same level of T | = 0.433 tons/ac. |
| 3. N marginal means | = 0.306 tons/ac. | 7. T means at the same level of N | = 0.473 tons/ac. |
| 4. N means at the same level of C | = 0.530 tons/ac. | S.E. of body of T × C table | = 0.384 tons/ac. |

Crop :- Carrot.**Ref :- I.A.R.I. 56(30).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'CM'.**

Object :—To study the effect of depth of cultivation with and without inversion and effect of different fertilizers and their method of application on the yield of Carrot.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize for fodder. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 26.10.1956. (iv) (a) As per treatments. (b) to (e) N.A. (v) Nil. (vi) Nautes half long. (vii) Irrigated. (viii) Weeding. (ix) 5.59". (x) 15.2.1957 to 9.4.1957.

2. TREATMENTS :

Same as in expt. no. 54(32) on page 406.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 52' × 13'. (b) 50' × 11'. (v) 1' × 1'. (vi) Yes.

4. GENERAL ;

(i) Good. (ii) N.A. (iii) Yield of carrot. (iv) (a) 1952-1956. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 17.85 tons/ac. (ii) (a) 3.80 tons/ac. (b) 1.80 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of carrot in tons/ac.

Treatment	C ₁	C ₂	C ₃	T ₁	T ₂	N ₁	N ₂	N ₃
Av. yield	17.45	18.35	17.74	18.00	17.70	18.47	17.36	17.72
S.E./mean	= 0.776 tons/ac.			0.633 tons/ac.		0.368 tons/ac.		

Crop :- Cauliflower.

Ref :- I.A.R.I. 55(18).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study the effect of application of different levels of N, P and molybdenum on Cauliflower.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 30.10.1955 and 2.12.1955. (iv) (a) Ploughing by victory plough discing and ploughing by tractor and ploughing by *desi* plough. (b) Planting. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 3 intercultures, earthing and weeding. (ix) N.A. (xi) 27.2.1956, to 17.3.1956.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(i) 3 levels of N as A/S : N₀=0, N₁=60 and N₂=120 lb./ac.

(2) 3 levels of P₂O₅ as Super : P₀=0, P₁=40 and P₂=80 lb./ac.

(3) 3 levels of molybdenum as acid molybdenum : M₀=0, M₁=1 and M₂=2 lb./ac.

3. DESIGN :

(i) 3³ confd. (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 18'×18'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Meery ophid attack. (iii) Yield of cauliflower. (iv) (a) 1955-1957. (b) No. (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 2.63 tons/ac. (ii) 1.06 tons/ac. (iii) Main effect of P is highly significant and interaction N×P is significant. (iv) Av. yield of cauliflower in tons/ac.

	P ₀	P ₁	P ₂	Mean	M ₀	M ₁	M ₂
N ₀	2.21	2.46	2.45	2.37	2.74	2.00	2.37
N ₁	1.16	3.01	3.70	2.62	2.34	2.48	3.05
N ₂	2.18	2.51	4.01	2.90	2.87	3.09	2.75
Mean	1.85	2.66	3.39	2.63	2.65	2.52	2.72
M ₀	2.10	2.93	2.93				
M ₁	1.38	2.35	3.85				
M ₂	2.08	2.71	3.38				

S.E. of any marginal mean

= 0.31 tons/ac.

S.E. of body of any table

= 0.43 tons/ac.

Crop :- Cauliflower.**Ref :- I.A.R.I. 55(19).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :—To study the effect of application of different levels of N, P and Molybdenum on Cauliflower.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 12.11.1955. (iv) (a) Ploughing by Victory plough, discing, planking and ploughing with *desi* plough. (b) Planting. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 3 intercultures and 1 earthing. (ix) N.A. (x) 31.1.1956 to 29.2.1956.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(18) on page 408.

4. GENERAL :

(i) Good. (ii) Infestation of cabbage aphids. (iii) Yield of cauliflower. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 5.77 tons/ac. (ii) 1.85 tons/ac. (iii) Main effect of P is highly significant and interaction $P \times M$ is significant. Av. yield of cauliflower in tons/ac.

	P ₀	P ₁	P ₂	Mean	M ₀	M ₁	M ₂
N ₀	4.20	5.98	5.57	5.25	5.68	5.21	4.84
N ₁	4.10	6.55	6.51	5.72	5.34	5.68	6.15
N ₂	5.04	6.10	7.91	6.35	5.25	6.95	6.85
Mean	4.45	6.21	6.66	5.77	5.42	5.95	5.95
M ₀	3.80	6.33	6.14				
M ₁	3.86	5.65	8.33				
M ₂	5.68	6.65	5.52				

S.E. of any marginal mean = 0.44 tons/ac.

S.E. of body of any table = 0.75 tons/ac.

Crop :- Cauliflower.**Ref :- I.A.R.I. 56(31).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :—To study the effect of application of different levels of N, P and Molybdenum on Cauliflower.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Lobia*. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 30.10.1956. (iv) (a) 3 ploughings with country plough after inversion with Victory plough. (b) Transplanting. (c) to (e) N.A. (v) 20 tons/ac. of F.Y.M. one month prior to transplanting. (vi) *Sutton's snowball*. (vii) Irrigated. (viii) 3 hoeings and 1 earthing. (ix) 5.59". (x) February—March, 1957.

2. TREATMENTS :

Same as in expt. no. 55(18) on page 408.

3. DESIGN :

(i) 3³ partially confd. confounding NP^2M^2 and NP^2M components of 3 factor interaction. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 20'×18'. (b) 18'×16'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Light attack of aphids. (iii) Yield of cauliflower. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Two-way tables are not available.

5. RESULTS :

(i) 3.47 tons/ac. (ii) 1.02 tons/ac. (iii) N and P effects are highly significant. (iv) Av. yield of cauliflower in tons/ac.

Treatment	N ₀	N ₁	N ₂	P ₀	P ₁	P ₂	M ₀	M ₁	M ₂
Av. yield	2.79	3.74	3.87	2.67	3.87	3.87	3.38	3.69	3.34

S.E./mean = 0.24 tons/ac.

Crop :- Cauliflower.

Ref :- I.A.R.I. 57(36).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To test the response of Cauliflower to different levels of N, P fertilizers and Molybdenum on Cauliflower.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 14.11.1957. (iv) (a) 4 discings with tractor and 2 beamings. (b) Transplanting. (c) N.A. (d) 2'×2'. (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 2 to 19.2.1958.

2. TREATMENTS and 3. DESIGN:

Same as in expt. no. 55(18) on page 408.

4. GENERAL :

(i) Fair. (ii) Attack of aphids. (iii) Yield of cauliflower. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 5.95 tons/ac. (ii) 1.26 tons/ac. (iii) Main effect of N and P are highly significant. (iv) Av. yield of cauliflower in tons/ac.

	P ₀	P ₁	P ₂	Mean	M ₀	M ₁	M ₂
N ₀	3.92	4.16	4.23	4.10	4.43	3.84	4.04
N ₁	4.30	7.00	7.46	6.25	6.20	6.54	6.02
N ₂	6.25	8.04	8.21	7.50	7.71	7.15	7.64
Mean	4.82	6.40	6.63	5.95	6.11	5.84	5.90
M ₀	4.50	7.06	6.78				
M ₁	4.27	6.36	6.90				
M ₂	5.70	5.78	6.22				

S.E. of any marginal mean = 0.36 tons/ac.

S.E. of body of any table = 0.51 tons/ac.

Crop :- Tomato (Rabi).

Ref :- I.A.R.I. 55(21).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study the effect of different levels of N, P and different times of application of N on Tomato.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 20.11.1955. (iv) (a) Ploughings by soil inversion plough, *desi* plough and *triphal* followed by *sohaga*. (b) Planting. (c) to (e) N.A. (v) Nil. (vi) and (vii) N.A. (viii) Hoeing and weeding. (ix) N.A. (x) March, April and May, 1956.

2. TREATMENTS :

All combinations of (1), (2) and (3)+control (one plot in each block)

(1) 3 levels of N as A/S : $N_1=30$, $N_2=60$ and $N_3=90$ lb./ac.

(2) 3 levels of P_2O_5 as Super : $P_1=20$, $P_2=40$ and $P_3=60$ lb./ac.

(3) 3 times of application : T_1 =Full dose at planting, $T_2=\frac{1}{2}$ at planting+ $\frac{1}{2}$ after 6 weeks of planting and $T_3=\frac{1}{3}$ at planting+ $\frac{1}{3}$ after 6 weeks of planting+ $\frac{1}{3}$ at flowering.

3. DESIGN :

(i) 3³ confd. (ii) (a) 10 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 20'×18'4". (b) 18'×16'4". (v) 1' on each side. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Mild attack of virus and ealworm. (iii) Yield of vegetables. (iv) (a) 1955—N.A. (b) and (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 6.63 tons/ac. (ii) 0.85 tons/ac. (iii) Main effect of N, P and 'control vs. others' are highly significant. (iv) Av. yield of tomato in tons/ac.

Control = 5.50 tons/ac.

	P_1	P_2	P_3	Mean	T_1	T_2	T_3
N_1	5.17	5.54	6.27	5.66	5.78	5.59	5.62
N_2	5.68	6.66	7.82	6.72	6.31	6.28	7.57
N_3	6.49	7.51	8.52	7.51	7.24	7.67	7.61
Mean	5.78	6.57	7.54	6.63	6.44	6.52	6.93
T_1	5.45	6.42	7.45				
T_2	5.52	6.57	7.46				
T_3	6.36	6.73	7.71				

S.E. of any marginal mean = 0.20 tons/ac.

S.E. of body of any table or control mean = 0.35 tons/ac.

Crop :- Tomato (Rabi).

Ref :- I.A.R.I. 55(22).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of different levels of N, P and different times of application of N on Tomato.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 20.8.1955. (iv) (a) 2 ploughings by *desi* plough, 1 ploughing by Victory plough and discing. (b) Planting. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 2 hoeings, 5 weedings and 2 earthings. (ix) N.A. (x) February to April, 1956.

2. TREATMENTS :

Same as in expt. no. 55(21) on page 410.

3. DESIGN :

(i) 3³ confd. (ii) (a) 10 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 1/120 ac. (b) 1/150 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Fruit borer aphid and eal worm attack. (iii) Yield of tomato. (iv) (a) 1955. (b) No. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 8.69 tons/ac. (ii) 0.77 tons/ac. (iii) Main effect of N is highly significant. Interaction $P \times T$ and 'control vs. others' are significant. (iv) Av. yield of tomato in tons/ac.

Control = 8.05 tons/ac.

	P ₁	P ₂	P ₃	Mean	T ₁	T ₂	T ₃
N ₁	7.99	8.32	8.35	8.22	8.47	8.21	7.98
N ₂	8.12	9.02	9.26	8.80	8.65	8.69	9.06
N ₃	9.32	9.10	9.39	9.27	9.34	9.04	9.44
Mean	8.48	8.81	9.00	8.76	8.82	8.65	8.83
T ₁	8.06	9.05	9.35				
T ₂	8.55	8.25	9.14				
T ₃	8.82	9.14	8.52				

S.E. of any marginal mean = 0.18 tons/ac.

S.E. of body of table or control mean = 0.13 tons/ac.

Crop :- Tomato (Rabi).**Ref :- I.A.R.I. 57(38).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :- To study the effect of N and P as spray and soil application on Tomato.

1. BASAL CONDITIONS:

(i) to (x) N.A.

2. TREATMENTS :

22 manurial treatments : M₀=Control, M₁=30 lb./ac. of N as soil application, M₂=2 M₁, M₃=4 M₁, M₄=20 lb./ac. of P₂O₅ applied to soil, M₅=2 M₄, M₆=M₁+M₄, M₇=M₁+M₅, M₈=M₂+M₄, M₉=M₂+M₅, M₁₀=M₂+M₄, M₁₁=M₃+M₅, M₁₂=30 lb./ac. of N in 2% spray applied in 4 instalments, M₁₃=2 M₁₂, M₁₄=30 lb./ac. of N as 4% spray applied in 4 instalments, M₁₅=2 M₁₄, M₁₆=20 lb./ac. of P₂O₅ in 2% spray applied in 4 instalments, M₁₇=2 M₁₆, M₁₈=30 lb./ac. of N+20 lb./ac. of P₂O₅ in 4% spray applied in 4 instalments, M₁₉=30 lb./ac. of N+40 lb./ac. of P₂O₅ in 4% spray applied in 4 instalments, M₂₀=60 lb./ac. of N+20 lb./ac. of P₂O₅ in 4% spray applied in 4 instalments and M₂₁=60 lb./ac. of N+40 lb./ac. of P₂O₅ in 4% spray applied in 4 instalments.

N applied as urea and P₂O₅ as triple Super.**3. DESIGN :**

(i) R.B.D. (ii) (a) 22. (b) N.A. (iii) 3. (iv) (a) 50'×12.5'. (b) 48'×7.5'. (v) 1'×2.5'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) No. (iii) Yield of tomato. (iv) (a) 1957—N.A. (b) and (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 10.74 tons/ac. (ii) 2.42 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tomato in tons/ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀
Av. yield	6.15	9.45	12.52	14.20	8.31	7.61	8.62	7.70	11.37	14.05	14.58
Treatment	M ₁₁	M ₁₂	M ₁₃	M ₁₄	M ₁₅	M ₁₆	M ₁₇	M ₁₈	M ₁₉	M ₂₀	M ₂₁
Av. yield	15.19	11.70	9.24	11.36	12.77	8.20	7.78	10.15	13.16	11.60	10.65

S.E./mean = 1.40 tons/ac.

Crop :- Tomato.**Ref :- I.A.R.I. 59(27).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :- To study the effect of N and P as spray and soil application on Tomato.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) 28 and 30.1.1959. (iv) (a) 1 double discing with tractor, 1 ploughing with Victory plough, 1 ploughing with *desi* plough and *triphali*. (b) Transplanting. (c) to (e) N.A. (v) 10 tons/ac. of F.Y.M. (vi) N.A. (vii) Irrigated. (viii) 4 weedings and hoeing with Sharma hoe. (ix) N.A. (x) 17 pickings from 30.4.1959 to 30.6.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(38) on page 412.

4. GENERAL :

(i) Normal. (ii) Attack of fruit borer caterpillar. (iii) Yield of tomato. (iv) (a) 1958—N.A. (b) and (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 9.10 tons/ac. (ii) N.A. (iii) Treatment differences are significant. (iv) Av. yield of tuber in tons/ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀
Av. yield	6.23	9.35	10.43	9.75	8.60	8.24	8.62	8.51	8.78	11.13	10.45
Treatment	M ₁₁	M ₁₂	M ₁₃	M ₁₄	M ₁₅	M ₁₆	M ₁₇	M ₁₈	M ₁₉	M ₂₀	M ₂₁
Av. yield	13.20	9.61	7.75	8.74	6.44	10.74	7.22	10.22	11.70	7.46	7.05

S.E./mean = N.A.

Crop :- Tomato.**Ref :- I.A.R.I. 59(28).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :- To study the effect of N and P as spray and soil application on Tomato.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) 11.11.1959/16.1.1960 to 26.1.1960. (iv) (a) 1 Victory ploughing and 1 double discing with tractor. (b) Transplanting. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 2 hand weedings. (ix) N.A. (x) 26.4.1960 to 14.6.1960.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(38) on page 412.

4. GENERAL :

(i) Poor. (ii) Nil. (iii) Yield of tomato. (iv) (a) 1957—N.A. (b) and (c) No. (v) and (vi) Nil. (vii) Crop was poor due to late planting. Some scorching was observed in 4% foliar spray plots specially in N and P combinations.

5. RESULTS :

(i) 9.68 tons/ac. (ii) 1.64 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tomato in tons/ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀
Av. yield	6.36	10.58	10.92	9.53	9.33	7.04	8.46	9.71	11.85	12.60	9.55
Treatment	M ₁₁	M ₁₂	M ₁₃	M ₁₄	M ₁₅	M ₁₆	M ₁₇	M ₁₈	M ₁₉	M ₂₀	M ₂₁
Av. yield	11.72	8.88	9.15	9.81	10.17	8.19	9.62	8.23	9.86	11.63	9.67

S.E./mean = 0.95 tons/ac.

Crop :- Tomato.**Ref :- I.A.R.I. 59(29).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.****Object :-**To find out the optimum levels of fertilizers for Tomato.**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) 15.1.1959. (iv) (a) 2 cross discings with tractor. (b) Transplanting. (c) to (e) N.A. (v) 10 tons/ac. of F.Y.M. (vi) N.A. (vii) Irrigated. (viii) 2 weedings, 1 hoeing by Sharma hoe and earthing. (ix) N.A. (x) 25.4.1959 to 4.7.1959.

2. TREATMENTS :**Main-plot treatments :**

All combinations of (1), (2) and (3)+control (3 plots)

(1) 3 levels of N as A/S : $N_1=40$, $N_2=80$ and $N_3=120$ lb./ac.(2) 3 levels of P_2O_5 as Super : $P_1=20$, $P_2=40$ and $P_3=60$ lb./ac.(3) 3 levels of K_2O as Pot. Sul. : $K_1=20$, $K_2=40$ and $K_3=60$ lb./ac.**Sub-plot treatments :**2 cultural treatments : $F_1=$ Flat beds and $F_2=$ Ridges.**3. DESIGN :**

(i) $(3^3+3) \times 2$ split-plot confd. (ii) (a) 10 main-plots/block ; 2 sub-plots/main-plot and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) $20' \times 13.5'$. (b) $18' \times 12'$. (v) $1' \times .75'$. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of tomato. (iv) (a) 1959—N.A. (b) and (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 5.71 tons/ac. (ii) (a) 1.47 tons/ac. (b) 1.11 tons/ac. (iii) Only main effects of N, P and 'control vs. others' are highly significant. (iv) Av. yield of tomato in tons/ac.

Control (F_1+F_2) = 3.87 tons/ac.

	P_1	P_2	P_3	K_1	K_2	K_3	F_1	F_2	Mean
N_1	4.58	4.75	5.43	4.41	4.52	5.83	5.23	4.61	4.92
N_2	5.27	6.54	7.63	6.08	6.59	6.77	6.44	6.52	6.48
N_3	5.33	6.74	6.92	6.30	6.53	6.16	6.29	6.37	6.33
Mean	5.06	6.01	6.66	5.60	5.88	6.25	5.99	5.83	5.91
F_1	5.08	6.36	6.52	5.61	5.98	6.37			
F_2	5.04	5.66	6.80	5.59	5.78	6.13			
K_1	4.91	5.42	6.46						
K_2	5.22	6.02	6.40						
K_3	5.05	6.59	7.12						

S.E. of difference of two

1. N, P or K marginal means = 0.35 tons/ac.

2. F marginal means = 0.21 tons/ac.

3. F means at the same level of N, P or K = 0.37 tons/ac.

4. N, P or K means at the same level of F = 0.43 tons/ac.

S.E. of body of $N \times P$, $N \times K$ or $P \times K$ table = 0.45 tons/ac.**Crop :- Tomato.****Ref :- I.A.R.I. 59(30).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'IM'.**

Object :-To study the optimum moisture range and nitrogen levels under conditions of Shallow water table on Tomato.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) 20.11.1959. (iv) (a) 1 ploughing by tractor, 1 discing and levelling. (b) to (c) N.A. (v) 60 lb./ac. of P_2O_5 . (vi) N.A. (vii) As per treatments. (viii) 4 weedings and 4 intercultures. (ix) N.A. (x) 9.4.1959 to 18.5.1959.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of moisture : M_1 =Moisture above 70% of the available moisture, M_2 =Moisture above 60% of the available moisture and M_3 =Moisture above 50% of the available moisture.

(2) 3 levels of N : N_1 =40, N_2 =80 and N_3 =120 lb./ac.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 33'×16'. (b) 30'×12'. (v) 1.5'×2'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of virus disease and fruit borer. (iii) Yield of tomato. (iv) (a) 1959. (b) N.A. (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 26.99 tons/ac. (ii) 2.60 tons/ac. (iii) Main effects of M and N are significant. (iv) Av. yield of tomato in tons/ac.

	N_1	N_2	N_3	Mean
M_1	23.74	25.68	27.03	25.48
M_2	24.83	27.76	28.19	26.93
M_3	27.40	28.24	30.08	28.57
Mean	25.32	27.23	28.43	26.99

S.E. of any marginal mean = 0.75 tons/ac.

S.E. of body of table = 1.30 tons/ac.

Crop :- Tomato (Rabi).

Ref :- I.A.R.I. 59(31).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'IM'.

Object :—To find out the optimum moisture range for maximum yield in Tomato, in relation to nitrogen levels.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) 17 and 18.2.1959. (iv) (a) 3 ploughings and levelling twice. (b) Transplanting. (c) to (e) N.A. (v) 10 tons/ac. of F.Y.M.+60 lb./ac. of P_2O_5 as Super+60 lb/ac. of K_2O . (vi) N.A. (vii) Irrigated. (viii) 3 weedings. (ix) N.A. (x) 13 pickings from 7.5.1959 to 20.7.1959.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N_1 =40, N_2 =80 and N_3 =120 lb./ac.

(2) 3 levels of irrigation : I_1 =500, I_2 =5,000 and I_3 =50,000 ohms.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a) and (b) 22'×15'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal though the crop was considerably patchy. (ii) Nil. (iii) Yield of tomato. (iv) 1959—N.A. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 9.82 tons/ac. (ii) 1.57 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of tomato in tons/ac.

	N ₁	N ₂	N ₃	Mean
I ₁	9.01	9.29	10.26	9.52
I ₂	10.87	10.91	8.73	10.17
I ₃	8.53	10.63	10.14	9.77
Mean	9.47	10.28	9.71	9.82

S.E. of any marginal mean = 0.52 tons/ac.

S.E. of body of table = 0.91 tons/ac.

Crop :- Gram.

Ref :- I.A.R.I. 55(20).

Site :- Botanical Sub-Stn., Pusa.

Type :- 'M'.

Object :-To study the effect of N, P and K on Gram.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 28.10.1955. (iv) (a) Ploughing with E. plough, discing, harrowing, ploughing with *desi* plough, beaming and special time harrowing and beaming. (b) to (e) N.A. (v) Nil. (vi) N P -58. (vii) Unirrigated. (viii) Liver harrowing and 2 weedings. (ix) N.A. (x) 5 to 7.4.1956.

2. TREATMENTS :

10 manurial treatments : M₀=Control, M₁=8000 lb./ac. of P.Y.M., M₂=40 lb./ac. of N as Rape cake, M₃=40 lb./ac. of N as A/S, M₄=50 lb./ac. of K₂O as Pot. Sul, M₅=80 lb./ac. of P₂O₅ as Super, M₆=M₄+M₅, M₇=M₃+M₄+M₅, M₈=M₃+M₆ and M₉=M₃+M₄.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 10. (iv) (a) and (b) 44' x 24'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Lodging was observed in thickly growth plots. (ii) Wilt attack, no control measure was taken. (iii) Yield of grain. (iv) (a) 1960--contd. (b) Yes. (c) N.A. (v) and (vi) Nil. (vii) The thick growth plant had very poor pod information and the pods were eaten by insects.

5. RESULTS :

(i) 1124 lb./ac. (ii) 195.5 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of gram in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉
Av. yield	1110	1332	1089	1106	949	1266	1246	1077	1068	1002

S.E./mean = 61.8 lb./ac.

Crop :- Gram.

Ref :- I.A.R.I. 59(25).

Site :- Botanical Sub-Stn., Pusa.

Type :- 'M'.

Object :-To study the effect of N, P and K on Gram.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Punjab A. (b) N.A. (iii) 5 and 6.11.1959. (iv) (a) 2 ploughings with *desi* plough, 1 ploughing with E. plough, 8 beamings, and 2 special harrowings. (b) to (e) N.A. (v) Nil. (vi) N.P.-58. (vii) Unirrigated. (viii) 2 weedings. (ix) N.A. (x) 25 and 26.3.1960.

2. TREATMENTS :

Same as in expt. no. 55(20) above.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 10. (iv) (a) N.A. (b) 42'×22'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Light attack of wilt. (iii) Yield of gram. (iv) (a) 1930—contd. (b) and (c) No. (v) and (vi) Nil. (vii) The year was dry in the early stage of *rabi* and it rained when the crop ripened. The west wind affected the crop much at the time of pod formation. The crop was dried and grains could not fully developed.

5. RESULTS :

(i) 294 lb./ac. (ii) 161.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of gram in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉
Av. yield	233	636	295	172	156	420	207	325	339	160

S.E./mean = 51.0 lb./ac.

Crop :- Gram (*Rabi*).

Ref :- I.A.R.I. 58(39).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the comparative efficiency of foliar and soil application of P and micronutrients on Gram yield.

1. BASAL CONDITIONS :

(i) to (v) N.A. (vi) N.P.—58. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

12 manurial treatments : M₀=Control, M₁=40 lb./ac. of P₂O₅ as soil application, M₂=1 lb./ac. of Mo as soil application, M₃=2 lb./ac. of B as soil application, M₄=5 lb./ac. of Cu as soil application, M₅=5 lb./ac. of Mn as soil application, M₆=3% solution of 40 lb./ac. of P₂O₅ in sprays, M₇=3% solution of ½ lb./ac. of Mo in 3 sprays, M₈=3% solution of ½ lb./ac. of B in 3 sprays, M₉=3% solution of 1 lb./ac. of Cu in 3 sprays, M₁₀=3% solution of 1 lb./ac. of Mn in 3 sprays and M₁₁=3% solution of ½ lb./ac. of Mo+½ lb./ac. of B in 3 sprays.

40 lb./ac. of P₂O₅ as soil application was applied from M₂ to M₅ and 3% solution of 40 lb./ac. of P₂O₅ in 3 sprays was applied from M₇ to M₁₁.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 36'×18'. (b) 32'×12½'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1958—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 114½ lb./ac. (ii) 141.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀	M ₁₁
Av. yield	1123	1214	1171	904	1164	1242	1148	1229	1187	1064	1058	1228

S.E./mean = 70.8 lb./ac.

Crop :- Arhar.

Ref :- I.A.R.I. 56(32).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'IV'.

Object :- To study the effect of different spacings on different varieties of Arhar.

1. BASAL CONDITIONS :

(i) (a) No. (b) Wheat. (c) 20 and 40 lb./ac. of N as A/S. (ii) (a) Sandy loam. (b) N.A. (iii) 24.7.1956, and 25.7.1956. (iv) (a) Ploughings (b) to (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing with bullock. (ix) 22.28". (x) 24.5.1957 and 25.5.1957.

2. TREATMENTS :**Main-plot treatments :**

8 varieties : V_1 =N.P. (WR)—15, V_2 =N.P. (WR)—38, V_3 =N.P. (WR)—40, V_4 =N.P. (WR)—41, V_5 =N.P. (WR)—42, V_6 =F—52, V_7 =EB—3 and V_8 =UP—105.

Sub-plot treatments :

3 spacings between rows : $S_1=2\frac{1}{2}'$, $S_2=3\frac{1}{2}'$ and $S_3=4\frac{1}{2}'$.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) $25' \times 17'$. (b) $23' \times 15'$. (v) $1' \times 1'$. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height, no. of branches, weight of 1000 grain. (iv) (a) 1956 contd. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Other two-way tables are N.A.

5. RESULTS :

(i) 1257 lb./ac. (ii) (a) 347.0 lb./ac. (b) 83.7 lb./ac. (iii) Main effect of V is highly significant. (iv) Av. yield of arhar in lb./ac.

Treatment	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8
Av. yield	1205	1326	1219	1373	1314	1484	841	1250

S.E./mean = 100.4 lb./ac.

Crop :- Arhar (Rabi).

Ref :- I.A.R.I. 57(37).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CMV'.

Object :- To study the effect of different spacings and different manures on different varieties of Arhar.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 30 and 31.7.1957. (iv) (a) 1 ploughing with Victory plough and 1 with *desi* plough. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) As per treatments. (vii) N.A. (viii) 3 weedings and 1 hoeing. (ix) N.A. (x) 21.4.1958.

2. TREATMENTS :**Main-plot treatments :**

5 varieties : $V_1=105$ (U.P.), $V_2=F-52$ (Bombay), $V_3=N.P.-15$ (I.A.R.I.), $V_4=N.P.-42$ (I.A.R.I.) and $V_5=N.P.-24$ (I.A.R.I.).

Sub-plot treatments :

3 spacings between rows : $S_1=1.5'$, $S_2=1.75'$ and $S_3=2.50'$.

Sub-sub-plot treatments :

3 levels of manures : M_0 =No manure, $M_1=20$ lb./ac. of N and $M_2=20$ lb./ac. of N and 60 lb./ac. of P_2O_5 .

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 3 sub-plots/main-plot and 3 sub-sub-plot/sub-plot. (b) N.A. (iii) 4. (iv) and (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Few plants were affected with white ant. (iii) Grain yield. (iv) (a) 1957—N.A. (b) N.A. (c) Nil. (v) and (vi) Nil. (vii) Two-way tables : N.A.

5. RESULTS :

(i) 566 lb./ac. (ii) (a) 355.2 lb./ac. (b) 210.7 lb./ac. (c) 357.1 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of arhar in lb./ac.

Treatment	V ₁	V ₂	V ₃	V ₄	V ₅	S ₁	S ₂	S ₃	M ₀	M ₁	M ₂
Av. yield	688	498	594	583	467	571	607	521	539	595	565
	S.E./mean = 59.2 lb./ac.					S.E./mean = 27.2 lb./ac.			S.E./mean = 46.1 lb./ac.		

Crop :- Arhar (Kharif).

Ref :- I.A.R.I. 58(40).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CMV'.

Object :- To study the effect of different spacings and different levels of manures on different varieties on Arhar.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 24 and 25.7.1958. (iv) (a) 1 Victory ploughing and 3 discings. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) 2 weedings and 3 hoeings. (ix) N.A. (x) 9 and 10.4.1959.

2. TREATMENTS :

Same as in expt. no. 57(37) on page 418.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 3 sub-plots/main-plot and 3 sub-sub-plots/sub-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 31' x 14'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) and (i) N.A. (ii) Grain yield. (iv) (a) 1957—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 388 lb./ac. (ii) (a) 318.0 lb./ac. (b) 199.4 lb./ac. (c) 142.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean	M ₀	M ₁	M ₂
S ₁	450	328	368	519	389	411	409	393	430
S ₂	457	266	389	444	382	388	377	409	377
S ₃	457	205	349	423	389	365	377	340	377
Mean	455	266	369	462	387	388	388	381	395
M ₀	430	259	389	491	369				
M ₁	437	273	389	348	457				
M ₂	498	266	328	546	335				

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|-----------------------------------|----------------|
| 1. V marginal means | = 75.0 lb./ac. | 6. S means at the same level of V | = 58.2 lb./ac. |
| 2. M marginal means | = 36.4 lb./ac. | 7. V means at the same level of S | = 88.7 lb./ac. |
| 3. S marginal means | = 26.0 lb./ac. | 8. S means at the same level of M | = 45.0 lb./ac. |
| 4. M means at the same level of V | = 81.4 lb./ac. | 9. M means at the same level of S | = 51.8 lb./ac. |
| 5. V means at the same level of M | = 100.2 lb./ac. | | |

Crop :- Sugarcane.

Ref :- I.A.R.I. 59(32)

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of N, P and K on Sugarcane.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 31.3.1959 to 1.4.1959. (iv) (a) 1 Victory ploughing followed by *desi* ploughing. (b) to (e) N.A. (v) N.A. (vi) CO.—1104. (vii) Irrigated. (viii) 5 hoeings, 3 weedings and 1 earthing. (ix) N.A. (x) 25.2.1960 to 20.3.1960.

2. TREATMENTS :

All combinations of (1) and (2)+control

(1) 3 methods of application of manures : M_1 = Soil application, M_2 = $\frac{1}{2}$ as soil application + $\frac{1}{2}$ as spray and M_3 = Foliar application.

(2) 5 levels of manures : F_1 = 40 lb./ac. of N, F_2 = 80 lb./ac. of N, F_3 = 120 lb./ac. of N, F_4 = 80 lb./ac. of N + 40 lb./ac. of P_2O_5 , F_5 = 80 lb./ac. of N + 40 lb./ac. of P_2O_5 + 40 lb./ac. of K_2O .

3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 29.5' × 23.0'. (b) 22.5' × 21.5. (v) 3.5' × 0.75'. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Attack of top shoot borer. (iii) Cane yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) N.A. (b) Nil. (vi) Heavy rain during the period of spraying. (vii) There was scorching after spraying. The plant population was not uniform and the stand was poor.

5. RESULTS :

(i) 25.70 tons/ac. (ii) 3.74 tons/ac. (iii) Control vs. others alone is significant. (iv) Av. yield of cane in lb./ac.

	F_1	F_2	F_3	F_4	F_5	Mean
M_1	24.10	27.66	31.41	28.13	25.57	27.37
M_2	23.39	26.25	27.92	23.47	25.67	25.34
M_3	24.47	25.43	26.04	25.64	24.82	25.28
Mean	23.99	26.45	28.46	25.75	25.35	26.00

S.E. of M marginal mean = 8.4 tons/ac.
 S.E. of F marginal mean = 10.8 tons/ac.
 S.E. of body of table or control mean = 18.7 tons/ac.

Crop :- Sugarcane.

Ref :- I.A.R.I. 54(33).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'MV'.

Object :- To study the relative performance of some promising Sugarcane varieties in relation with different levels of N.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 10 and 12.3.1954. (iv) (a) 2 tractor ploughings, 1 *desi* ploughing, 4 beamings, discing and planking. (b) to (e) N.A. (v) The field was green manured with *sannhemp* and additional F.Y.M. at 10 tons/ac. + 80 lb./ac. of P_2O_5 as Super were added. (vi) As per treatments. (vii) Irrigated. (viii) 2 hoeings and 1 earthing. (ix) N.A. (x) March, April 1955.

2. TREATMENTS :

Main-plot treatments :

6 varieties : V_1 = CO.—312, V_2 = CO.—647, V_3 = CO.—659, V_4 = CO.—739, V_5 = CO.—797 and V_6 = BO.—11.

Sub-plot treatments :

4 levels of N as A/S : N_0 = 0, N_1 = 40, N_2 = 80 and N_3 = 120 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 52.5' × 20'. (b) 52.5' × 15'. (v) 2.5' on both sides length wise. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1950—contd. (b) No. (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 28.83 tons/ac. (ii) (a) 5.99 tons/ac. (b) 2.07 tons/ac. (iii) Main effect of N and V are significant. (iv) Av. yield of sugarcane in tons/ac

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	Mean
N ₀	25.96	31.60	28.11	24.90	26.68	27.54	27.47
N ₁	26.95	35.36	27.95	25.17	31.39	27.44	29.04
N ₂	27.75	34.28	29.11	24.60	32.79	30.51	29.84
N ₃	24.79	33.83	28.59	23.90	31.77	30.93	28.97
Mean	26.36	33.77	28.44	24.64	30.66	29.11	28.83

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. V marginal means | = 2.46 tons/ac. |
| 2. N marginal means | = 0.69 tons/ac. |
| 3. N means at the same level of V | = 1.68 tons/ac. |
| 4. V means at the same level of N | = 2.85 tons/ac. |

Crop :- Sugarcane.

Ref :- I.A.R.I. 56(33).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'MV'.

Object :— To study the effect of N on different varieties of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sannhemp*. (c) N.A. (ii) (a) Clay loam. (b) N.A. (iii) 2 and 3.3.1956. (iv) (a) Tractor discing, grubbing and country ploughing. (b) to (e) N.A. (v) G.M. with *sannhemp*. (vi) As per treatments. (vii) Irrigated. (viii) Hoeing and earthing. (ix) 22.28%. (x) 17.2.1957 to 3.4.1957.

2. TREATMENTS :

Same as in expt. no. 54(33) on page 420.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/block and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 60' × 17.5'. (b) 60' × 12.5'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Growth, no. of *clumps*, weight of *clump*, juice analysis for sucrose. (iv) (a) 1950—contd. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Tables of means are N.A.

5. RESULTS :

(i) 26.78 tons/ac. (ii) (a) 3.28 tons/ac. (b) 1.91 tons/ac. (iii) Main effects of V and N are highly significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	N ₀	N ₁	N ₂	N ₃
Av. yield	23.61	30.77	27.37	24.90	28.68	25.34	23.80	26.34	27.80	29.18

S.E. of V marginal mean = 0.95 tons/ac.

S.E. of N marginal mean = 0.45 tons/ac.

Crop :- Sugarcane.**Ref :- I.A.R.I. 57(39).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'MV'.**

Object :—To study the response of different varieties of Sugarcane to Nitrogen.

1. BASAL CONDITIONS :(i) and (ii) N.A. (iii) 27 and 28.3.1957. (iv) (a) 1 ploughing, 2 *desi* ploughings, double discing and double grubbing. (b) to (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 6 hoeings and 1 weeding. (ix) N.A. (x) 8.1.1958 to 6.2.1958.**2. TREATMENTS :****Main-plot treatments :**6 varieties : $V_1=CO.-797$, $V_2=CO.-647$, $V_3=CO.-659$, $V_4=CO.-1109$, $V_5=CO.-999$, and $V_6=CO.-998$.**Sub-plot treatments :**4 levels of N : $N_0=0$, $N_1=40$, $N_2=80$ and $N_3=120$ lb./ac.**3. DESIGN :**(i) Split-plot. (ii) (a) 6 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) $40' \times 15'$. (b) $38' \times 10'$. (v) $1' \times 2.5'$. (vi) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Cane yield. (iv) to (vii) N.A.

5. RESULTS :

(i) 33.40 tons/ac. (ii) (a) 2.95 tons/ac. (b) 3.60 tons/ac. (iii) Only main effects of N and V are highly significant. (iv) Av yield of sugarcane in tons/ac.

	V_1	V_2	V_3	V_4	V_5	V_6	Mean
N_0	24.97	28.85	31.05	35.53	35.31	27.04	30.46
N_1	29.29	35.98	31.37	33.88	29.80	34.15	32.41
N_2	28.67	36.71	36.74	35.77	34.47	35.60	34.66
N_3	34.13	39.35	35.04	35.39	35.94	36.71	36.09
Mean	29.26	35.22	33.55	35.14	33.88	33.37	33.40

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. V marginal means | = 1.20 tons/ac. |
| 2. N marginal means | = 1.20 tons/ac. |
| 3. N means at the same level of V | = 2.94 tons/ac. |
| 4. V means at the same level of N | = 2.82 tons/ac. |

Crop :- Sugarcane.**Ref :- I.A.R.I. 58(41).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'MV'.**

Object :—To study the differential response of Sugarcane varieties to levels of Nitrogen.

1. BASAL CONDITIONS :(i) and (ii) N.A. (iii) 10 and 11.2.1958. (iv) (a) 1 double discing, 2 double grubbing and beaming with *sohaga*. (b) Planting of 3 budded setts. (c) to (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 5 weedings and 3 hoeings. (ix) N.A. (x) 19.1.1959 to mid. February, 1959.**2. TREATMENTS :**

Same as in expt. no. 57(39) above.

3. DESIGN :(i) Split-plot. (ii) (a) 6 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) $36' \times 10'$. (v) N.A. (vi) Yes.

4. GENERAL :

- (i) Normal. Lodging from 25 to 29.9.1958 due to strong gales of wind whose velocity was 64 to 66 m.p.h.
 (ii) Slight attack of shoot borer was controlled by spraying B.H.C. 5%. (iii) Cane yield. (iv) (a) to (c) N.A. (v) to (vii) Nil.

5. RESULTS :

- (i) 27.85 tons/ac. (ii) (a) 5.16 tons/ac. (b) 2.99 tons/ac. (iii) Main effect of V and N alone are highly significant. (iv) Av. yield of stripped cane in tons/ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	Mean
N ₀	26.13	28.31	24.51	31.43	25.41	21.51	26.22
N ₁	27.41	29.15	27.11	31.61	25.72	22.85	27.31
N ₂	29.47	29.95	28.19	32.85	25.73	25.59	28.63
N ₃	29.64	30.03	29.79	33.15	26.94	25.86	29.23
Mean	28.16	29.36	27.40	32.26	25.95	23.95	27.85

S.E. of difference of two

1. V marginal means = 1.82 tons/ac.
2. N marginal means = 0.86 tons/ac.
3. N means at the same level of V = 2.11 tons/ac.
4. V means at the same level of N = 2.58 tons/ac.

Crop :- Sugarcane.

Ref :- I.A.R.I. 59(33).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Sugarcane.

1. BASAL CONDITIONS :

- (i) and (ii) N.A. (iii) 18 and 19.2.1959. (iv) (a) 2 double discings, 1 double grubbing, levelling and beaming. (b) to (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 2 hoeings, 2 weedings and 1 earthing. (ix) N.A. (x) 28.12.1959 to 11.1.1960.

2. TREATMENTS :

Same as in expt. no. 57(39) on page 422.

3. DESIGN :

- (i) Split-plot. (ii) (a) 6 main-plots/replication 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 40' × 15'. (b) 38' × 10'. (v) 1.0' × 2.5'. (vi) Yes.

4. GENERAL :

- (i) and (ii) N.A. (iii) Cane yield. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

- (i) 22.76 tons/ac. (ii) (a) 5.02 tons/ac. (b) 1.79 tons/ac. (iii) Main effects of N and V are highly significant. (iv) Av. yield of sugarcane in tons/ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	Mean
N ₀	16.82	20.18	22.24	24.14	19.67	14.72	19.63
N ₁	19.67	23.39	25.72	23.77	21.61	18.40	22.09
N ₂	19.50	25.39	25.99	26.22	23.77	19.85	23.45
N ₃	22.74	26.26	29.17	27.44	27.32	22.34	25.88
Mean	19.68	23.81	25.78	25.39	23.09	18.83	22.76

S.E. of difference of two

1. V marginal means	= 1.77 tons/ac.
2. N marginal means	= 0.52 tons/ac.
3. N means at the same level of V	= 1.27 tons/ac.
4. V means at the same level of N	= 2.09 tons/ac.

Crop :- Sugarcane.**Ref :- I.A.R.I. 58(42).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'MV'.**

Object :—To study the relative performance of Sugarcane varieties at different levels of N.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 24.3.1958. (iv) (a) 1 Victory plough, 3 desi plough and 2 beamings. (b) In furrows 2½' apart. (c) 50 mds./ac. (d) and (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings and 1 earthing. (ix) Nil. (x) April 1959.

2. TREATMENTS :

Main-plot treatments :

6 varieties : V₁=CO.—1104, V₂=CO.—1116, V₃=CO.—1124, V₄=CO.—1136, V₅=CO.—1142 and V₆=CO.—997.

Sub-plot treatments :

2 levels of N as A/S : N₁=60 and N₂=120 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 22'×7.5'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of sugarcane. (iv) and (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 25.39 tons/ac. (ii) (a) 7.85 tons/ac. (b) 2.47 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of sugarcane in tons/ac.

	1	V ₂	V ₃	V ₄	V ₅	V ₆	Mean
N ₁	26.90	19.92	21.45	24.25	28.23	27.93	24.78
N ₂	28.93	23.31	21.80	26.90	29.79	25.28	26.00
Mean	27.92	21.61	21.63	25.58	29.01	26.60	25.39

S.E. of difference of two

1. V marginal means	= 3.92 tons/ac.
2. N marginal means	= 0.71 tons/ac.
3. N marginal means at the same level of V	= 1.75 tons/ac.
4. V marginal means at the same level of N	= 4.11 tons/ac.

Crop :- Sugarcane.**Ref :- I.A.R.I. 55(23).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'ICM'.**

Object :— To study the effect of variation in the depth of cultivation, levels of N and irrigation intervals on the yield and quality of Sugarcane.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 12 to 14.3.1955. (iv) (a) As per treatments. (b) to (e) N.A. (v) Nil. (vi) CO.—647. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 5 to 29.3.1956.

2. TREATMENTS :

Main-plot treatments :

3 cultural treatments : C₀=Ploughing with *desi* plough (non-inversion), C₁=Ploughing with *desi* plough+tractor plough (inversion) 6" deep+discing+grubbing and C₃=Ploughing with tractor (inversion) 10" deep+discing+grubbing.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N₁=80, N₂=120 and N₃=160 lb./ac.

(2) 3 intervals of irrigation : I₁=10, I₂=15 and I₃=20 days.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 49' × 12 5'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Growth rate low. (ii) Attack of shoot borer in July and August. (iii) Yield of sugarcane. (iv) and (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 26.94 tons/ac. (ii) (a) 9.75 tons/ac. (b) 3.17 tons/ac. (iii) Only C × N interaction is highly significant. (iv) Av. yield of sugarcane in tons/ac.

	N ₁	N ₂	N ₃	Mean	I ₁	I ₂	I ₃
C ₀	27.82	26.68	26.59	27.03	25.94	27.63	27.53
C ₁	24.74	27.07	24.29	25.37	24.93	25.00	26.17
C ₂	29.43	25.70	30.14	28.42	28.68	27.84	28.75
Mean	27.33	26.48	27.01	26.94	26.52	26.82	27.48
I ₁	26.95	25.77	26.83				
I ₂	26.77	27.03	26.66				
I ₃	28.28	26.65	27.52				

S.E. of difference of two

1. C marginal means	= 2.30 tons/ac.
2. N or I marginal means	= 0.75 tons/ac.
3. N or I means at the same level of C	= 1.29 tons/ac.
4. C means at the same level of N or I	= 2.53 tons/ac.
S.E. of body of N × I table	= 0.92 tons/ac.

Crop :- Sugarcane.

Ref :- I.A.R.I. 56(34).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'ICM'.

Object :- To study the effect in the variation of depths of cultivation with nitrogen and irrigation levels on the yield of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 23 and 24.3.1956. (iv) (a) As per treatments. (b) to (e) N.A. (v) F.Y.M. at 10 tons/ac. (vi) CO.—647 (medium). (vii) Irrigated. (viii) Weeding, hoeing and earthing. (ix) 22.28". (x) 11.12.1956 to 12.2.1957.

2. TREATMENTS :

Same as in expt. no 55(23) on page 424.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 49'×17.5'. (b) 49'×12.5'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of sugarcane. (iv) (a) 1953—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Two-way tables of N.A.

5. RESULTS :

(i) 26.79 tons/ac. (ii) (a) 1.86 tons/ac. (b) 1.57 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	C ₀	C ₁	C ₂	N ₁	N ₂	N ₃	I ₁	I ₂	I ₃
Av. yield	26.49	27.20	26.69	26.51	26.70	27.17	26.61	26.80	26.97

S.E. of C marginal mean = 0.31 tons/ac.

S.E. of N or I marginal mean = 0.26 tons/ac.

Crop :- Sugarcane.

Ref :- I.A.R.I. 57(40).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'ICM'.

Object :- To study the effect of variation in depths of cultivation with alternative tillage implements in combination with various levels of N and irrigation.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 13 to 15.3.1957. (iv) (a) 9 ploughings with *desi* plough, 2 tractor ploughings, planking, discing, harrowing and grubbing. (b) In furrows of seed by ridge plough. (c) 60 mds./ac. (d) and (e) N.A. (v) N.A. (vi) CO.—647. (vii) Irrigated. (viii) Hoeings and 2 weedings. (ix) N.A. (x) 14.2.1958 to mid. of March, 1958.

2. TREATMENTS :

Main-plot treatments :

3 depths of cultivation : C₀=4" with *desi* plough (non-inversion), C₁=6" with tractor plough (inversion) and C₂=10" with tractor plough (inversion).

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N₁=80, N₂=120 and N₃=160 lb./ac.

(2) 3 irrigation intervals : I₁=10, I₂=15 and I₃=20 days.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 45'×17.5'. (b) 44'×12.5'. (v) 2.5'×2.5'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of minor borer. (iii) Sugarcane yield. (iv) to (vii) N.A.

5. RESULTS :

(i) 26.42 tons/ac. (ii) (a) 2.10 tons/ac. (b) 2.16 tons/ac. (iii) Main effects of N and I are highly significant. (iv) Av. yield of sugarcane in tons/ac.

	C ₀	C ₁	C ₂	Mean	I ₁	I ₂	I ₃
N ₁	24.41	24.99	25.31	24.90	25.96	24.77	23.98
N ₂	26.59	27.12	27.63	27.11	28.23	27.49	25.62
N ₃	26.27	27.58	27.86	27.24	28.50	28.40	24.81
Mean	25.76	26.56	26.93	26.42	27.56	26.89	24.80
I ₁	27.19	27.54	27.96				
I ₂	26.38	27.13	27.16				
I ₃	23.70	25.02	25.68				

S.E. of difference of two

1. C marginal means	= 0.49 tons/ac.
2. N or I marginal means	= 0.51 tons/ac.
3. N or I means at the same level of C	= 0.88 tons/ac.
4. C means at the same level of N or I	= 0.85 tons/ac.
S.E. of body of N×I table	= 0.62 tons/ac.

Crop :- Sugarcane.**Ref :- I.A.R.I. 57(41).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'ICM'.**

Object :— To study the effect of irrigation levels, nitrogen levels and seed rates on Sugarcane.

1. BASAL CONDITIONS ;

(i) and (ii) N.A. (iii) 19 and 20.3.1957. (iv) (a) 5 *desi* ploughings and 3 *triplalies*. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) Horse hoeing. (ix) 25.96". (x) December, 1957.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 intensities of irrigation : $I_1=45''$, $I_2=60''$ and $I_3=75''$ delta of irrigation.(2) 3 levels of N as A/S : $N_1=60$, $N_2=80$ and $N_3=120$ lb./ac.(3) 3 seed rates : $S_1=45$, $S_2=60$ and $S_3=75$ mds./ac.

28", 38" and 48" water was given with 45", 60" and 75" delta of irrigation.

3. DESIGN :

(i) 3^3 partial confd. (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) and (b) 18'×40'. (v) Nil, (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of top borer. (iii) Sugarcane yield. (iv) (a) to (c) N.A. (v) (a) and (b) Nil. (vi) Hails storm at sowing time. (vii) Nil.

5. RESULTS :

(i) 16.39 tons/ac. (ii) 1.40 tons/ac. (iii) Interactions I×S and N×S are significant. (iv) Av. yield of Sugarcane in tons/ac.

	S_1	S_2	S_3	Mean	I_1	I_2	I_3
N_1	15.85	15.83	16.77	16.15	16.34	15.76	16.36
N_2	15.49	16.89	17.63	16.67	17.13	17.04	15.84
N_3	17.00	16.44	15.59	16.34	15.72	16.70	16.61
Mean	16.11	16.39	16.66	16.39	16.40	16.50	16.27
I_1	15.13	16.54	17.52				
I_2	16.88	16.95	15.67				
I_3	16.33	15.67	16.81				

S.E. of any marginal mean = 0.33 tons/ac.
S.E. of body of any table = 0.57 tons/ac.

Crop :- Sugarcane.**Ref :- I.A.R.I. 56(35).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'D'.**

Object :—To study the effect of 2, 4 -D alone and in combination with cultural practices in controlling weeds in Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) N.A. (ii) (a) Clay loam. (b) N.A. (iii) 24.3.1956. (iv) (a) to (c) N.A. (v) F.Y.M. was broadcast at 12 tons/ac. about $1\frac{1}{2}$ months before sowing and mixed thoroughly with soil. (vi) CO.—647. (vii) Irrigated. (viii) N.A. (ix) 22.28". (x) 2.4.1957 to 16.4.1957.

2. TREATMENTS :

9 weedicidal treatments : W_0 =Unweeded (control), W_1 =Local method of weeding (3 hoeings with cultivator), W_2 =Pre-emergence application of 2, 4-D at 2 lb./ac., W_3 =Post emergence application of 2, 4-D at 2 lb./ac. (once), W_4 =Post emergence application of 2, 4-D at 2 lb./ac. (twice), $W_5=W_2+W_3$, $W_6=W_1+W_2$, $W_7=W_1+W_3$ and $W_8=W_1+W_2+W_3$.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) $33' \times 20\frac{1}{2}'$. (b) $25' \times 16\frac{1}{2}'$. (v) $4.0' \times 2.0'$. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Crop was seriously damaged by top shoot borer in the early stages. Dead hearts were pulled by hand. (iii) Height of cane, no. of canes, juice analysis and total yield of cane. (iv) (a) 1956—1957. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 36.04 tons/ac. (ii) 5.64 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	W_0	W_1	W_2	W_3	W_4	W_5	W_6	W_7	W_8
Av. yield	26.39	38.53	35.04	33.09	31.59	34.80	40.92	40.65	43.37

S.E./mean = 2.82 tons/ac.

Crop :- Sugarcane.

Ref :- I.A.R.I. 57(42).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'D'.

Object :- To study the effect of 2, 4-D alone and in conjunction with cultural practices in controlling weeds in Sugarcane.

1. BASAL CONDITIONS :

(i) to (x) N.A.

2. TREATMENTS :

Same as in expt. no. 56(35) on page 427.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) $33' \times 20\frac{1}{2}'$. (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Cane yield. (iv) (a) 1956—1957. (b) Yes. (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 28.68 tons/ac. (ii) 2.64 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in tons/ac.

Treatment	W_0	W_1	W_2	W_3	W_4	W_5	W_6	W_7	W_8
Av. yield	23.33	30.38	27.11	27.29	26.89	28.47	32.03	30.05	32.55

S.E./mean = 1.32 tons/ac.

Crop :- Sugarcane.**Ref :- I.A.R.I. 58(43).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'D'.**

Object :—To study the effect of 2, 4—D alone and in combination with cultural practices in controlling weeds in Sugarcane.

1. BASAL CONDITIONS :

(i) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

Same as in expt. no. 56(35) on page 427.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 15'×35'. (b) 10'×30'. (v) 2½'×2½'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of cane. (iv) (a) N.A. (b) Yes. (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 30.86 tons/ac. (ii) 2.89 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	W ₀	W ₁	W ₂	W ₃	W ₄	W ₅	W ₆	W ₇	W ₈
Av. yield	24.16	33.58	26.13	30.14	29.96	30.42	34.55	32.53	35.83

S.E./mean = 1.45 tons/ac.

Crop :- Sugarcane.**Ref :- I.A.R.I. 56(36).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'D'.**

Object :—To study the effect of four formulations of weedicides in controlling weeds in Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Cotton. (c) N.A. (ii) (a) Clay loam. (b) N.A. (iii) 21.3.1956. (iv) (a) to (e) N.A. (v) 290 mds /ac. of F.Y.M. as basal dressing and mixed on 4.1.1956 and 100 lb./ac. of N as C/N was applied as top dressing. (vi) CO.—647 (medium). (vii) Irrigated. (viii) N.A. (ix) 22.28". (x) 3 to 12.4.1957.

2. TREATMENTS :**Main-plot treatments :**4 weedicides : W₁=Sodium salt of 2, 4—D, W₂=Ethylester of 2, 4—D, W₃=Amine salt of 2, 4—D and W₄=Sodium salt of M.C.P.A.**Sub-plot treatments :**4 levels of weedicides : D₁=8, D₂=16, D₃=24 and D₄=32 ozs /ac. of acid equivalent.**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/block ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 45'×17'. (b) 41'×10'. (v) 2'×3.5'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Crop was seriously damaged by top shoot borer. Mechanical methods were used for control. (iii) Height of cane, no. of canes per clump, juice analysis, total yield of cane and weed population count. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Table of means—N.A.

5. RESULTS :

(i) 20.50 tons/ac. (ii) (a) 9.24 tons/ac. (b) 3.82 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	W ₁	W ₂	W ₃	W ₄	D ₁	D ₂	D ₃	D ₄
Av. yield	22.59	21.03	20.76	17.63	21.46	20.76	19.31	20.48

S.E. of W marginal mean = 2.31 tons/ac.

S.E. of D marginal mean = 0.96 tons/ac.

Crop :- Sugarcane.

Ref :- I.A.R.I. 57(43).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'D'.

Object :- To study the effect of four formulations of weedicides in controlling weeds in Sugarcane.

1. BASAL CONDITIONS :

(i) to (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(36) on page 429.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Cane yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 26.31 tons/ac. (ii) (a) 2.87 tons/ac. (b) 1.91 tons/ac. (iii) None] of the effects is significant. (iv) Av. yield of sugarcane in tons/ac.

	W ₁	W ₂	W ₃	W ₄	Mean
D ₁	28.48	27.14	26.30	25.21	26.78
D ₂	25.45	24.95	26.62	26.66	25.92
D ₃	24.92	27.95	26.15	25.85	26.22
D ₄	26.89	26.37	26.03	25.96	26.31
Mean	26.44	26.60	26.27	25.92	26.31

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. W marginal means | = 1.01 tons/ac. |
| 2. D marginal means | = 0.67 tons/ac. |
| 3. D means at the same level of W | = 1.35 tons/ac. |
| 4. W means at the same level of D | = 1.55 tons/ac. |

Crop :- Sugarcane.

Ref :- I.A.R.I. 59(34).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'D'.

Object :- To find out a suitable weed control programme in Sugarcane using chemicals and cultural methods.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 16.3.1959. (iv) (a) 1 *desi* ploughing, 1 Victory ploughing, 2 grubblings and 2 discings by tractor. (b) to (e) N.A. (v) 120 lb./ac. of N+60 lb./ac. of P₂O₅. (vi) N.A. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 2nd week of March, 1960.

2. TREATMENTS :

All combinations of (1) and (2)+5 extra treatments

(1) 4 weedicides at pre emergence stage : W₀=Nil, W₁=1 hand weeding, W₂=10 lb. of TCA+1 lb. of 2, 4-D, W₃=Crag I+1½ lb. of 2, 4-D.(2) 4 weedicides at post emergence stage : X₁=4 lb. of Crag I+1½ lb. of 2, 4-D, X₂=8 lb. of TCA+1½ lb. of 2, 4-D, X₃=2 lb. of CMU+2 lb. of 2, 4-D, and X₄=2 hoeings.Extra treatments : E₀=Control, E₁=Regular hand weeding, E₂=3 hoeings (local method), E₃=3 hand weeding and E₄=3 hand weeding+3 hoeings.

3. DESIGN :

(i) R.B.D. (ii) (a) 21. (b) N.A. (iii) 4. (iv) (a) 20'×30'. (b) 300 sq. ft. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of top-borer. (iii) Cane yield. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 21.50 tons/ac. (ii) 1.71 tons/ac. (iii) Main effects of W and X are highly significant. Interaction W × X is significant. 'E vs. others' and E effects are highly significant. (iv) Av. yield of sugarcane in tons/ac.

$$E_0 = 7.41, \quad E_1 = 36.24, \quad E_2 = 17.27, \quad E_3 = 26.18 \text{ and } E_4 = 26.78 \text{ tons/ac.}$$

	X ₁	X ₂	X ₃	X ₄	Mean
W ₀	11.02	10.26	21.25	14.03	14.14
W ₁	13.00	11.12	22.09	15.04	15.31
W ₂	24.53	25.49	29.46	26.13	26.40
W ₃	26.45	25.96	32.40	29.30	28.53
Mean	18.75	18.21	26.30	21.12	21.10

S.E. of W or X marginal mean = 0.43 tons/ac.
S.E. of body of table or E mean = 0.86 tons/ac.

Crop :- Sugarcane.

Ref :- I.A.R.I. 54(34).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'DM'.

Object :—To test the relative efficiency of different forms of N with some weed control measures.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 11 and 12.3.1954. (iv) (a) 4 ploughings and 1 discing. (b) to (e) N.A. (v) 10 tons/ac. of F.Y.M.+80 lb./ac. of P₂O₅+N (dose N.A.). (vi) CO,—312. (vii) Irrigated. (viii) 2 blind hoeings, 3 hoeings and 1 weeding. (ix) N.A. (x) 10.2.1955 to 6.4.1955.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 sources of N : S₁=A/S, S₂=C/N and S₃=Cal. Nitrate.

(2) 3 levels of N : N₁=40, N₂=80 and N₃=120 lb./ac.

(3) 3 methods of weed control : W₁=Mechanical, W₂=Dicotex (2, 4-D) at 5 lb./ac. and W₃=C/S at 15 lb./ac.

N applied on 31.3.1954.

3. DESIGN :

(i) 3³ confd. (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 1/60.5 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of cane. (iv) (a) 1952—1954. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 20.18 tons/ac. (ii) 2.50 tons/ac. (iii) Main effect of W alone is highly significant. (iv) Av. yield of sugarcane in tons/ac.

	N ₁	N ₂	N ₃	Mean	W ₁	W ₂	W ₃
S ₁	19.01	19.66	20.30	19.66	22.34	19.21	17.43
S ₂	20.03	21.02	21.75	20.93	24.99	17.89	19.92
S ₃	18.35	19.79	21.70	19.95	21.76	18.82	19.26
Mean	19.13	20.16	21.25	20.18	23.03	18.64	18.87
W ₁	23.44	23.07	22.58				
W ₂	16.82	18.48	20.61				
W ₃	17.13	18.93	20.56				

S.E. of any marginal mean

= 0.59 tons/ac.

S.E. of body of any table

= 1.02 tons/ac.

Crop :- Cotton (Kharif).**Ref :- I.A.R.J. 57(44).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :—To determine the optimum dose of N and P and the most efficient method of applying the same on the yield of Cotton.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 2.5.1957. (iv) (a) 1 ploughing with Victory plough and 2 rollings. (b) N.A. (c) 20 lb./ac. (d) and (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 16 to 19.10.1957 and 15 to 18.12.1957.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 methods of application : M₁=Broadcast, M₂=Fertilizer placed 3" under seed and M₃=Fertilizer placed 4" to either side of seed and 4" below seed level.

(2) 3 levels of N as A/S : N₁=40, N₂=80 and N₃=120 lb./ac.

(3) 3 levels of P₂O₅ : P₀=0, P₁=40 and P₂=80 lb./ac.

3. DESIGN :

(i) 3³ partially confd. (MNP² and MN²P² are confd.) (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 50' × 17'. (b) 40' × 12.5'. (v) 5' × 2.25'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of jassids. (iii) Yield of *kapas*. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1282 lb./ac. (ii) 119.2 lb./ac. (iii) Interaction N × P alone is significant. (iv) Av. yield of *kapas* in lb./ac.

	N ₁	N ₂	N ₃	Mean	M ₁	M ₂	M ₃
P ₀	1247	1229	1315	1264	1291	1184	1316
P ₁	1279	1361	1179	1273	1207	1336	1276
P ₂	1396	1235	1297	1309	1258	1321	1349
Mean	1307	1275	1264	1282	1252	1280	1314
M ₁	1283	1207	1265				
M ₂	1294	1330	1217				
M ₃	1345	1288	1309				

S.E. of any marginal mean

= 28.1 lb./ac.

S.E. of body of any table

= 48.7 lb./ac.

Crop :- Cotton (Kharif).**Ref :- I.A.R.I. 52(44).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.****Object :-**To study the effect of different methods of application of N and P on the yield of Cotton.**1. BASAL CONDITIONS :**

(i) and (ii) N.A. (iii) 18.5.1958. Resown on 25.5.1958. (iv) (a) 2 ploughings with Victory plough, 1 double discing and grubbing twice, *triphali* and double *sohaga*. (b) to (e) N.A. (v) N.A. (vi) F.—216. (vii) Irrigated. (viii) 2 weedings and 2 hoeings. (ix) N.A. (x) 18 to 20.10.1958, 3 to 9.11.1958 and 4 to 11.12.1958.

2. TREATMENTS :

All combinations of (1), (2) and (3)+3 extra treatments in each block.

(1) 3 levels of N : $N_1=20$, $N_2=40$ and $N_3=60$ lb./ac.(2) 3 levels of P_2O_5 : $P_1=15$, $P_2=30$ and $P_3=45$ lb./ac.(3) 3 methods of application : M_1 =Soil application, M_2 =Half applied to soil+half sprayed and M_3 =Spray application.Extra treatments : E_0 =Control, $E_1=80$ lb./ac. of N+45 lb./ac. of P_2O_5 as soil application and $E_2=100$ lb./ac. of N+45 lb./ac. of P_2O_5 as soil application.**3. DESIGN :**

(i) 3^3 confd with 3 extra treatments/block (NP^2M and NPM^2 are confd.). (ii) (a) 12 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) $27' \times 24'3''$. (b) $25' \times 17'6''$. (v) $1' \times 3'4\frac{1}{2}''$. (vi) Yes.

4. GENERAL :(i) and (ii) N.A. (iii) Yield of *kapas*. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.**5. RESULTS :**(i) 651 lb./ac. (ii) 166.3 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in lb./ac.

$$E_0 = 665 \text{ lb./ac.}, E_1 = 781 \text{ lb./ac. and } E_2 = 639 \text{ lb./ac.}$$

	N_1	N_2	N_3	Mean	M_1	M_2	M_3
P_1	561	671	672	635	621	647	636
P_2	697	661	686	681	635	620	788
P_3	746	537	533	592	678	538	560
Mean	668	623	630	636	645	602	661
M_1	729	564	641				
M_2	661	526	619				
M_3	614	779	631				

S.E. of any marginal mean = 39.2 lb./ac.

S.E. of body of any table or E mean = 67.9 lb./ac.

Crop :- Cotton (Kharif).**Ref :- I.A.R.I. 59(35).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.****Object :-**To compare the response of Cotton to the application of Urea and triple Superphosphate applied as solid fertilizer to soil, sprayed on foliage and the combination of the two.**1. BASAL CONDITIONS :**

(i) and (ii) N.A. (iii) 22 and 23.5.1959. (iv) (a) 1 Victory ploughing, 1 ploughing with *triphali* and plankings. (b) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 1 hand weeding, 1 weeding with *khurpi*, 1 horse hoeing and 1 thinning. (ix) N.A. (x) 25.9.1959 to 24.10.1959.

2. TREATMENTS :

All combinations (1), (2) and (3)+3 extra treatments in each block.

(1) 3 levels of N : $N_1=20$, $N_2=40$ and $N_3=60$ lb./ac.

(2) 3 levels of P_2O_5 : $P_1=15$, $P_2=30$ and $P_3=45$ lb./ac.

(3) 3 methods of application : M_1 =Full dose applied to the soil M_2 =Half dose through soil and half sprayed on foliage and M_3 =Full dose applied on foliage.

Extra treatments : E_0 =Control, $E_1=80$ lb./ac. of N+40 lb./ac. of P_2O_5 applied through soil and $E_2=100$ lb./ac. of N+45 lb./ac. of P_2O_5 applied through soil.

N applied as Urea and P_2O_5 as triple Super.

3. DESIGN :

(i) 3^3 partially confd. with three extra treatments (NPM² and NP²M are confd.). (ii) (a) 12 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) $27' \times 22\frac{1}{2}'$. (b) $25' \times 17\frac{1}{2}'$. (v) $1' \times 2.5'$. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Boll worm attack. Endrex was sprayed. (iii) Yield of *kapas*. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 971 lb./ac. (ii) 204.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in lb./ac.

$$E_0 = 1140 \text{ lb./ac.}, E_1 = 971 \text{ lb./ac. and } E_2 = 830 \text{ lb./ac.}$$

	N_1	N_2	N_3	Mean	M_1	M_2	M_3
P_1	1031	1026	931	996	919	1044	1026
P_2	899	896	973	924	927	884	960
P_3	958	1018	944	983	899	971	1079
Mean	973	980	949	968	915	966	1022
M_1	918	1032	796				
M_2	942	915	1041				
M_3	1057	991	1013				

S.E. of any marginal mean = 48.3 lb./ac.
S.E. of body of any table or E mean = 83.6 lb./ac.

Crop :- Cotton (Kharif).

Ref :- I.A.R.I. 58(45).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To determine the relative efficiency of methods of applying different levels of N alone and with P.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 20.5.1958. Resown on 27.5.1958. (iv) (a) 1 tractor ploughing, 1 discing, 1 ploughing with Victory plough and 1 ploughing with *desi* plough (b) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 2 weedings and 1 interculture. (ix) N.A. (x) 16 to 22.10.1958 and 13 to 16.11.1958.

2. TREATMENTS :

Main-plot treatments :

4 doses of fertilizers : $F_1=20$ lb./ac. of N as A/S, $F_2=40$ lb./ac. of N as A/S, $F_3=60$ lb./ac. of N as A/S and $F_4=F_3+60$ lb./ac. of P_2O_5 as Super.

Sub-plot treatments :

3 methods of application : M_1 =Broadcast, M_2 =Placed 3" below seed and M_3 =Placed 4" to either side of seed and 4" below the seed level.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) 50' x 14.5'. (b) 43.5' x 10'. (v) 3 $\frac{1}{4}$ ' x 2 $\frac{1}{4}$ '. (vi) Yes.

4. GENERAL :

(i) First sown crop failed because of hot and gusty winds. The re-sown crop put on normal growth in early stages but was ruined later by pest and rain. (ii) Severe attack of jassid and chafer beetle. (iii) Yield of *kapas*. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 273 lb./ac. (ii) (a) 95.0 lb./ac. (b) 101.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in lb./ac.

	F ₁	F ₂	F ₃	F ₄	Mean
M ₁	357	405	396	360	380
M ₂	354	384	421	365	381
M ₃	305	384	352	393	359
Mean	339	391	390	373	373

S.E. of difference of two

1. F marginal means = 34.7 lb./ac.
2. M marginal means = 32.2 lb./ac.
3. M means at the same level of F = 64.4 lb./ac.
4. F means at the same level of M = 62.9 lb./ac.

Crop :- Cotton.

Ref :- I.A.R.I. 59(36).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study the uptake of P by Cotton.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 26 to 29.4.1959. (iv) (a) Double grubbing and double discing. (b) to (e) N.A. (v) 60 lb./ac. of N+40 lb./ac. of K₂O. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) N.A.

2. TREATMENTS :

All combinations of (1), 2) and (3)+3 extra treatments/block.

(1) 3 levels of P₂O₅ : P₁=20, P₂=40 and P₃=60 lb./ac.

(2) 3 types of single band placement : H₀=0", H₁=3" and H₂=5" below surface.

(3) 3 types of double band placement : M₀=0", M₁=3" and M₂=5" below surface.

Extra treatments : E₁=60 lb./ac. of N+40 lb./ac. of K₂O, E₂=40 lb./ac. of P₂O₅ in single band 3" below surface and E₃=40 lb./ac. of P₂O₅ in double band 3" below surface.

P₂O₅ applied in the form of Super.

3. DESIGN :

(i) 3³ partially confd. with 3 extra treatments per block. (PH²M² and PH²M were confd.). (ii) (a) 12 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 18' x 20'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of jassids. (iii) Yield of *kapas*. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 961 lb./ac. (ii) 171.4 lb./ac. (iii) Interaction PH²M² alone is significant. (iv) Av. yield of *kapas* in lb./ac.

$E_1 = 982 \text{ lb./ac.}$, $E_2 = 916 \text{ lb./ac.}$ and $E_3 = 955 \text{ lb./ac.}$

	M_0	M_1	M_2	Mean	H_0	H_1	H_2
P_1	919	952	889	920	973	846	941
P_2	894	1143	1017	1018	1046	939	1069
P_3	1007	884	977	956	889	997	982
Mean	940	993	961	965	969	927	997
H_0	943	1022	943				
H_1	928	931	923				
H_2	949	1025	1017				

S.E. of any marginal mean

= 40.4 lb./ac.

S.E. of body of any table or E mean

= 70.0 lb./ac.

Crop :- Cotton.

Ref :- I.A.R.I. 56(37).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object :- To study the effect in the variation of depths of cultivation with and without inversion on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 19.6.1956. (iv) (a) As per treatments. (b) to (e) N.A. (v) 10 tons/ac. of F.Y.M. (vi) F.—216. (vii) Irrigated. (viii) Weeding and hoeing. (ix) 16.69%. (x) Pickings on 24, 26 9.1956, 23, 25.10.1956 and 24.11.1956.

2. TREATMENTS:

Main plot treatments :

3 types of ploughing: T_1 =Tractor ploughing 10" deep followed by grubbing and discing, T_2 =5" to 6" deep Victory ploughing followed by country plough and T_3 =Country plough.

Sub-plot treatments :

2 methods of application: M_1 =Broadcast and M_2 =Placement.

Sub-sub-plot treatments :

4 manurial treatments: N_1 =40 lb./ac. of N as A/S, N_2 =40 lb./ac. of N as G.N.C., N_3 =40 lb./ac. of N as A/S+80 lb./ac. of P_2O_5 and N_4 =40 lb./ac. of G.N.C.+80 lb./ac. of P_2O_5 .

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication; 2 sub-plots/main-plot and 4 sub-sub-plots/sub-plot. (b) N.A. (iii) 5. (iv) (a) 38'×15.5'. (b) 36'×13.5'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of *kapas*. (iv) (a) 1952—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (i) Nil. (vii) Two way tables : N.A.

5. RESULTS :

(i) 387 lb./ac. (ii) (a) 124.9 lb./ac. (b) 114.7 lb./ac. (c) 153.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	T_1	T_2	T_3	M_1	M_2	N_1	N_2	N_3	N_4
Av. yield	415	392	352	402	373	373	389	415	370

S.E. of T mean = 19.7 lb./ac.

S.E. of M mean = 14.8 lb./ac.

S.E. of N mean = 30.0 lb./ac.

Crop :- Cotton.**Ref :- I.A.R.I. 54(37).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'CM'.**

Object :—To study the effect of depths of cultivation, different forms of nitrogen in combination with phosphate and their method of application on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) N.A. (ii) (a) and (b) N.A. (iii) 1.6.1954. (iv) (a) As per treatments. (b) Sown in lines. (c) to (e) N.A. (v) Nil. (vi) to (x) N.A.

2. TREATMENTS :**Main-plot treatments :**

3 types of ploughing : $T_1=9''$ to $10''$ deep ploughing by tractor followed by grubber, $T_2=5''$ to $6''$ deep ploughing by Victory plough followed by country plough and $T_3=4''$ to $5''$ deep ploughing by country plough.

Sub-plot treatments :

2 methods of application : M_1 =Broadcast and M_2 =Placement.

Sub-sub-plot treatments :

All combinations of (1) and (2)

(1) 2 sources of 40 lb./ac. of N : $S_1=A/S$ and $S_2=G.N.C.$

(2) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=80$ lb./ac.

Fertilizers applied on 31.5.1954 and 1.6.1954.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 2 sub-plots/main-plot and 4 sub-sub-plots/sub-plot. (b) N.A. (iii) 5. (iv) (a) $30' \times 21'$. (b) $27' \times 18'$. (v) $1.5' \times 1.5'$. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) 1952—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1323 lb./ac. (ii) (a) 343.5 lb./ac. (b) 243.4 lb./ac. (c) 220.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in lb./ac.

	M_1	M_2	S_1	S_2	P_0	P_1	Mean
T_1	1379	1310	1353	1335	1297	1391	1344
T_2	1231	1257	1251	1236	1269	1218	1244
T_3	1445	1315	1382	1378	1435	1324	1380
Mean	1352	1294	1329	1316	1334	1311	1323
P_0	1360	1308	1331	1338			
P_1	1343	1280	1327	1295			
S_1	1317	1341					
S_2	1386	1247					

S.E. of difference of two

- | | | | |
|-----------------------------------|----------------|--|----------------|
| 1. T marginal means | = 77.9 lb./ac. | 6. M means at the same level of P or S | = 59.9 lb./ac. |
| 2. M marginal means | = 44.4 lb./ac. | 7. P or S means at the same level of M | = 57.0 lb./ac. |
| 3. S or P marginal means | = 40.5 lb./ac. | 8. P or S means at the same level of T | = 69.8 lb./ac. |
| 4. M means at the same level of T | = 77.0 lb./ac. | 9. T means at the same level of P or S | = 92.2 lb./ac. |
| 5. T means at the same level of M | = 95.0 lb./ac. | S.E. of body of $P \times S$ table | = 40.3 lb./ac. |

Crop :- Cotton (Kharif).**Ref :- I.A.R.I. 57(45).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'CM'.**

Object :—To study the seed bed prepared by alternative forms of tillage implements in conjunction with various doses of manures and their mode of application on the yield of Cotton.

1. BASAL CONDITIONS:

(i) and (ii) N.A. (iii) 9 and 10.5.1957. (iv) (a) As per treatments. (b) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 1 hoeing by bullock hoe, 1 hand hoeing with Sharma hoe and 1 weeding with *khurpi* (ix) N.A. (x) 27.9.1957, 11.10.1957, 25.10.1957 and 12.11.1957.

2. TREATMENTS:

Main-plot treatments:

3 types of ploughing: T_1 =Deep ploughing 9" to 10" by tractor followed by grubber and disc, T_2 =5" to 6" ploughing by bullock soil turning Victory plough followed by country plough and T_3 =4" to 5" deep ploughing by country plough.

Sub-plot treatments:

2 methods of application: M_1 =Placement of manures at plough hole and M_2 =Broadcast of manures.

Sub-sub-plot treatments:

4 manurial treatments: N_1 =40 lb./ac. of N as A/S, N_2 =40 lb./ac. of N as G.N.C., N_3 = N_1 +80 lb./ac of P_2O_5 as Super and N_4 = N_2 +80 lb./ac. of P_2O_5 as Super.

3. DESIGN:

(i) Split-plot. (ii) (a) 3 main-plots/replication; 2 sub-plots/main-plot and 4 sub-sub-plot/sub-plot. (b) N.A. (iii) 5. (iv) (a) 38' x 15.5'. (b) 35' x 10.0'. (v) 1'6" x 2' x 9". (vi) Yes.

4. GENERAL:

(i) Very good. (ii) Attack of jassids, wilt and boll rots. 5% DDT was dusted. (iii) Yield of *kapas*. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 1793 lb./ac. (ii) (a) 249.8 lb./ac. (b) 139.4 lb./ac. (c) 130.9 lb./ac. (iii) Main effect of M and interaction $T \times M$ are significant. (iv) Av. yield of *kapas* in lb./ac.

	N_1	N_2	N_3	N_4	Mean	M_1	M_2
T_1	1668	1750	1784	1795	1749	1749	1750
T_2	1781	1849	1761	1853	1811	1823	1799
T_3	1859	1800	1780	1834	1818	1901	1735
Mean	1769	1800	1775	1827	1793	1824	1761
M_1	1794	1821	1820	1862			
M_2	1745	1778	1730	1793			

S.E. of difference of two

- | | | | |
|-----------------------------------|----------------|-----------------------------------|----------------|
| 1. T marginal means | = 55.8 lb./ac. | 5. T means at the same level of M | = 64.0 lb./ac. |
| 2. M marginal means | = 25.4 lb./ac. | 6. T means at the same level of N | = 75.4 lb./ac. |
| 3. N marginal means | = 33.8 lb./ac. | 7. N means at the same level of T | = 58.5 lb./ac. |
| 4. M means at the same level of T | = 44.8 lb./ac. | 8. M means at the same level of N | = 48.6 lb./ac. |
| | | 9. N means at the same level of M | = 47.8 lb./ac. |

Crop :- Cotton.

Ref :- I.A.R.I. 57(46).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'ICM'.

Object:—To study the relationship of Irrigation, nitrogen levels and sowing dates on the yield of Cotton.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) As per treatments. (iv) (a) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS:

All combinations of (1), (2) and (3)

(1) 3 depths of Irrigation: I_1 =20", I_2 =30" and I_3 =40".

(2) 3 levels of N as A/S: N_1 =20, N_2 =40 and N_3 =80 lb./ac.

(3) 3 dates of sowing: D_1 =1st May, D_2 =20th May and D_3 =10th June.

3. DESIGN :

(i) 3³ confd. (D²N² is totally confd.). (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 3. (iv) (a) 16' x 47'. (b) 1/82 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of *kapas*. (iv) (a) 1956 - contd. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1081 lb./ac. (ii) 214.3 lb./ac. (iii) Main effect of D alone is significant. (iv) Av. yield of *kapas* in lb./ac.

	I ₁	I ₂	I ₃	Mean	D ₁	D ₂	D ₃
N ₁	1116	1032	1119	1089	1170	1155	941
N ₂	1128	1109	1105	1114	1207	1130	1005
N ₃	1117	949	1054	1040	1071	1062	986
Mean	1120	1030	1093	1081	1151	1116	977
D ₁	1174	1137	1138				
D ₂	1199	1021	1127				
D ₃	989	932	1012				

S.E. of any marginal mean = 35.7 lb./ac.
S.E. of body of any table = 61.9 lb./ac.

Crop :- Cotton (Kharif).

Ref :- I.A.R.I. 58(46).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- ICM.

Object :- To study the relationship of irrigation, nitrogen levels and sowing dates on the yield of Cotton.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) As per treatments. (iv) (a) 6 *desi* ploughings and 4 *triphatics*. (b) to (v) N.A. (vi) and (vii) N.A. (viii) As per treatments. (ix) Horse hoeing and weeding. (x) 36.2". (xi) 1.12.1958 onwards.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 water regions : I₁=0.33, I₂=0.75 and I₃=above i atmosphere.

(2) 3 levels of N as C/N : N₁=20, N₂=40 and N₃=80 lb/ac.

(3) 3 dates of sowing : D₁=1.5.1958, D₂=20.5.1958 and D₃=1.6.58.

3. DESIGN :

(i) 3³ partially confd. (IN²D² and IN²D are partially confd.) (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 17.5' x 40'. (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal (ii) Jassids, boll worms and grey beetle. (iii) Yield of *kapas*. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 363 lb/ac. (ii) 82.7 lb/ac. (iii) Main effect of D alone is highly significant. (iv) Av. yield of *kapas* in lb/ac.

	N ₁	N ₂	N ₃	Mean	I ₁	I ₂	I ₃
D ₁	393	396	393	394	355	428	398
D ₂	364	426	417	402	419	411	378
D ₃	277	334	270	293	320	275	285
Mean	345	385	360	363	365	372	353
I ₁	347	386	360				
I ₂	334	393	389				
I ₃	353	377	330				

S.E. of any marginal mean = 19.5 lb./ac.
 S.E. of body of any table = 33.8 lb./ac.

Crop :- Cotton.

Ref :- I.A.R.I. 56(38).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CD'.

Object :- To study the effect of T.C.A., P.C.P., 2, 4--D and cultural treatments in controlling weeds in Cotton.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Heavy loam. (b) N.A. (iii) 5.5.1956. (iv) (a) to (e) N.A. (v) 30 lb./ac. of N as A/S+30 lb./ac. of P₂O₅ as Super applied as broadcast before planting and mixed with the soil. (vi) F.—216. (vii) Irrigated. (viii) As per treatments. (ix) 16.67%. (x) 18 to 20.9.1956, 3 to 4.10.1956 and 5 to 8.11.1956.

2. TREATMENTS :

25 weed control treatments : C₀=Control, C₁=Weeding by hand, C₂=Hoeing with cultivator, C₃=Pre-emergence spray of T.C.A. at 3 lb./ac., C₄=Pre-emergence spray of T.C.A. at 6 lb./ac., C₅=Pre-emergence spray of T.C.A. at 9 lb./ac., C₆=Post-emergence spray of T.C.A. at 3 lb./ac., C₇=Post-emergence spray of T.C.A. at 6 lb./ac., C₈=Post-emergence spray of T.C.A. at 9 lb./ac., C₉=C₃+C₆, C₁₀=C₃+C₂, C₁₁=C₆+C₂, C₁₂=Pre-emergence spray of P.C.P. at 3 lb./ac., C₁₃=Pre-emergence spray of P.C.P. at 6 lb./ac., C₁₄=Pre-emergence spray of P.C.P. at 9 lb./ac., C₁₅=Post-emergence spray of P.C.P. at 3 lb./ac., C₁₆=Post-emergence spray of P.C.P. at 6 lb./ac., C₁₇=Post-emergence spray of P.C.P. at 9 lb./ac., C₁₈=C₁₂+C₁₅, C₁₉=C₁₂+C₂, C₂₀=C₁₅+C₂, C₂₁=Pre-emergence spray of 2, 4--D at 4 ozs./ac., C₂₂=Pre-emergence spray of 2, 4--D at 6 ozs./ac., C₂₃=Pre-emergence spray of 2, 4--D at 8 ozs./ac. and C₂₄=Pre-emergence spray of 2, 4--D at 10 ozs./ac.

3. DESIGN :

5×5 lattice. (ii) (a) 5 plots/block ; 5 blocks/replication. (b) N.A. (iii) 3. (iv) (a) 32'×26'. (b) 30'×18'. (v) 1'×4'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of pinle boll worm. (iii) Height, number of bolls, number of branches per plant and yield of kapas. (iv) (a) 1956—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 930 lb./ac. (ii) 134.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of kapas in lb./ac.

Treatment	C ₀	C ₁	C ₂	C ₃	C ₄	C ₅	C ₆	C ₇	C ₈	C ₉	C ₁₀	C ₁₁	C ₁₂
Av. yield	683	1234	1111	716	782	889	839	1029	1119	954	1234	1325	831
Treatment	C ₁₃	C ₁₄	C ₁₅	C ₁₆	C ₁₇	C ₁₈	C ₁₉	C ₂₀	C ₂₁	C ₂₂	C ₂₃	C ₂₄	
Av. yield	749	889	847	806	815	864	1061	1070	913	872	732	880	

S.E./mean = 77.4 lb./ac.

Crop :- Cotton (Kharif).

Ref :- I.A.R.I. 57(47).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'DC'.

Object :- To study the effectiveness of three weedicides (T.C.A., P.C.P., 2, 4-D) over indigenous method of weed control in Cotton.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 21.5.1957. (iv) (a) 1 double discing, 1 ploughing, 1 double *tijali* ploughing, 1 ploughing, and *tijali* ploughing. (b) to (e) N.A. (v) 80 lb./ac. of N as A/S (½ on 25.6.1957 and the other half on 1.8.1957). (vi) N.A. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 18.12.1957.

2. TREATMENTS :

25 weed control treatments : C₀=Control, C₁=6 lb./ac. of T.C.A. as pre-emergence spray, C₂=12 lb./ac. of T.C.A. as pre-emergence spray, C₃=18 lb./ac. of T.C.A. as pre-emergence spray, C₄=6 lb./ac. of T.C.A. as post-emergence spray, C₅=12 lb./ac. of T.C.A. as post-emergence spray, C₆=18 lb./ac. of T.C.A. as post-emergence spray, C₇=6 lb./ac. of T.C.A. as pre+post-emergence spray, C₈=6 lb./ac. of T.C.A. as pre emergence spray+hoeing, C₉=6 lb./ac. of T.C.A. as post-emergence spray+hoeing, C₁₀=3 lb./ac. of P.C.P. as pre-emergence spray, C₁₁=6 lb./ac. of P.C.P. as pre-emergence spray, C₁₂=9 lb./ac. of P.C.P. as pre-emergence spray, C₁₃=3 lb./ac. of P.C.P. as post-emergence spray, C₁₄=6 lb./ac. of P.C.P. as post-emergence spray, C₁₅=9 lb./ac. of P.C.P. as post-emergence spray, C₁₆=3 lb./ac. of P.C.P. as pre+post-emergence spray, C₁₇=3 lb./ac. of P.C.P. as pre-emergence spray+hoeing, C₁₈=3 lb./ac. of post-emergence spray+hoeing, C₁₉=4 ozs./ac. of 2, 4-D as pre-emergence spray, C₂₀=6 ozs./ac. of 2, 4-D as pre-emergence spray, C₂₁=8 ozs./ac. of 2, 4-D as pre-emergence spray, C₂₂=10 lb./ac. of 2, 4-D as pre-emergence spray, C₂₃=Bullock hoeing and C₂₄=Hand weeding.

3. DESIGN :

(i) Simple lattice. (ii) (a) 5 plots/block ; 5 blocks/replication. (b) N.A. (iii) 3. (iv) (a) 32'×20'. (b) 20'×14'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) Poor growth. (ii) Attack of pink boll worm and jassids and red leaf disease. (iii) Yield of *kapas*. (iv) (a) 1956—contd. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 205 lb./ac. (ii) 95.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	C ₀	C ₁	C ₂	C ₃	C ₄	C ₅	C ₆	C ₇	C ₈	C ₉	C ₁₀	C ₁₁	C ₁₂
Av. yield	218	207	215	216	144	251	187	153	254	188	142	163	199
Treatment	C ₁₃	C ₁₄	C ₁₅	C ₁₆	C ₁₇	C ₁₈	C ₁₉	C ₂₀	C ₂₁	C ₂₂	C ₂₃	C ₂₄	
Av. yield	197	173	234	213	240	420	182	109	155	154	280	261	

S.E./mean = 51.1 lb./ac.

Crop :- Cotton.

Ref :- I.A.R.I. 58(47).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'DC'.

Object :- To study the effect of weedicides and cultural treatments in controlling weeds in Cotton.

1. BASAL CONDITIONS :

(i) to (vii) N.A. (viii) As per treatments. (ix) and (x) N.A.

2. TREATMENTS :

Same as in expt. no. 56(38) on page 440.

3. DESIGN :

(i) 5×5 lattice. (ii) (a) 5 plots/block ; 5 blocks/replication. (b) N.A. (iii) 3. (iv) (a) 32'×20'. (b) 26'×14'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of *kapas*. (iv) (a) 1956—contd. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 142.0 lb./ac. (ii) 30.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	C ₀	C ₁	C ₂	C ₃	C ₄	C ₅	C ₆	C ₇	C ₈	C ₉	C ₁₀	C ₁₁	C ₁₂
Av. yield	92.2	435.0	329.1	97.6	70.8	105.6	66.1	55.8	88.4	74.9	327.9	309.7	42.8

Treatment	C ₁₃	C ₁₄	C ₁₅	C ₁₆	C ₁₇	C ₁₈	C ₁₉	C ₂₀	C ₂₁	C ₂₂	C ₂₃	C ₂₄
Av. yield	63.6	87.7	112.1	59.0	98.9	94.2	309.2	303.8	92.0	73.3	89.5	71.5

S.E./mean = 17.55 lb./ac.

Crop :- Tobacco.

Ref :- I.A.R.I. 55(24).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :— To study the effect of different levels of N, P and K on Hookah Tobacco.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) N.A./28 and 29.1.1956. (iv) (a) 1 victory ploughing and 3 *desi* ploughings. (b) to (e) N.A. (v) 10 tons/ac. of F.Y.M. (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 18 to 24.5.1956.

2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 levels of N as A/S : N₀=0, N₁=40 and N₂=80 lb./ac.
 (2) 3 levels of P₂O₅ as Super : P₀=0, P₁=40 and P₂=80 lb./ac.
 (3) 3 levels of K₂O as Pot. Sul. : K₀=0, K₁=40 and K₂=80 lb./ac.

3. DESIGN :

(i) 3³ partially confd. (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 24'×27'. (b) 22'×24'. (v) 1'×1½'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of leaf. (iv) (a) 1953—1957. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Data for expt. conducted in 1954 and 1956 N.A.

5. RESULTS :

(i) 1071 lb./ac. (ii) 356.4 lb./ac. (iii) Main effects of N and P are significant. (iv) Av. yield of tobacco in lb./ac.

	N ₀	N ₁	N ₂	Mean	K ₀	K ₁	K ₂
P ₀	813	947	802	854	679	902	980
P ₁	875	1162	1419	1152	1068	1137	1250
P ₂	978	1389	1251	1206	1260	1071	1287
Mean	889	1166	1157	1071	1002	1037	1172
K ₀	881	1060	1066				
K ₁	752	1189	1169				
K ₂	1031	1249	1238				

S.E. of any marginal mean = 84.0 lb./ac.
S.E. of body of any table = 145.5 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- I.A.R.I. 57(48).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of different levels of N, P and K on Hookah Tobacco.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 17.11.1957/20 to 22.1.1958. (iv) (a) 1 ploughing and 2 double discings. (b) Transplanting. (c) to (e) N.A. (v) N.A. (vi) *Hockat*. (vii) Irrigated. (viii) 6 weedings. (ix) N.A. (x) 15.5.1958.

2. TREATMENTS :

Same as in expt. no. 55(24) on page 442.

3. DESIGN :

(i) 3³ partially confd. Confounding NP³K and NP²K³. (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 42' × 20'. (b) 40' × 18'. (v) 1' × 1". (vi) Yes.

4. GENERAL :

Same as in expt. no. 55(24) on page 442.

5. RESULTS :

(i) 2075 lb./ac. (ii) 54.5 lb./ac. (iii) Main effects of N and P are highly significant. (iv) Av. yield of tobacco in lb./ac.

	P ₀	P ₁	P ₂	Mean	K ₀	K ₁	K ₂
N ₀	1267	1316	1716	1433	1336	1391	1573
N ₁	1918	2166	2708	2264	2239	2322	2225
N ₂	2147	2481	2954	2527	2518	2528	2536
Mean	1777	1988	2459	2075	2031	2080	2111
K ₀	1697	1921	2474				
K ₁	1705	2065	2472				
K ₂	1924	1977	2432				

S.E. of any marginal mean = 12.8 lb./ac.
S.E. of body of any table = 22.2 lb./ac.

Crop :- Tobacco.

Ref :- I.A.R.I. 59(37).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'ICM'.

Object :- To study the effect of flood and furrow irrigation, different levels of N and methods of planting on Tobacco.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) N.A./February, 1959. (iv) (a) 1 *tripali*. (b) Transplanting. (c) to (e) N.A. (v) N.A. (vi) N.P.—219. (vii) Irrigated. (viii) 6 weedings and hoeings. (ix) N.A. (x) May, 1960.

2. TREATMENTS :**Main-plot treatments :**

All combinations of (1) and (2)

(1) 5 levels of N : $N_0=0$, $N_1=40$, $N_2=80$, $N_3=120$ and $N_4=160$ lb./ac.(2) 2 methods of transplanting : $M_1=Flat$ and $M_2=Furrow$.**Sub-plot treatments :**4 levels of irrigation : $I_1=1.0''$, $I_2=1.5''$, $I_3=2.0''$ and $I_4=2.5''$.**3. DESIGN :**(i) Split-plot. (ii) (a) 10 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b) $30' \times 12'$. (v) N.A. (vi) Yes.**4. GENERAL :**

(i) Normal. (ii) N.A. (iii) Yield of tobacco. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :(i) 2859 lb./ac. (ii) (a) 344.6 lb./ac. (b) 961.8 lb./ac. (iii) Main effect of N and interaction $M \times I$ are highly significant. Main effect of N is significant. (iv) Av. yield of tobacco in lb./ac.

	N_0	N_1	N_2	N_3	N_4	Mean	I_1	I_2	I_3	I_4
M_1	2223	2739	3137	3216	3332	2929	3546	2347	3109	2715
M_2	2172	2371	2933	3151	3313	2788	2553	3450	2665	2484
Mean	2198	2555	3035	3184	3323	2859	3050	2899	2887	2600
I_1	2313	2673	3235	3427	3600					
I_2	2175	2696	3231	3167	3223					
I_3	2117	2547	2989	3325	3459					
I_4	2185	2303	2685	2816	3008					

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|------------------------------------|-----------------|
| 1. N marginal means | = 99.5 lb./ac. | 5. N means at the same level of I | = 491.1 lb./ac. |
| 2. M marginal means | = 62.9 lb./ac. | 6. I means at the same level of M | = 351.2 lb./ac. |
| 3. I marginal means | = 248.3 lb./ac. | 7. M means at the same level of I | = 310.6 lb./ac. |
| 4. I means at the same level of N | = 555.3 lb./ac. | S.E. of body of $N \times M$ table | = 99.5 lb./ac. |

Crop :- Sesamum (Kharif).**Ref :- I.R.A.I. 55(25).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :—To study the effect of different levels of N and P with different sources of N on Sesamum.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 6.7.1955. (iv) (a) 1 ploughing and 2 discings. (b) to (e) N.A. (v) N.I. (vi) N.A. (vii) Irrigated. (viii) 1 hoeing, 1 weeding and 1 thinning. (ix) N.A. (x) 10 to 15.10.1955.

2. TREATMENTS :**Main-plot treatments :**3 sources of N : $S_1=A/S$, $S_2=F.Y.M$ and $S_3=G.N.C$.**Sub-plot treatments :**

All combinations of (1) and (2)

(1) 3 levels of N : $N_0=0$, $N_1=30$ and $N_2=60$ lb./ac.(2) 2 levels of P_2O_5 : $P_0=0$ and $P_1=80$ lb./ac.**3. DESIGN :**(i) Split-plot. (ii) (a) 3 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) $34' \times 23'$. (b) $33' \times 22'$. (v) $0.5' \times 0.5'$. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of sesamum. (iv) (a) 1952—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 662 lb./ac. (ii) (a) 126.8 lb./ac. (b) 77.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of seed in lb./ac.

	S ₁	S ₂	S ₃	Mean	N ₀	N ₁	N ₂
P ₀	688	657	596	647	635	610	696
P ₁	700	644	637	677	709	633	689
Mean	694	651	641	662	672	622	693
N ₀	—	—	—				
N ₁	651	595	619				
N ₂	690	670	719				

S.E. of difference of two

- | | | | |
|-----------------------------------|----------------|-----------------------------------|----------------|
| 1. S marginal means | = 36.6 lb./ac. | 5. S means at the same level of P | = 42.9 lb./ac. |
| 2. P marginal means | = 18.3 lb./ac. | 6. N means at the same level of S | = 38.7 lb./ac. |
| 3. N marginal means | = 22.4 lb./ac. | 7. S means at the same level of N | = 48.4 lb./ac. |
| 4. P means at the same level of S | = 31.6 lb./ac. | S.E. of body of N×P table | = 22.4 lb./ac. |

Crop :- Sesamum.**Ref :- I.A.R.I. 56(39).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :—To study the effect of N and P through different sources on the yield of Sesamum.

1. BASAL CONDITIONS :

(i) (a) No. (b) Fallow. (c) Nil. (ii) (a) Clay loam. (b) N.A. (iii) 17.7.1956. (iv) (a) Tractor ploughing, grubbing and discing. (b) to (e) N.A. (v) N.A. (vi) N.P.—6. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 22.3°. (x) 16 and 17.10.1956.

2. TREATMENTS :

Same as in expt. no. 55(25) on page 444.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main plots/replication and 6 sub-plots/main-plot. (b) N:A. [(iii) 4. (iv) (a) 35'×24'. (b) 33'×22'. (v) 1.0'×1.0'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Heavy attack of stem borer and stem rot. (iii) Yield of sesamum. (iv) (a) 1952—1957. (b) Yes. (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Other tables are available.

5. RESULTS :

(i) 247 lb./ac. (ii) (a) 56.4 lb./ac. (b) 102.6 lb./ac. (iii) Only N effect is significant. (iv) Av. yield of seed in lb./ac.

	S ₁	S ₂	S ₃	
	228	286	228	
	N ₀	N ₁	N ₂	Mean
P ₀	164	288	239	230
P ₁	214	313	263	263
Mean	189	300	251	247

S.E. of P marginal mean	= 17.1 lb./ac.
S.E. of N marginal mean	= 20.9 lb./ac.
S.E. of body of table	= 29.6 lb./ac.

Crop :- Sesamum (Kharif).

Ref :- I.A.R.I. 54(35).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study the effect of N, P and micro-nutrients on Sesamum.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 1.7.1954. (iv) (a) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 9 and 10.10.1954.

2. TREATMENTS :

12 manurial treatments : M_0 = Control, M_1 = 30 lb./ac. of N, M_2 = 60 lb./ac. of P_2O_5 , M_3 = 30 lb./ac. of N + 60 lb./ac. of P_2O_5 , M_4 = M_3 + 5 lb./ac. of Borax through soil + 2 lb./ac. of Borax by spraying at maximum growth on foliage, M_5 = M_3 + 10 lb./ac. of Borax through soil + 2 lb./ac. of Borax by spraying at maximum growth on foliage, M_6 = M_3 + 50 lb./ac. of $MnSO_4$ through soil + 5 lb./ac. of $MnSO_4$ by spraying, M_7 = M_3 + 75 lb./ac. of $MnSO_4$ through soil + 5 lb./ac. of $MnSO_4$ by spraying, M_8 = 5 lb./ac. of Borax through soil + 2 lb./ac. of Borax by spraying, M_9 = 10 lb./ac. of Borax through soil + 2 lb./ac. of Borax by spraying, M_{10} = 50 lb./ac. of $MnSO_4$ through soil + 5 lb./ac. of $MnSO_4$ by spraying and M_{11} = 75 lb./ac. of $MnSO_4$ through soil + 5 lb./ac. of $MnSO_4$ by spraying.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 14' x 35'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of sesamum. (iv) (a) 1952—contd. (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) Heavy rain fall at maturity damaged the crop. (vii) Nil.

5. RESULTS :

(i) 151 lb./ac. (ii) 60.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of sesamum in lb./ac.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8	M_9	M_{10}	M_{11}
Av. yield	128	152	251	134	143	157	217	106	140	143	117	122

S.E./mean = 30.4 lb./ac.

Crop :- Sesamum (Kharif).

Ref :- I.A.R.I. 55(26).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study the effect of N, P and micro-nutrients on Sesamum.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 23.7.1955. (iv) (a) 4 ploughings. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 3 weedings and 3 thinnings. (ix) N.A. (x) 28 and 31.10.1955.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(35) above.

5. RESULTS :

(i) 106 lb./ac. (ii) 68.9 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of sesamum in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀	M ₁₁
Av. yield	220	286	181	247	298	220	152	164	170	229	152	149

S.E./mean = 34.4 lb./ac.

Crop :- Sesamum (Kharif).

Ref :- I.A.R.I. 56(40).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study the effect of N, P and micro-nutrients on Sesamum.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Oats. (c) Nil. (ii) (a) Clay loam. (b) N.A. (iii) 25.7.1956. (iv) (a) Tractor ploughing, grubbing and discing. (b) to (e) N.A. (v) Nil. (vi) Strain 'S'. (vii) Irrigated. (viii) 1 weeding and 1 hoeing. (ix) 16.69". (x) 17.10.1956.

2. TREATMENTS :

Same as in expt. no. 54(35) on page 446.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (effective replications are 2). (iv) (a) 16' × 37'. (b) 14' × 35'. (v) 1' × 1'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Attack of stem rot in 2 replications. (iii) Yield of sesamum. (iv) (a) 1952—N.A. (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) In 2 replications the crop failed due to the stagnation of water in the field and stem rot attack on the crop. (vii) Nil.

5. RESULTS :

(i) 843 lb./ac. (ii) 237.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of sesamum in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀	M ₁₁
Av. yield	855	1070	798	1020	979	724	782	864	617	806	716	880

S.E./mean = 167.9 lb./ac.

Crop :- Linseed.

Ref :- I.A.R.I. 57(49).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :— To study the uptake of P by Linseed with the help of radiotracer technique.

1. BASAL CONDITIONS :

(i) to (iv) N.A. (v) 60 lb./ac. of N+30 lb./ac. of K₂O. (vi) to (x) N.A.

2. TREATMENTS :

7 methods of application of 30 lb./ac. of P₂O₅ : M₀=Control, M₁=Mixed with top 2" soil, M₂=Mixed with top 4" soil, M₃=Single band 1" below the seed, M₄=Single band 3" below the seed, M₅=Double band 1" below the seed and 2½" side ways and M₆=Double band 3" below the seed and 2½" side ways.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 15' × 7½'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Seed yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1007 lb./ac. (ii) 151.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of seed in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆
Av. yield	887	879	969	1129	1169	979	1038

S.E./mean = 75.7 lb./ac.

Crop :- Linseed.

Ref :- I.A.R.I. 58(48).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :— To study the uptake of P by Linseed with the help of radiotracer technique.

1. BASAL CONDITIONS :

(i) to (iv) N.A. (v) 60 lb./ac. of N+30 lb./ac. of K₂O. (vi) to (x) N.A.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(49) on page 447.

5. RESULTS :

(i) 1939 lb./ac. (ii) 232.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of seed in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆
Av. yield	1916	1776	1804	2036	2250	1824	1966

S.E./mean = 116.0 lb./ac.

Crop :- Linseed.

Ref :- I.A.R.I. 57(50).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :— To study the effect of different levels of N, P and K on Linseed.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 23.11.1957. (iv) to (vi) N.A. (vii) Irrigated. (viii) 4 weedings. (ix) N.A. (x) 21 and 22.4.1958.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N : N₀=0, N₁=30 and N₂=60 lb./ac.

(2) 3 levels of P₂O₅ : P₀=0, P₁=20 and P₂=40 lb./ac.

(3) 3 levels of K₂O : K₀=0, K₁=20 and K₂=40 lb./ac.

3. DESIGN :

(i) 3³ confd. (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 32'×20'. (b) 28'×16'. (v) 2'×2'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of seed. (iv) (a) 1957 -contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1368 lb./ac. (ii) 78.1 lb./ac. (iii) Main effect of N is highly significant. Main effect of K is significant. Interactions N×P, P×K and N×P×K are highly significant. (iv) Av. yield of seed in lb./ac.

	P ₀	P ₁	P ₂	Mean	K ₀	K ₁	K ₂
N ₀	1154	1067	908	1043	1078	1019	1033
N ₁	1405	1415	1490	1437	1502	1380	1428
N ₂	1608	1618	1649	1625	1647	1595	1633
Mean	1389	1367	1349	1368	1409	1331	1365
K ₀	1413	1449	1364				
K ₁	1291	1342	1361				
K ₂	1463	1310	1322				

S.E. of any marginal mean

= 18.4 lb./ac.

S.E. of body of any table

= 31.9 lb./ac.

Crop :- Linseed (Rabi).**Ref :- I.A.R.I. 58(49).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**Object :- To study the effect of different levels of N, P and K on Lin^o seed.**1. BASAL CONDITIONS :**

(i) and (ii) N.A. (iii) 3.11.1958. (iv) to (vi) N.A. (vii) Irrigated. (viii) 3 weedings and 3 hoeings. (ix) N.A. (x) 7.4.1958.

2. TREATMENTS :

Same as in expt. no. 57(50) on page 448.

3. DESIGN :(i) 3³ confd. (ii) (a) 9 plot/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 32'×20'. (b) 28'×18'. (v) 2'×1'. (vi) Yes.**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Yield of seed. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1765 lb./ac. (ii) 219.5 lb./ac. (iii) Only main effect of N is highly significant. (iv) Av. yield of seed in lb./ac.

	P ₀	P ₁	P ₂	Mean	K ₀	K ₁	K ₂
N ₀	1256	1171	1224	1217	1171	1203	1278
N ₁	1805	1929	1721	1818	1998	1808	1649
N ₂	2279	2254	2243	2259	2243	2238	2225
Mean	1780	1785	1729	1765	1804	1750	1741
K ₀	1770	1845	1796				
K ₁	1762	1739	1749				
K ₂	1808	1771	1643				

S.E. of any marginal mean

= 51.7 lb./ac.

S.E. of body of any table

= 89.6 lb./ac.

Crop :- Linseed.**Ref :- I.A.R.I. 56(41).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.****Object :-**To study the response of Linseed to N.**1. BASAL CONDITIONS:**

(i) (a) Linseed—Maize. (b) Maize. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 5.11.1956. (iv) (a) Victory ploughing, country ploughing, discing and grubbing. (b) to (e) N.A. (v) Nil. (vi) R.R.--9 (medium). (vii) Irrigated. (viii) 1 weeding and 1 hoeing. (ix) 5.59°. (x) 11.5.1957.

2. TREATMENTS :**Main-plot treatments :**4 sources of N : $S_1=A/S$, $S_2=A/S/N$, $S_3=Urea$ and $S_4=Nangal\ salt$.**Sub-plot treatments :**5 levels of N : $N_0=0$, $N_1=10$, $N_2=20$, $N_3=40$ and $N_4=80$ lb./ac.**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) $38' \times 14'$. (b) $36' \times 12'$. (v) $2' \times 1'$. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Seed yield. (iv) (a) 1954—contd. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Raw data and two-way table : N.A.

5. RESULTS :

(i) 1028 lb./ac. (ii) (a) 180.2 lb./ac. (b) 158.0 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of seed in lb./ac.

Treatment	S_1	S_2	S_3	S_4	N_0	N_1	N_2	N_3	N_4
Av. yield	1095	1011	1003	1003	833	952	966	1182	1209

S.E. of difference of two

1. S marginal means	= 57.0 lb./ac.
2. N marginal means	= 55.9 lb./ac.

Crop :- Linseed (Rabi).**Ref :- I.A.R.I. 54(36).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.****Object :-**To study the effect of N, P and micro-nutrients on Linseed.**1. BASAL CONDITIONS :**

(i) and (ii) N.A. (iii) 18.10.1954. (iv) (a) 4 ploughings and 2 grubblings. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 3 weedings. (ix) N.A. (x) 15 to 18.4.1955.

2. TREATMENTS :

12 manurial treatments : $M_0=Control$, $M_1=30$ lb./ac. of N, $M_2=60$ lb./ac. of P_2O_5 , $M_3=30$ lb./ac. of N+60 lb./ac. of P_2O_5 , $M_4=M_3+5$ lb./ac. of Borax through soil+2 lb./ac. of Borax by spraying, $M_5=M_3+10$ lb./ac. of Borax through soil+2 lb./ac. of Borax by spraying, $M_6=M_3+50$ lb./ac. of $MnSO_4$ through soil+5 lb./ac. of $MnSO_4$ by spraying, $M_7=M_3+75$ lb./ac. of $MnSO_4$ through soil+5 lb./ac. of $MnSO_4$ by spraying, $M_8=5$ lb./ac. of Borax through soil+2 lb./ac. of Borax by spraying, $M_9=10$ lb./ac. of Borax through soil+2 lb./ac. of Borax by spraying, $M_{10}=50$ lb./ac. of $MnSO_4$ through soil+5 lb./ac. of $MnSO_4$ by spraying and $M_{11}=75$ lb./ac. of $MnSO_4$ through soil+5 lb./ac. of $MnSO_4$ by spraying.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) $14' \times 35'$. (b) $12' \times 33'$. (v) $1' \times 1'$. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of seed. (iv) (a) 1954—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 791 lb./ac. (ii) 195.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀	M ₁₁
Av. yield	741	856	692	807	811	755	865	904	755	789	777	735

S.E./mean = 97.5 lb./ac.

Crop :- Linseed (Rabi).

Ref :- I.A.R.I. 55(27).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of N, P and micro-nutrients on Linseed.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 23.10.1955. (iv) (a) 2 grubblings and 2 beamings. (b) N.A. (c) 10 lb./ac. (d) and (e) N.A. (v) Nil. (vi) R.R.—197. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 9 to 13.4.1956.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(36) on page 450.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of seed. (iv) (a) 1954—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2203 lb./ac. (ii) 284.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of seed in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀	M ₁₁
Av. yield	1992	2198	1855	2485	2226	2277	2430	2365	2126	2190	2054	2241

S.E./mean = 142.2 lb./ac.

Crop :- Linseed.

Ref :- I.A.R.I. 56(42).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of N, P and micro-nutrients on Linseed.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* fodder. (c) Nil. (ii) (a) Clay loam. (b) N.A. (iii) 1.11.1956. (iv) (a) Tractor ploughing, grubbing and discing. (b) to (e) N.A. (v) Nil. (vi) R.R.—197. (vii) Irrigated. (viii) 1 weeding and 1 hoeing. (ix) 5.59". (x) 20.4.1957.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(36) on page 450.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of seed. (iv) (a) 1954—contd. (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) Crop suffered due to hailstorm. (vii) Nil.

5. RESULTS :

(i) 1702 lb./ac. (ii) 228.8 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of seed in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀	M ₁₁
Av. yield	1577	1997	1454	1945	1641	1591	1896	1955	1613	1531	1634	1595

S.E./mean = 114.4 lb./ac.

Crop :- Linseed.**Ref :- I.A.R.I. 57(51).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.****Object :-**To study the effect of split application of nitrogen dose on Linseed at different times.**1. BASAL CONDITIONS :**

(i) and (ii) N.A. (iii) 23.11.1957. (iv) (a) Double discing. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 3 weedings and 3 hoeings. (ix) N.A. (x) 24.4.1958.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : $N_1=20$, $N_2=40$ and $N_3=60$ lb /ac.(2) 3 times of application : $T_1=$ Full at sowing, $T_2=\frac{1}{2}$ at sowing + $\frac{1}{2}$ after 1 month and $T_3=\frac{1}{2}$ after 1 month + $\frac{1}{2}$ after 2 months.**3. DESIGN :**(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) $20' \times 42'$. (b) $16' \times 38'$. (v) $2' \times 2'$. (vi) Yes.**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1957—N.A. (b) and (c) N.A. (v) and (vi) Nil. (vii) Raw data and two-way table : N.A.

5. RESULTS :

(i) 1684 lb./ac. (ii) 208.2 lb./ac. (iii) Only N effect is highly significant. (iv) Av. yield of seed in lb./ac.

Treatment	N_1	N_2	N_3	T_1	T_2	T_3
Av. yield	1493	1730	1828	1677	1660	1715

S.E. of N or T marginal mean = 60.1 lb./ac.

Crop :- Linseed (Rabi).**Ref :- I.A.R.I. 58(50).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'MV'.****Object :** To study the effect of different levels of N on different varieties of Linseed.**1. BASAL CONDITIONS :**(i) and (ii) N.A. (iii) 14.10.1958. (iv) (a) 3 ploughings with *desi* plough, 2 ploughings with *triphali* and 1 ploughing with *Victory* plough. (b) to (e) N.A. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) 1 weeding with *khurpi*. (ix) N.A. (x) 11.4.1959.**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 4 varieties : $V_1=R.R.-9$, $V_2=R.R.-38$, $V_3=R.R.-45$ and $V_4=R.R.-204$.(2) 3 levels of N : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.**3. DESIGN :**(i) Fact in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) and (b) $25' \times 10'$. (v) Nil. (vi) Yes.**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Seed yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 488 lb./ac. (ii) 890.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of seed in lb./ac.

	V ₁	V ₂	V ₃	V ₄	Mean
N ₀	511	446	459	509	481
N ₁	514	479	498	427	479
N ₂	561	465	484	503	503
Mean	529	463	480	480	488

S.E. of V marginal mean = 257.1 lb./ac.
 S.E. of N marginal mean = 222.7 lb./ac.
 S.E. of body of table = 445.4 lb./ac.

Crop :- Linseed (Rabi).

Ref :- I.A.R.I. 59(38).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Linseed.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 14.10.1959. (iv) (a) 1 ploughing with Victory plough, 3 ploughings with *desi* plough and 2 ploughings with *tripali*. (b) to (e) N.A. (v) N.A. (vi) As per treatments. (vii) N.A. (viii) 1 weeding. (ix) N.A. (x) 11.4.1960.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(50) on page 452.

5. RESULTS :

(i) 376 lb./ac. (ii) 62.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	V ₁	V ₂	V ₃	V ₄	Mean
N ₀	370	381	354	367	368
N ₁	444	368	392	356	390
N ₂	343	375	340	422	370
Mean	386	375	362	382	376

S.E. of V marginal mean = 18.1 lb./ac.
 S.E. of N marginal mean = 15.7 lb./ac.
 S.E. of body of table = 31.4 lb./ac.

Crop :- Linseed (Rabi).

Ref :- I.A.R.I. 55(23).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'MV'.

Object :- To study the effect of N and P on different varieties of Linseed.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 20 and 21.10.1955. (iv) (a) 1 tractor ploughing, 2 *desi* ploughings, 1 discing, levelling and beaming. (b) to (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding and 1 hoeing. (ix) N.A. (x) 15 to 17.4.1956.

2. TREATMENTS :

Main plot treatments :

3 varieties : V_1 =R.R.—10, V_2 =R.R.—236 and V_3 =N.P.—12.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.

(2) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=60$ lb./ac.

Sub-sub-plot treatments :

2 methods of placement : M_1 =Broadcast and M_2 =Placem.nt.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 6 sub-plots/main-plot and 2 sub-sub-plots/sub-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 27'×23'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of seed. (iv) (a) 1952—contd. (b) Yes. (c) N.A. (v) and (vi) Nil. (vii) Other two way tables : N.A.

5. RESULTS :

(i) 1420 lb./ac. (ii) (a) 313.1 lb./ac. (b) 104.8 lb./ac. (c) N.A. (iii) Main effect of N is highly significant and interaction $N \times P$ is significant. (iv) Av. yield of seed in lb./ac.

Treatment	V_1	V_2	V_3	M_1	M_2
Av. yield	1415	1356	1489	1448	1392

	N_0	N_1	N_2	Mean
P_0	1333	1481	1497	1437
P_1	1333	1382	1497	1404
Mean	1333	1431	1497	1420

S.E. of V marginal mean *	= 45.2 lb./ac.
S.E. of N marginal mean	= 15.1 lb./ac.
S.E. of P marginal mean	= 12.3 lb./ac.
S.E. of body of $N \times P$ table	= 21.4 lb./ac.

Crop :- Linseed.

Site :- Indian Agri. Res. Instt., New Delhi.

Ref :- I.A.R.I. 56(43).

Type :- 'CMV'.

Object :—To study the effect of N and P on different varieties of Linseed.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* for fodder. (c) N.A. (ii) (a) Clay loam. (b) N.A. (iii) 31.10.1956. (iv) (a) Tractor ploughing, grubbing and discing. (b) to (c) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) 22, 28". (x) 11 to 13.4.1957.

2. TREATMENTS :

Same as in expt. no. 55(28) on page 453.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 6 sub-plots/main-plot and 2 sub-sub-plots/sub-plot. (b) N.A. (iii) 4. (iv) (a) 27.5'×24'. (b) 25.5'×22'. (v) 1.0'×1.0'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Rust attack on N.P.—12. (iii) Yield of seed. (iv) (a) 1952—1957. (b) Yes. (c) No. (v) (a) and (b) Nil. (vi) Hail storm in the month of March affected the crop considerably. (vii) Other two way tables—N.A.

5. RESULTS :

(i) 950 lb./ac. (ii) (a) 128.9 lb./ac. (b) 71.0 lb./ac. (c) 41.4 lb./ac. (iii) Main effect of N is highly significant. Interaction N×P is significant. (iv) Av. yield of seed in lb./ac.

Treatment	V ₁	V ₂	V ₃	M ₁	M ₂
Av. yield	968	992	891	932	968

	N ₀	N ₁	N ₂	Mean
P ₀	787	968	1070	942
P ₁	760	998	1118	959
Mean	773	983	1094	950

S.E. of M marginal mean	=	4.9 lb./ac.
S.E. of V marginal mean	=	18.6 lb./ac.
S.E. of N marginal mean	=	10.2 lb./ac.
S.E. of P marginal mean	=	8.4 lb./ac.
S.E. of body of N×P table	=	14.5 lb./ac.

Crop :- Maize fodder (Kharif).

Ref :- I.A.R.I. 54(38).

Site :- Indian Agri. Res. Inst., New Delhi.

Type :- 'M'.

Object :- To determine the interval between the application of F.Y.M. and sowing to obtain the optimum yield of Maize fodder.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 17.6.1954. (iv) (a) 4 ploughings and 1 rolling. (b) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 1 hoeing with *desi* plough and 2 weedings. (ix) N.A. (x) 3 to 6.9.1954.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)+a control

(1) 4 intervals of applying F.Y.M. : T₁=3, T₂=2, T₃=1 month before sowing and T₄=1 week before sowing of wheat.

(2) 3 levels of F.Y.M. to previous wheat crop : F₁=2½, F₂=5 and F₃=10 tons/ac.

Sub-plot treatments :

2 levels of N as A/S : N₀=0 and N₁=10 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 13 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 32'×18'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1952—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 4.10 tons/ac. (ii) (a) 2.09 tons/ac. (b) 0.91 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of fodder in tons/ac.

Control = 2.74 tons/ac.

	T ₁	T ₂	T ₃	T ₄	Mean	N ₀	N ₁
F ₁	3.94	4.18	3.81	3.44	3.84	3.76	3.92
F ₂	3.89	4.39	4.15	4.56	4.25	4.12	4.37
F ₃	3.89	4.46	4.63	5.24	4.55	4.40	4.71
Mean	3.91	4.34	4.20	4.41	4.21	4.09	4.33
N ₀	3.80	4.25	3.96	4.36			
N ₁	4.01	4.42	4.44	4.47			

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. T marginal means | = 0.60 tons/ac. | 6. N means at the same level of F | = 0.32 tons/ac. |
| 2. F marginal means | = 0.52 tons/ac. | 7. F means at the same level of N | = 0.57 tons/ac. |
| 3. N marginal means | = 0.18 tons/ac. | S.E. of body of T×F table | = 0.74 tons/ac. |
| 4. N means at the same level of T | = 0.37 tons/ac. | S.E. of control mean | = 1.01 tons/ac. |
| 5. T means at the same level of N | = 0.66 tons/ac. | | |

Crop :- Maize fodder (Kharif).**Ref :- I.A.R.I. 55(29).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :-To study the residual effect of the interval between the application of F.Y.M. and sowing of wheat on succeeding Maize fodder.

1. BASAL CONDITIONS:

(i) (a) Wheat—Maize. (b) Wheat. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 8.6.1955. (iv) (a) 2 ploughings. (b) Sowing behind the plough by *kera*. (c) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 3 weedings. (ix) N.A. (x) 30.8.1955 to 2.9.1955.

2. TREATMENTS:

Same as in expt. no. 54(38) on page 455.

3. DESIGN:

(i) Split-plot. (ii) (a) 13 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 32'×36'. (b) 32'×18'. (v) 9' on either side. (vi) Yes.

4. GENERAL:

(i) and (ii) N.A. (iii) Yield of fodder. (iv) (a) 1952—contd. (b) Yes. (c) Nil (v) to (vii) Nil.

5. RESULTS:

(i) 7.78 tons/ac (ii) (a) 2.87 tons/ac. (b) 1.05 tons/ac. (iii) N effect is highly significant. 'Control vs. others' and interaction 'N×control vs. others' are significant. (iv) Av. yield of fodder in tons/ac.

Control = 5.16 tons/ac.

	T ₁	T ₂	T ₃	T ₄	Mean	F ₁	F ₂	F ₃
N ₀	7.61	7.48	8.08	7.63	7.70	6.62	7.36	9.12
N ₁	7.85	8.34	9.10	7.87	8.29	7.57	7.44	9.86
Mean	7.73	7.91	8.59	7.75	8.00	7.10	7.40	9.49
F ₁	6.38	8.06	7.56	6.40				
F ₂	6.91	6.86	8.31	7.52				
F ₃	9.92	8.80	9.90	9.32				

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. T marginal means | = 0.83 tons/ac. | 5. N means at the same level of F | = 0.37 tons/ac. |
| 2. F marginal means | = 0.72 tons/ac. | 6. T means at the same level of N | = 0.88 tons/ac. |
| 3. N marginal means | = 0.21 tons/ac. | 7. F means at the same level of N | = 0.76 tons/ac. |
| 4. N means at the same level of T | = 0.43 tons/ac. | S.E. of body of T×F table | = 1.01 tons/ac. |

Crop :- Maize fodder (Kharif).**Ref :- I.A.R.I. 56(44).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :-To study the residual effect of the interval between the application of F.Y.M. and sowing of wheat on succeeding Maize fodder.

1. BASAL CONDITIONS :

(i) (a) Wheat—Maize. (b) Wheat. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 2.6.1956. (iv) (a) 4 ploughings. (b) N.A. (c) 20 srs./ac. (d) and (e) N.A. (v) N.A. (vi) P.F.—2. (vii) Irrigated. (viii) 1 hoeing. (ix) N.A. (x) 13, 14 and 16.8.1956.

2. TREATMENTS :

Same as in expt. no. 54(38) on page 455.

3. DESIGN :

(i) Split-plot. (ii) (a) 13 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 34' × 20'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Stem borer attack. (iii) Yield of fodder. (iv) (a) 1952—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 6.12 tons/ac. (ii) (a) 2.05 tons/ac. (b) 0.68 tons/ac. (iii) N effect alone is significant. (iv) Av. yield of fodder in tons/ac.

Control = 5.71 tons/ac.

	T ₁	T ₂	T ₄	Mean	F ₁	F ₂	F ₃
N ₀	6.00	5.84	6.14	6.03	5.54	5.78	6.69
N ₁	6.41	6.53	6.29	6.01	5.98	5.99	6.96
Mean	6.20	6.19	6.22	6.02	5.76	5.88	6.82
F ₁	5.82	5.68	5.65	5.90			
F ₂	5.63	5.75	6.60	5.55			
F ₃	7.16	7.14	6.40	6.61			

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. T marginal means | = 0.59 tons/ac. | 5. T means at the same level of N | = 0.62 tons/ac. |
| 2. F marginal means | = 0.51 tons/ac. | 6. N means at the same level of F | = 0.24 tons/ac. |
| 3. N marginal means | = 0.14 tons/ac. | 7. F means at the same level of N | = 0.54 tons/ac. |
| 4. N means at the same level of T | = 0.28 tons/ac. | S.E. of body of T × F table | = 0.72 tons/ac. |

Crop :- Maize fodder (Kharif).

Ref :- I.A.R.I. 57(52).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the residual effect of the interval between the application of F.Y.M. and sowing of wheat on succeeding Maize fodder.

1. BASAL CONDITIONS :

(i) (a) Wheat—Maize. (b) Wheat. (c) As per treatments. (ii) and (iii) N.A. (iv) (a) 3 ploughings. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 hoeing. (ix) and (x) N.A.

2. TREATMENTS :

Same as in expt. no. 54(38) on page 455.

3. DESIGN :

(i) Split-plot. (ii) (a) 13 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 34' × 20'. (b) 32' × 18'. (v) 1' × 1'. (vi) Yes.

GENERAL :

(i) and (ii) N.A. (iii) Yield of fodder. (iv) (a) 1952—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 4.60 tons/ac. (ii) (a) 1.18 tons/ac. (b) 0.88 tons/ac. (iii) Main effect of F is highly significant. 'Control vs. others' is significant. (iv) Av. yield of fodder in tons/ac.

Control = 3.78 tons/ac.

	T ₁	T ₂	T ₃	T ₄	Mean	F ₁	F ₂	F ₃
N ₀	4.45	4.56	4.49	4.46	4.49	4.10	4.52	4.87
N ₁	5.19	5.09	4.64	4.48	4.85	4.25	4.88	5.43
Mean	4.82	4.82	4.57	4.47	4.67	4.18	4.70	5.15
F ₁	4.52	4.27	4.07	3.85				
F ₂	4.82	4.86	4.57	4.57				
F ₃	5.14	5.36	5.08	5.01				

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. T marginal means | = 0.34 tons/ac. | 5. T means at the same level of N | = 0.42 tons/ac. |
| 2. F marginal means | = 0.30 tons/ac. | 6. N means at the same level of F | = 0.31 tons/ac. |
| 3. N marginal means | = 0.18 tons/ac. | 7. F means at the same level of N | = 0.37 tons/ac. |
| 4. N means at the same level of T | = 0.36 tons/ac. | S.E. of body of T×F table | = 0.42 tons/ac. |

Crop :- Maize fodder (Kharif).

Ref :- I.A.R.I. 58(51).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :— To study the residual effect of the interval between the application of F.Y.M. and sowing of wheat on succeeding Maize fodder.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 11 to 14.6.1958. (iv) (a) 1 ploughing. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 weeding and 1 hoeing. (ix) N.A. (x) 2.9.1958.

2. TREATMENTS :

Same as in expt. no. 54(38) on page 455.

3. DESIGN :

(i) Split-plot. (ii) (a) 13 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 20'×34'. (b) 18'×32'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Stem borer attack. (iii) Yield of fodder. (iv) (a) 1952—contd. (b) Yes. (c) Nil. (v) (a) and (b) No. (vi) Continuous rains in August 1958 and stem borer attack damaged the crop. Due to water lodging weeding could not be done. (vii) Nil.

5. RESULTS :

(i) 1.85 tons/ac. (ii) (a) 0.78 tons/ac. (b) 0.39 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of fodder in tons/ac.

Control = 1.70 tons/ac.

	T ₁	T ₂	T ₃	T ₄	Mean	N ₀	N ₁
F ₁	1.46	1.89	1.51	1.46	1.58	1.62	1.54
F ₂	2.05	2.09	2.19	1.81	2.04	2.17	1.90
F ₃	2.01	2.41	1.67	1.83	1.98	1.86	2.11
Mean	1.84	2.13	1.79	1.70	1.87	1.88	1.85
N ₀	1.75	2.18	1.77	1.83			
N ₁	1.93	2.08	1.81	1.58			

S.E. of difference of two

1. T marginal means	= 0.23 tons/ac.	5. F means at the same level of N	= 0.22 tons/ac.
2. F marginal means	= 0.20 tons/ac.	6. N means at the same level of T	= 0.16 tons/ac.
3. N marginal means	= 0.08 tons/ac.	7. T means at the same level of N	= 0.25 tons/ac.
4. N means at the same level of F	= 0.14 tons/ac.	S.E. of body of T×F table	= 0.28 tons/ac.

Crop :- Maize fodder (Kharif).

Ref :- I.A.R.I. 55(30).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of soil need fertilizer on Maize fodder.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 12.6.1955. (iv) (a) 3 ploughings and 2 *sohagas*. (b) to (e) N.A. (v) N.A. (vi) N.P.—yellow no. 2. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 4 and 5.9.1955.

2. TREATMENTS :

5 manurial treatments : T₀=No manure (control), T₁=Soil need fertilizer (30 lb./ac. of N+78.8 lb./ac. of P₂O₅+21.3 lb./ac. of K₂O), T₂=30 lb./ac. of N as A/S, T₃=T₂+28.8 lb./ac. of P₂O₅ as triple Super and T₄=T₃+21.3 lb./ac. of K₂O as Pot. Sul.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) and (b) 28'×24'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Fodder yield. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 9.75 tons/ac. (ii) 1.52 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of fodder in tons/ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Av. yield	7.76	11.22	9.60	9.85	10.33

S.E./mean = 0.62 tons/ac.

Crop :- Maize fodder (Kharif).

Ref :- I.A.R.I. 56(45).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of soil need fertilizer on Maize fodder.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 26.7.1956. (iv) (a) Discing twice and grubbing four times. (b) Sown by drill. (c) 16 srs/ac. (d) and (e) N.A. (v) N.A. (vi) Yellow no. 2. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 3.10.1956.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(30) above.

4. GENERAL :

(i) Stunted as the crop was sown late. (ii) Nil. (iii) Fodder yield. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 6.60 tons/ac. (ii) 2.18 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in tons/ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Av. yield	4.97	7.45	7.03	6.41	7.16

S.E./mean = 0.89 tons/ac.

Crop :- Maize fodder (Kharif).

Ref :- I.A.R.I. 57(53).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of soil need fertilizer on Maize fodder.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 5.7.1957. (iv) (a) 1 ploughing by Victory plough and 2 ploughings by *desi* plough. (b) to (e) N.A. (v) N.A. (vi) Yellow no. 2. (vii) Irrigated. (viii) and (ix) N.A. (ix) 9 and 10.9.1957.

TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(30) on page 459.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Fodder yield. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 7.23 tons/ac. (ii) 1.59 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in tons/ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Av. yield	6.43	8.62	6.83	7.30	6.98

S.E./mean = 0.65 tons/ac.

Crop :- Maize fodder (Kharif).

Ref :- I.A.R.I. 55(31).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'

Object :- To study the relative value of different phosphatic fertilizers for Maize fodder.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 3 to 6.6.1955. (iv) (a) 1 Victory ploughing and 3 *desi* ploughings. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 18 to 22.8.1955.

2. TREATMENTS :

12 sources of 100 lb./ac. of P₂O₅ : S₀=Control (no P₂O₅), S₁=Rock phos., S₂= $\frac{1}{2}$ as Super+ $\frac{1}{2}$ as Rock phos., S₃=Super, S₄=Farm B.M. (residual effect), S₅=Powder Farm S₆=B.M. grade I (residual effect), S₇=B.M. grade II, S₈=B.M. grade III, S₉=Trichy nodules, S₁₀= $\frac{1}{2}$ as trichy nodules+ $\frac{1}{2}$ as Super and S₁₁=Super (only 50 lb./ac. of P₂O₅).

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 27' x 20'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1955—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 8.17 tons/ac. (ii) 2.68 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in tons/ac.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	S ₉	S ₁₀	S ₁₁
Av. yield	8.37	6.56	9.08	8.58	7.12	7.09	8.68	6.82	8.70	9.56	8.82	8.67

S.E./mean = 1.20 tons/ac.

Crop :- Maize fodder (Kharif).

Ref :- I.A.R.I. 56(46).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study the relative value of different phosphatic fertilizers for Maize fodder.

1. BASAL CONDITIONS :

(i) (a) No. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 10 and 12.6.1956. (iv) (a) 1 Victory ploughing and 1 *desi* ploughing. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 24 to 28.8.1956.

2. TREATMENTS to 4. GENERAL :

Same as in expt no. 55(31) on page 460.

5. RESULTS :

(i) 8.16 tons/ac. (ii) 1.43 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in tons/ac.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	S ₉	S ₁₀	S ₁₁
Av. yield	8.26	6.65	8.24	8.59	7.89	8.67	8.51	6.74	8.67	8.23	8.45	9.04

S.E./mean = 0.64 tons/ac.

Crop :- Maize fodder (Kharif).

Ref :- I.A.R.I. 54(39).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study the effect of different levels of N as A/S and F.Y.M. on the yield of Maize Fodder.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 24 and 25.7.1954. (iv) (a) 2 ploughings with *desi* plough and 1 ploughing with Victory plough. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 28.9.1954 to 4.10.1954.

2. TREATMENTS :

12 manurial treatments: T₀=No manure, T₁=40 lb./ac. of N as F.Y.M., T₂=80 lb./ac. of N as F.Y.M., T₃=120 lb./ac. of N as F.Y.M., T₄=20 lb./ac. of N as A/S, T₅=40 lb./ac. of N as A/S, T₆=60 lb./ac. of N as A/S, T₇=20 lb./ac. of N as F.Y.M. + 20 lb./ac. of N as A/S, T₈=40 lb./ac. of N as F.Y.M. + 40 lb./ac. of N as A/S, T₉=60 lb./ac. of N as F.Y.M. + 60 lb./ac. of N as A/S, T₁₀=80 lb./ac. of N as F.Y.M. + 40 lb./ac. of N as A/S and T₁₁=120 lb./ac. of N as F.Y.M. + 40 lb./ac. of N as A/S. F.Y.M. applied 8 weeks before sowing. A/S applied $\frac{1}{2}$ at sowing + $\frac{1}{2}$ at first irrigation.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 8. (iv) (a) 24' × 34.5'. (b) 22' × 33'. (v) 1' × 9". (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1953—1956. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 6.22 tons/ac. (ii) 1.42 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in tons/ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁
Av. yield	5.66	6.90	6.66	6.88	6.08	5.69	5.49	5.66	5.68	6.05	6.75	7.13

S.E./mean = 0.50 tons/ac.

Crop :- Maize fodder (Kharif).

Ref :- I.A.R.I. 55(32).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of different levels of N as A/S and F.Y.M. on the yield of Maize Fodder.

1. BASAL CONDITIONS:

(i) (a) No. (b) Wheat. (c) N.A. (ii) (a) and (b) No. (iii) 16 and 17.6.1955. (iv) (a) 1 Victory ploughing, 2 *desi* ploughings and beaming. (b) to (e) N.A. (v) N.A. (vi) Yellow no. 2. (vii) Irrigated. (viii) 2 hoeings and 1 weeding. (ix) N.A. (x) 6 to 8.9.1955.

2. TREATMENTS :

Same as in expt. no. 54(39) on page 461.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 8. (iv) (a) and (b) 22' x 33'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1953—1956. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS

(i) 4.07 tons/ac. (ii) 1.05 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁
Av. yield	3.72	3.73	4.14	4.05	3.71	4.72	4.04	4.12	3.86	4.14	3.78	4.87

S.E./mean = 0.37 tons/ac.

Crop :- Maize fodder (Kharif).

Ref :- I.A.R.I. 56(47).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of different levels of N as A/S and F.Y.M. on the yield of Maize Fodder.

1. BASAL CONDITIONS :

(i) (a) Maize Wheat—Maize. (b) Wheat. (c) N.A. (ii) (a) and (b) N.A. (iii) 17 and 18.7.1956. (iv) (a) 1 double tractor grubbing and 1 double tractor discing. (b) *By kera*. (c) to (e) N.A. (v) N.A. (vi) Yellow no. 2. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

Same as in expt. no. 54(39) on page 461.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 8. (iv) (a) and (b) 22' x 33'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Fodder yield. (iv) (a) 1953—1956. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2.87 tons/ac. (ii) 1.26 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in tons/ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁
Av. yield	2.21	2.51	3.41	2.98	2.71	2.91	3.21	3.53	1.82	3.28	2.44	3.43

S.E./mean = 0.44 tons/ac.

Crop :- Maize fodder (Kharif).

Ref :- I.A.R.I. 54(40).

Site :- Bot. Sub-stn., Pusa.

Type :- 'M'.

Object :- To study the effect of N and P through different sources on the yield of Maize fodder.

1. BASAL CONDITIONS :

(i) (a) Wheat—Maize. (b) Wheat. (c) N.A. (ii) (a) and (b) N.A. (iii) 17.6.1954. (iv) (a) 2 ploughings with Empire plough and 1 *desi* ploughing. (b) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 3 hoeings and 3 thinings. (ix) 34.71". (x) 28.9.1954.

2. TREATMENTS :

10 manurial treatments : M₀=Control, M₁=8000 lb./ac. of F.Y.M., M₂=40 lb./ac. of N as Rape cake, M₃=20 lb./ac. of N as A/S, M₄=25 lb./ac. of K₂O as Pot. Sul., M₅=40 lb./ac. of P₂O₅ as Super, M₆=25 lb./ac. of K₂O as Pot. Sul.+40 lb./ac. of P₂O₅ as Super, M₇=20 lb./ac. of N as A/S+25 lb./ac. of K₂O as Pot. Sul.+40 lb./ac. of P₂O₅ as Super, M₈=20 lb./ac. of N as A/S+40 lb./ac. of P₂O₅ as Super and M₉=20 lb./ac. of N as A/S+25 lb./ac. of K₂O as Pot. Sul.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 9. (iv) (a) 44'×24'. (b) 37.5'×18'. (v) 3'3"×3'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Attack of top and stem borers. (iii) Fodder yield. (iv) (a) 1930—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 4.09 tons/ac. (ii) 0.15 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of fodder in tons/ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉
Av. yield	2.84	6.11	5.60	4.39	3.26	3.25	2.26	4.62	4.46	4.12

S.E./mean = 0.05 tons/ac.

Crop :- Maize fodder (Rabi).

Ref :- I.A.R.I. 54(41).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object :- To study the effect of different levels of P and the number of cuttings on the yields of Maize fodder and its residual effect on soil fertility as judged by the following Maize crop.

1. BASAL CONDITIONS :

(i) (a) and (b) Maize. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 3.11.1954. (iv) (a) 1 ploughing by Victory plough and *desi* plough. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Hoeing and 2 weedings. (ix) N.A. (x) 22.3.1955 for C₁ and 12.2.1955, 25.3.1955 for C₂.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of P₂O₅ : P₀=0, P₁=40, P₂=80 and P₃=120 lb./ac.

(2) 2 levels of cutting : C₁=1 cutting and C₂=2 cuttings.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 1/80 ac. (v) Nil. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of maize fodder. (iv) (a) 1953—N.A. (b) Yes. (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 6.74 tons/ac. (ii) 0.50 tons/ac. (iii) Main effect of P is significant, main effect of C is highly significant while interaction is not significant. (iv) Av. yield of fodder in tons/ac.

	P ₀	P ₁	P ₂	P ₃	Mean
C ₁	6.50	7.23	7.11	7.36	7.05
C ₂	6.05	6.14	6.98	6.51	6.42
Mean	6.28	6.68	7.04	6.94	6.74

S.E. of P marginal mean = 0.18 tons/ac.

S.E. of C marginal mean = 0.12 tons/ac.

S.E. of body of table = 0.25 tons/ac.

Crop :- Berseem (Rabi.)

Ref :- I.A.R.I. 54(42).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study the effect of P on berseem yield rotated with cowpea for three years and further to study the residual effect of fertilizer on wheat in (i) cowpea—wheat and (ii) fallow—wheat rotations.

1. BASAL CONDITIONS :

(i) (a) Cowpea—Wheat and Fallow—Wheat. (b) Cowpea. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 20 and 21.11.1954. (iv) (a) Ploughings and hand hoeing. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Weeding on 18.1.1955 to 31.1.1955. (ix) N.A. (x) 6 to 11.6.1955.

2. TREATMENTS :

13 manurial treatments : M₀=Control, M₁=16 lb./ac. of P₂O₅ as F.Y.M., M₂=32 lb./ac. of P₂O₅ as F.Y.M., M₃=64 lb./ac. of P₂O₅ as F.Y.M., M₄=16 lb./ac. of P₂O₅ as Super, M₅=32 lb./ac. of P₂O₅ as Super, M₆=64 lb./ac. of P₂O₅ as Super, M₇=8 lb./ac. of P₂O₅ as Super+8 lb./ac. of P₂O₅ as F.Y.M., M₈=8 lb./ac. of P₂O₅ as Super+24 lb./ac. P₂O₅ as F.Y.M., M₉=8 lb./ac. of P₂O₅ as Super+56 lb./ac. of P₂O₅ as F.Y.M., M₁₀=8 lb./ac. of P₂O₅ as F.Y.M.+24 lb./ac. of P₂O₅ as Super, M₁₁=8 lb./ac. of P₂O₅ as F.Y.M.+56 lb./ac. of P₂O₅ as Super and M₁₂=No berseem crop.

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 6. (iv) (a) 65'×17'. (b) 63'×15'. (v) 1' on each side. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1954—1956 (treatments changed in 1955 and 1956). (b) Yes. (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

Grain yield

(i) 494 lb./ac. (ii) 81.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀	M ₁₁	M ₁₂
Av. yield	290	335	491	584	451	527	538	435	478	640	533	620	—

S.E./mean = 33.1 lb./ac.

Fodder yield

(i) 12.26 tons/ac. (ii) 2.79 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of fodder in tons/ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀	M ₁₁
Av. yield	4.49	6.93	10.54	12.52	11.03	15.35	20.39	7.28	10.78	17.04	13.05	17.68

S.E./mean = 1.14 tons/ac.

Crop :- Berseem (*Rabi*).

Ref :- I.A.R.I. 55(33).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of P on Berseem yield rotated with cowpea for 3 years and further to study the residual effect of fertilizers on wheat in cowpea—wheat and fallow—wheat rotations.

1. BASAL CONDITIONS :

(i) (a) *Berseem*—Cowpea. (b) Cowpea. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 18 to 20.10.1955. (iv) (a) and (b) N.A. (c) 10 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Local. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 26.5.1956 to 9.6.1956.

2. TREATMENTS :

13 manurial treatments : M₀=Control (no manure), M₁=16 lb./ac. of P₂O₅ as F.Y.M., M₂=32 lb./ac. of P₂O₅ as F.Y.M., M₃=64 lb./ac. of P₂O₅ as F.Y.M., M₄=16 lb./ac. of P₂O₅ as Super, M₅=32 lb./ac. of P₂O₅ as Super, M₆=64 lb./ac. of P₂O₅ as Super, M₇=8 lb./ac. of P₂O₅ as Super+8 lb./ac. of P₂O₅ as F.Y.M., M₈=8 lb./ac. of P₂O₅ as Super+16 lb./ac. of P₂O₅ as F.Y.M., M₉=8 lb./ac. of P₂O₅ as Super+56 lb./ac. of P₂O₅ as F.Y.M., M₁₀=16 lb./ac. of P₂O₅ as Super+8 lb./ac. of P₂O₅ as F.Y.M., M₁₁=56 lb./ac. of P₂O₅ as Super+8 lb./ac. of P₂O₅ as F.Y.M. and M₁₂=No *berseem* crop.

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 6. (iv) (a) 65'×17'. (b) 63'×15'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Good. Lodging occurred. (ii) Nil. (iii) Yield of fodder and seed. (iv) (a) 1954—1956 (treatments changed in 1955). (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 14.19 tons/ac. (ii) 2.06 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of fodder in tons/ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀	M ₁₁	M ₁₂
Av. yield	4.94	9.10	15.07	18.74	10.24	13.60	19.18	10.32	14.54	21.89	13.93	18.68	—

S.E./mean = 0.84 tons/ac.

Crop :- Berseem (*Rabi*).

Ref :- I.A.R.I. 56(48).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of low doses of phosphate on the yield of Berseem.

1. BASAL CONDITIONS :

(i) (a) *Berseem*—Cowpea. (b) Cowpea. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 17 and 18.10.1956. (iv) (a) 3 Victory ploughings and 3 *desi* ploughings. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 12 and 13.6.1957.

2. TREATMENTS :

Same as in expt. no. 54(42) on page 464.

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 65' x 17'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) No. (iii) Yield of fodder and seed. (iv) (a) 1954-1956 (treatments slightly changed in 1955). (b) Yes. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :**Fodder yield**

(i) 9.72 tons/ac. (ii) 2.26 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of fodder in tons/ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀	M ₁₁	M ₁₂
Av. yield	2.99	5.18	11.13	12.68	6.93	8.85	13.89	6.76	10.03	15.06	10.15	13.01	—

S.E./mean = 0.92 tons/ac.

Seed yield

(i) 251 lb./ac. (ii) 64.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of seed in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀	M ₁₁	M ₁₂
Av. yield	66	165	261	297	238	287	355	189	279	297	285	294	—

S.E./mean = 26.2 lb./ac.

Crop :- Berseem (*Kharif*).

Ref :- I.A.R.I. 54(43).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study the relative value of different phosphates.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 22 and 25.6.1954. (iv) (a) 2 Victory ploughings and 3 *desi* ploughings. (b) to (e) N.A. (v) 50 lb./ac. of A/S was given as B.D. (vi) N.A. (vii) Irrigated. (viii) Weedings from 8 to 14.8.1954. (ix) N.A. (x) 7 to 11.9.1954.

2. TREATMENTS :

12 manurial treatments: M₀=Control, M₁=100 lb./ac. of P₂O₅ as Rock. phos., M₂=50 lb./ac. of P₂O₅ as Super+50 lb./ac. of P₂O₅ as Rock. phos., M₃=100 lb./ac. of P₂O₅ as Super, M₄=100 lb./ac. of P₂O₅ as Farm B.M., M₅=100 lb./ac. of P₂O₅ as Powdered B.M., M₆=100 lb./ac. of P₂O₅ as B.M. grade I, M₇=100 lb./ac. of P₂O₅ as B.M. grade II, M₈=100 lb./ac. of P₂O₅ as B.M. grade III, M₉=100 lb./ac. of P₂O₅ as Trichi nodules, M₁₀=50 lb./ac. of P₂O₅ as Trichi nodules+50 lb./ac. of P₂O₅ as Super and M₁₁=50 lb./ac. of P₂O₅ as Super.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 27' x 20'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) Fodder yield. (iv) (a) 1953—contd. (b) and (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 8.11 tons/ac. (ii) 1.95 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in tons/ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀	M ₁₁
Av. yield	8.21	7.69	7.58	7.63	8.58	8.85	8.47	6.89	8.73	8.14	9.09	7.46

S.E./mean = 0.87 tons/a.

Crop :- Berseem (Rabi).

Ref :- I.A.R.I. 54(44).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :-To study the relative value of different phosphates.

1. BASAL CONDITIONS :

(i) to (iv) N.A. (v) Nil. (vi) to (x) N.A.

2. TREATMENTS :

Same as in expt. no. 54(43) on page 466.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 5. (iv) (a) 28.5'×21.5'. (b) 27'×20'. (v) 9"×9". (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of fodder. (iv) (a) 1953—contd. (b) Yes. (c) No. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 23.06 tons/ac. (ii) 4.00 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of fodder in tons/ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀	M ₁₁
Av. yield	18.11	18.11	29.04	31.61	19.86	25.49	16.83	18.94	19.74	20.82	28.73	29.39

S.E./mean = 1.79 tons/ac.

Crop :- Berseem (Rabi).

Ref :- I.A.R.I. 55(34).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :-To study the relative value of different phosphates.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 28.10.1955. (iv) (a) Victory ploughing once, bullock discing thrice and *desi* ploughing once. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) and (x) N.A.

2. TREATMENTS :

Same as in expt. no. 54(43) on page 466.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 27'×20'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1953—contd. (b) Yes. (c) No. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS:

(i) 13.42 tons/ac. (ii) 2.65 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of fodder in tons/ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀	M ₁₁
Av. yield	10.41	11.18	17.94	15.26	11.39	14.50	10.69	9.97	10.84	13.62	18.08	17.19

S.E./mean = 1.18 tons/ac.

Crop :- Berseem (green fodder) (Rabi).

Ref :- I.A.R.I. 57(54).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of different fertilizers on the yield of Berseem and the residual effect of these on the succeeding crops in rotation.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 22 and 23.10.1957. (iv) (a) 4 tractor grubblings, 1 ploughing with Victory plough and 1 tractor discing. (b) to (e) N.A. (v) to (ix) N.A. (x) 5 harvestings from 13.12.1957 to 18.4.1958.

2. TREATMENTS :

8 manurial treatments : T₀=Control, T₁=120 lb./ac. of P₂O₅, T₂=T₁+120 lb./ac. of K₂O, T₃=T₁+100 lb./ac. of N, T₄=T₁+25 lb./ac. of N, T₅=T₁+50 lb./ac. of N, T₆=T₂+100 lb./ac. of N and T₇=Fallow.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) and (b) 36'×18'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) to (vii) N.A.

5. RESULTS :**Series I**

(i) 12.84 tons/ac. (ii) 2.12 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of fodder in tons/ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Av. yield	8.13	13.27	13.78	14.14	13.26	13.51	13.79	—

S.E./mean = 0.865 tons/ac.

Series II

(i) 21.70 tons/ac. (ii) 2.17 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of fodder in tons/ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Av. yield	10.94	24.58	23.22	23.35	22.95	23.78	23.05	—

S.E./mean = 0.884 tons/ac.

Crop :- Berseem (Rabi).

Ref :- I.A.R.I. 58(52).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of P on Berseem with and without K and N and its residual effect on maize, cotton and wheat.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 3 and 4.11.1958. (iv) (a) 4 tractor grubblings, 1 ploughing with *tripali* and 1 tractor discing. (b) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 4 harvestings from 7.1.1959 to 9.4.1959.

2. TREATMENTS :

7 manurial treatments : M_0 =Control (2 plots), M_1 =120 lb./ac. of P_2O_5 , M_2 = M_1 +120 lb./ac. of K_2O , M_3 = M_1 +100 lb./ac. of N, M_4 = M_1 +25 lb./ac. of N, M_5 = M_1 +50 lb./ac. of N and M_6 = M_2 +100 lb./ac. of N.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) and (b) 36'×18'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of fodder. (iv) (a) 1948—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

Series I

(i) 7.24 tons/ac. (ii) 1.54 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of fodder in tons/ac.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	6.74	6.76	7.36	8.03	8.40	6.69	7.18

S.E./mean other than M_0 = 0.63 tons/ac.

S.E./mean for M_0 = 0.44 tons/ac.

Series II

(i) 13.09 tons/ac. (ii) 1.95 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of fodder in tons/ac.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	8.30	15.12	15.96	13.46	14.05	14.32	15.23

S.E./mean other than M_0 = 0.79 tons/ac.

S.E./mean for M_0 = 0.56 tons/ac.

Crop :- Berseem (*Kharif*).

Ref :- I.A.R.I. 59(39).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study the effect of low doses of P on Berseem fodder and after effects on wheat.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 2.6.1959. (iv) (a) 1 Victory ploughing and 2 tractor discings. (b) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 27 to 29.8.1959.

2. TREATMENTS :

13 manurial treatments : M_0 =Control, M_1 =Fallow in *rabi*, M_2 =16 lb./ac. of P_2O_5 as F.Y.M., M_3 =32 lb./ac. of P_2O_5 as F.Y.M., M_4 =64 lb./ac. of P_2O_5 as F.Y.M., M_5 =16 lb./ac. of P_2O_5 as Super, M_6 =32 lb./ac. of P_2O_5 as Super, M_7 =64 lb./ac. of P_2O_5 as Super, M_8 =8 lb./ac. of P_2O_5 as Super+8 lb./ac. of P_2O_5 as F.Y.M., M_9 =8 lb./ac. of P_2O_5 as Super+24 lb./ac. of P_2O_5 as F.Y.M., M_{10} =8 lb./ac. of P_2O_5 as Super+24 lb./ac. of P_2O_5 as F.Y.M., M_{11} =8 lb./ac. of P_2O_5 as F.Y.M.+24 lb./ac. of P_2O_5 as Super and M_{12} =8 lb./ac. of P_2O_5 as F.Y.M.+56 lb./ac. of P_2O_5 as Super.

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) (a) 65'×17'. (b) 63'×15'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of fodder. (iv) (a) 1959—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 5.67 tons/ac. (ii) 1.384 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in tons/ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆
Av. yield	4.58	4.50	4.77	6.57	5.36	6.13	5.86
Treatment	M ₇	M ₈	M ₉	M ₁₀	M ₁₁	M ₁₂	
Av. yield	5.72	4.58	4.78	7.71	6.65	6.56	

S.E./mean = 0.799 tons/ac.

Crop :- Berseem.

Ref :- I.A.R.I. 58(53).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of soil and foliar application of micro-nutrient elements on the yield of Berseem fodder.

1. BASAL CONDITIONS :

(i) to (x) N.A.

2. TREATMENTS :

18 mineral treatments : M₁=Control, M₁=60 lb./ac. of P₂O₅ as soil application, M₂=120 lb./ac. of P₂O₅ as soil application, M₃=40 lb./ac. of P₂O₅ as soil application+20 lb./ac. of P₂O₅ as foliar spray, M₄=40 lb./ac. of P₂O₅ as soil application+40 lb./ac. of P₂O₅ as foliar spray, M₅=40 lb./ac. of P₂O₅ as foliar spray, M₆=M₁+1 lb./ac. of Mo as soil application, M₇=M₁+1 lb./ac. of B as soil application, M₈=M₁+2 lb./ac. of Zn as soil application, M₉=M₂+1 lb./ac. of Mo as soil application, M₁₀=M₂+1 lb./ac. of B as soil application, M₁₁=M₂+2 lb./ac. of Zn as soil application, M₁₂=M₁+½ lb./ac. of Mo as foliar spray, M₁₃=M₁+½ lb./ac. of B as foliar spray, M₁₄=M₁+1 lb./ac. of Zn as foliar spray, M₁₅=M₁+½ lb./ac. of Mo as foliar spray, M₁₆=M₂+½ lb./ac. of B as foliar spray and M₁₇=M₂+1 lb./ac. of Zn as foliar spray.

3. DESIGN :

(i) R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a) 27'×19.5'. (b) 25'×17.5'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Fodder yield. (iv) (a) 1958—1959 (treatments slightly changed in 1959). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 29.63 tons/ac. (ii) 3.15 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of fodder in tons/ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈
Av. yield	21.26	29.31	29.84	30.06	30.43	26.11	30.14	31.44	29.95
Treatment	M ₉	M ₁₀	M ₁₁	M ₁₂	M ₁₃	M ₁₄	M ₁₅	M ₁₆	M ₁₇
Av. yield	30.70	31.98	31.76	28.39	25.49	30.62	30.89	30.88	34.06

S.E./mean = 1.58 tons/ac.

Crop :- Berseem (Rabi).**Ref :- I.A.R.I. 59(40).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object:— To study the effect of soil and foliar application of micro-nutrient elements on the yield of Berseem fodder.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 4 and 5.11.1959. (iv) (a) 1 Victory ploughing, 1 ploughing with *triphali* and 1 double discing with tractor. (b) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 1.2.1960 to 14.5.1960.

2. TREATMENTS :

18 manurial treatments: M_0 =Control, M_1 =60 lb./ac. of P_2O_5 as soil application, M_2 =120 lb./ac. of P_2O_5 as soil application, M_3 =40 lb./ac. of P_2O_5 as soil application+20 lb./ac. of P_2O_5 as 3% foliar spray, M_4 =80 lb./ac. of P_2O_5 as soil application+40 lb./ac. of P_2O_5 as 3% foliar spray, M_5 =40 lb./ac. of P_2O_5 as 3% foliar spray, M_6 = M_1 +1 lb./ac. of M_0 as soil application, M_7 = M_1 +1 lb./ac. of B as soil application, M_8 = M_1 +2 lb./ac. of Zn as soil application, M_9 = M_2 +1 lb./ac. of Mo as soil application, M_{10} = M_2 +1 lb./ac. of B as soil application, M_{11} = M_2 +2 lb./ac. of Zn as soil application, M_{12} = M_1 + $\frac{1}{2}$ lb./ac. of Mo as foliar spray, M_{13} = M_1 + $\frac{1}{2}$ lb./ac. of B as foliar spray, M_{14} = M_1 +1 lb./ac. of Zn as foliar spray, M_{15} = M_2 + $\frac{1}{2}$ lb./ac. of Mo as foliar spray, M_{16} = M_2 + $\frac{1}{2}$ lb./ac. of B as foliar spray and M_{17} = M_2 +1 lb./ac. of Zn as foliar spray.

3. DESIGN :

(i) R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a) 25'×21'. (b) 23'×19'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) 1 replication was damaged considerably by rats. (iii) Yield of *berseem*. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Effective number of replication is 3.

5. RESULTS:

(i) 26.28 tons/ac. (ii) 2.87 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in tons/ac.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8
Av. yield	24.43	26.18	26.58	26.92	29.16	22.75	27.71	22.29	28.21
Treatment	M_9	M_{10}	M_{11}	M_{12}	M_{13}	M_{14}	M_{15}	M_{16}	M_{17}
Av. yield	26.31	25.50	28.94	28.09	23.84	24.37	25.85	27.41	28.48

S.E./mean = 1.66 tons/ac.

Crop :- Berseem.**Ref :- I.A.R.I. 57(63).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'CM'.**

Object:— To study the effect of phosphobacterin inoculation on the yield of Berseem.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sweet potato. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 25.1.1957. (iv) (a) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) 3". (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)+2 extra treatments

(1) 3 sources of 60 lb./ac. of P_2O_5 : S_1 =B M, S_2 =Super and S_3 =Rock phos.

(2) 2 inoculation of seed : C_0 =No inoculation and C_1 =Phosphobacterin inoculation of seed.

Extra treatments : E_0 =Control and E_1 =Phosphobacterin inoculation of seed.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 41'×20'. (b) 38'×17'. (v) 11'×11'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of fodder. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 14.09 tons/ac. (ii) 1.94 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of fodder in tons/ac.

$$E_0 = 12.83 \text{ tons/ac. and } E_1 = 14.76 \text{ tons/ac.}$$

	S ₁	S ₂	S ₃	Mean
C ₀	12.84	14.76	13.44	13.68
C ₁	14.52	14.96	14.63	14.70
Mean	13.68	14.86	14.03	14.19

S.E. of C marginal mean = 0.46 tons/ac.
 S.E. of S marginal mean = 0.56 tons/ac.
 S.E. of body of table or E mean = 0.79 tons/ac.

Crop :- Berseem (Rabi).

Ref :- I.A.R.I. 58(54).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object :- To see the effect of phosphobacterin inoculation of Berseem seed and its effects on phosphorus availability.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 18 and 19.10.1958. (iv) (a) Tractor discing 4 times. (b) to (e) N.A. (v) 30 lb./ac. of N as A/S. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 6 harvestings from 12.12 1958 to 10.5.1959.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 5 manurial treatments : M₀=Control, M₁=30 lb./ac. of N as F.Y.M., M₂=M₁+60 lb./ac. of P₂O₅ as Super, M₃=M₁+60 lb./ac. of P₂O₅ as Rock phos. and M₄=M₁+60 lb./ac. of P₂O₅ as B.M.

(2) 4 cultural treatments : C₁=No bacterial culture, C₂=Phosphobacterin, C₃=Fosfo. 24 and C₄=Indian culture.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 20. (b) N.A. (iii) 4. (iv) and (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Green fodder yield. (iv) (a) 1956-N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 36.81 tons/ac. (ii) 1.764 tons/ac. (iii) Main effects of M and C are highly significant. (iv) Av. yield of fodder in tons/ac.

	M ₀	M ₁	M ₂	M ₃	M ₄	Mean
C ₁	30.69	34.12	38.80	34.95	35.70	34.85
C ₂	38.62	39.05	43.54	39.67	39.16	40.01
C ₃	35.33	34.94	38.48	36.32	36.22	36.26
C ₄	34.98	35.40	38.74	35.67	35.75	36.11
Mean	34.90	35.88	39.89	36.65	36.71	36.81

S.E. of C marginal mean	= 0.39 tons/ac.
S.E. of M marginal mean	= 0.44 tons/ac.
S.E. of body of table	= 0.83 tons/ac.

Crop :- Berseem (Rabi).

Ref :- I.A.R.I. 57(55).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object :—To see phosphobacterin inoculation of Berseem seed and its effect on up take of P.

1. BASAL CONDITIONS :

(i) to (ix) N.A. (x) 3 harvestings from 21.1.1958 to 3.4.1958.

2. TREATMENTS :

All combinations of (1) and (2)+2 extra treatments

(1) 5 sources of 60 lb./ac. of P_2O_5 : S_0 =No P_2O_5 , S_1 =B.M., S_2 =Rock. Phos., S_3 =Super and S_4 =F.Y.M.

(2) 2 levels of fospho. : F_0 =No fospho. 24 and F_1 =Fospho. 24.

Extra treatments : E_1 =Phosphobacterin and E_2 =Indian culture.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) and (b) 31'×23'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) to (vii) Nil.

5. RESULTS :

(i) 17.03 tons/ac. (ii) 1.94 tons/ac. (iii) E effect is significant and interaction F×S is highly significant. (iv) Av. yield of fodder in tons/ac.

$E_1 = 16.12$ tons/ac. and $E_2 = 18.93$ tons/ac.

	S_0	S_1	S_2	S_3	S_4	Mean
F_0	17.20	15.92	16.24	20.07	16.86	17.26
F_1	16.27	16.60	16.37	16.02	17.75	16.60
Mean	16.73	16.26	16.30	18.04	17.30	16.93

S.E. of F marginal mean	= 0.35 tons/ac.
S.E. of S marginal mean	= 0.56 tons/ac.
S.E. of body of table or E mean	= 0.79 tons/ac.

Crop :- Cowpea fodder (Kharif).

Ref :- I.A.R.I. 54(45).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study the residual effect of different levels and sources of P applied to previous berseem crop on Cowpea.

1. BASAL CONDITIONS :

(i) (a) Berseem—Cowpea. (b) Berseem. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 15 and 16.7.1954. (iv) (a) 1 Victory ploughing. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 20 to 26.9.1954.

2. TREATMENTS :

13 manurial treatments : M_0 =Control (no manure), M_1 =Fallow in previous season and no manure, M_2 =16 lb./ac. of P_2O_5 as F.Y.M., M_3 =32 lb./ac. of P_2O_5 as F.Y.M., M_4 =64 lb./ac. of P_2O_5 as F.Y.M., M_5 =16 lb./ac. of P_2O_5 as Super, M_6 =32 lb./ac. of P_2O_5 as Super, M_7 =64 lb./ac. of P_2O_5 as Super, M_8 =8 lb./ac. of P_2O_5 as Super+8 lb./ac. of P_2O_5 as F.Y.M. M_9 =8 lb./ac. of P_2O_5 as Super+24 lb./ac. of P_2O_5 as F.Y.M., M_{10} =8 lb./ac. of P_2O_5 as Super+56 lb./ac. of P_2O_5 as F.Y.M., M_{11} =8 lb./ac. of P_2O_5 as F.Y.M.+24 lb./ac. of P_2O_5 as Super and M_{12} =8 lb./ac. of P_2O_5 as F.Y.M.+56 lb./ac. of P_2O_5 as Super.

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 6. (iv) (a) 65'×17'. (b) 63'×15'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1948—N.A. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 7.68 tons/ac. (ii) 2.50 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in tons/ac.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	7.36	6.88	6.80	8.56	7.73	6.27	7.05
Treatment	M_7	M_8	M_9	M_{10}	M_{11}	M_{12}	
Av. yield	9.35	8.38	5.71	10.28	7.05	8.39	

S.E./mean = 1.02 tons/ac.

Crop :- Cowpea fodder (Kharif).

Ref :- I.A.R.I. 55(35).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study the residual effect of different levels and sources of P applied to previous berseem crop on Cowpea.

1. BASAL CONDITIONS :

(i) (a) *Berseem*—Cowpea. (b) *Berseem*. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 27.6.1955. (iv) (a) 2 Victory ploughings and 1 bullock discing. (b) to (c) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 hoeing and 2 weedings. (ix) N.A. (x) 10 to 16.9.1955.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(45) on page 473.

5. RESULTS :

(i) 5.56 tons/ac. (ii) 0.69 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in tons/ac.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	4.87	5.69	5.51	6.05	5.91	5.37	5.35
Treatment	M_7	M_8	M_9	M_{10}	M_{11}	M_{12}	
Av. yield	5.58	5.63	5.34	5.74	5.77	5.46	

S.E./mean = 0.28 tons/ac.

Crop :- Cowpea fodder (Kharif).

Ref :- I.A.R.I. 56(51).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :—To study the effect of different levels and sources of P applied to previous berseem crop on Cowpea.

1. BASAL CONDITIONS :

(i) (a) *Berseem*—Cowpea. (b) *Berseem*. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 23 to 25.6.1956. (iv) (a) and (b) N.A. (c) 20 srs./ac. (d) and (e) N.A. (v) Nil. (vi) K—397. (vii) Irrigated. (viii) and (ix) N.A. (x) 3 to 7.9.1956.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(45) on page 473.

5. RESULTS :

(i) 4.26 tons/ac. (ii) 0.69 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of fodder in tons/ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆
Av. yield	3.25	4.66	3.42	4.33	4.65	3.99	3.73
Treatment	M ₇	M ₈	M ₉	M ₁₀	M ₁₁	M ₁₂	
Av. yield	4.75	3.71	4.60	5.15	4.37	4.76	

S.E./mean = 0.28 tons/ac.

Crop :- Cowpea fodder (Kharif).

Ref :- I.A.R.I. 57(56).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object:—To study the residual effect of different levels and sources of P applied to previous berseem crop on Cowpea.

1. BASAL CONDITIONS :

(i) (a) *Berseem*—Cowpea. (b) *Berseem*. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 11.7.1957. (iv) (a) 3 ploughings. (b) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 9 to 11.10.1957.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(45) on page 473.

5. RESULTS :

(i) 3.23 tons/ac. (ii) 1.10 tons./ac. (iii) Treatment differences are significant. (iv) Av. yield of fodder in tons/ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆
Av. yield	2.36	2.95	2.33	3.58	4.55	2.44	3.15
Treatment	M ₇	M ₈	M ₉	M ₁₀	M ₁₁	M ₁₂	
Av. yield	4.22	2.52	2.84	4.42	3.57	3.07	

S.E./mean = 0.45 tons/ac.

Crop :- Cowpea fodder (Kharif).

Ref :- I.A.R.I. 58(55).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object:—To study the residual effect of different levels and sources of P applied to previous berseem crop on Cowpea.

1. BASAL CONDITIONS :

(i) (a) *Berseem*—Cowpea. (b) *Berseem*. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 14.7.1958. (iv) (a) 1 Victory ploughing and 4 discings. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 3, 4 and 6.10.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(45) on page 473.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1948—N.A. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 5.61 tons/ac. (ii) 1.22 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in tons/ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆
Av. yield	4.55	5.72	3.92	6.55	5.45	6.07	5.02
Treatment	M ₇	M ₈	M ₉	M ₁₀	M ₁₁	M ₁₂	
Av. yield	5.47	5.53	4.62	7.47	6.39	6.19	

S.E./mean = 0.70 tons/ac.

Crop :- Guar fodder (Kharif).**Ref :- I.A.R.I. 57(57).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :—To study the effect of different levels of P on Guar in Guar—Wheat rotation.

1. BASAL CONDITIONS :

(i) (a) As per treatments. (b) and (c) N.A. (ii) to (vi) N.A. (vii) Unrigated. (viii) Nil. (ix) and (x) N.A.

2. TREATMENTS :

12 manurial treatments with crop rotations : T₁=Guar—Wheat, T₂=T₁ with 25 lb./ac. of P₂O₅ to guar crop, T₃=T₁ with 50 lb./ac. of P₂O₅ to guar crop, T₄=T₁ with 75 lb./ac. of P₂O₅ to guar crop, T₅=T₁ with 20 lb./ac. of N to wheat, T₆=Guar with 25 lb./ac. of P₂O₅—wheat with 20 lb./ac. of N, T₇=Guar with 50 lb./ac. of P₂O₅—wheat with 20 lb./ac. of N, T₈=Guar with 75 lb./ac. of P₂O₅—wheat with 20 lb./ac. of N, T₉=Fallow—wheat (2 plots), T₁₀=Fallow—wheat with 20 lb./ac. of N and T₁₁=Fallow—wheat with 20 lb./ac. of N+25 lb./ac. of P₂O₅.

3. DESIGN :

(i) R.B.D. (ii) 12. (effective plots are 8 for guar crop). (b) N.A. (iii) 6. (iv) (a) 26'×22'. (b) 24'×20'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1957—N.A. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) As 1957 is the starting year of the expt., the effective treatments for guar crop become 4 each in two plots in each replication.

5. RESULTS :

(i) 2.05 tons/ac. (ii) 0.38 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of fodder in tons/ac.

Treatment	(T ₁ +T ₅)	(T ₂ +T ₆)	(T ₃ +T ₇)	(T ₄ +T ₈)
Av. yield	1.65	2.13	1.96	2.46

S.E./mean = 0.11 tons/ac.

Crop :- Guar fodder (Kharif).**Ref :- I.A.R.I. 58(56).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'M'.**

Object :—To study the effect of different levels of P on Guar in Guar—Wheat rotation.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) 19.7.1958. (iv) (a) 3 ploughings and 1 harrowing. (b) to (c) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 3 weedings. (ix) N.A. (x) 25.9.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(57) on page 476.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1957—N.A. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2.64 tons/ac. (ii) 0.38 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of fodder in tons/ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	2.15	2.54	2.71	2.85	2.09	2.75	2.99	3.05

S.E./mean = 0.16 tons/ac.

Crop :- Guar fodder (Kharif).

Ref :- I.A.R.I. 59(41).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of different levels of P on Guar in Guar—Wheat rotation.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) 11.7.1959. (iv) (a) 2 Victory and 3 *desi* ploughings. (b) to (c) N.A. (v) and (vi) N.A. (vii) Unirrigated. (viii) 2 weedings. (ix) N.A. (x) 21 and 22.9.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(57) on page 476.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1957—N.A. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2.08 tons/ac. (ii) 0.47 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of fodder in tons/ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	1.70	2.28	2.33	2.31	1.60	2.06	2.07	2.31

S.E./mean = 0.19 tons/ac.

Crop :- Jowar fodder (Kharif).

Ref :- I.A.R.I. 57(58).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of different levels and sources of N on Jowar.

1. BASAL CONDITIONS :

(i) to (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)+a control

(1) 3 levels of N : N₁=40, N₂=80 and N₃=120 lb./ac.

(2) 4 sources of N : S₁=A/S, S₂=A/N, S₃=Urea and S₄=Nitro magnesia.

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 27'×20'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of fodder. (iv) to (vii) N.A.

5. RESULTS :

(i) 7.02 tons/ac. (ii) 0.44 tons/ac. (iii) 'Control vs. others' and main effect of N are highly significant. (iv) Av. yield of fodder in tons/ac.

Control = 5.17 tons/ac.

	S ₁	S ₂	S ₃	S ₄	Mean
N ₁	6.07	5.92	6.21	6.00	6.05
N ₂	6.96	7.72	7.13	7.00	7.20
N ₃	8.27	8.28	8.24	8.22	8.25
Mean	7.10	7.31	7.19	7.07	7.17

S.E. of S marginal mean = 0.13 tons/ac.

S.E. of N marginal mean = 0.11 tons/ac.

S.E. of body of table or control mean = 0.22 tons/ac.

Crop :- Grasses.

Ref :- I.A.R.I. 59(43).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of different levels of P on the yield of Grass fodder.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 28.8.1959. (iv) (a) 1 Victory ploughing and 3 *desi* ploughings. (b) to (e) N.A. (v) and (vi) N.A. (vii) Unirrigated. (viii) 1 hoeing. (ix) N.A. (x) 4.11.1959.

2. TREATMENTS :

4 levels of P₂O₅ : P₀=0, P₁=30, P₂=60 and P₃=90 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) 24'×50'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Fodder yield. (iv) (a) 1958-1959. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment was conducted at Todapur.

5. RESULTS :

(i) 22.96 tons/ac. (ii) 1.17 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in tons/ac.

Treatment	P ₀	P ₁	P ₂	P ₃
Av. yield	22.23	23.50	22.74	23.39

S.E./mean = 0.48 tons/ac.

Crop :- Grasses.

Ref :- I.A.R.I. 59(44).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'M'.

Object :- To study the effect of different levels of P on the yield of Grass fodder.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) to (vi) N.A. (vii) Irrigated. (viii) 3 hoeings with *desi* hoe and 3 weedings. (ix) N.A. (x) 27.7.1959 to 23.3.1960.

2. TREATMENTS :

4 levels of P_2O_5 as Super : $P_0=0$, $P_1=60$, $P_2=120$ and $P_3=180$ lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) 1/72 ac. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of leaf hopper. (iii) Yield of grass fodder. (iv) (a) 1958—1959. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Whole of the area was water lodged during rains.

5. RESULTS :

(i) 15.95 tons/ac. (ii) 1.07 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in tons/ac.

Treatment	P_0	P_1	P_2	P_3
Av. yield	16.09	15.88	15.66	16.16

S.E./mean = 0.44 tons/ac.

Crop :- Grasses (*Kharif*).

Ref :- I.A.R.I. 59(45).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'MV'.

Object :—To study the relative response of different strains of *cenchrus ciliaris* to different levels of N.

1. BASAL CONDITIONS :

(i) to (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) 1 hoeing with *desi* hoe. (ix) N.A. (x) 22.7.1959, 21.8.1959 and 25.9.1959.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 5 varieties : $V_1=$ Bold, $V_2=A-2328$, $V_3=A-2329$, $V_4=A-49$ and $V_5=$ Delhi.

(2) 3 levels of N as A/S : $N_0=0$, $N_1=40$ and $N_2=80$ lb./ac.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 1/72 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) to (vi) N.A. (vii) Expt. was conducted at Todapur.

5. RESULTS :

(i) 4.33 tons/ac. (ii) 1.00 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of fodder in lb./ac.

	V_1	V_2	V_3	V_4	V_5	Mean
N_0	3.11	4.48	4.37	5.08	4.03	4.21
N_1	4.33	4.90	3.71	4.83	4.14	4.38
N_2	4.07	4.56	4.75	3.72	4.94	4.41
Mean	3.84	4.65	4.28	4.54	4.37	4.33

S.E. of V marginal mean = 0.33 tons/ac.

S.E. of N marginal mean = 0.26 tons/ac.

S.E. of body of table = 0.58 tons/ac.

Crop :- Grasses.

Ref :- I.A.R.I. 59(42).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'MV'.

Object :- To study the effect of different levels of N, P and K on different Grasses.

1. BASAL CONDITIONS :

(i) to (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) 3 hoeings, 2 weedings and gap filling.
 (ix) N.A. (x) 10.8.1959 to 15.9.1959.

2. TREATMENTS :

All combinations (1), (2), (3) and (4)

(1) 3 grasses : $G_1 = \text{Chloris gayana}$, $G_2 = \text{Panicum maximum}$ and $G_3 = \text{Urochloa mosambicensis}$.(2) 3 levels of N as A/S : $N_0 = 0$, $N_1 = 40$ and $N_2 = 80$ lb./ac.(3) 3 levels of P_2O_5 as Super : $P_0 = 0$, $P_1 = 30$ and $P_2 = 60$ lb./ac.(4) 3 levels of K_2O as Pot. Sul. : $K_0 = 0$, $K_1 = 30$ and $K_2 = 60$ lb./ac.

3. DESIGN :

(i) 3^4 confd. (ii) (a) 9 plots/block and 9 blocks/replication. (b) N.A. (iii) 2. (iv) (a) and (b) $12' \times 50'$. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grass. (iv) to (vii) N.A.

5. RESULTS :

(i) 11.95 tons/ac. (ii) 2.46 tons/ac. (iii) Main effect of G is highly significant and interaction $G \times K$ is significant. (iv) Av. yield of grass in tons/ac.

	K_0	K_1	K_2	P_0	P_1	P_2	N_0	N_1	N_2	Mean
G_1	7.71	8.39	8.91	8.69	8.31	8.01	7.84	8.66	8.52	8.34
G_2	10.42	11.47	13.30	10.73	12.63	11.74	10.49	11.51	13.91	11.73
G_3	15.90	16.42	15.05	16.50	15.97	14.99	15.82	16.05	15.49	15.79
Mean	11.34	12.09	12.42	11.97	12.31	11.58	11.38	12.07	12.40	11.95
N_0	10.89	11.99	11.28	11.84	11.59	10.73				
N_1	10.69	12.33	13.19	12.03	13.12	11.07				
N_2	12.45	11.97	12.79	12.05	12.21	12.94				
P_0	11.83	12.11	11.97							
P_1	10.83	12.62	13.47							
P_2	11.37	11.55	11.82							

S.E. of any marginal mean

= 0.33 tons/ac.

S.E. of body of any table

= 0.58 tons/ac.

Crop :- Grasses.

Ref :- I.A.R.I. 56(52).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object :- To study the effect of different intervals of cutting and different levels of N on the yield of Grasses.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 10.6.1954. (iv) (a) 4 ploughings. (b) to (e) N.A.
 (v) 107 mds./ac. of activated sludge. (vi) Blue panic (*Panicum antidotale*). (vii) Irrigated. (viii) Weeding and hoeing. (ix) and (x) N.A.

2. TREATMENTS:

All combinations of (1) and (2)

(1) 3 clipping intervals : $C_1=20$, $C_2=30$ and $C_3=40$ days.

(2) 4 levels of N : $N_0=0$, $N_1=40$, $N_2=80$ and $N_3=120$ lb./ac.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) $34' \times 16'$. (b) $34' \times 14'$. (v) 1' either side length wise. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) *Helmenthosporium* attack. Perenox sprayed. (iii) Yield of grass. (iv) to (vi) N.A. (vii) Raw-data and two-way table : N.A.

5. RESULTS :

(i) 12.46 tons/ac. (ii) 0.79 tons/ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of fodder in tons/ac.

Treatment	N_0	N_1	N_2	N_3	C_1	C_2	C_3
Av. yield	8.8	10.46	13.77	16.91	11.82	12.61	12.94

S.E. of N mean = 0.23 tons/ac.

S.E. of C mean = 0.20 tons/ac.

Crop :- Grasses.

Ref :- I.A.R.I. 59(46).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object :- To study the effect of time of application of nitrogenous fertilizers on the yield of Grass.

1. BASAL CONDITIONS :

(i) to (v) N.A. (vi) *Setaria spherocata*. (vii) Irrigated. (viii) 4 hoeings and 2 weedings. (ix) N.A. (x) 25.4.1959 to 29.10.1959.

2. TREATMENTS :

All combinations of (1) and (2)+two extra treatments

(1) 4 levels of N : $N_1=80$, $N_2=120$, $N_3=160$ and $N_4=200$ lb./ac.

(2) 3 times of application : T_1 =After every cut, T_2 =After every two cuts and T_3 =After every three cuts.

Extra treatments : E_0 =Control and E_1 =40 lb./ac. of P_2O_5 .

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 3. (iv) (a) N.A. (b) $14' \times 52'$. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grass. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 31.93 tons/ac. (ii) 5.38 tons/ac. (iii) N effect is significant. 'Extra treatment vs. others' effect is highly significant. (iv) Av. yield of grass in tons/ac.

E_0 = 26.13 tons/ac. and E_1 = 22.70 tons/ac.

	N_1	N_2	N_3	N_4	Mean
T_1	29.82	29.98	30.37	39.67	32.46
T_2	30.66	34.15	27.40	36.15	32.09
T_3	33.23	31.48	38.25	37.03	35.10
Mean	31.24	31.87	32.01	37.62	33.18

S.E. of N marginal mean	= 1.79 tons/ac.
S.E. of T marginal mean	= 1.55 tons/ac.
S.E. of body of table or extra treatments mean	= 3.11 tons/ac.

Crop :- Grasses.

Ref :- I.A.R.I. 57(59).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object :- To study the effect of cuttings in association with levels of N on the yield of Grass.

1. BASAL CONDITIONS :

(i) to (vi) N.A. (vii) Irrigated. (viii) 2 hoeings. (ix) N.A. (x) 10 cuttings from 24.4.1957 to 19.10.1957.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N as C/N : $N_0=0$, $N_1=40$, $N_2=80$ and $N_3=120$ lb./ac.

(2) 3 intervals of cutting : $C_1=20$, $C_2=30$ and $C_3=40$ days.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) and (b) 1/80 ac. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) N.A. (iii) Yield of grass. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 6.94 tons/ac. (ii) 2.13 tons/ac. (iii) N effect and interaction $N \times C$ are highly significant. (iv) Av. yield of grass in tons/ac.

	N_0	N_1	N_2	N_3	Mean
C_1	3.08	8.31	9.88	7.37	7.16
C_2	4.72	4.02	11.23	9.67	7.41
C_3	5.77	4.41	5.19	9.62	6.25
Mean	4.52	5.58	8.77	8.89	6.94

S.E. of N marginal mean = 0.71 tons/ac.

S.E. of C marginal mean = 0.61 tons/ac.

S.E. of body of table = 1.23 tons/ac.

Crop :- Grasses (Kharif & Rabi).

Ref :- I.A.R.I. 57(60).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CM'.

Object :- To study the effect of different intervals of cutting in association with levels of N on the yield of Grass.

1. BASAL CONDITIONS :

(i) to (vi) N.A. (vii) Irrigated. (viii) 1 weeding and 2 hoeings. (ix) N.A. (x) 8 cuttings from 24.4.1957 to 21.10.1957.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(59) above.

4. GENERAL :

(i) Stand of crop was poor. (ii) N.A. (iii) Yield of grass. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2.78 tons/ac. (ii) 0.48 tons/ac. (iii) All effects are highly significant. (iv) Av. yield of fodder in tons/ac.

	N ₀	N ₁	N ₂	N ₃	Mean
C ₁	1.13	2.39	2.40	3.60	2.38
C ₂	1.35	1.68	2.77	5.01	2.70
C ₃	1.80	1.87	2.62	6.77	3.26
Mean	1.43	1.98	2.60	5.13	2.78

S.E. of N marginal mean = 0.16 tons/ac.
 S.E. of C marginal mean = 0.11 tons/ac.
 S.E. of body of table = 0.28 tons/ac.

Crop :- Grasses.

Ref :- I.A.R.I. 59(47).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'CMV'.

Object :- To study the effect of N and intervals of cutting on the yield of different varieties of grasses.

1. BASAL CONDITIONS :

(i) to (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 3 *desi* hoeings and 2 weedings. (ix) N.A. (x) 18.4.1959 to 18.11.1959.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V₁=*S. Sphacelata*, V₂=*B. Mutica* and V₃=*P. Purpureum*.

(2) 3 levels of N as A/S : N₀=0, N₁=80 and N₂=160 lb./ac.

(3) 3 intervals of cutting : C₁=30, C₂=45 and C₃=60 days.

3. DESIGN :

(i) 3³ confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 48'×12.5'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grass. (iv) 1958—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 45.85 tons/ac. (ii) 4.81 tons/ac. (iii) Main effects of N, V and C and interaction N×V are highly significant. Interaction N×C is significant. (iv) Av. yield of grass in tons/ac.

	N ₀	N ₁	N ₂	Mean	C ₁	C ₂	C ₃
V ₁	42.18	41.61	48.84	44.21	33.95	46.57	52.11
V ₂	23.36	37.13	42.10	34.20	25.52	37.56	39.51
V ₃	44.39	63.27	69.73	59.13	46.53	60.52	70.34
Mean	36.64	47.34	53.56	45.85	35.33	48.22	53.99
C ₁	28.65	36.52	40.83				
C ₂	40.87	49.36	54.42				
C ₃	40.41	56.13	65.42				

S.E. of any marginal mean = 1.39 tons/ac.
 S.E. of body of any table = 1.56 tons/ac.

Crop :- Hubam Clover + Senji (Rabi).

Ref :- I.A.R.I. 54(46).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'X'.

Object :-To study the response of Hubam Clover and Senji mixture in different proportions of P.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 11.11.1954. (iv) (a) 1 ploughing with *desi* plough. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) *Hubam* on 17.3.1955 and *Hubam + Senji* on 30.4.1955, 30.5.1955 and 29.6.1955.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 mixtures : M_1 =Hubam clover alone, M_2 =*Senji* alone, M_3 =Hubam clover and *senji* in 1 : 1 ratio and M_4 =Hubam clover and *senji* in 3 : 2.

(2) 3 levels of P_2O_5 : $P_0=0$, $P_1=40$ and $P_2=80$ lb./ac.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 0.5 acre. (b) N.A. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grass. (iv) (a) 1951—N.A. (b) Yes. (c) N.A. (v) to (vi) Nil.

5. RESULTS :

(i) 9.97 tons/ac. (ii) 1.87 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of fodder in tons/ac.

	M_1	M_2	M_3	M_4	Mean
P_0	11.27	7.04	9.25	11.37	9.73
P_1	10.76	7.19	8.84	12.02	9.70
P_2	10.49	9.23	11.00	11.19	10.48
Mean	10.84	7.82	9.70	11.53	9.97

S.E. of M marginal mean = 0.62 tons/ac.

S.E. of S marginal mean = 0.54 tons/ac.

S.E. of body of table = 1.08 tons/ac.

Crop :- Linseed, Wheat and Gram (Rabi).

Ref :- I.A.R.I. 54(47).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'X'.

Object :-To study the effect of mixed cropping of Linseed, Wheat and Gram on their yield.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 18.10.1954. (iv) (a) 2 ploughings and grubbing. (b) Line sowing. (c) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 7 weedings. (ix) N.A. (x) Wheat on 1, 6.4.1955, Gram and Linseed on 7, 9 to 11.4.1955.

2. TREATMENTS :

9 proportions of mixture : M_1 =Linseed alone, M_2 =Wheat alone, M_3 =Gram alone, M_4 =Linseed+gram in 2 : 1, M_5 =Linseed+wheat in 2 : 1, M_6 =Linseed+gram+wheat in 4 : 1 : 1, M_7 =Linseed+gram in 1 : 1, M_8 =Linseed+wheat in 1 : 1 and M_9 =Linseed+gram+wheat in 2 : 1 : 1.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 1/60 ac. (v) Nil. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1952—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

I. Linseed yield

(i) 342 lb./ac. (ii) 209.0 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of linseed in lb./ac.

Treatment	M ₁	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉
Av. yield	792	485	189	270	309	172	179

S.E./mean = 104.5 lb./ac.

II. Wheat yield

(i) 1668 lb./ac. (ii) 711.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₂	M ₃	M ₆	M ₈	M ₉
Av. yield	2187	1491	1203	2116	1344

S.E./mean = 355.5 lb./ac.

III. Gram yield

(i) 1060 lb./ac. (ii) 281.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₃	M ₄	M ₆	M ₇	M ₉
Av. yield	1689	1197	347	1377	689

S.E./mean = 140.7 lb./ac.

Crop :- Linseed, Wheat and Gram (Rabi).

Ref :- I.A.R.I. 55(36).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'X'.

Object — To study the effect of mixed cropping of Linseed, Wheat and Gram on their yield.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 12.11.1955. (iv) (a) Discing twice and tractor grubbing twice. (b) Line sowing. (c) Linseed 10 lb./ac., wheat 75 lb./ac. and gram 36 lb./ac. (d) and (e) N.A. (v) Top dressing by C/N. (vi) N.A. (vii) Irrigated. (viii) 3 hoeings and 2 weedings. (ix) N.A. (x) 28.4.1956, 30.4.1956 and 1.5.1956.

2. TREATMENTS :

Same as in expt. no. 54(47) on page 484.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 40' × 18'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1952—N.A. (b) and (c) No. (v) to (vii) Nil.

5. RESULTS :

I. Linseed yield

(i) 207 lb./ac. (ii) 46.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of linseed in lb./ac.

Treatment	M ₁	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉
Av. yield	485	362	74	91	313	66	58

S.E./mean = 23.0 lb./ac.

II Gram yield

(i) 250 lb./ac. (ii) 121.8 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₃	M ₄	M ₆	M ₇	M ₉
Av. yield	658	165	58	296	74

S.E./mean = 60.9 lb./ac.

III Wheat yield

(i) 745 lb./ac. (ii) 56.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₂	M ₅	M ₈	M ₈	M ₉
Av. yield	979	601	831	674	642

S.E./mean = 28.0 lb./ac.

Crop :- Linseed, Wheat and Gram (Rabi).

Ref :- I.A.R.I. 56(53).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'X'.

Object :- To study the effect of mixed cropping of Linseed with Wheat and Gram on their yield.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clay loam. (b) N.A. (iii) 6.11.1956. (iv) (a) Tractor ploughing, grubbing and discing. (b) Line sowing. (c) Linseed 10 lb./ac., wheat 75 lb./ac. and gram 32 lb./ac. (d) and (e) N.A. (v) Nil. (vi) Linseed RR-197 (medium), wheat NP.-760 (medium) and gram NP.-58 (medium). (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 5.59". (x) 16.2.1957.

2. TREATMENTS :

Same as in expt. no. 54(47) on page 484.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 42' × 20'. (b) 40 × 18'. (v) 1' × 1'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. Wheat lodged completely. (ii) Rust attack on wheat and wilt on gram. (iii) Growth and grain yield. (iv) (a) 1952-1957. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

I Linseed yield

(i) 520 lb./ac. (ii) 93.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of seed in lb./ac.

Treatment	M ₁	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉
Av. yield	1200	1015	44	161	1034	66	118

S.E./mean = 46.9 lb./ac.

II Wheat yield

(i) 845 lb./ac. (ii) 112.2 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₂	M ₅	M ₆	M ₈	M ₉
Av. yield	1182	868	570	814	791

S.E./mean = 106.1 lb./ac.

III Gram yield

(i) 101 lb./ac. (ii) 60.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₃	M ₄	M ₆	M ₇	M ₉
Av. yield	201	148	10	132	13

S.E./mean = 30.4 lb./ac.

Crop :- Sesamum and Maize (Kharif).
Site :- Indian Agri. Res. Instt., New Delhi.

Ref :- I.A.R.I. 54(48).
Type :- 'X'

Object :— To study the effect of mixed cropping of Sesamum with Maize.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 2 and 5.7.1954. (iv) (a) 4 ploughings. (b) Row sowing. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 8 and 9.10.1954.

2. TREATMENTS :

6 mixture treatments : T₁=Sesamum alone, T₂=Maize alone, T₃=Maize+sesamum in separate rows, T₄=Maize+sesamum mixed in same row, T₅=Maize+sesamum pure in separate row at $\frac{1}{2}$ seed rate and T₆=Maize+sesamum mixed in same row at $\frac{1}{4}$ seed rate.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 33' x 22'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of Sesamum. (iv) 1952—contd. (b) and (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 89 lb./ac. (ii) 36.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of sesamum in lb./ac.

Treatment	T ₁	T ₃	T ₄	T ₅	T ₆
Av. yield	109	118	64	71	81

S.E./men = 14.8 lb./ac.

Crop :- Maize and Sesamum (Kharif).
Site : Indian Agri. Res. Instt., New Delhi.

Ref :- I.A.R.I. 55(37).
Type :- 'X'.

Object :— To study the effect of mixed cropping of Sesamum with Maize on their yield.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 6 and 7.7.1955. (iv) (a) 1 tractor ploughing, 2 discings and beaming. (b) Line sowing. (c) Sesamum 1 srs./ac. and maize 10 srs./ac. (d) and (e) N.A. (v) F.Y.M. at 4 tons/ac. (vi) N.A. (vii) Irrigated. (viii) 3 hoeings, 2 weedings and 2 thinnings. (ix) N.A. (x) 6 to 12.10.1955.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(48) above.

4. GENERAL :

(i) Satisfactory. Maize lodged completely. (ii) Stem borer attack on maize. (iii) Yield of grain. (iv) (a) 1952—contd. (b) and (c) N.A. (v) to (vii) Nil.

5. RESULTS :

Sesamum yield

(i) 473 lb./ac. (ii) 68.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of sesamum in lb./ac.

Treatment	T ₁	T ₃	T ₄	T ₅	T ₆
Av. yield	623	406	444	439	452

S.E./mean = 28.0 lb./ac.

Maize yield

(i) 474 lb./ac. (ii) 121.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T ₂	T ₃	T ₄	T ₅	T ₆
Av. yield	1029	336	374	352	280

S.E./mean = 49.4 lb./ac.

Crop :- Sesamum and Maize.**Ref :- I.A.R.I. 56(54).****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'X'.****Object :-**To study the effect of mixed cropping of Sesamum with Maize on their yield.**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clay loam. (b) N.A. (iii) 14.7.1956. (iv) (a) Tractor ploughing, grubbing and discing. (b) Line sowing. (c) Sesamum 4 lb./ac. and maize 20 lb./ac. (d) and (e) N.A. (v) Nil. (vi) Sesamum N.P.—7 (medium) and Maize yellow No. 2 (medium). (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 16.69". (x) 15.10.1956.

2. TREATMENTS :

Same as in expt. no. 54(48) on page 487.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 35'×24'. (b) 33'×22'. (v) 1'×1'. (vi) Yes.

4. GENERAL :

(i) Completely lodged. (ii) Sesamum attacked by stem rot. (iii) Growth and grain yield. (iv) (a) 1952—contd. (b) No. (c) N.A. (v) and (vi) Nil. (vii) Sesamum crop failed.

5. RESULTS :

(i) 1011 lb./ac. (ii) 141.1 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of maize grain in lb./ac.

Treatment	T ₂	T ₃	T ₄	T ₅	T ₆
Av. yield	1424	790	889	922	1029

S.E./mean = 57.6 lb./ac.

Crop :- Sugarcane.**Ref :- I.A.R.I. 58(57).****Site :- Indian Agri. Res. Instt. New Delhi.****Type :- 'R'.****Object :-**To study comparative effect of rotations on growth and yield of Sugarcane.**1. BASAL CONDITIONS :**

(i) and (ii) N.A. (iii) Middle of February, 1958. (iv) (a) 5 ploughings and 2 beamings. (b) Sowing in lines. (c) 50 mds./ac. (d) and (e) N.A. (v) 10 tons/ac. of F.Y.M. and 80 lb./ac. of N as A/S. (vi) N.A. (vii) Irrigated. (viii) 2 weedings and 2 hoeings. (ix) N.A. (x) March—April 1959.

2. TREATMENTS :

3 rotational treatments : T₁ = Maize—Potato—Sugarcane, T₂ = Fallow—Wheat—Cotton—Fallow—Sugarcane and T₃ = G.M.—Wheat—Fallow—Potato—Sugarcane.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 62'×42'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of sugarcane. (iv) (a) 1951—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 19.68 tons/ac. (ii) 3.67 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	T ₁	T ₂	T ₃
Av. yield	19.52	20.75	18.77

S.E./mean = 1.83 tons/ac.

Crop :- Wheat and Bajra.

Ref :- I.A.R.I. 56(55).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'R'.

Object :—To study the effect of organic and inorganic manures on the yield of crops under different rotations.

1. BASAL CONDITIONS :

(i) (a) As per treatments. (b) and (c) N.A. (ii) (a) Heavy clay. (b) N.A. (iii) Wheat on 8.11.1956 and Bajra, .5 and 26.7.1956. (iv) (a) to (e) N.A. (v) Nil. (vi) Wheat N.P.—718 (medium) and bajra local. (vii) Irrigated. (viii) 1 weeding. (ix) 5.59". (x) 2.11.1956 and 22 to 26.4.1957.

2. TREATMENTS :

Main-plot treatments :

3 rotations : $R_1 = \text{Bajra—Wheat}$, $R_2 = \text{Fallow—Wheat}$ and $R_3 = \text{Bajra—Fallow}$.

Sub-plot treatments :

5 levels of F.Y.M. : $F_0 = 0$, $F_1 = 2.5$, $F_2 = 5$, $F_3 = 10$ and $F_4 = 20$ tons/ac.

Sub-sub-plot treatments :

3 levels of N : $N_0 = 0$, $N_1 = 20$ and $N_2 = 40$ lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 5 sub-plots/main-plot and 3 sub-sub-plots/sub-plot. (b) N.A. (iii) 2. (iv) (a) $58' \times 12.5'$. (b) $55' \times 9.5'$ for wheat ; $56' \times 10'$ for bajra. (v) One row around. (vi) Yes.

4. GENERAL :

(i) Wheat crop lodged due to hail storm on 13.3.1957. (ii) Attack of yellow rust on wheat. (iii) Growth observations and grain yield. (iv) to (vi) N.A. (vii) Tables of means N.A.

5. RESULTS :

Wheat

(i) 1053 lb./ac. (ii) (a) 193.4 lb./ac. (b) 268.2 lb./ac. (c) 114.4 lb./ac. (iii) Main effect of N is highly significant and main effect of F is significant. (iv) Av. yield of grain in lb./ac.

Treatment	R_1	R_2	F_0	F_1	F_2	F_3	F_4	N_0	N_1	N_2
Av. yield	971	1135	592	864	1127	1284	1399	765	1061	1333

S.E. of difference of two

1. R marginal means	=	49.9 lb./ac.
2. F marginal means	=	109.5 lb./ac.
3. N marginal means	=	36.2 lb./ac.

Bajra

(i) 462 lb./ac. (ii) (a) 13.16 lb./ac. (b) 362.0 lb./ac. (c) 125.1 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Treatment	R_1	R_2	F_0	F_1	F_2	F_3	F_4	N_0	N_1	N_2
Av. yield	453	471	399	448	489	452	524	417	449	521

S.E. of difference of two

1. R marginal means	=	3.4 lb./ac.
2. F marginal means	=	147.8 lb./ac.
3. N marginal means	=	39.5 lb./ac.

Crop :- Wheat and Bajra (Kharif).

Ref :- I.A.R.I. 59(48).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'R'.

Object :—To study the effect of barani rotations in relation to manures and fertilizers.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) to (x) N.A.

2. TREATMENTS :

Main-plot treatments :

4 rotations : $C_1 = \text{Bajra—Fallow—Fallow—Wheat}$, $C_2 = \text{Bajra—Fallow—Gram—Wheat}$, $C_3 = \text{Bajra—Gram—Fallow—Wheat}$ and $C_4 = \text{Bajra—Gram—G.M.—Wheat}$.

Sub-plot treatments :

6 levels of manures : M_0 =Control, M_1 =F.Y.M. at $2\frac{1}{2}$ tons/ac., M_2 =F.Y.M. at 5 tons/ac., M_3 =15 lb./ac. of N+20 lb./ac. of P_2O_5 , M_4 =30 lb./ac. of N+20 lb./ac. of P_2O_5 and M_5 =20 lb./ac. of P_2O_5 .

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) $1/80$ ac. (b) $1/97.2$ ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1956—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 155 lb./ac. (ii) (a) 19.4 lb./ac. (b) 25.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of *bajra* grain in lb./ac.

	M_0	M_1	M_2	M_3	M_4	M_5	Mean
C_1	166	158	156	172	160	185	166
C_2	142	150	174	162	160	120	151
C_3	144	150	162	160	150	144	152
C_4	146	136	148	178	158	142	151
Mean	150	148	160	168	157	148	155

S E. of difference of two

1. C marginal means = 6.5 lb./ac.
2. M marginal means = 10.5 lb./ac.
3. M means at the same level of C = 21.0 lb./ac.
4. C means at the same level of M = 20.2 lb./ac.

Crop :- Maize, Guar and Cowpea (Kharif).

Ref :- I.A.R.I. 54(49).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'R'.

Object :—To study the effect of manuring on different crop rotations.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) N.A. (ii) (a) and (b) N.A. (iii) 1 and 2.7.1954. (iv) (a) 1 ploughing with victory plough and 3 ploughings with *desi* plough. (b) Sowing in lines. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) Maize : 6.10.1954. Cowpea : 18.11.1954 and 25.11.1954 Guar ploughed in on 19.8.1954.

2. TREATMENTS :

8 rotations : R_1 =Maize—Fallow, R_2 =Fallow—Wheat, R_3 =Fallow—Wheat (manured), R_4 =Maize (manured with 10 tons/ac. of F.Y.M.)—Wheat, R_5 =Maize—Peas, R_6 =G.M.—Wheat (manured with 60 lb./ac. of P_2O_5), R_7 =Cowpea—Wheat and R_8 =Maize+G.M. crop in alternate rows manured with 60 lb./ac. of P_2O_5 —Wheat.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) $33' \times 31'$. (b) $31' \times 29'$. (v) $1' \times 1'$. (vi) Yes.

4. GENERAL :

(i) Normal (ii) (a) Nil (iii) Yield of grain. (iv) (a) 1950—contd. (modified in *kharif* 1954). (b) No. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 1204 lb./ac. (ii) 138.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of maize grain in lb./ac.

Treatment	R ₁	R ₄	R ₅	R ₈
Av. yield	1084	1436	1141	1154

S.E./mean = 56.7 lb./ac.

Crop :- Maize, Guar, Cowpea (Kharif).

Ref :- I.A.R.I. 55(38).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'R'.

Object :- To study the effect of manuring on different crop rotations.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) 20.6.1955. (iv) (a) 2 ploughings. (b) Sowing in lines. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Weeding twice and one thinning. (ix) N.A. (x) Burying of guar on 20.8.1955, 2 pickings of cowpea and Maize from 20 to 30.9.1955.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(49) on page 490.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of fodder and grain. (iv) (a) 1954—contd. (b) Yes. (c) Nil. (v) (a) and (b) No. (vi) There were heavy rains in the end of September and early October which affected the yield of Maize adversely. (vii) Nil.

5. RESULTS :

(i) 576 lb./ac. (ii) 148.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of maize grain in lb/ac.

Treatment	R ₁	R ₄	R ₅	R ₈
Av. yield	525	695	606	476

S E /mean = 60.8 lb./ac.

Crop :- As per rotation (Kharif).

Ref :- I A.R.I. 54(50).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'R'.

Object :- To find out a suitable rotation for Delhi tract.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) Cotton on 20.4.1954 and 26, 27.4.1954, Maize and cowpea on 27.5.1954, Guar on 21.6.1954 and Maize on 6, 7.7.1954. (iv) (a) 1 ploughing with victory plough and 1 with *desi* plough. (b) Sowing in lines. (c) to (e) N.A. (v) F.Y.M. at 1400 lbs/plot to cotton and 700 lb./plot to Maize and Cowpea. 1.5 mds./plot of Super to Guar and 1.5 mds./plot of A/S to Maize. (vi) N.A. (vii) Irrigated. (viii) 2 weedings and 2 hoeings to Cotton. 1 hoeing to Maize and Cowpea and 2 weedings to Maize. (ix) N.A. (x) Cotton from 24.9.1954 to 24.10.1954, Guar on 23 and 24.8.1954 and Maize on 10.10.1954.

2. TREATMENTS :

10 rotations with all their phases

	1st year		2nd year		3rd year	
	Kh.	Rb.	Kh.	Rb.	Kh.	Rb.
A	Maize + Cowpea	Wheat	Fallow	Wheat	—	—
B	Sannhemp	Potato	Maize	Peas	—	—
C	Cotton	Berseem	Fallow	Wheat	—	—
D	Maize + Cowpea	Wheat	Cotton	Berseem	—	—
E	Maize	Potato	—Sugarcane—		—	—

F	<i>Sannhemp</i>	Wheat	Maize	Peas	—	—
G	Fallow	Wheat	Fallow	Peas	Cotton	Fallow
H	Fallow	Wheat	Cotton	Fallow	—Sugarcane—	
I	Maize+	Wheat	Fallow	Peas	Maize	<i>Berseem</i>
	Cowpea					
J	<i>Sannhemp</i>	Wheat	Fallow	Potato	—Sugarcane—	

3. DESIGN :

(i) R.B.D. (ii) (a) 24. (b) N.A. (iii) 4. (iv) (a) 62'×42'. (b) 61'×41'. (v) 0.5'×0.5'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and fodder. (iv) (a) 1951—contd. (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

I Sugarcane yield

(i) 29.49 tons/ac. (ii) 5.68 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	E ₂	H ₃	J ₃
Av. yield	27.39	30.74	30.34

S.E./mean = 2.84 tons/ac.

II Cotton yield

(i) 1090 lb./ac. (ii) 172.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	C ₁	D ₂	G ₃	H ₂
Av. yield	1171	1167	1110	914

S.E./mean = 86.2 lb./ac.

III Maize yield

(i) 1474 lb./ac. (ii) 219.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	B ₂	E ₁	F ₂	I ₃
Av. yield	1428	1628	1437	1402

S.E./mean = 109.8 lb./ac.

IV Maize+Cowpea+Sannhemp yield

(i) 9.58 tons/ac. (ii) 1.12 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in tons/ac.

Treatment	A ₁	B ₁	D ₁	F ₁	I ₁	J ₁
Av. yield	11.73	6.71	13.90	6.28	12.27	6.58

S.E./mean = 0.56 tons/ac.

Crop :- As per rotation (*Rabi*).

Ref :- I.A.R.I. 54(51).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'R'.

Object :- To find out a suitable rotation for Delhi tract.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) Wheat on 29, 30.10.1954, Potato on 15 to 18.10.1954, Peas on 23. 0.1954 and *Berseem* on 18 and 24.10.1954. (iv) (a) 2 ploughings. (b) Line sowing. (c) to (e) N.A. (v) A/S at 200 lb/ac. to wheat, F.Y.M. at 10 tons/ac. to potato, Ammo. Phos. at 120 lb./ac. to Pea and *Berseem*. (vi) N.A. (vii) Irrigated. (viii) Wheat weeding 4 times, Potato earthing twice, Peas hoeing once weeding once and *Berseem* weeding once. (ix) N.A. (x) Wheat on 2.4.1955, Potato on 3.3.1955 to 21.3.1955, Peas on 19.3.1955 and *Berseem* from 21.12.1954 to 16.4.1955.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(50) on page 491.

5. RESULTS :

I Wheat yield

(i) 2307 lb./ac. (ii) 294.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	A ₁	A ₂	C ₂	D ₁	F ₁	G ₁	H ₁	I ₁	J ₁
Av. yield	2120	2068	2713	2247	2125	2499	2225	2412	2351

S.E./mean = 147.0 lb./ac.

II Pea yield

(i) 1911 lb./ac. (ii) 225.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of pea in lb./ac.

Treatment	B ₂	F ₂	G ₂	I ₂
Av. yield	1951	1998	1828	1868

S.E./mean = 142.7 lb./ac.

III Potato yield

(i) 9.32 tons/ac. (ii) 1.24 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	B ₁	E ₁	J ₂
Av. yield	8.45	9.59	9.91

S.E./mean = 0.62 tons/ac.

IV Berseem yield

(i) 29.86 tons/ac. (ii) 2.40 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in tons/ac.

Treatment	C ₁	D ₂	I ₃
Av. yield	26.92	32.35	30.30

S.E./mean = 1.20 tons/ac.

Crop :- As per rotations (*Kharif*).

Ref :- I.A.R.I. 55(39).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'R'.

Object :- To find out the best rotation for Delhi 'Tract'.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) Cotton on 21 to 24.4.1955, Maize and cowpea on 26 and 27.5.1955, *Guar* on 23.6.1955, Maize and Sugarcane—N.A. (iv) (a) 5 ploughings for cotton 3 for maize and cowpea, 2 for G.M., 5 for maize and 4 for sugarcane. (b) Line sowing. (c) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 2 weedings and 1 hoeing for cotton, 1 hoeing for maize and cowpea, 4 weedings and 2 thinnings for maize and 3 hoeings and 1 earthing for sugarcane. (ix) N.A. (x) Cotton on 12.9.1955 to 6.11.1955, Maize and cowpea on 9.8.1955 to 12.8.1955, *Guar* on 19.8.1955, Maize on 10.1.1956 to 23.1.1956 and Sugarcane N.A.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(50) on page 491.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain and fodder. (iv) (a) 1951—contd. (b) Yes. (c) N.A. (v) (a) and (b) Nil. (vi) There were heavy rains in the end of September and early October. This affected adversely maize and cotton. (vii) Effective number of replications for sugarcane is 3.

5. RESULTS :

I Sugarcane yield

(i) 36.84 tons/ac. (ii) 0.70 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	E ₂	H ₂	J ₂
Av. yield	38.57	37.85	34.10

S.E./mean = 0.40 tons/ac.

II Cotton yield

(i) 1152 lb./ac. (ii) 197.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of kapas in lb./ac.

Treatment	C ₁	D ₂	G ₂	H ₂
Av. yield	1145	1075	1089	1298

S.E./mean = 98.6 lb./ac.

III Maize+Cowpea yield

(i) 14.90 tons/ac. (ii) 2.33 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in tons/ac.

Treatment	A ₁	D ₁	I ₁
Av. yield	14.41	16.54	13.74

S.E./mean = 1.16 tons/ac.

IV Maize yield

(i) 1204 lb./ac. (ii) 311.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	B ₂	E ₁	F ₂	I ₂
Av. yield	1193	1363	1237	1023

S.E./mean = 155.6 lb./ac.

Crop :- As per rotation (*Rabi*).

Ref :- I.A.R.I. 55(40).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'R'.

Object :- To find out the best rotation for Delhi tract.

1. BASAL CONDITIONS :

(i) (a) to (c) As per rotation. (ii) and (iii) N.A. (iv) (a) 4 ploughings and 1 bullock discing for wheat and potato, 3 ploughings for pea and 1 for *berseem*. (b) *Berseem* by broadcast and others behind the plough. (c) Wheat—N.A., potato at 60 tubers/line, pea at 3 lb./plot and *berseem* at 2 lb./plot. (d) and (e) N.A. (v) N.A. (vi) Wheat—N.P. 775, potato—D.R.R., peas—N.P. 29, and *berseem*—N.A. (vii) Irrigated. (viii) 1 weeding for wheat, 2 weedings and 1 earthing for potatoes, 2 weedings and 1 hoeing with sharma hoe for pea. (ix) N.A. (x) 11 to 13.4.1956 for wheat, 15 to 21.3.1956 for potato, 22 and 23.3.1956 for peas and 6 cuttings for *berseem*.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(50) on page 491.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain, fodder and tuber. (iv) (a) 1951—contd. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Crop was adversely affected by frost and cold wave.

5. RESULTS :

I Wheat yield

(i) 1872 lb./ac. (ii) and (iii) N.A. (iv) Av. yield of grain in lb./ac.

Treatment	A ₁	A ₂	C ₂	D ₁	F ₁	G ₁	H ₁	I ₁	J ₁
Av. yield	1572	1893	1975	1950	1818	1925	2057	1703	1958

S.E./mean = N.A.

II Pea yield

(i) 1866 lb./ac. (ii) 463.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of pea in lb./ac.

Treatment	B ₂	F ₂	G ₂	I ₂
Av. yield	1843	1629	1884	2106

S.E./mean = 231.8 lb./ac.

III Potato yield

(i) 5.60 tons/ac. (ii) 0.58 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of tube in tons/ac.

Treatment	B ₁	E ₁	J ₂
Av. yield	4.92	5.65	6.22

S.E./mean = 0.29 tons/ac.

IV Berseem yield

(i) 34.65 tons/ac. (ii) 2.80 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in tons/ac.

Treatment	C ₁	D ₂	I ₃
Av. yield	32.37	32.81	28.77

S.E./mean = 1.40 tons/ac.

Crop :- As per rotations (*Kharif*) and (*Rabi*).

Ref :- I.A.R.I. 56(56).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'R'.

Object :- To find out the best rotation for Delhi tract.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Sandy loam to loam. (b) N.A. (iii) Wheat from end of Oct. to early Nov., cotton in the end of April, sugarcane from Feb. end to early March, potato in Oct. end, maize from end of June to early July and pea in the middle of March. (iv) (a) 1 victory ploughing and 5 *desi* ploughings before sowing of each crop. (b) to (e) N.A. (v) Nil. (vi) Wheat—N.P. 775, Cotton—216F, Sugarcane—C. 312, Potato—D.R.R., Maize—Pusa yellow no. 2 and Pea—N.P. 29. (vii) Irrigated. (viii) N.A. (ix) 16.66" in *kharif* and 5.59" in *rabi*. (x) Wheat in April, cotton in Nov., sugarcane in January, potato in March, maize in Oct. and pea in March.

2. TREATMENTS :

Same as in expt. no. 54(50) on page 491.

3. DESIGN :

(i) R.B.D. (ii) (a) 24 (b) N.A. (iii) 4. (iv) (a) and (b) 62' × 42'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. Lodging in wheat occurred in March. (ii) D.D.T. was sprayed in cotton against jassids. (iii) Yield of different crops were recorded separately for each plot. (iv) (a) 1951—contd. (b) Yes. (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

I Maize+Cowpea yield

(i) 11.81 tons/ac. (ii) 1.06 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of fodder in tons/ac.

Treatment	A ₁	D ₁	I ₁
Av. yield	9.95	12.78	12.70
S.E./mean = 0.53 tons/ac.			

II Maize yield

(i) 984 lb./ac. (ii) 327.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	B ₂	E ₁	F ₃	I ₃
Av. yield	1051	1002	763	1014
S.E./mean = 163.9 lb./ac.				

III Cotton yield

(i) 1303 lb./ac. (ii) 261.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of kapas in lb./ac.

Treatment	C ₁	D ₂	G ₃	H ₂
Av. yield	1201	1338	1429	1245
S.E./mean = 130.6 lb./ac.				

IV Sugarcane yield

(i) 26.40 tons/ac. (ii) 2.24 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	E ₂	H ₃	J ₃
Av. yield	24.66	24.47	30.06
S.E./mean = 1.12 tons/ac.			

V Wheat yield

(i) 1765 lb./ac. (ii) 225.8 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	A ₁	A ₂	C ₃	D ₁	F ₁	G ₁	H ₁	J ₁
Av. yield	1301	1184	1656	1949	1706	1794	1865	1664
S.E./mean = 112.9 lb./ac.								

VI Potato yield

(i) 11.00 tons/ac. (ii) 0.88 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of tuber in tons/ac.

Treatment	B ₁	E ₁	J ₂
Av. yield	9.03	11.72	12.24
S.E./mean = 0.44 tons/ac.			

VII Pea yield

(i) 1835 lb./ac. (ii) 146.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of pea in lb./ac.

Treatment	B ₂	F ₂	G ₂	I ₂
Av. yield	1814	1838	1895	1794
S.E./mean = 73.3 lb./ac.				

VIII Berseem yield

(i) 28.01 tons/ac. (ii) 2.72 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in tons/ac.

Treatment	C ₁	D ₂	I ₃
Av. yield	22.65	25.09	21.75
S.E./mean = 1.36 tons/ac.			

Crop :- As per rotation (Kharif).

Ref :- I.A.R.I. 57(61).

Site :- Indian Agr. Res. Inst., New Delhi.

Type :- 'R'.

Object :-To find out the best suitable rotation for Delhi tract.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) Sugarcane on 8.3.1957 and 29.3.1957, Cotton on 25.4.1957 and 9.5.1957, Maize on 27 and 28.6.1957, Maize+Cowpea on 3.6.1957 and *Guar* on 15.7.1957. (iv) (a) 6 ploughings to sugarcane, 3 to cotton, 5 to maize, 2 to maize+cowpea and 1 to *guar*. (b) to (e) N.A. (v) and (vi) N.A. Maize yellow-2, Cotton 216-F and Sugarcane CO-312. (vii) Irrigated. (viii) 1 weeding and 1 earthing. (ix) N.A. (x) Sugarcane on 7.1.1958 to 28.2.1958. Cotton on 25, 26.9.1957 and 10.10.1957 and 11.11.1957, Maize on 6.10.1957, Maize+Cowpea on 21.8.1957 and *Guar* on 9, 11.9.1957.

2. TREATMENTS :

Same as in expt. no. 54(50) on page 491.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) and (b) 62' x 42'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain, fodder, *kapas* and sugarcane yield. (iv) (a) 1951—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

I Maize yield

(i) 996 tons/ac. (ii) 217.2 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	B ₂	E ₁	F ₃	I ₃
Av. yield	1335	1159	706	783

S.E./mean = 108.6 lb./ac.

II Cotton yield

(i) 1049 lb./ac. (ii) 121.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	C ₁	D ₂	G ₃	H ₂
Av. yield	975	1031	1155	1035

S.E./mean = 60.9 lb./ac.

III Maize+Cowpea yield

(i) 9.45 tons/ac. (ii) 1.02 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in tons/ac.

Treatment	A ₁	D ₁	I ₁
Av. yield	8.28	9.57	10.49

S.E./mean = 0.51 tons/ac.

IV Sugarcane yield

(i) 29.69 tons/ac. (ii) 4.02 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in tons/ac.

Treatment	E ₂	H ₃	J ₃
Av. yield	27.46	27.91	33.70

S.E./mean = 2.01 tons/ac.

Crop :- As per rotation (Rabi).

Ref :- I.A.R.I. 57(62).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'R'.

Object :- To find out the best suitable rotation for Delhi tract.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) Wheat on 12 and 13.11.1957, Potato on 25 and 28.10.1957, *Berseem* on 21.10.1957 and Pea on 19.10.1957 and 28.10.1957. (iv) (a) 2 ploughings for each crop. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Weeding for potato only. (ix) N.A. (x) Wheat on 4.4.1958, Potato on 3.2.1958, *Berseem* on 2.1.1958, 20.2.1958, 20.3.1958, 8.4.1958 and 29.4.1958 and Pea on March, 1958.

2. TREATMENTS :

Same as in expt. no. 54(50) on page 491.

3. DESIGN :

(i) R.B.D. (ii) (a) 24. (b) N.A. (iii) 4. (iv) (a) and (b) 62' x 42'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Grain, fodder and tuber yield. (iv) (a) 1951—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

I Potato yield

(i) 5.72 tons/ac. (ii) 0.52 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	B ₁	F ₁	J ₂
Av. yield	4.74	6.84	5.59

S.E./mean = 0.26 tons/ac.

II Pea yield

(i) 1617 lb./ac. (ii) 276.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of pea in lb./ac.

Treatment	B ₂	F ₂	G ₂	I ₂
Av. yield	1810	1461	1572	1625

S.E./mean = 138.2 lb./ac.

III *Berseem* yield

(i) 18.06 tons/ac. (ii) 3.38 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of *berseem* in tons/ac.

Treatment	C ₁	D ₂	I ₃
Av. yield	16.40	15.48	22.29

S.E./mean = 1.69 tons/ac.

IV Wheat yield

(i) 2104 lb./ac. (ii) 294.6 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	A ₁ +A ₂	C ₂	D ₁	F ₁	G ₁	H ₁	I ₁	J ₁
Av. yield	1448	2366	2386	2119	2213	2469	2448	2041

S.E./mean = 147.3 lb./ac.

Crop :- As per rotation (Kharif).

Ref :- I.A.R.I. 58(58).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'R'.

Object :- To find out a suitable rotation for Delhi tract.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) to (x) N.A.

2. TREATMENTS :

Same as in expt. no. 54(50) on page 491.

3. DESIGN :

(i) R.B.D. (ii) (a) 24. (b) N.A. (iii) 4. (iv) (a) and (b) 62' × 42'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Grain, fodder, *kapas* and sugarcane yield. (iv) (a) 1951—contd. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Yield of sugarcane : N.A.

5. RESULTS :

I Maize yield

(i) 412 lb./ac. (ii) 33.4 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	B ₂	E ₁	F ₂	I ₃
Av. yield	457	454	362	374

S.E./mean = 16.7 lb./ac.

II Cotton yield

(i) 594 lb./ac. (ii) 54.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	C ₁	D ₂	G ₃	H ₃
Av. yield	547	609	658	560

S.E./mean = 27.4 lb./ac.

III Maize + cowpea yield

(i) 8.62 tons/ac. (ii) 1.64 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in tons/ac.

Treatment	A ₁	D ₁	I ₁
Av. yield	7.70	9.37	8.78

S.E./mean = 0.82 tons/ac.

Crop :- As per rotation (*Rabi*).**Ref :- I.A.R.I. 58(59).****Site :- Indian Agri. Res. Inst., New Delhi.****Type :- 'R'.**

Object :- To find out a suitable rotation for Delhi tract.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) to (x) N.A.

2. TREATMENTS :

Same as in expt. no. 54(50) on page 491.

3. DESIGN :

(i) R.B.D. (ii) (a) 24. (b) N.A. (iii) 4. (iv) (a) and (b) 62' × 42'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Grain, tuber and fodder yield. (iv) (a) 1951—contd. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Yield of wheat : N.A.

5. RESULTS :

I Pea yield

(i) 1592 lb./ac. (ii) 106.8 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of pea in lb./ac.

Treatment	B	F	G	I
Av. yield	1637	1637	1580	1514

S.E./mean = 53.4 lb./ac.

II Potato yield

(i) 4.48 tons/ac. (ii) 0.48 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of tuber in tons/ac.

Treatment	B	F	I
Av. yield	3.28	5.08	5.09

S.E./mean = 0.24 tons/ac.

III Berseem yield

(i) 17.93 tons/ac. (ii) 1.28 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in tons/ac.

Treatment	C	D	I
Av. yield	17.29	16.96	19.54

S.E./mean = 0.64 tons/ac.

Crop :- Cotton (Kharif).

Ref :- I.A.R.-I. 58(60).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'R'.

Object :- To study the relationship between cropping pattern and irrigation intensity.

1. BASAL CONDITIONS :

(i) As per treatments. (ii) N.A. (iii) 6 and 7.5.1958. (iv) (a) 1 *desi* ploughing, 1 *triphali* after spreading F.Y.M., 1 *desi* and 2 *triphali* ploughings after soaking irrigation. (b) and (c) N.A. (d) 30" between rows. (e) N.A. (v) N.A. (vi) H-14. (vii) As per treatments. (viii) 2 hoeings, 2 weedings and 1 thinning. (ix) 22.9". (x) 23.10.1958 to 30.10.1958 and 25.11.1958 to 9.12.1958.

2. TREATMENTS :

Main-plot treatments :

	All phases of the following rotations					
	1st year		2nd year		3rd year	
	Kharif	Rabi	Kharif	Rabi	Kharif	Rabi
A	Cotton	Fallow	Fallow	Wheat	Fallow	Wheat
B	Cotton	Berseem	Fallow	Wheat	Fallow	Wheat
C	Cotton	Berseem	Jowar + Cowpea	Wheat	Fallow	Wheat
D	Cotton	Berseem	Jowar + Cowpea	Wheat	Jowar + Cowpea	Wheat
E	Maize	Fallow	Fallow	Wheat	Fallow	Wheat
F	Maize	Berseem	Fallow	Wheat	Fallow	Wheat
G	Maize	Berseem	Jowar + Cowpea	Wheat	Fallow	Wheat
H	Maize	Berseem	Jowar + Cowpea	Wheat	Jowar + Cowpea	Wheat
J	Maize	Fallow	Fallow	Potato	Fallow	Wheat
K	Maize	Fallow	— Sugarcane —	—	Fallow	Wheat
L	Maize	Fallow	— Sugarcane —	—	Jowar + Cowpea	Wheat
M	Maize	Berseem	— Sugarcane —	—	Jowar + Cowpea	Wheat

Sub-plot treatments :

3 levels of irrigation : $I_1 = 30.5''$ at $2\frac{1}{2}''$ per irrigation, $I_2 = 31.5''$ at $3''$ per irrigation and $I_3 = 32.5''$ at $3\frac{1}{2}''$ per irrigation.

The above levels include a basal pre-sowing irrigation also.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 38' × 16'. (b) 33' × 12.5'. (v) 2.5' × 1.75'. (vi) Yes.

4. GENERAL :

(i) Due to more rains there was more vegetative growth and consequently low yield of cotton. (ii) Nil. (iii) Yield of seed. (iv) (a) 1955—N.A. (b) and (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 808 lb./ac. (ii) (a) 273.0 lb./ac. (b) 81.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of seed in lb./ac.

	A ₁	B ₁	C ₁	D ₁	Mean
I ₁	823	846	757	805	808
I ₂	807	893	744	820	816
I ₃	879	835	648	840	800
Mean	836	858	716	822	808

S.E. of difference of two

1. Main-plot marginal means = 111.4 lb./ac.
2. I marginal means = 28.7 lb./ac.
3. I means at the same level of main-plot = 57.4 lb./ac.
4. Main-plot means at the same level of I = 120.9 lb./ac.

Crop :- Sugarcane.

Ref :- I.A.R.I. 58(61).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'R'.

Object :- To study the relationship between cropping pattern and irrigation intensity.

1. BASAL CONDITIONS :

(i) As per treatments. (ii) N.A. (iii) 12, 13 15 and 17.3.1959. (iv) (a) 3 *desi* ploughings and 2 *triphali* ploughings. (b) and (c) N.A. (d) 3' between rows. (e) N.A. (v) 10 tons/ac. of F.Y.M. + 80 lb./ac. of N as A/S + 40 lb./ac. of P₂O₆ as Super. (vi) CO-647. (vii) Irrigated. (viii) 1 weeding, 1 earthing and tying once. (ix) N.A. (x) 9 and 11.2.1959 and 1 and 6.3.1959.

2. TREATMENTS :

Main-plot treatments :

Same as in expt. no. 58(69) on page 500.

Sub-plot treatments :

3 levels of irrigations : I₁ = 2½" (47.5"), I₂ = 3" (50.9") and I₃ = 3½" (54.4") per irrigation.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 38' × 16'. (b) 33' × 9'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. DDT dusting on 9.7.1958. (iii) Yield of sugarcane. (iv) (a) 1955—contd. (b) and (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 25.42 tons/ac. (ii) (a) 2.16 tons/ac. (b) 3.83 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of sugarcane in tons/ac.

	K ₂	L ₂	M ₂	Mean
I ₁	24.74	25.06	26.73	25.51
I ₂	23.83	22.66	24.95	23.81
I ₃	27.50	26.22	27.11	26.94
Mean	25.36	24.65	26.26	25.42

S.E. of difference of two

1. Main-plot marginal means = 0.88 tons/ac.
2. I marginal means = 1.59 tons/ac.
3. I means at the same level of main-plot = 2.71 tons/ac.
4. Main-plot means at the same level of I = 2.38 tons/ac.

Crop :- Wheat (Rabi).**Ref :- I.A.R.I. 58(62)****Site :- Indian Agri. Res. Instt., New Delhi.****Type :- 'R'.**

Object :- To study the relationship between cropping pattern and irrigation intensity.

1. BASAL CONDITIONS :

(i) As per treatments. (ii) N.A. (iii) 14, 15, 18, 19 and 20.11.1958. (iv) (a) One ploughing with victory plough one with *triphali* before soaking dose. One *desi* and 2 *triphali* after soaking the dose. (b) Sown by *kera*. (c) 35 srs./ac. (d) and (e) N.A. (v) 40 lb./ac. of N as A/S + 40 lb./ac. of P₂O₅ as Super. (vi) N.P.—718. (vii) to (ix) Nil. (x) 16 to 20.4.1959.

2. TREATMENTS :**Main-plot treatments :**

Same as in expt. no. 58(60) on page 500.

Sub-plot treatments :3 levels of irrigation : I = 2½" at very frequent interval (15.5"), I₂ = 3" at medium interval (12.65") and I₃ = 3½" at less frequent interval (9.65").**3. DESIGN :**

(i) Split-plot. (ii) (a) 20 main-plots/block, 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 38' × 16'. (b) 33' × 12'. (v) 2½' × 2'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—contd. (b) and (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 1822 lb./ac. (ii) (a) 259.7 lb./ac. (b) 217.5 lb./ac. (iii) Main-plot treatments are significant. I effect is highly significant. (iv) Av. yield of grain in lb./ac.

	A ₂	A ₃	B ₂	B ₃	C ₂	C ₃	D ₂	D ₃	E ₂	E ₃	
I ₁	2028	2090	1801	2038	1880	2018	1832	1906	1696	2068	
I ₂	1760	1899	1760	2069	1707	2080	1990	1839	1788	1645	
I ₃	1812	2062	1786	1687	1461	1923	1580	1478	1664	1796	
Mean	1867	2017	1782	1998	1683	2007	1801	1741	1716	1836	
	F ₂	F ₃	G ₂	G ₃	H ₂	H ₃	J ₃	K ₃	L ₃	M ₃	Mean
I ₁	2062	1990	1994	2123	2150	1574	1702	2088	2030	1798	1943
I ₂	1915	1880	1839	1930	1937	1368	1700	1858	1992	1665	1831
I ₃	1865	1712	1475	1829	1580	1224	1772	1947	1555	1418	1691
	1947	1861	1769	1961	1889	1389	1725	1964	1859	1627	1822

S.E. of difference of two

1. Main-plot marginal means	= 106.0 lb./ac.
2. I marginal means	= 34.4 lb./ac.
3. I means at the same level of main-plot	= 153.8 lb./ac.
4. Main-plot means at the same level of sub-plot	= 164.3 lb./ac.

Crop :- Jowar and Cowpea (Kharif).

Ref :- I.A.R.I. 58(63).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'R'.

Object :- To study the relationship between cropping pattern and irrigation intensity.

1. BASAL CONDITIONS :

(i) As per treatments. (ii) N.A. (iii) 18, 25.7.1958. (iv) (a) 2 ploughings by *desi* plough. (b) Sowing with *kera*. (c) to (e) N.A. (v) 40 lb./ac. of N as A/S+40 lb./ac. of P_2O_5 as Super. (vi) Local (*jowar*) and K-499 (Cowpea). (vii) Irrigated. (viii) Nil. (ix) 20.5". (x) 10 to 12.10.1958.

2. TREATMENTS :

Main-plot treatments :

Same as in expt. no. 58 (60) on page 500.

Sub-plot treatments :

3 levels of irrigation : $I_0=0$, $I_1=4"$ and $I_2=20.5"$ to $24.5"$.

3. DESIGN :

(i) Split-plot. (ii) (a) and (b) N.A. (iii) 4. (iv) (a) and (b) $38' \times 16'$. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Fodder yield. (iv) (a) 1955—contd. (b) and (c) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 9.85 tons/ac. (ii) (a) 1.66 tons/ac. (b) 0.68 tons/ac. (iii) Main-plot treatments are significant. (iv) Av. yield of green fodder in tons/ac.

	C_2	D_2	D_3	G_2	H_2	H_3	L_3	M_3	Mean
I_0	11.57	10.62	9.38	10.31	9.54	9.45	9.57	9.98	9.93
I_1	11.64	10.35	9.91	10.12	9.32	9.00	9.38	8.85	9.82
I_2	11.52	9.70	9.58	10.55	9.85	8.56	9.48	9.18	9.80
Mean	11.58	10.22	9.62	10.33	9.57	9.00	9.48	9.00	9.85

S.E. of difference of two

1. Main-plot marginal means	= 0.68 tons/ac.
2. I marginal means	= 0.17 tons/ac.
3. I means at the same level of main-plot.	= 0.48 tons/ac.
4. Main-plot means at the same level of I	= 0.78 tons/ac.

Crop :- Potato (Rabi).

Ref :- I.A.R.I. 58(64).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'R'.

Object :- To study the relationship between cropping pattern and irrigation intensity.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 12.11.1958. (iv) (a) 2 *desi* ploughings and 2 *triphali* ploughings. (b) and (c) N.A. (d) Between rows $1\frac{1}{2}'$. (e) N.A. (v) 20 tons/ac. of F.Y.M.+80 lb./ac. of N as A/S+40 lb./ac. of P_2O_5 as Super+80 lb./ac. of K_2O as Pot. Sul. (vi) Up-to-date. (vii) Irrigated. (viii) 2 earthings. (ix) 1.9". (x) 10.3.1959.

2. TREATMENTS :

3 levels of irrigation : $I_1=2\frac{1}{2}''$, $I_2=3''$ and $I_3=3\frac{1}{2}''$.

3. DESIGN :

(i) R.B.D. (ii) (a) and (b) N.A. (iii) 4. (iv) (a) $38' \times 16'$. (b) $33' \times 12'$. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. Spraying copper shell fungicide. (iii) to (vii) Nil.

5. RESULTS :

(i) 8.32 tons/ac. (ii) 0.84 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	I_1	I_2	I_3
Av. yield	8.47	8.19	8.30

S.E./mean = 0.42 tons/ac.

Crop :- Berseem (*Rabi*).

Ref :- I.A.R.I. 58(65).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'R'.

Object :--To study the relationship between cropping pattern and irrigation intensity.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 18, 19.10.1958 for (F_1, G_1, H_1, M_1) and 8, 10.11.1958 for (B_1, C_1, D_1). (iv) (a) 2 *desi* ploughings. (b) to (e) N.A. (v) 20 lb./ac. of N as A/S+80 lb./ac. of P_2O_5 as Super. (vi) N.A. (vii) Irrigated (viii) Nil. (ix) N.A. (x) 5 cuttings from 23/24.12.1958 to 6.5.1959.

2. TREATMENTS :

Main-plot treatments :

Same as in expt. no. 58(60) on page 500.

Sub-plot treatments :

3 levels of irrigation : $I_1=2\frac{1}{2}''$ at most frequent interval ($38.4''$), $I_2=3''$ at medium interval ($32.4''$) and $I_3=3\frac{1}{2}''$ at less frequent interval ($31.0''$).

3. DESIGN :

(i) Split-plot. (ii) (a) and (b) N.A. (iii) 4. (iv) (a) $38' \times 16'$. (b) $33' \times 12'$. (v) and (vi) N.A.

4. GENERAL :

(i) Good. (ii) Nil. (iii) to (vii) N.A.

5. RESULTS :

(i) 26.22 tons/ac. (ii) (a) 4.13 tons/ac. (b) 2.02 tons/ac. (iii) Main-plot treatments and I effect are highly significant. (iv) Av. yield of green fodder in tons/ac.

	B_1	C_1	D_1	F_1	G_1	H_1	M_1	Mean
I_1	20.83	21.65	25.28	33.12	31.69	31.33	33.60	28.21
I_2	20.43	18.96	21.35	30.66	32.36	28.27	31.07	26.16
I_3	19.45	16.64	19.13	29.08	29.48	26.12	30.15	24.29
Mean	20.24	19.08	21.92	30.95	31.18	28.57	31.61	26.22

S.E. of difference of two

1. Main-plot marginal means = 1.68 tons/ac.
2. I marginal means = 0.54 tons/ac.
3. I means at the same level of main-plot = 1.43 tons/ac.
4. Main-plot means at the same level of I = 2.05 tons/ac.

Crop :- Wheat.

Ref :- I.A.R.I. 59(49).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'R'.

Object :- To study the relationship between cropping pattern and irrigation intensity.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) 20.11.1959 and 1.12.1959. (iv) (a) 1 *deci* ploughing and 2 *triphali* after soaking irrigation. (b) to (c) N.A. (v) 40 lb./ac. of N as A/S+20 lb./ac. of P_2O_5 as Super. (vi) N.P.—718. (vii) As per treatments. (viii) Nil. (ix) N.A. (x) 19 to 26.4.1960.

2. TREATMENTS :

Main-plot treatments :

Same as in expt. no. 58(60) on page 500.

Sub-plot treatments :

3 levels of irrigation : $I_1=9.94''$ (in 3 irrigations), $I_2=7.94''$ (in 2 irrigations) and $I_3=5.44''$ (in one irrigation).

3. DESIGN :

(i) Split-plot. (ii) (a) 20 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) $38' \times 16'$. (b) $33' \times 12'$. (v) $2.5' \times 2'$. (vi) Yes.

4. GENERAL :

(i) Average. (ii) Nil. (iii) Yield of grain. (iv) to (vii) N.A.

5. RESULTS :

(i) 1933 lb./ac. (ii) (a) 393.0 lb./ac. (b) 286.7 lb./ac. (iii) Main-plot treatments are highly significant. I effect is significant. (iv) Av. yield of grain in lb./ac.

	A ₁	A ₂	B ₂	B ₃	C ₂	C ₃	D ₂	D ₃	E ₂	E ₃
I ₁	1928	1554	2018	1970	1561	1989	1818	1729	1817	1892
I ₂	2023	1853	1971	1755	2009	2320	2011	1915	2181	1537
I ₃	2030	1650	1922	1844	1810	1982	1958	1418	1896	1782
Mean	1994	1686	1970	1856	1793	2097	1929	1687	1965	1737

F ₂	F ₃	G ₂	G ₃	H ₂	H ₃	J ₂	K ₃	L ₃	M ₂	Mean
2001	1939	1731	2121	1793	1961	2628	2288	1841	1939	1926
2148	1849	1910	2274	1660	1678	2817	2343	1612	2112	1999
2054	1951	1695	1858	1765	1622	2425	2085	1942	1803	1875
2068	1913	1779	2084	1739	1754	2623	2239	1798	1951	1933

S.E. of difference of two

1. Main-plot marginal means = 160.4 lb./ac.
2. I marginal means = 45.3 lb./ac.
3. I means at the same level of main-plot = 202.8 lb./ac.
4. Main-plot means at the same level of I = 230.5 lb./ac.

Crop :- Cotton.

Ref :- I.A.R.I. 59(50).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'R'.

Object :- To study the relationship between cropping pattern and irrigation intensity.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) 16 to 18.5.1959. (iv) (a) 1 ploughing with *desi* plough, and 1 *tripali* after soaking irrigation. (b) to (e) N.A. (v) N.A. (vi) H-14. (vii) As per treatments. (viii) 1 thinning and 2 hoeings. (ix) N.A. (x) 19.10.1959.

2. TREATMENTS:

Main-plot treatments :

Same as in expt. no. 58(60) on page 500.

Sub-plot treatments :

3 levels of irrigation : $I_1=36.81^*$, $I_2=32.31^*$ and $I_3=25.81^*$.

The above levels include soaking irrigation and rain water common to all plots.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) $38' \times 16'$. (b) $33' \times 12\frac{1}{2}'$. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Seed cotton yield. (iv) to (vii) N.A.

5. RESULTS :

(i) 1182 lb./ac. (ii) (a) 333.0 lb./ac. (b) 121.8 lb./ac. (iii) Only I effect is highly significant. (iv) Av. yield of *kapas* in lb./ac.

	A ₁	B ₁	C ₁	D ₁	Mean
I ₁	1388	1318	1216	1338	1315
I ₂	1348	1327	1125	1961	1265
I ₃	1033	949	929	955	966
Mean	1256	1198	1090	1185	1182

S.E. of difference of two

1. Main-plot marginal means = 135.9 lb./ac.
2. I marginal means = 43.0 lb./ac.
3. I means at the same level of main-plot = 86.1 lb./ac.
4. Main-plot means at the same level of I = 153.1 lb./ac.

Crop :- Jowar—Cowpea.

Site :- Indian Agri. Res. Instt., New Delhi.

Ref :- I.A.R.I. 59(51).

Type :- 'R'.

Object :—To study the relationship between cropping pattern and irrigation intensity.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) 14 to 16.7.1959. (iv) (a) 2 *tripali* and ploughing. (b) to (e) N.A. (v) 40 lb./ac. of N as A/S+40 lb./ac. of P₂O₅ as Super. (vi) N.A. (vii) As per treatments. (viii) Nil. (ix) N.A. (x) 14 to 20.10.1959.

2. TREATMENTS :

Main plot treatments :

Same as in expt. no. 58(60) on page 500.

Sub-plot treatments :

3 levels of irrigation : $I_1=31.27^*$ with frequent interval, $I_2=25.77^*$ with medium interval and $I_3=23.77^*$ with less frequent interval.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) $38' \times 16'$. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of green fodder. (iv) to (vii) N.A.

5. RESULTS :

(i) 14.59 tons/ac. (ii) (a) 1.93 tons/ac. (b) 1.37 tons/ac. (iv) Main effects of main-plot treatments and I are highly significant. (iv) Av. yield of green fodder in tons/ac.

	C ₂	D ₂	D ₃	G ₂	H ₂	H ₃	L ₃	M ₃	Mean
I ₁	17.60	16.16	15.08	14.58	14.94	12.86	13.84	13.84	14.86
I ₂	18.02	17.11	14.39	15.82	13.76	13.34	14.62	13.12	15.02
I ₃	16.19	14.86	14.53	15.39	12.78	11.74	13.25	12.43	13.90
Mean	17.27	16.04	14.67	15.26	13.83	12.65	13.90	13.13	14.59

S.E. of difference of two

1. Main-plot marginal means = 0.79 tons/ac.
2. I marginal means = 0.34 tons/ac.
3. I means at the same level of main-plot = 0.97 tons/ac.
4. Main-plot means at the same level of I = 1.12 tons/ac.

Crop :- Potato.

Ref :- I.A.R.I. 59(52).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'R'.

Object :- To study the relationship between cropping pattern and irrigation intensity.

BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) 14 and 15.10.1959. (iv) (a) 1 ploughing with *desi* lough after F.Y.M., 1 *desi* ploughing and 2 *tripali* after soaking irrigation. (b) and (c) N.A. (d) 1½' between rows. (e) N.A. (v) 20 tons/ac. of F.Y.M.+80 lb./ac. K₂O+80 lb./ac. of ½N+40 lb./ac. of P₂O₅. (vi) Up to date. (vii) As per treatments. (viii) 2 earthings. (ix) N.A. (x) 3.3.1960.

TREATMENTS :

Main-plot treatments :

Same as in expt. no. 58(60) on page 500.

Sub-plot treatments :

Levels of Irrigation : I₁=20.6" with frequent interval, I₂=18.6" with medium interval and I₃=17.6" with less frequent interval.

N :

3.D. (ii) 3. (iii) 4. (iv) (a) 38'×16'. (b) 33'×12'. (v) 2½'×2'. (vi) Yes.

YAL :

Yd. (ii) Nil. (iii) Yield of tubers. (iv) to (vii) N.A.

RESULTS :

(i) 11.97 tons/ac. (ii) 1.11 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	I ₁	I ₂	I ₃
Av. yield	13.18	11.87	10.87

S.E./mean = 0.56 tons/ac.

Crop :- Berseem (*Rabi*).

Ref :- I.A.R.I. 59(53).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'R'.

Object :- To study the relationship between cropping pattern and irrigation intensity.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) 21 to 28.10 1959. (iv) (a) *Desi* ploughing followed by *triphali*. (b) to (e) N.A. (v) 20 lb./ac. of N as A/S+80 lb /ac. of P_2O_5 as Super. (vi) N.A. (vii) As per treatments. (viii) Nil. (ix) N.A. (x) 24.12.1959 to 12 5.1960.

2. TREATMENTS :

Main-plot treatments :

Same as in expt. no. 58(60) on page 500.

Sub-plot treatments :

3 levels of irrigation : $I_1=39"$, $I_2=33.5"$ and $I_3=30.5"$.

3. DESIGN :

(i) Split-plot. (ii) (a) 7 main-plots/blocks ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) $38' \times 16'$. (b) $33' \times 12'$. (v) $2\frac{1}{2}' \times 2'$. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Green fodder yield. (iv) to (vii) N.A.

5. RESULTS :

(i) 25.20 tons/ac. (ii) (a) 5.64 tons/ac. (b) 2.60 tons/ac. (iii) I effect alone is highly significant. (iv) Av. yield of green fodder in tons/ac.

	B ₁	C ₁	D ₁	F ₁	G ₁	H ₁	M ₁	Mean
I ₁	23.44	30.18	33.63	27.92	26.76	31.74	26.75	28.63
I ₂	21.83	26.23	27.62	24.71	24.90	26.97	22.18	24.8
I ₃	18.85	24.26	23.61	22.18	21.92	24.38	19.60	22.1
Mean	21.37	26.89	28.15	24.94	24.53	27.70	22.84	25.20

S.E. of difference of two

1. Main-plot marginal means = 2.30 tons/ac.
2. I marginal means = 0.69 tons/ac.
3. I means at the same level of main-plot = 1.84 tons/ac.
4. Main-plot means at the same level of I = 2.75 tons/ac.

Crop :- Maize.

Ref :- I.A.R.I. 59(54).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'R'.

Object :- To study the relationship between cropping pattern and irrigation intensity.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) and (b) N.A. (iii) 1 and 2.7.1959. (iv) (a) 1 *desi* ploughing and 2 *triphali* ploughing after soaking irrigation. (b) to (e) N.A. (v) 10 tons/ac. of F.Y.M.+40 lb./ac. of N+20 lb./ac. of P_2O_5 . (vi) Yellow no. 16. (vii) As per treatments. (viii) 2 weedings with horse hoe. (ix) N.A. (x) 28 and 29.9.1959.

2. TREATMENTS :

Main-plot treatments :

Same as in expt. no. 58(60) on page 500.

Sub-plot treatments :

3 levels of irrigation : $I_1=30.00''$ with frequent interval, $I_2=28.00''$ with medium interval and $I_3=25.08''$ with less frequent interval.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) $38' \times 16'$. (b) $33' \times 12'$. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) to (vii) N.A.

5. RESULTS :

(i) 2120 lb./ac. (ii) (a) 428.2 lb./ac. (b) 300.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	E_1	F_1	G_1	H_1	J_1	K_1	L_1	M_1	Mean
I_1	1820	2262	2105	2131	2435	2056	1959	2011	2097
I_2	1719	2362	2014	2212	2472	1875	2032	2150	2104
I_3	1765	2136	2386	2382	2123	2229	2095	2145	2158
Mean	1768	2253	2168	2242	2343	2053	2029	2102	2120

S.E. of difference of two

1. Main-plot marginal means = 174.8 lb./ac.
2. I marginal means = 75.2 lb./ac.
3. I means at the same level of main-plot = 212.7 lb./ac.
4. Main-plot means at the same level of I = 246.4 lb./ac.

Crop :- Maize (*Kharif*).

Ref :- I.A.R.I. 58(66).

Site :- Indian Agri. Res. Instt., New Delhi.

Type :- 'R'.

Object :- To study the relationship between cropping pattern and irrigation intensity.

1. BASAL CONDITIONS :

(i) As per treatments. (ii) (a) and (b) N.A. (iii) 8 and 9.7.1958. (iv) (a) 3 ploughings and 2 *triphais*. (b) to (e) N.A. (v) 5 tons/ac. of F.Y.M. + 40 lb./ac. of N as A/S + 20 lb./ac. of P_2O_5 as Super. (vi) Yellow no. 16. (vii) Irrigated. (viii) 1 hoeing with horse hoe and 2 hand hoeings. (ix) 20.2". (x) 6 to 9.10.1958.

2. TREATMENTS :

Main-plot treatments :

Same as in expt. no. 58(60) on page 500.

Sub-plot treatments :

3 levels of irrigation : $I_1=26.7''$ at $2\frac{1}{2}''$ per irrigation, $I_2=27.2''$ at $3''$ per irrigation and $I_3=27.7''$ at $3\frac{1}{2}''$ per irrigation.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) $38' \times 16'$. (b) $33' \times 12'$. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. Dusting with DDT on 25.8.1958 to check the attack of *chilounelus*. (iv) (a) 1955—N.A. (b) and (c) N.A. (v) to (vii) N.A.

5. RESULTS :

(i) 1472 lb./ac. (ii) (a) 304.6 lb./ac. (b) 221.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	E ₁	F ₁	G ₁	H ₁	J ₁	K ₁	L ₁	M ₁	Mean
I ₁	1475	1418	1684	1339	1430	1354	1621	1404	1466
I ₂	1548	1430	1609	1401	1454	1165	1468	1476	1444
I ₃	1480	1569	1598	1344	1456	1483	1542	1574	1506
Mean	1501	1472	1630	1361	1447	1334	1544	1485	1472

S.E. of difference of two

1. Main-plot marginal means = 124.3 lb./ac.
2. I marginal means = 55.2 lb./ac.
3. I means at the same level of main-plot = 156.3 lb./ac.
4. Main-plot means at the same level of I = 178.2 lb./ac.

Central Tobacco Research Institute
RAJAHMUNDRY

CENTRAL TOBACCO RESEARCH INSTITUTE, RAJAHMUNDRY

1. Name of the experimental station : Central Tobacco Research Institute.
2. Tehsil or Taluka : Rajamundry.
3. District : East Godavari.
4. Address : Central Tobacco Research Institute,
Rajamundry-1, Andhra Pradesh.
5. Year of establishment : 1947.
6.

	Latitude	Longitude	Altitude
	17°N	81° 4' E	84 ft.
7. Whether research, multiplication or demonstration farm : Research.
8. Whether State, University or private managed : Indian Council of Agricultural Research.
9. Programme of research : Fundamental and applied.
10. Normal cropping pattern : Mono-culture of F.C.V. tobacco. F.C.V. tobacco grown during *rabi* season.
11. Type of tract it represents : Black-cotton soil tract.
12. General description of the topography of the experimental area : Plain levelled land located on the banks of the river Godavari. But these lands are protected from flooding or submergence by a bund.
13. Soils :
 - (a) Broad soil types : Clay.
 - (i) Depth : 8 feet.
 - (ii) Colour : Black.
 - (iii) Structure : Angular blocky
 - (b) Chemical analysis :

	Depth	0—9"	9"—18"
	Organic carbon	0.48	0.44
	Total nitrogen	0.035	0.029
	Available P ₂ O ₅	0.033	0.038
	T.S.S.	0.068	0.057
	pH	8.2	7.5
	Exchangeable cations (m.e./100 gm.)		
	Ca	42.46	44.23
	Mg	5.09	8.65
	K	0.39	0.46
	Total	51.74	65.14

 (Year of analysis is 1957).

(c) Mechanical analysis :

Depth	0—9"	9—18"
Coarse sand	1.5	0.6
Fine sand	17.0	11.4
Silt	22.3	15.1
Clay	56.5	61.8
CaCO ₃	1.5	0.3

14. Normal average rainfall in mm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
135	268	219	116	64	1	—	36	—	1	2	6	848

(The period on which the figures are based is 1965—1966.)

15. Irrigation facilities available ;
year from which the facilities
were made available :

—
Yes, since 1960.

16. Whether any proper drainage system
exists :

Necessary surface drainage has been provided for baling out excess rainwater.

**WRAPPER AND HOOKAH TOBACCO RESEARCH STATION, DINHATA
(COOCH BEHAR).**

1. Name of the experimental station : Wrapper and Hookah Tobacco Research Station.
2. Tehsil or Taluka : Dinhata.
3. District : Cooch Behar.
4. Address : Dinhata (P.O.), Cooch Behar D'stt., W.B.
5. Year of establishment : 1952.
6. Latitude 26° 20' N Longitude 89° 27' E Altitude 41 metres above M.S.L.
7. Whether Research, multiplication or demonstration farm : Research farm.
8. Whether State, University or private managed : Indian Council of Agricultural Research.
9. Programme of research : Work on agronomical and botanical aspects of tobacco.
10. Normal cropping pattern : Tobacco in *rabi* followed by jute or paddy in *kharif*.
11. Type of tract it represents : Sub-tropical humid.
12. General description of the topography of the experimental area : Plane land with ample drainage system and farm roads and bounded by a bambooplantation on one side and a dead river end beyond, and village roads on the other sides
13. Soils :
 - (a) Broad soil types : No appreciable demarcation of differences in horizons or profile.
 - (i) Depth : More than 4 ft.
 - (ii) Colour : Light brown to grey.
 - (iii) Structure : Friable sandy loam soils.
 - (b) Chemical analysis : N.A.
 - (c) Mechanical analysis : N.A.
14. Normal average rainfall in mm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
651.2	563.0	436.4	310.0	178.5	34.7	0.1	34.6	12.6	35.0	105.4	416.5	226.3

(The period on which the figures are based is 1956—1965.)
15. Irrigation facilities available ; year from which the facilities were made available : A deep tube well ; since 1961.
16. Whether any proper drainage system exists : Yes.

TOBACCO RESEARCH STATION; HUNSUR.

1. Name of the experimental station. Tobacco Research Station.
2. Tehsil or Taluka : Hunsur.
3. District : Mysore.
4. Address : Officer-in-charge, Tobacco Research Station, Hunsur (P.O.), Mysore State.
5. Year of establishment : 1957.
6. Latitude Longitude Altitude
 12° - 17' - 55" 76° - 17' - 35" 2,711 feet above mean sea level
7. Whether research, multiplication or demonstration farm : Research farm.
8. Whether State, University or private managed : Indian Council of Agricultural Research, New Delhi.
9. Programme of research : Programme of work include Agronomical, Botanical and Pathological research on the flue cured virginia, burley and *ibta* tobacco.
10. Normal cropping pattern : Normally two crops in a year are cultivated under rainfed conditions. The first cropping period is from April to September and the Second period is from October to January. The crops generally grown from April to September consist of *ragi*, *til*, groundnut (short duration). Flue cured virginia tobacco and *jowar*. The crops grown in October to January are *ibib* tobacco, late *ragi* horse gram, coriander, bengal gram and niger.
11. Type of tract it represents : It represents semi-maland tract mostly under rainfed conditions with small trees and open scrub and dense scrub in many regions. The soils are mostly light, sandy to gravelly in texture, reddish to light brown in colour and with poor fertility.
12. General description of the topography of the experimental area :
 The farm is located within the municipal limits. It is situated on the side of a hillock, sloping to the west and is benchterraced. Consequently all the main plots are length (north-south direction) than broad.
 There is a small storage tank on the south side of the farm which is fed by Lakshmanathirtha river water from Achecut by channel. This tank gets dried up during the off season and hence not of much use to the farm at that period. On the slopy side of the channel and to the west of the farm, paddy is cultivated during the season.
 The total area of the farm is about 36 acres, of which about 24 acres are under cultivation. The break up of the cultivable area is as follows.

Tobacco nursery about 2 acres, flue cured virginia tobacco about 10 acres, *ibid* and burley tobacco about 8 acres, paddy about 4 acres. In normal years a crop of groundnut (short duration) is raised in about 8 acres early in the season under rainfed conditions in those plots where *ibid* and burley tobacco will be planted as a second crop.

At present there is a well (open well) on the extreme south western corner of the farm which supplies water to laboratory and to tobacco nursery. It is hoped that a couple of open wells will be opened out in the near future when it should be possible to grow food crop (*ragi*) in an area of about 20 acres in the off season under irrigated conditions.

13. Soils :

- | | |
|---------------------------|---------------------|
| (a) Broad soil types : | Light. |
| (i) Depth : | 1 to 3 feet. |
| (ii) Colour : | Reddish mostly. |
| (iii) Structure : | Gravelly and sandy. |
| (b) Chemical analysis : | N.A. |
| (c) Mechanical analysis : | N.A. |

14. Normal average rainfall in mm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
80.2	142.4	69.3	79.6	127.6	46.6	21.4	3.3	3.3	19.2	74.6	144.4	811.9

(The period on which the figures are based is 1956--1966.)

15. Irrigation facilities available ; year from which the facilities were made available :
- Irrigation facilities are not available. It is hoped to have irrigation facilities in the near future.

16. Whether any proper drainage system exists :

Ordinary surface drainage is available in all the plots. A few fields having poor sub-soil drainage were provided with artificial underground rubble drainage system during 1959-60 which are working satisfactorily so far.

TOBACCO RESEARCH STATION, PUSA.

1. Name of the experimental station : Tobacco Research Station.
2. Tehsil or Taluka : Pusa Block.
3. District : Darbhanga.
4. Address : Tobacco Research Station, Pusa F.O., District Darbhanga Bihar.
5. Year of establishment : 1950.
6. Latitude 25.89° N. Longitude 85.48° E. Altitude 52.12 metres above M.S.L.
7. Whether research, multiplication or demonstration farm : Research farm.
8. Whether State, University or private managed : Managed by the Indian Council of Agricultural Research.
9. Programme of research : Agronomical and botanical research on cultivated varieties of *N. tabacum* and *N. rustica* species.
10. Normal cropping pattern : Maize+*arhar* or maize alone followed by tobacco.
11. Type of tract it represents : Sandy loam (calcareous).
12. General description of the topography of the experimental area : Flat and plain sloping from east to west.
13. Soils :
 - (a) Broad soil types : Calcareous sandy loam, alluvium.
 - (i) Depth : N.A.
 - (ii) Colour : Whitish grey.
 - (iii) Structure : Single grain.
 - (b) Chemical analysis : See appendix
 - (c) Mechanical analysis : See appendix
14. Normal average rainfall in mm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
181.3	303.3	255.7	214.3	151.4	—	24.2	40.2	2.3	5.1	13.8	22.5	1214.1

(The period on which the figures are based is 1953-54 to 1962-63.)
15. Irrigation facilities available ; year from which the facilities were made available : Research Station is possessing one tubewell and pumpset and capacity is quite sufficient for providing irrigation facilities for an area of 30 acres ; since 1965.
16. Whether any proper drainage system exists : No drainage problem so far as farm is concerned.

APPENDIX

Depth in inches	Mechanical Composition Percentage of				Chemical Composition						
	Sand	Silt	Clay	CaCO ₃	Class	Organic Carbon	Total Organic Nitrogen	C/N	Total P ₂ O ₅	Soluble Salt	pH
	<i>South Nepali Area</i>										
0"–18"	29.50	25.25	7.75	37.50	Loam	265.6 mg%	0.0336%	7.8	0.0556%	0.150%	8.0
18"–20"	44.90	16.15	11.45	27.50	Sandy loam	425.6 mg%	0.0728%	5.8	0.0213%	0.180%	8.2
20"–22"	47.25	16.25	6.50	30.00	Sandy loam	249.6 mg%	0.0322%	7.8	0.0309%	0.200%	8.0
	<i>North Pangarbi Area</i>										
0"–17"	30.14	13.90	10.35	37.61	Sandy loam	407.6 mg%	0.046%	8.86	0.13%	0.250%	8.7
17"–29"	30.46	25.05	5.35	39.14	Sandy loam	361.9 mg%	0.036%	10.05	0.13%	0.225%	8.3

Depth of Water Table : 10 ft. deep minimum and 32 ft. deep maximum.
 Maximum water holding capacity : 43 to 46%.

CIGAR AND CHEROOT TOBACCO STATION, VEDASANDUR.

1. Name of the experimental station : Cigar and Cheroot Tobacco Research Station.
2. Tehsil or Taluka : Dindigul.
3. District : Madurai
4. Address : Cigar and Cheroot Tobacco Research Station,
P.O. Vendasandur, Madurai District, Madras.
5. Year of establishment : 1948.
6. Latitude 10°32' N Longitude 77°57' E Altitude 250 feet
7. Whether research, multiplication or demonstration farm : Research farm.
8. Whether State, University or private managed : Indian Council of Agricultural Research, New Delhi.
9. Programme of research : Manurial and cultural trials on tobacco.
10. Normal cropping pattern : Tobacco during November—February every year with *jowar*, *bajra* or *marua* in between. Sometimes two of the three, if season permits.
11. Type of tract it represents : Mixed soil of grayish coarse gravelly soils and medium red loams.
12. General description of the topography of the experimental area : The station is close to a seasonal river, the lands near the river being very much undulated and the soil being coarse gravel. The lands away from the river are red sandy and medium loams.
13. Soils :

(a) Broad soil types :	Coarse gravel	Red loams.				
(i) Depth :	60 to 75 cm.	75 to 90 cm.				
(ii) Colour :	Greyish	Reddish				
(iii) Structure :	Coarse granular with small stones, highly porous.	Granular with small stones, highly porous.				
(b) Chemical analysis :						
	Depth	pH	EC TSS	Available in lb./ac.		
				N	P	K
Cigar tobacco soil	0—9"	8.3	Less than 0.2	168	6.0	365
	9"—18"	8.0	„	140	8.8	270
Chewing tobacco soil	0—9"	8.0	„	70	7.6	100
	9"—18"	7.3	„	70	9.6	150
(c) Mechanical analysis :			N.A.			
14. Normal average rainfall in mm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
20.3	20.6	68.0	62.7	203.0	144.9	66.2	56.5	7.7	11.9	62.1	63.3	757.2

(The figures are based on the period 1930 to 1965.)

15. Irrigation facilities available ; year from which the facilities were made available :

Yes, from wells with 30' to 40' depth. From the beginning. Fair crops can be raised at this station only with atleast two irrigations per week.

16. Whether any proper drainage system exists :

The soil is highly porous. Usual drainage system for heavy and moderate rains provided with ordinary drains. Permanent drainage of the farm has not yet completed.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(1).

Site :- Wrapper and Hookah Tobacco Res. Stn., Dinahata.

Type :- 'M'.

Object :- To study the effect of organic and inorganic manures on the yield and quality of wrapper Tobacco.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Mustard. (c) Nil. (ii) (a) Alluvium (*Doras*). (b) N.A. (iii) 13.11.1955. (iv) (a) 6 ploughings followed by planking and 2 cultivations followed by planking. (b) Transplanting. (c) 30000 plants/ac. (d) 2' x 2'. (e) 1. (v) Nil. (vi) Rangpur Sumatra. (vii) Irrigated. (viii) Intercultivations and weeding. (ix) 0.47". (x) 4 to 21.3.1955.

2. TREATMENTS:

Main-plot treatments:

3 manurial treatments : M_0 = Control (fallow plot), M_1 = *Dhaincha* sown broadcast (with 2 mds./ac. of Super and ploughed in as G.M. and M_2 = 40 lb./ac. of N as F.Y.M. applied by broadcast.

Sub-plot treatments:

All combinations of (1) and (2)

(1) 2 levels of N as A/S : $N_0=0$ and $N_1=50$ lb./ac.(2) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=35$ lb./ac.

N and P applied by broadcast at sowing.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) A. (iv) (a) 14' x 48'. 10' x 44'. (v) 2' x 2'. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Wide spread and severe attack of tobacco mosaic. Roguing of affected plants was done in the initial stage only. (iii) Yield of cured leaf. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) The experiment was planted rather late and possibly because of this reason the crop failed to put up a normal growth.

5. RESULTS :

(i) 631 lb./ac. (ii) (a) 186.1 lb./ac. (b) 134.2 lb./ac. (iii) Main effect of P alone is significant. (iv) Av. yield of of cured leaf in lb./ac.

	M_0	M_1	M_2	Mean	P_0	P_1
N_0	458	665	663	595	548	643
N_1	662	704	634	667	586	748
Mean	560	685	648	631	567	695
P_0	458	659	583			
P_1	662	710	713			

S.E. of difference of two

- | | |
|--|----------------|
| 1. M marginal means | = 65.8 lb./ac. |
| 2. N or P marginal means | = 38.7 lb./ac. |
| 3. N or P means at the same level of M | = 67.1 lb./ac. |
| 4. M means at the same level of N or P | = 81.1 lb./ac. |
| S.E. of body of N x P table | = 38.7 lb./ac. |

Crop :- Tobacco.

Ref :- C.T.R.I. 55(32).

Site :- Wrapper and Hookah Tobacco Res. Stn., Dinahata.

Type :- 'M'.

Object :- To study the effect of various organic manures and urea on the yield and quality of Tobacco.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Light silt loam. (b) N.A. (iii) 20.11.1955. Gaps filled on 30.11.1955 and 21.12.1955. (iv) (a) 4 ploughings. (b) Transplanting. (c) 10890 plants/ac. (d) 2' x 2'. (e) 1. (v) G.M. (*Dhaincha*) and 15 C.L./ac. of F.Y.M. (vi) Motihari (local). (vii) Irrigated. (viii) 6 intercultures, 5 hoeings, 2 hand weedings, topping and suckering. (ix) 1.94%. (x) 28.2.1956 to 14.3.1958.

2. TREATMENTS:

4 sources of 100 lb./ac. of N : S₁=Horn hoof meal, S₂=Blood meal, S₃=Urea and S₄=F.Y.M.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 52' x 24'. (b) 48' x 20'. (v) 2' x 2'. (vi) Yes.

4. GENERAL:

(i) Shortage of moisture during transplanting and growth periods adversely affected the stand and growth of the crop. (ii) Nil. (iii) Yield of cured leaf. (iv) (a) 1954-1958. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) Unusually strong wind storms accompanied by rains during the harvesting and curing periods damaged the crop. (vii) Nil.

5. RESULTS:

(i) 555 lb./ac. (ii) 99.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	S ₁	S ₂	S ₃	S ₄
Av. yield	483	472	372	893

S.E./mean = 40.7 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 56(26).

Site :- Wrapper and Hookah Tobacco Res. Stn., Dinahata.

Type :- 'M'.

Object :- To study the effect of various organic manures and urea on the yield and quality of Tobacco.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) *Dhaincha*. for G.M. (c) Nil. (ii) (a) Light silt loam. (b) N.A. (iii) 23.11.1956. Gaps filled on 1.12.1956 and 6.12.1956. (iv) (a) 4 ploughings. (b) Transplanting. (c) 10890 plants/ac. (d) 2' x 2'. (e) 1. (v) G.M. (*Dhaincha*). (vi) Motihari (local). (vii) Unirrigated. (viii) 2 hand weedings, 3 intercultures, 3 hand hoeings, topping and suckering. (ix) N.A. (x) 2.2.1957 to 13.3.1957.

2. TREATMENTS:

4 sources of 100 lb./ac. of N : S₁=Horn hoof meal, S₂=Blood meal, S₃=Urea and S₄=F.Y.M.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 40' x 16'. (b) 36' x 12'. (v) 2' x 2'. (vi) Yes.

4. GENERAL:

(i) Good. Crop lodged. (ii) Nil. (iii) Yield of cured leaf. (iv) (a) 1954-1958. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) Heavy rains during the month of January caused considerable damage to the crop by the way of causing water logged conditions. (vii) Nil.

5. RESULTS:

(i) 809 lb./ac. (ii) 246.1 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	S ₁	S ₂	S ₃	S ₄
Av. yield	776	691	943	824

S.E./mean = 100.5 lb./ac.

Crop :- Tobacco.**Ref :- C.T.R.I. 57(29).****Site :- Wrapper and Hookah Tobacco Res. Stn., Dinhata. Type :- 'M'.**

Object :- To study the effect of various organic manures and urea on the yield and quality of Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhaincha* for G.M. (c) 15 C.L./ac. of F.Y.M. + 100 lb./ac. of N as A/S. (ii) (a) Light silt loam. (b) N.A. (iii) N.A. (iv) (a) 4 ploughings. (b) Transplanting. (c) 10890 plants/ac. (d) 2' x 2'. (e) 1. (v) G.M. (*dhaincha*). (vi) Motihari (local). (vii) Irrigated. (viii) Weeding, hoeing, *mummati* digging, earthing and topping. (ix) and (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(26) on page 512.

4. GENERAL :

(i) N.A. (ii) Heavy incidence of mosaic virus especially during post December period. (iii) Yield of cured leaf. (iv) (a) 1954—1958. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) Rainfall during the period was below normal. (vii) Nil.

5. RESULTS :

(i) 872 lb./ac. (ii) 155.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	S ₁	S ₂	S ₃	S ₄
Av. yield	862	906	860	858

S.E./mean = 63.4 lb./ac.

Crop :- Tobacco.**Ref :- C.T.R.I. 58(48).****Site :- Wrapper and Hookah Tobacco Res. Stn., Dinhata. Type :- 'M'.**

Object :- To study the effect of various organic manures and urea on the yield and quality of Tobacco.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Light silt loam. (b) N.A. (iii) N.A. (iv) (a) 4 ploughings. (b) Transplanting. (c) 10,890 plants/ac. (d) 2' x 2'. (e) 1. (v) Nil. (vi) Motihari (local). (vii) Irrigated. (viii) Weeding, hoeing, *mummati* digging, earthing up and topping. (ix) and (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(26) on page 512.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of cured leaf. (iv) (a) 1954—1958. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) Heavy rainfall during the harvesting period. (vii) Nil.

5. RESULTS :

(i) 1652 lb./ac. (ii) 277.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	S ₁	S ₂	S ₃	S ₄
Av. yield	1728	1664	1731	1486

S.E./mean = 113.2 lb./ac.

Crop :- Tobacco.**Ref :- C.T.R.I. 54(2).****Site :- Wrapper and Hookah Tobacco Res. Stn., Dinahata. Type :- 'M'.****Object :-**To study the effects of various organic manures and urea on the yield and quality of Tobacco.**1. BASAL CONDITIONS:**

(i) (a) Nil. (b) Tobacco. (c) Nil. (ii) (a) Alluvium (*doras*). (b) N.A. (iii) 26.11.1954. (iv) (a) 6 ploughings, 2 cultivations and 8 plankings. (b) Transplanting. (c) 10890 plants/ac. (d) 2' x 2'. (e) 1. (v) *Dhainch* (G.M.). (vi) Motihari (local). (vii) Irrigated. (viii) Interculturing, weeding, topping and suckering. (ix) 0.18^h. (x) 15.2.1955 to 2.3.1955.

2. TREATMENTS :

4 sources of 100 lb./ac. of N : S₁=Horn and hoof meal, S₂=Blood meal, S₃=Urea and S₄=F.Y.M.
N applied broadcast before planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 52' x 24'. (b) 48' x 20'. (v) 2' x 2'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Stray cases of hollow stem rot were observed ; affected plants were up-rooted and destroyed. (iii) Yield of tobacco. (iv) (a) 1954—contd. (b) Yes. (c) No. (v) and (vi) Nil. (vii) The land was not uniform in fertility and the levels were bad. It resulted in a markedly uneven growth in the individual plots.

5. RESULTS :

(i) 636 lb./ac. (ii) 85.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	S ₁	S ₂	S ₃	S ₄
Av. yield	552	628	681	681

S.E./mean = 35.4 lb./ac.

Crop :- Tobacco.**Ref :- C.T.R.I. 54(3).****Site :- Cigarette Tobacco Res. Sub-Stn. Farm, Guntur. Type :- 'M'.****Object :-**To find out the best time of application and method of placement of fertilisers for Cigarette Tobacco.**1. BASAL CONDITIONS :**

(i) (a) Groundnut—Sorghum—Fallow—Tobacco. (b) Fallow. (c) Nil. (ii) (a) Black clay. (b) N.A. (iii) 8 10 1954. (iv) (a) 4 ploughings. (b) Transplanted. (c) —. (d) 33" x 33". (e) N.A. (v) Nil. (vi) Harrison special. (vii) Unirrigated. (viii) 5 weedings and 2 intercultures. (ix) 7.65". (x) 8.1.1955 to 5.2.1955.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : N₁=20 and N₂=25 lb./ac.

(2) 2 methods of applications : M₁=Broadcast and M₂=In plough furrows.

(3) 3 times of application of N : T₁=30, T₂=20 and T₃=10 days before planting.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 1/47.6 ac. (b) 1/71.43 ac. (v) 1 row all round the plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of green leaf, bright leaf and bright leaf equivalent. (iv) to (vii) Nil.

5. RESULTS :

(i) 3281 lb./ac. (ii) 242.9 lb./ac. (iii) Main effect of M is significant. (iv) Av. yield of green leaf in lb./ac.

	T ₁	T ₂	T ₃	Mean	M ₁	M ₂
N ₁	3205	3298	3157	3220	3127	3313
N ₂	3445	3275	3304	3341	3219	3464
Mean	3325	3286	3231	3281	3173	3389
M ₁	3309	3172	3037			
M ₂	3341	3401	3424			

S.E. of N or M marginal mean = 57.3 lb./ac.
 S.E. of T marginal mean = 70.1 lb./ac.
 S.E. of body of T×N or T×M table = 99.2 lb./ac.
 S.E. of body of N×M table = 81.0 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.L 54(4).

Site :- Cigarette Tobacco Res. Sub-Stn. Farm, Guntur. Type :- 'M'.

Object :- To find out the effect of different combinations of manures given to the rotation crops—groundnut and sorghum on the yield and quality of Cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Groundnut—Sorghum—Fallow—Tobacco. (b) Fallow. (c) Nil. (ii) (a) Black clay. (b) N.A. (iii) 12.10.1954. (iv) (a) 5 ploughings. (b) Transplanting. (c) —. (d) 33"×33". (e) N.A. (v) Nil. (vi) Harrison special. (vii) Unirrigated. (viii) 4 weedings and 2 interculturalures. (ix) 7.65". (x) 8.1.1955 to 15.2.1955.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of manure to groundnut in *kharif* : M₀=No manure, M₁=20 lb./ac. of N+30 lb./ac. of P₂O₅+20 lb./ac. of K₂O and M₂=M₁+60 C.L./ac. of F.Y.M.

(2) 2 levels of manure to sorghum in *rabi* : L₀=No manure and L₁=20 lb./ac. of N+30 lb./ac. of P₂O₅.

(3) 2 levels of N to tobacco : N₀=0 and N₁=20 lb./ac.

N applied as A/S, P₂O₅ as Super and K₂O as Pot. Sul.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 1/40 ac. (b) 1/47.6 ac. (v) 1 row all round the plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of green leaf, bright leaf and total bright leaf equivalent. (iv) (a) 1952—1955. (b) and (c) No. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 3463 lb./ac. (ii) 295.2 lb./ac. (iii) Main effect of N and interaction N×L are highly significant. (iv) Av. yield of green leaf in lb./ac.

	M ₀	M ₁	M ₂	Mean	L ₀	L ₁
N ₀	3016	3186	3179	3127	2954	3300
N ₁	3689	3926	3785	3800	3964	3635
Mean	3352	3556	3482	3463	3459	3468
L ₀	3175	3654	3548			
L ₁	3530	3458	3475			

S.E. of M marginal mean	= 73.8 lb./ac.
S.E. of N or L marginal mean	= 60.3 lb./ac.
S.E. of body of M×N or M×L table	= 104.4 lb./ac.
S.E. of body of N×L table	= 85.2 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(5).

Site :- Cigarette Tobacco Res. Sub-Stn. Farm, Guntur. Type :- 'M'.

Object :- To compare the effect of C/N and A/S on Cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Groundnut—*Sorghum*—Fallow—Tobacco. (b) Fallow. (c) Nil. (ii) (a) Black clay. (b) N.A. (iii) 4.10.1954. (iv) (a) 4 ploughings. (b) Transplanted. (c) —. (d) 33"×33". (e) N.A. (v) Nil. (vi) Harrison special. (vii) Unirrigated. (viii) 4 weedings and 3 intercultures. (ix) 7.65". (x) 8.1.1955 to 14.2.1955.

2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M. : $F_0=0$ and $F_1=6$ C.L./ac.

Sub-plot treatments :

3 sources of 20 lb./ac. of N : $N_0=No$ N, $N_1=C/N$ and $N_2=A/S$.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 1/22.73 ac. (b) 1/29.41 ac. (v) 1 row all round th : plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of green leaf, bright leaf and total bright leaf equivalent. (iv) (a) 1952—1954. (b) N.A. (c) Nil. (v) to (vii) N.I.

5. RESULTS :

(i) 3245 lb./ac. (ii) (a) 598.8 lb./ac. (b) 383.2 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of green leaf in lb./ac.

	N_0	N_1	N_2	Mean
F_0	2662	3341	3024	3039
F_1	3222	3790	3428	3480
Mean	2942	3565	3226	3245

S.E. of difference of two

1. F marginal means	= 244.5 lb./ac.
2. N marginal means	= 191.6 lb./ac.
3. N means at the same level of F	= 271.0 lb./ac.
4. F means at the same level of N	= 329.7 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(6).

Site :- Cigarette Tobacco Res. Sub-Stn. Farm, Guntur. Type :- 'M'.

Object :- To compare the effect of C/N and A/S on Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Chillies. (c) 12 C.L./ac. of F.Y.M. (ii) (a) Black clay. (b) N.A. (iii) 20.10.1954. (iv) (a) 5 ploughings. (b) Transplanting. (c) —. (d) 33"×33". (e) N.A. (v) Nil. (vi) *Natu*. (vii) Unirrigated. (viii) 3 intercultures and 1 weeding. (ix) 7.65". (x) 12.2.1955.

2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M. : $F_0=0$ and $F_1=12$ C.L./ac.

Sub-plot treatments :

5 levels of N : $N_0=0$, $N_1=30$ lb./ac. as C/N, $N_2=60$ lb./ac. as C/N, $N_3=30$ lb./ac. as A/S and $N_4=60$ lb./ac. as A/S.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 1/37 ac. (b) 1/58 ac. (v) 1 row all round the plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of cured leaf. (iv) (a) 1952—54. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1183 lb./ac. (ii) (a) 100.5 lb./ac. (b) 91.1 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of cured leaf in lb./ac.

	N_0	N_1	N_2	N_3	N_4	Mean
F_0	969	1149	1328	1224	1254	1185
F_1	988	1204	1293	1168	1254	1181
Mean	979	1177	1311	1196	1254	1183

S.E. of difference of two

1. F marginal means = 31.8 lb./ac.
2. N marginal means = 45.6 lb./ac.
3. N means at the same level of F = 64.4 lb./ac.
4. F means at the same level of N = 65.8 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(7).

Site :- Cigarette Tobacco Res. Sub-Stn. Farm, Guntur. Type :- 'M'.

Object : - To study the direct, residual and cumulative effects of manures on Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco after Tobacco. (b) Tobacco. (c) N.A. (ii) (a) Black clay. (b) N.A. (iii) 11.10.1954. (iv) (a) 4 ploughings. (b) Transplanting. (c) —. (d) 33" x 33". (e) N.A. (v) Nil. (vi) *Natu*- Rat tail. (vii) Unirrigated. (viii) 3 intercultures and 2 weedings. (ix) 7.65°. (x) 6.2.1955.

2. TREATMENTS :

Treatment	N_0	N_1	N_2	N_3	N_4	N_5	N_6	N_7	N_8
Year									
1952	C	C	C	F	F	F	A/S	A/S	A/S
1953	C	F	A/S	F	C	A/S	A/S	F	C
1954	Residual effect of the above treatments.								

C = No manure, F = 12 C.L./ac. of F.Y.M., A/S = 30 lb./ac. of N.

3. DESIGN :

(i) R B D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 1/22.73 ac. (b) 1/30.3 ac. (v) 1 row all round the plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of cured leaf. (iv) (a) 1952—1954. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1004 lb./ac. (ii) 101.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	N ₀	N ₁	N ₂	N ₃	N ₄	N ₅	N ₆	N ₇	N ₈
Av. yield	871	1040	1089	1014	964	1027	1069	1036	925

S.E./mean = 50.9 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 57(1).

Site :- Tobacco Res. Stn., Hunsur.

Type :- 'M'.

Object :- To find the effect of coconut oil in suppressing the suckers and its effect on yield.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) (a) Red sandy loam. (b) N.A. (iii) July, 1957. (iv) (a) Ploughing 3 to 4 times. (b) Broadcasting. (c) 3 lb./ac. (d) 33" x 33". (e) N.A. (v) Application of V.Q.T.F. mixture at 40 gms./plant. (vi) Harrison special. (vii) Unirrigated. (viii) Intercultivation and topping. (ix) N.A. (x) November—December, 1957.

2. TREATMENTS.

2 manurial treatments : M₀ = No application of coconut oil and M₁ = Application of coconut oil in the axils of the leaf on the topped plants.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 6. (iv) (a) and (b) 60 plants/plot. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Endrex spraying at 10 ozs. in 5 gallons of water against caterpillar. (iii) No. and weight of suckers and yield of green and cured leaf. (iv) 1957—1962. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

Yield of suckers

(i) 1071 lb./ac. (ii) 178.2 lb./ac. (iii) Treatment difference is not significant. (iv) Av. weight of suckers in lb./ac.

Treatment	M ₀	M ₁
Av. yield	1126	1015

S.E./mean = 72.7 lb./ac.

Yield of cured leaf

(i) 516 lb./ac. (ii) 113.6 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	M ₀	M ₁
Av. yield	500	531

S.E./mean = 46.4 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 59(1).

Site :- Tobacco Res. Stn., Hunsur.

Type :- 'M'.

Object :- To study the effect of different forms of N and the optimum combination of N, P and K on the yield of Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) 20 tons/ac. of F.Y.M. (ii) (a) Red sandy loam. (b) N.A. (iii) 17.11.1959. (iv) (a) 3 to 4 ploughings. (b) Broadcasting. (c) 3 lb./ac. (d) 33" x 33". (e) N.A. (v) Nil. (vi) Chantikudi. (vii) Unirrigated. (viii) Topping at 8 leaves level. (ix) Nil. (x) 11.2.1960.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 sources of N : $S_1 = \text{G.N.C.}$, $S_2 = \text{A/S}$ and $S_3 = \text{G.N.C.} + \text{A/S}$ in equal proportion.(2) 3 levels of N : $N_1 = 20$, $N_2 = 40$ and $N_3 = 80$ lb./ac.**Sub-plot treatments :**

All combinations of (1) and (2)

(1) 2 levels of P_2O_5 as Super : $P_1 = 50$ and $P_2 = 100$ lb./ac.(2) 2 levels of K_2O as Potash : $K_1 = 25$ and $K_2 = 50$ lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 48 plants/plot. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Growth was sub-normal. (ii) Minor insects were controlled by spraying Bordeaux mixture at weekly intervals. (iii) Yield of cured and green leaf. (iv) (a) 1959--1961. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) The crop did not mature in time due to heavy rains and late sowing. $N \times S$ table is not available.

5. RESULTS :

(i) 606 lb./ac. (ii) (a) 217.7 lb./ac. (b) 112.7 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of tobacco in lb./ac.

	S_1	S_2	S_3	N_1	N_2	N_3	K_1	K_2	Mean
P_1	549	628	590	487	617	662	582	596	589
P_2	606	619	646	530	627	714	626	622	624
Mean	578	623	618	509	622	688	604	609	606
K_1	577	640	595	513	616	683			
K_2	579	607	640	505	628	693			

S.E. of difference of two

- | | |
|---|----------------|
| 1. N or S marginal means | = 44.4 lb./ac. |
| 2. P or K marginal means | = 18.8 lb./ac. |
| 3. P or K means at the same level of N or S | = 56.3 lb./ac. |
| 4. N or S means at the same level of P or K | = 50.0 lb./ac. |
| S.E. of body of $P \times K$ table | = 18.8 lb./ac. |

Crop :- Tobacco.**Site :- Tobacco Res. Stn., Hunsur.****Ref :- C.T.R.I, 58(1).****Type :- 'M'.**

Object :—To find the effect of cocount oil and other chemicals in suppressing the suckers and its effect on the yield of Tobacco.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Tobacco. (c) Same as (V). (ii) (a) Red sandy loam. (b) N.A. (iii) 13.11.1958. (iv) (a) 3 to 4 ploughings. (b) Broadcasting. (c) 3 lb./ac. (d) $33'' \times 33''$. (e) N.A. (v) Application of V.O.T.F. mixture at 40 gms/plant. (vi) Harrison special. (vii) Unirrigated. (viii) Intercultivation and topping. (ix) and (x) N.A.

2. TREATMENTS.

4 chemical treatments : T_0 =Control (hand suckering), T_1 =Naphthalene acetic acid (one drop at the cut end of the stem and spreading uniformly), T_2 =Maleic hydrazide, (sprayed on the top of leaf axil) and T_3 =Coconut oil.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) 60 plants/plot. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Endrex spraying at 10 ozs in 5 gallons of water against caterpillars. (iii) No. and wt. of suckers. (iv) (a) 1957-1962 (failed in 1960). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) The weather was very dry towards the leaf maturing period consequently the leaves were drying and got torn off in breeze. Hence the yield could not be taken. (vii) Nil.

5. RESULTS :

(i) 172 lb./ac. (ii) 87.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. weight of suckers in lb./ac.

Treatment	T_0	T_1	T_2	T_3
Av. yield	335	74	252	29

S.E./mean = 35.8 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 59(2).

Site :- Tobacco Res. Stn., Hunsur.

Type :- 'M'.

Object :—To find the effect of coconut oil and other chemicals in suppressing suckers and its effect on the yield of Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) Same as (V). (ii) (a) Red sandy loam. (b) N.A. (iii) 12.8.1959. (iv) (a) 3 to 4 ploughings. (b) Broadcasting. (c) 3 lb./ac. (d) 33" x 33". (e) N.A. (v) Application of V.O.T.F. mixture at 40 gms./plant. (vi) Harrison special. (vii) Unirrigated. (viii) Intercultivation and topping. (ix) 22.6". (x) 5.12.1959.

2. TREATMENTS :

4 chemical treatments : T_0 =Control (hand suckering), T_1 =Naphthalene acetic acid 2% (one drop at the cut end of the stem and spreading uniformly), T_2 =Maleic hydrazide 1% (sprayed on the top of 6th leaf axil) and T_3 =Coconut oil (in the axils of the leaf on topped plants).

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) 50 plants/plot. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Subnormal. (ii) Minor insects were controlled by spraying Endrex at 10 ozs in 5 gallons against caterpillars. (iii) No. and weight of suckers and weight of green and cured leaf. (iv) (a) 1957-1962 (expt. failed in 1960). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) The growth was subnormal due to lack of rains.

5. RESULTS :

1. Yield of cured leaf

(i) 867 lb./ac. (ii) 109.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	T_0	T_1	T_2	T_3
Av. yield	887	917	847	855

S.E./mean = 44.6 lb./ac.

2. Weight of suckers

(i) 604 lb./ac. (ii) 273.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of suckers in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃
Av. yield	1312	478	622	3

S.E./mean = 112.6 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 54(8).

Site :- Hookah & Chewing Tobacco Res. Stn., Pusa. Type :- 'M'.

Object :- To find out the optimum dose of oil cake and inorganic fertilizer for Hookah and Chewing tobacco.

1. BASAL CONDITIONS :

(i) (a) Maize—Rahar Mixture followed by tobacco. (b) Maize—Rahar mixture. (c) Nil. (ii) (a) Gangetic alluvium calcareous. (b) N.A. (iii) N.A./30.9.1954 and 1.10.1954. (iv) (a) to (c) N.A. (d) 3'×3'. (e) 1 plant/hole. (v) G.M. with sannhemp. (vi) Bori Bharao—93 (medium). (vii) Irrigated, (viii) 3 weedings, 3 hoeings, 1 topping and 6 suckerings. (ix) 46.73". (x) 11.3.1955.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N : N₀=0, N₁=50 and N₂=100 lb./ac.

(2) 3 levels of P₂O₅ as Super : P₀=0, P₁=30 and P₂=60 lb./ac.

(3) 3 levels of K₂O as Pot. Sul. : K₀=0, K₁=50 and K₂=100 lb./ac.

Half of N was applied as oil cake and ½ of N as A/S.

3. DESIGN :

(i) 3³ confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 4. (iv) (a) 54'×24'. (b) 48'×18'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Leaf curl, mosaic etc. Removal of affected plants. (iii) Growth, length and breadth of individual leaf. Yield of cured leaf. weight and percentage of various grades. (iv) (a) 1950—1954. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1837 lb./ac. (ii) 218.5 lb./ac. (iii) Main effect of N and interaction N P K² are highly significant. (iv) Av. yield of cured leaf in lb./ac.

	P ₀	P ₁	P ₂	Mean	K ₀	K ₁	K ₂
N ₀	1838	1622	1621	1694	1664	1672	1745
N ₁	1861	1966	1960	1929	2008	1941	1837
N ₂	1959	1798	1906	1888	1944	1904	1815
Mean	1886	1795	1829	1837	1872	1839	1799
K ₀	1938	1900	1778				
K ₁	1865	1816	1836				
K ₂	1855	1670	1872				

S.E. of any marginal mean = 36.4 lb./ac.
S.E. of body of any table = 63.1 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(9).

Site :- Hookah & Chewing Tobacco Res. Stn., Pusa. Type :- 'M'.

Object :- To find out the effect of fertilizing G.M. crop in Maize and Rahar mixture—Sannhemp—hookah and chewing tobacco (N. Tabacum) rotation.

1. BASAL CONDITIONS :

(i) (a) Maize+Rahar—*Sannhemp*—Tobacco. (b) Maize—Rahar mixture. (c) Nil. (ii) (a) Gangetic alluvium calcareous. (b) N.A. (iii) N.A./26.9.1954. (iv) (a) to (c) N.A. (d) 3'×2'. (e) 1 plant/hole. (v) Nil. (vi) *Bori bharao*—93 (medium). (vii) Irrigated. (viii) 3 weedings, 1 interculturing, topping once and 6 time suckering. (ix) 46.73%. (x) 14 and 16.2.1955.

2. TREATMENTS :

Main-plot treatments :

2 levels of G.M. : G_0 =No G.M. (Fallow in *kharif*) and G_1 =G.M. *sannhemp* (in *kharif*).

Sub-plot treatments :

4 manurial treatments : M_1 =No manure in *kharif* and manure to tobacco at 100 lb./ac. of N and 60 lb./ac. of P_2O_5 , M_2 =No manure in *kharif* and no manure to tobacco, M_3 =Manure applied in *kharif* at 25 lb./ac. of N and 30 lb./ac. of P_2O_5 and 75 lb./ac. of N+80 lb./ac. of P_2O_5 to tobacco and M_4 =Manure applied in *kharif* at 25 lb./ac. of N+30 lb./ac. of P_2O_5 +No manure to tobacco.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 42'×20'. (b) 36'×16'. (v) 3'×2'. (vi) Yes.

4. GENERAL :

(i) Crop poor and the stand was also not good. (ii) Leaf curl, mosaic and attack of caterpillars and picking of insects. (iii) Yield of cured leaves and percentage of various grades. (iv) (a) 1954—1955. (b) and (c) Nil (v) to (vii) Nil.

5. RESULTS :

(i) 1533 lb./ac. (ii) (a) 426.9 lb./ac. (b) 309.3 lb./ac. (iii) Main effect of M is highly significant. (iv) Av. yield of cured leaf in lb./ac.

	M_1	M_2	M_3	M_4	Mean
G_0	1673	1209	1643	1452	1494
G_1	1688	1270	1729	1607	1573
Mean	1680	1239	1686	1529	1533

S.E. of difference of two

1. G marginal means	= 123.2 lb./ac.
2. M marginal means	= 126.3 lb./ac.
3. M means at the same level of G	= 178.6 lb./ac.
4. G means at the same level of M	= 197.7 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(10).

Site :- Hookah & Chewing Tobacco Res. Stn., Pusa. Type :- 'M'.

Object :- To find out the effect of coconut oil in the suppression of suckers and its effect on yield.

1. BASAL CONDITIONS :

(i) (a) Maize—Rahar mixture followed by tobacco. (b) Maize—Rahar mixture. (c) Nil. (ii) (a) Gangetic alluvium calcareous. (b) N.A. (iii) N.A./1.10.1954. (iv) (a) to (c) N.A. (d) 3'×2'. (e) 1 plant/hole. (v) G.M. with *sannhemp*. (vi) *Bori bharao*—93 (medium). (vii) Irrigated. (viii) 3 weedings, 1 interculturing, topping once as usual and 7 times suckering. (ix) 46.73%. (x) 7.3.1955.

2. TREATMENTS :

3 treatments : T_0 =Control, T_1 =Application of coconut oil to top 5 buds and T_2 =Application of coconut oil to top 8 buds.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 36'×12'. (b) 30'×8'. (v) 3'×2'. (vi) Yes.

4. GENERAL :

(i) Average growth and stand. (ii) Attack of leaf curl, mosaic and caterpillars. Hand picking of larvae. (iii) Yield of cured leaves. Fresh and dry weights of suckers. (iv) (a) 1954—1955. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2300 lb./ac. (ii) 213.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	T ₀	T ₁	T ₂
Av. yield	2320	2232	2349
S.E./mean = 87.1 lb./ac.			

Crop :- Tobacco.

Ref :- C.T.R.I. 54(11).

Site :- Hookah & Chewing Tobacco Res. Stn., Pusa. Type :- 'M'.

Object :- To determine the optimum dose of N and P in relation to topping and spacing of Hookah and Chewing tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Barley. (c) Nil. (ii) (a) Gangetic alluvium calcareous. (b) N.A. (iii) N.A./22.10.1954. (iv) (a) to (c) N.A. (d) As per treatments. (e) 1 plant/hole. (v) G.M. with *saanhemp*. (vi) *Bori bharao*-93. (medium). (viii) 3 weedings, 1 interculturing, topping as usual and 6 times suckering. (ix) 46.73%. (x) 30.3.1955.

2. TREATMENTS :

Main-plot treatments:

2 spacings: S₁=2' × 3' and S₂=2½' × 3'.

Sub-plot treatments :

2 topping treatments : T₁=12 and T₂=14 leaves/plant.

Sub-sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N : N₀=0, N₁=75 and N₂=150 lb./ac.

(2) 2 levels of P₂O₅ : P₀=0 and P₁=60 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 2 sub-plots/main-plot and 6 sub-sub-plots/sub-plot. (b) N.A. (iii) 4. (iv) (a) 42' × 20'. (b) 36' × 16'. (v) 3' × 2'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Leaf curl, mosaic and attack of caterpillars. Hand picking of larvae. (iii) Yield of cured leaf and percentage of first grade leaf. (iv) (a) 1954-1955 (in modified form). (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Land subjected to water lodging, hence planting was delayed.

5. RESULTS :

(i) 1539 lb./ac. (ii) (a) 681.6 lb./ac. (b) 250.3 lb./ac. (c) 216.7 lb./ac. (iii) Main effect of N is highly significant. Interaction T × N × P is significant. (iv) Av. yield of cured leaf in lb./ac.

	T ₁	T ₂	N ₀	N ₁	N ₂	P ₀	P ₁	Mean
S ₁	1581	1695	1308	1689	1917	1573	1703	1638
S ₂	1387	1492	1122	1479	1718	1426	1453	1440
Mean	1484	1594	1215	1584	1817	1500	1578	1539
P ₀	1470	1530	1122	1583	1795			
P ₁	1498	1658	1308	1585	1840			
N ₀	1203	1228						
N ₁	1494	1674						
N ₂	1754	1881						

S.E. of difference of two

1. S marginal means	= 139.1 lb./ac.	8. T means at the same level of N	= 80.8 lb./ac.
2. T marginal means	= 51.1 lb./ac.	9. P means at the same level of T	= 62.5 lb./ac.
3. N marginal means	= 54.2 lb./ac.	10. T means at the same level of P	= 67.6 lb./ac.
4. P marginal means	= 44.2 lb./ac.	11. N means at the same level of S	= 76.6 lb./ac.
5. T means at the same level of S	= 72.2 lb./ac.	12. S means at the same level of N	= 152.5 lb./ac.
6. S means at the same level of T	= 148.2 lb./ac.	S.E. of body of N×P table	= 54.2 lb./ac.
7. N means at the same level of T	= 76.6 lb./ac.		

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 56(1).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'M'.

Object :-To study the effect of different sources of N on the yield and quality of Tobacco.

1. BASAL CONDITIONS :

(i) (a) Maize+*Rahar*—Tobacco. (b) Maize+*Rahar*. (c) Nil. (ii) (a) Gangetic alluvium calcareous. (b) N.A. (iii) 4.10.1956. (iv) (a) 1 ploughing by planet Junior cultivator. (b) Transplanting. (c) 2 lb./ac. (d) 3'×2'. (e) 1. (v) G.M. with *sanai*+500 mds/ac. of F.Y.M. (vi) *Bori Bharao*—93 (medium). (vii) Irrigated. (viii) 2 weedings, 10 suckering and topping. (ix) 14.00". (x) 3.3.1957.

2. TREATMENTS :

5 sources of 50 lb./ac. of N : S₀=Control, S₁=A/S, S₂=A/C, S₃=A/S+A/C and S₄=Mustard cake.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 15'×30'. (b) 9'×26'. (v) 3'×2'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Leaf curl and mosaic. (iii) Yield of cured leaf. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Hail storm in January, 1957.

5. RESULTS :

(i) 2443 lb./ac. (ii) 193.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄
Av. yield	2163	2401	2487	2611	2554

S.E./mean = 96.7 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(12).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'M'.

Object :-To determine the effect of different organic manures on yield and quality of Hookah and Chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) N A. (b) Maize+*Rahar*. (c) Nil. (ii) (a) Gangetic alluvium calcareous. (b) Nil. (iii) 23.9.1954. (iv) (a) to (c) N.A. (d) 3'×2'. (e) 1 plant/hole. (v) G.M. with *sannhemp*+50 lb./ac. of N as A/S. (vi) *Bori Bharao*—93 (medium). (vii) Irrigated. (viii) 3 weedings, 1 interculturing, topping as usual and 6 times suckering. (ix) 46.73". (x) 24.2.1955.

2. TREATMENTS :

5 sources of 50 lb./ac. of N : S₁=Mustard cake, S₂=Stera meal, S₃=Blood meal, S₄=Steamed horn hoof meal and S₅=Urea (actually A/S).

As urea was not available, 50 lb./ac. of N as A/S was applied.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 42'×20'. (b) 36'×16'. (v) 3'×2'. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Leaf curl, mosaic and attack of caterpillars. Hand picking of larvae. (iii) Yield of cured leaf. (iv) (a) 1954-1955. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1752 lb./ac. (ii) 209.72 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	S ₁	S ₂	S ₃	S ₄	S ₅
Av. yield	1753	1855	1739	1740	1673

S.E./mean = 85.61 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 55(1).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'M'.

Object : To find out the effect of vegetable oil in the suppression of suckers and on the yield and quality of Hookah and Chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Maize + *Rahar* - Tobacco. (b) Maize + *Rahar*. (c) Nil. (ii) (a) Gangetic alluvium calcareous. (b) N.A. (iii) 12.9.1955. (iv) (a) 1 ploughing by planet Junior cultivator. (b) Transplanting. (c) 2 lb./ac. (d) 3'×2'. (e) 1. (v) G.M. with *sannhemp*. (vi) *Bori Bharao* -93 (medium). (vii) Irrigated. (viii) 2 weedings and mulching, 9 suckering and topping. (ix) 6.11". (x) 9.2.1956.

2. TREATMENTS :

Main-plot treatment :

3 sources of N : S₁=Mustard oil, S₂=Groundnut oil and S₃=Coconut oil.

Sub-plot treatments :

4 methods of application of N : M₀=Control, M₁=Application to 4 top buds, M₂=Application to 6 top buds and M₃=Application to 8 top buds.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 21'×42'. (b) 15'×38'. (v) 3'×2'. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Leaf curl and mosaic. (iii) Cured leaf weight. (iv) (a) 1955-1958. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) N.A.

5. RESULTS :

(i) 1856 lb./ac. (ii) (a) 266.2 lb./ac. (b) 171.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of cured leaf in lb./ac.

	M ₀	M ₁	M ₂	M ₃	Mean
S ₁	1793	2138	1933	1779	1911
S ₂	1873	1860	1788	1863	1846
S ₃	1800	1789	1867	1792	1812
Mean	1822	1929	1863	1811	1856

S.E. of difference of two

1. S marginal means = 76.8 lb./ac.
2. M marginal means = 57.1 lb./ac.
3. M means at the same level of S = 98.9 lb./ac.
4. S means at the same level of M = 115.0 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 56(2).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'M'.

Object :- To find out the effect of different vegetable oils in the suppression of suckers on yield and quality of Hookah and Chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Maize+Rahar—Tobacco. (b) Maize+Rahar. (c) Nil. (ii) (a) Gangetic alluvium calcareous. (b) (b) N.A. (iii) 7.10.1956. (iv) (a) 1 ploughing by planet junior plough. (b) Transplanting. (c) 2 lb./ac. (d) 3'×2'. (e) 1. (v) G.M. with sannhemp. (vi) Bori Bharao—93 (medium). (vii) Irrigated. (viii) 2 weedings and mulching, 8 suckering and topping. (ix) 14.00". (x) 6.3.1957.

2. TREATMENTS:

Same as in expt. no. 55(1) on page 525.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 15'×30'. (b) 9'×26'. (v) 3'×2'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Cut worm menace. Two sprayings of D.D.T. 5% W.P. (iii) Green and dry weight of sucker and yield of cured leaf. (iv) (a) 1955—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Hail storm on 9.1.1957. (vii) Nil.

5. RESULTS :

(i) 1623 lb./ac. (ii) (a) 369.7 lb./ac. (b) 237.1 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of cured leaf in lb./ac.

	M ₀	M ₁	M ₂	M ₃	Mean
S ₁	1717	1621	1671	1716	1681
S ₂	1453	1598	1608	1551	1553
S ₃	1616	1584	1685	1656	1635
Mean	1595	1601	1655	1641	1623

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. S marginal means | = 106.7 lb./ac. |
| 2. M marginal means | = 79.0 lb./ac. |
| 3. M means at the same level of S | = 136.9 lb./ac. |
| 4. S means at the same level of M | = 159.5 lb./ac. |

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 57(2).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'M'.

Object :- To study the effect of vegetable oils in the suppression of suckers on the yield and quality of Hookah and Chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sannhemp (G.M.). (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) 23.9.1957. (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3'×2'. (e) 1. (v) G.M. with sannhemp. (vi) Bori Bharao—10. (vii) Irrigated. (viii) 1 weeding, topping and suckering. (ix) 49.28". (x) 23.2.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(1) on page 525.

4. GENERAL :

(i) Good. (ii) Leaf curl and mosaic. (iii) Cured leaf yield. (iv) (a) 1955—1958. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1990 lb./ac. (ii) (a) 306.7 lb./ac. (b) 319.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of cured leaf in lb./ac.

	M ₀	M ₁	M ₂	M ₃	Mean
S ₁	1956	2061	2251	1940	2052
S ₂	1956	2103	1835	1726	1905
S ₃	2161	2022	1975	1897	2014
Mean	2024	2062	2020	1854	1990

S.E. of difference of two

1. S marginal means = 88.5 lb./ac.
2. M marginal means = 106.6 lb./ac.
3. M means at the same level of S = 184.7 lb./ac.
4. S means at the same level of M = 182.8 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 58(2).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa.

Type :- 'M'.

Object :— To study the effect of vegetable oils in the suppression of suckers on the yield and quality of Hookah and Chewing Tobacco.

1. BASAL CONDITIONS .

(i) (a) Nil. (b) *Sannhemp* (G.M.). (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) 16.9.1958. (iv) (a) 5 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3' × 2'. (e) 1. (v) G.M. with *sannhemp*. (vi) D.P.—401. (vii) Irrigated. (viii) 2 weedings, topping and suckering. (ix) 7.1". (x) 12.2.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(1) on page 525.

4. GENERAL :

(i) Good. (ii) Leaf curl and mosaic. (iii) Cured leaf yield. (iv) (a) 1955—1958. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2249 lb./ac. (ii) (a) 253.7 lb./ac. (b) 167.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of cured leaf in lb./ac.

	M ₀	M ₁	M ₂	M ₃	Mean
S ₁	2254	2268	2176	2300	2250
S ₂	2230	2193	2203	2230	2214
S ₃	2243	2225	2297	2363	2282
Mean	2242	2229	2225	2298	2249

S.E. of difference of two

1. S marginal means	= 73.2 lb./ac.
2. M marginal means	= 55.9 lb./ac.
3. M means at the same level of S	= 96.8 lb./ac.
4. S means at the same level of M	= 111.3 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 55(2).****Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'M'.**

Object :- To find out the effect of fertilizing G.M. crop and Tobacco crop as compared to farmer's method of manuring with F.Y.M.

1. BASAL CONDITIONS :

(i) (a) Maize + *Rahar*—Tobacco. (b) Maize—*Rahar*. (c) Nil. (ii) (a) Gangetic alluvium calcareous. (b) N.A. (iii) 28.9.1955. (iv) (a) 1 ploughing by plant junior cultivator. (b) Transplanting. (c) 2 lb./ac. (d) 3' x 2'. (e) 1. (v) Nil. (vi) *Bori Bharao*—93 (medium). (vii) Irrigated. (viii) 3 times weeding and mulching, 9 suckering and topping. (ix) 6.11^r. (x) 2.3.1956.

2. TREATMENTS :

	<i>Kharif</i>		<i>Rabi</i>	
	Crop	Manure	Crop	Manure
T ₁ =	Fallow	Nil	Tobacco	50 C.L./ac. of F.Y.M.
T ₂ =	Fallow	Nil	Tobacco	50 C.L./ac. of F.Y.M. + 25 lb./ac. of N as mustard cake.
T ₃ =	Fallow	Nil	Tobacco	50 C.L./ac. of F.Y.M. + 50 lb./ac. of N $\frac{1}{2}$ as mustard cake + $\frac{1}{2}$ as A/S + 30 lb./ac. of P ₂ O ₅ .
T ₄ =	Fallow	Nil	Tobacco	50 C.L./ac. of F.Y.M. + 100 lb./ac. of N $\frac{1}{2}$ as mustard cake + $\frac{1}{2}$ as A/S + 60 lb./ac. of P ₂ O ₅ .
T ₅ =	<i>Sannhemp</i>	Nil	Tobacco	G.M. with <i>sannhemp</i> + 50 lb./ac. of N $\frac{1}{2}$ as A/S + $\frac{1}{2}$ as mustard cake + 30 lb./ac. of P ₂ O ₅ .
T ₆ =	<i>Sannhemp</i>	30 lb./ac. of P ₂ O ₅	Tobacco	G.M. with <i>sannhemp</i> + 50 lb./ac. of N $\frac{1}{2}$ as A/S + $\frac{1}{2}$ as mustard cake.
T ₇ =	<i>Sannhemp</i>	Nil	Tobacco	G.M. with <i>sannhemp</i> + 100 lb./ac. of N $\frac{1}{2}$ as A/S + $\frac{1}{2}$ as mustard cake + 60 lb./ac. of P ₂ O ₅ .
T ₈ =	<i>Sannhemp</i>	60 lb./ac. of P ₂ O ₅	Tobacco	G.M. with <i>sannhemp</i> + 100 lb./ac. of N $\frac{1}{2}$ as A/S + $\frac{1}{2}$ as mustard cake.

P₂O₅ was applied as Super.**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 18' x 36'. (b) 12' x 32'. (v) 3' x 2'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Leaf curl and mosaic. (iii) Cured leaf yield. (iv) (a) 1955—1958. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2235 lb./ac. (ii) 199.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av yield	2034	2015	2400	2559	2153	1963	2408	2350

S.E./mean = 81.5 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 56(3).****Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'M'.**

Object :— To find out the effect of fertilizing the G.M. crop and Tobacco crop as compared to farmer's practice of manuring with F.Y.M. on Tobacco.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Gangetic alluvium calcareous. (b) N.A. (iii) 6. 10.1956. (iv) (a) Ploughing once by planet junior cultivator. (b) Transplanting. (c) 2 lb./ac. (d) 3'×2'. (e) 1. (v) Nil. (vi) *Bori bharao*—93 (medium). (vii) Irrigated. (viii) 3 times weeding and mulching, 7 suckering and topping. (ix) 14.00". (x) 4.3.1957.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(2) on page 528.

4. GENERAL :

(i) Good. (ii) Leaf curl of mosaic. Aphid attack and Endrin 19.5% sprayed. (iii) Cured leaf yield. (iv) (a) 1955—1958. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Hail storm on 9.1.1957. (vii) Nil.

5. RESULTS :

(i) 1966 lb./ac. (ii) 230.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	1965	1908	1874	2163	1835	1954	2013	2018

S.E./mean = 94.1 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 57(3).****Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'M'.**

Object :— To find out the effect of fertilizing the G.M. crop and Tobacco crop as compared to farmer's practice of manuring with F.Y.M. on Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize + Rahar. (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) 27.9.1957. (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3'×2'. (e) 1. (v) Nil. (vi) *Bori Bharao* - 10. (vii) Irrigated. (viii) 1 weeding, topping and suckering. (ix) 49.28". (x) 13.2.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(2) on page 528.

4. GENERAL :

(i) Good. (ii) Leaf curl and mosaic. (iii) Cured leaf yield. (iv) (a) 1955—1958. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2334 lb./ac. (ii) 235.1 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	2243	2345	2574	2699	2508	2575	2654	2674

S E /mean = 104.1 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 58(3).****Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'M'.**

Object :-To find out the effect of fertilizing the G.M. crop and Tobacco crop as compared to farmer's practice of manuring with F.Y.M. on Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) 24.9.1958. (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3' x 2'. (e) 1. (v) Nil. (vi) D.P.--401. (vii) Irrigated. (viii) 2 weedings, topping and suckering. (ix) 7.0". (x) 18.2.1959.

2. TREATMENTS :

Same as in expt. no. 55(2) on page 528.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 36' x 68'. (b) 30' x 64'. (v) 3' x 2'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Leaf spot disease. (iii) Cured leaf yield. (iv) (a) 1955--1958. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2693 lb./ac. (ii) 266.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	2581	2675	2691	2811	2577	2604	2800	2806

S.E./mean = 108.9 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 57(4).****Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'M'.**

Object :-To study the effect of different fertilizers on the yield and quality of Hookah and Chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize+Rahar. (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) 24.9.1957. (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3' x 2'. (e) 1. (v) 50 C.L./ac. of F.Y.M. (vi) *Bori Bharao*—10. (vii) Irrigated. (viii) 1 weeding, topping and suckering. (ix) N.A. (x) 14.2.1958.

2. TREATMENTS :

8 sources of 50 lb./ac. of N : S₀=Control, S₁=A/S, S₂=A/C, S₃=A/S+A/C, S₄=Mustard cake, S₅=Nitrophoska green, S₆=C/A/N and S₇=Nitrophoska green+C/A/N.

As Nitrophoska green and C/A/N were not received in time for application, the last three treatments became control plots. So, there were four control plots in each replication.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 15' x 30'. (b) 9' x 26'. (v) 3' x 2'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Leaf curl and mosaic. (iii) Yield of cured leaf. (iv) (a) 1957--1961. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1861 lb./ac. (ii) 256.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄
Av. yield	1726	1834	1794	2195	2161

S.E. of S₀ mean = 52.4 lb./ac. ; S.E./mean (other than S₀) = 104.8 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 58(49).****Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'M'.**

Object :— To study the effect of different fertilizers on the yield and quality of Hookah and Chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) N.A. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) 5.10.1958. (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3'×2'. (e) 1. (v) N.A. (vi) D.P.—401. (vii) Irrigated. (viii) 2 weedings, topping and suckering. (ix) 7.0°. (x) 12.3.1959.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(4) on page 530.

5. RESULTS :

(i) 2844 lb./ac. (ii) 508.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇
Av. yield	2509	2667	2753	3010	2658	3201	2942	3008

S.E./mean = 207.5 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 59(3).****Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'M'.**

Object :— To study the effect of different fertilizers on the yield and quality of Hookah and Chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sannhemp*. (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) 22.9.1959. (iv) (a) 5 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3'×2'. (e) 1. (v) G.M. with *sannhemp*. (vi) D.P.—401. (vii) Irrigated. (viii) 4 weedings, topping and suckering. (ix) N.A. (x) 6.3.1960.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(4) on page 530.

5. RESULTS :

(i) 1265 lb./ac. (ii) 195.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇
Av. yield	1094	1244	1212	1179	1440	1349	1273	1330

S.E./mean = 79.6 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 57(5).****Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'M'.**

Object :— To study the effect of different doses of organic and inorganic manures on the yield and quality of Hookah and Chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize+Rahar. (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) 5.10.1957. (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3'×2'. (e) 1. (v) Nil. (vi) *Bori Bharao*—10. (vii) Irrigated. (viii) 1 weeding, topping and suckering. (ix) 49.3°. (x) 10.3.1958.

2. TREATMENTS :

Main-plot treatments :

3 levels of organic manures : $F_1=50$ C.L./ac. of F.Y.M., $F_2=35$ C.L./ac. of F.Y.M.+G.M. and $F_3=50$ C.L./ac. of F.Y.M.+G.M.

Sub-plot treatments :

All combinations of (1) and (2)+one control

(1) 3 levels of N : $N_1=50$, $N_2=100$ and $N_3=150$ lb./ac.

(2) 5 sources of N : $S_1=A/S$, $S_2=$ Uncomposted mustard cake, $S_3=\frac{1}{2} A/S+\frac{1}{2}$ uncomposted mustard cake, $S_4=$ Composted mustard cake and $S_5=\frac{1}{2} A/S+\frac{1}{2}$ composted mustard cake.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 16 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) $15' \times 30'$, (b) $9' \times 26'$. (v) $3' \times 2'$. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Leaf curl and mosaic. (iii) Cured leaf yield. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1816 lb./ac. (ii) (a) 491.1 lb./ac. (b) 272.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of cured leaf in lb./ac.

Control = 1513 lb./ac.

	S_1	S_2	S_3	S_4	S_5	Mean	F_1	F_2	F_3
N_1	1541	1690	1916	1771	1715	1727	1689	1731	1760
N_2	1794	1856	1947	1810	1804	1842	1817	1833	1876
N_3	1843	1949	1993	2022	1885	1938	1938	1973	1904
Mean	1726	1832	1952	1868	1801	1836	1815	1846	1847
F_1	1742	1673	2009	1818	1832				
F_2	1567	1935	1865	1937	1824				
F_3	1769	1888	1983	1848	1747				

S.E. of difference of two

1. F marginal means = 103.5 lb./ac. 5. F means at the same level N = 131.6 lb./ac.
2. N marginal means = 57.5 lb./ac. 6. S means at the same level of F = 128.5 lb./ac.
3. S marginal means = 74.2 lb./ac. 7. F means at the same level of S = 154.7 lb./ac.
4. N means at the same level of F = 99.6 lb./ac. S.E. of body of $S \times N$ table or control mean = 157.4 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 58(4).

Site :- Hookah and Chewing Tobacco Res. Stn., Fusa.

Type :- 'M'.

Object :- To study the effect of different doses of organic and inorganic manures on the yield and quality of Hookah and Chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sannhemp*. (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) 3.10.1958. (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) $3' \times 2'$. (e) 1. (v) Nil. (vi) D.P.—401. (vii) Irrigated. (viii) 2 weedings, topping and suckering. (ix) 7.1". (x) 5.3.1959.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(5) on page 531.

5. RESULTS :

- (i) 3010 lb./ac. (ii) (a) 1131.8 lb./ac. (b) 290.1 lb./ac. (iii) Only 'control vs. others' effect is highly significant.
 (iv) Av. yield of cured leaf in lb./ac.

Control = 2538 lb./ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	Mean	F ₁	F ₂	F ₃
N ₁	2848	2885	2867	2913	2994	2901	2829	2840	3035
N ₂	2885	3239	2989	3028	3068	3042	2944	3074	3107
N ₃	3015	3359	3157	3284	3103	3184	3155	3197	3199
Mean	2916	3161	3004	3075	3055	3042	2976	3037	3113
F ₁	2762	3063	2877	3136	3041				
F ₂	2930	3184	3002	3054	3016				
F ₃	3057	3235	3134	3034	3107				

S.E. of difference of two

1. F marginal means = 238.6 lb./ac. 5. F means at the same level of S = 268.1 lb./ac.
 2. S marginal means = 79.0 lb./ac. 6. N means at the same level of F = 105.9 lb./ac.
 3. N marginal means = 61.2 lb./ac. 7. F means at the same level of N = 253.8 lb./ac.
 4. S means at the same level of F = 136.7 lb./ac. S.E. of body of N×S table or control mean = 167.5 lb./ac.

Crop :- Tobacco (*Rabi*).

Ref :- C.T.R.L 59(4).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa.

Type :- 'M'.

Object :- To study the effect of different doses of organic and inorganic manures on the yield and quality of Hookah and Chewing Tobacco.

1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *Sannhemp*. (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) 20.9.1959.
 (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3'×2'. (e) 1. (v) Top dressing with A/S and mustard cake. (vi) D.P. - 401. (vii) Irrigated. (viii) 4 weedings, topping and suckering. (ix) 19.6". (x) 24.2.1960.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(5) on page 531.

5. RESULTS :

- (i) 1104 lb./ac. (ii) (a) 428.6 lb./ac. (b) 290.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of cured leaf in lb./ac.

Control = 1930 lb./ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	Mean	F ₁	F ₂	F ₃
N ₁	1785	2213	1908	2142	2094	2028	1792	2125	2168
N ₂	1994	2165	2088	2108	2089	2089	1834	2239	2194
N ₃	1819	2441	2127	2403	2368	2231	2087	2343	2264
Mean	1866	2273	2041	2218	2183	2116	1904	2236	2209
F ₁	1496	1977	1966	036	2046				
F ₂	2093	2474	2049	2362	2201				
F ₃	2009	2367	2108	2256	2303				

S.E. of difference of two

1. F marginal means = 90.3 lb./ac. 5. F means at the same level of S = 152.3 lb./ac.
 2. S marginal means = 79.2 lb./ac. 6. N means at the same level of F = 106.2 lb./ac.
 3. N marginal means = 61.3 lb./ac. 7. F means at the same level of N = 125.2 lb./ac.
 4. S means at the same level of F = 137.1 lb./ac. S.E. of body of S×N table or control mean = 167.9 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 57(6).****Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'M'.**

Object :—To study the effect of deep placement of fertilizers on the yield and quality of Hookah and Chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sannhemp* (G.M.). (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) 8.10.1957. (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3'×2'. (e) One. (v) G.M. with *sannhemp*. (vi) *Bori bharao*—10. (vii) Irrigated. (viii) Weeding, topping and suckering. (ix) 49.3%. (x) 12.3.1958.

2. TREATMENTS :

All combinations of (1) and (2)

2 doses of fertilizers : $F_1=100$ lb./ac. of N ; $\frac{1}{2}$ as A/S + $\frac{1}{2}$ as mustard cake and $F_2=100$ lb./ac. of N as A/S + 100 lb./ac. of P_2O_5 as Super + 60 lb./ac. of K_2O as Pot. Sul.

(2) 3 methods of application of fertilizers : $M_1=$ Mustard cake to be applied before planting and A/S to be applied one month after planting, $M_2=$ Fertilizers to be applied at a depth of 6 $\frac{1}{2}$ " in 4 holes at a distance of 4" from the plant and $M_3=$ $\frac{1}{2}$ of the fertilizers to be broadcasted and $\frac{1}{2}$ to be applied as in M_2 .

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 15'×30'. (b) 9'×26'. (v) 3'×2'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Leaf curl and mosaic. (iii) Cured leaf yield. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2474 lb./ac. (ii) 230.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of cured leaf in lb./ac.

	M_1	M_2	M_3	Mean
F_1	2409	2455	2364	2409
F_2	2426	2790	2399	2538
Mean	2418	2623	2382	2474

S.E. of F marginal mean = 66.6 lb./ac.
 S.E. of M marginal mean = 81.6 lb./ac.
 S.E. of body of table = 115.4 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 58(5).****Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'M'.**

Object :—To study the effect of deep placement of fertilizers on the yield and quality of Hookah and Chewing Tobacco.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) *Sannhemp* (G.M.). (c) Nil. (ii) (a) Indo gangetic alluvium calcareous. (b) N.A. (iii) 29.9.1958. (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3' x 2'. (e) One (v) G.M. with *sannhemp*. (vi) D.P.—401. (vii) Irrigated. (viii) 1 weeding, topping and suckering. (ix) 7.0%. (x) 27.2.1959.

2. TREATMENTS to 4. GENERAL:

Same as in expt. no. 57(6) on page 534.

5. RESULTS:

(i) 3152 lb./ac. (ii) 247.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of cured leaf in lb./ac.

	M ₁	M ₂	M ₃	Mean
F ₁	3060	3131	3170	3120
F ₂	2997	3252	3304	3184
Mean	3028	3191	3237	3152

S.E. of F marginal mean = 71.5 lb./ac.
 S.E. of M marginal mean = 87.6 lb./ac.
 S.E. of body of table = 123.9 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 59(5).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa.

Type :- 'M'.

Object :- To study the effect of deep placement of fertilizers on the yield and quality of Hookah and Chewing Tobacco.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) *Sannhemp* (G.M.), (c) Nil. (ii) (a) Indo gangetic alluvium calcareous. (b) N.A. (iii) 29.9.1959. (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3' x 2'. (e) One. (v) G.M. with *sannhemp*. (vi) D.P.—401. (vii) Irrigated. (viii) 3 weedings, topping and suckering. (ix) 19.3%. (x) 26.2.1960.

2. TREATMENTS to 4. GENERAL:

Same as in expt. no. 57(6) on page 534.

5. RESULTS:

(i) 2859 lb./ac. (ii) 265.8 lb./ac. (iii) Only main effect of F is significant. (iv) Av. yield of cured leaf in lb./ac.

	M ₁	M ₂	M ₃	Mean
F ₁	2610	2760	2787	2719
F ₂	2910	3056	3029	2998
Mean	2760	2908	2908	2859

S.E. of F marginal mean = 76.7 lb./ac.
 S.E. of M marginal mean = 94.0 lb./ac.
 S.E. of body of table = 132.9 lb./ac.

Crop :- Tobacco (*Rabi*).

Ref :- C.T.R.I. 55(3).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'M'.

Object :- To determine the effect of organic and inorganic manures on the yield and quality of Hookah and Chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Maize+Rahar—Tobacco. (b) Maize+Rahar. (ii) (a) Gangetic alluvium calcareous. (b) N.A. (iii) 16.9.1955. (iv) (a) 1 ploughing by planet Junior cultivator. (b) Transplanting. (c) 2 lb./ac. (d) 3'×2'. (e) 1. (v) Nil. (vi) *Bori bharao*—93 (medium). (vii) Irrigated. (viii) 4 times weeding and mulching, 9 suckering and topping. (ix) 6.11". (x) 14.2.1956.

2. TREATMENTS :

Main-plot treatments :

2 types of basal dressing : B₁=F.Y.M. and B₂=G.M. (*Sannhemp*).

Sub-plot treatments :

9 sources of N : S₀=Control (no nitrogen), S₁=A/S, S₂=A/S/N, S₃=C/N, S₄=Stera meal, S₅=Blood meal, S₆=Urea, S₇=Horn and hoof meal and S₈=Mustard cake. Levels of N is not available.

3. DESIGN :

(i) Split plot. (ii) (a) 2 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 21'×42'. (b) 15'×38'. (v) 3'×2'. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Leaf curl and mosaic. (iii) Cured leaf weight. (iv) (a) 1955—1959. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2038 lb./ac. (ii) (a) 586.8 lb./ac. (b) 266.1 lb./ac. (iii) Main effect of S is highly significant and that of B is significant. (iv) Av. yield of cured leaf in lb./ac.

	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	Mean
B ₁	1979	2236	2349	2465	2496	2176	2055	2144	2092	2221
B ₂	1742	2051	1880	1959	1841	1775	1858	1615	1971	1855
Mean	1861	2144	2115	2212	2169	1976	1957	1880	2032	2038

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. B marginal means | = 112.9 lb./ac. |
| 2. S marginal means | = 108.6 lb./ac. |
| 3. S means at the same level of B | = 153.6 lb./ac. |
| 4. B means at the same level of S | = 183.7 lb./ac. |

Crop :- Tobacco (*Rabi*).

Ref :- C.T.R.I. 56(4).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'M'.

Object :- To determine the effect of organic and inorganic manures on the yield and quality of Hookah and Chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Maize and Rahar mixture—Tobacco. (b) Maize and Rahar mixture. (c) Nil. (ii) (a) Gangetic alluvium calcareous. (b) N.A. (iii) 3.10.1956. (iv) (a) 1 ploughing by planet junior cultivator. (b) Transplanting. (c) 2 lb./ac. (d) 3'×2'. (e) 1. (v) Nil. (vi) *Bori bharao*—93 (medium). (vii) Irrigated. (viii) 3 times weeding and mulching, topping and suckering. (ix) 14.00". (x) 1.3.1957.

2. TREATMENTS :

Same as in expt. no. 55(3) above.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 15' x 30'. (b) 9' x 26'. (v) 3' x 2'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Leaf-curl and mosaic. (iii) Yield of cured leaf. (iv) (a) 1955 - 1959. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Hail storm in January, 1957. (vii) Nil.

5. RESULTS :

(i) 1613 lb./ac. (ii) (a) 396.7 lb./ac. (b) 230.4 lb./ac. (iii) Only main effect of S is highly significant. (iv) Av. yield of cured leaf in lb./ac.

	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	Mean
B ₁	1403	1518	1643	1659	1731	1761	1744	1792	1687	1660
B ₂	1412	1503	1549	1599	1702	1710	1320	1645	1659	1567
Mean	1408	1511	1596	1629	1717	1736	1532	1719	1673	1613

S.E. of difference of two

1. B marginal means = 76.3 lb./ac.
2. S marginal means = 94.1 lb./ac.
3. S means at the same level of B = 133.0 lb./ac.
4. B means at the same level of S = 146.8 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 57(7).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'M'.

Object :- To determine the effect of different organic and inorganic manures on the yield and quality of Hookah and Chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) Nil. (ii) (a) Indo-genetic alluvium calcareous. (b) N.A. (iii) 30.9.1957. (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3' x 2'. (e) 1. (v) Nil. (vi) Bari bharao-10. (vii) Irrigated. (viii) 1 weeding, topping and suckering. (ix) 49.28%. (x) 2.3.1958.

2. TREATMENTS :

Same as in expt. no. 55(3) on page 536.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 15' x 30'. (b) 9' x 26'. (v) 3' x 2'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Leaf curl and mosaic. (iii) Cured leaf yield. (iv) (a) 1955-1959. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2213 lb./ac. (ii) (a) 538.3 lb./ac. (b) 292.9 lb./ac. (iii) Only main effect of S is highly significant. (iv) Av. yield of cured leaf in lb./ac.

	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	Mean
B ₁	2102	2390	2230	2211	2751	2574	2098	2318	2305	2331
B ₂	1873	1999	1953	2044	2234	2424	2161	2210	1945	2094
Mean	1988	2195	2092	2128	2493	2499	2130	2264	2125	2213

S.E. of difference of two

1. B marginal means = 103.6 lb./ac.
2. S marginal means = 119.6 lb./ac.
3. S means at the same level of B = 169.1 lb./ac.
4. B means at the same level of S = 165.7 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 58(6).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'M'.

Object :-To study the effect of different organic and inorganic manures on yield and quality of Hookah and Chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatment. (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) N.A. (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3' x 2'. (e) 1. (v) Nil. (vi) D.P.—401. (vii) Irrigated. (viii) 2 weedings, topping and suckering. (ix) 7.0%. (x) 1.3.1959.

2. TREATMENTS :

Same as in expt. no. 55(3) on page 536.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 15' x 30'. (b) 9' x 26'. (v) 3' x 2'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Leaf curl and mosaic. (iii) Cured leaf yield. (iv) (a) 1955—1959. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2155 lb./ac. (ii) (a) 395.2 lb./ac. (b) 264.4 lb./ac. (iii) Main effect of S alone is highly significant. (iv) Av. yield of cured leaf in lb./ac.

	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	Mean
B ₁	2023	2372	2312	2252	2684	2444	2130	2682	2386	2365
B ₂	1780	1834	2014	2087	1906	1904	1802	2144	2036	1945
Mean	1902	2103	2163	2170	2295	2174	1966	2413	2211	2155

S.E. of difference of two

1. B marginal means = 76.1 lb./ac.
2. S marginal means = 107.9 lb./ac.
3. S means at the same level of B = 152.7 lb./ac.
4. B means at the same level of S = 162.7 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 59(6).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'M'.

Object :- To study the effect of different organic and inorganic manures on the yield and quality of Hookah and Chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) 21.9.1959. (iv) (a) 3 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3' x 2'. (e) 1. (v) Nil. (vi) D.P.—401. (vii) Irrigated. (viii) 6 weedings. (ix) 19.27". (x) 29.2.1960.

2. TREATMENTS :

Same as in expt. no. 55(3) on page 536.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 15' x 30'. (b) 9' x 26'. (v) 3' x 2'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Leaf curl and mosaic. (iii) Cured leaf yield. (iv) (a) 1955—1959. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1170 lb./ac. (ii) (a) 138.5 lb./ac. (b) 135.0 lb./ac. (iii) Main effect of B is significant and that of S is highly significant. (iv) Av. yield of cured leaf in lb./ac.

	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	Mean
B ₁	1212	1289	1288	1255	1376	1338	1293	1340	1374	1307
B ₂	917	901	1006	1098	1138	1082	980	1051	1112	1032
Mean	1065	1095	1147	1177	1257	1210	1137	1196	1244	1170

S.E. of difference of two

- | | | |
|-----------------------------------|---|--------------|
| 1. B marginal means | = | 26.7 lb./ac. |
| 2. S marginal means | = | 55.1 lb./ac. |
| 3. S means at the same level of B | = | 77.9 lb./ac. |
| 4. B means at the same level of S | = | 78.2 lb./ac. |

Crop :- Tobacco.

Ref :- C.T.R.I. 54(13).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.

Object :- To compare the effect of C/N, A/S and A/S/N on the yield and quality of Cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Tobacco. (b) Tobacco. (c) N.A. (ii) (a) Deep black soil. (b) N.A. (iii) 17.11.1954. (iv) (a) 6 ploughings with country plough. (b) to (e) N.A. (v) Nil. (vi) Chatham. (vii) Unirrigated. (viii) One interculture with planet junior and three hand weedings. (ix) 6.24". (x) 24.1.1955 to 10.3.1955.

2. TREATMENTS :

All combinations of (1) and (2)+control (2 plots)

(1) 4 sources of N : $S_1=A/S$, $S_2=C/N$, $S_3=A/S/N$ and $S_4=Urea$.

(2) 2 levels of N : $N_1=20$ and $N_2=40$ lb./ac.

Fertilizers were applied in furrows, opened by plough, a week before transplanting

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) $22' \times 38'6''$. (b) $16'6'' \times 33'$. (v) $2'9'' \times 2'9''$. (vi) Yes.

GENERAL :

(i) Normal. (ii) Nil. (iii) Green, cured leaf weight and the proportion of different grades of cured leaf. Counts of flowerheads per plant. Dry weight of seed capsules and stalk. (iv) to (vii) Nil.

5. RESULTS :

(i) 4168 lb./ac. (ii) 690.0 lb./ac. (iii) 'Control vs. others' effect alone is highly significant. (iv) Av. yield of green leaf in lb./ac.

Control = 3422 lb./ac.

	S_1	S_2	S_3	S_4	Mean
N_1	4215	4475	4784	4131	4401
N_2	4273	4528	3867	4564	4308
Mean	4244	4502	4326	4348	4355

S.E. of S marginal mean = 243.9 lb./ac.

S.E. of N marginal mean = 172.5 lb./ac.

S.E. of body of table = 345.0 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(14).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.

Object :-To find out whether soil pH and availability of manures under local conditions are influenced by application of sulphur on the yield of Cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Tobacco. (b) Tobacco. (c) Nil. (ii) (a) Deep black soil. (b) Nil. (iii) 19.10.1954. (iv) (a) 4 ploughings with country plough. (b) to (e) N.A. (v) Nil. (vi) Harrison special. (vii) Unirrigated. (viii) 3 intercultures with planet junior and 2 hand weedings. (ix) 6.24". (x) 5.1.1955 to 10.2.1955.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.

(2) 3 sources of 50 lb./ac. of P_2O_5 : $P_0=No P_2O_5$, $P_1=Kudada$ phosphate, $P_2=Super$.

(3) 2 levels of Sulphur applied in 1953—1954 : $S_0=0$ and $S_1=560$ lb./ac.

3. DESIGN :

(i) $3^2 \times 2$ partially confd. (ii) (a) 6 plots/block and 3 blocks/replication. (b) N.A. (iii) 4. (iv) (a) $16'6'' \times 44'$. (b) $11'0'' \times 38'6''$. (v) $2'9'' \times 2'9''$. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Green leaf yield. (iv) to (vii) Nil.

5. RESULTS :

(i) 6784 lb./ac. (ii) 569.0 lb./ac. (iii) Main effect of N is highly significant and interaction $N \times P$ is significant. (iv) Av. yield of green leaf in lb./ac.

	N ₀	N ₁	N ₂	Mean	P ₀	P ₁	P ₂
S ₀	5318	7277	8027	6874	6905	6786	6931
S ₁	5325	7016	8277	6873	6926	6956	6737
Mean	5322	7147	8152	6874	6916	6871	6834
P ₀	5508	7325	7914				
P ₁	5287	6979	8348				
P ₂	5170	7137	8195				

S.E. of N or P marginal mean = 116.2 lb./ac.
 S.E. of S marginal mean = 94.8 lb./ac.
 S.E. of body of S×N or S×P table = 164.3 lb./ac.
 S.E. of body of N×P table = 201.2 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(15).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.

Object :- To study the effect of time of application of A/S on cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Continuous tobacco. (b) Tobacco. (c) Nil. (ii) (a) Deep black soil. (b) N.A. (iii) 16.10.1954.
 (iv) (a) 6 ploughings with country plough. (b) to (e) N.A. (v) Nil. (vi) Chatham. (vii) Unirrigated.
 (viii) 2 intercultures with planet junior and 1 hand weeding. (ix) 6.24". (x) 9.1.1955 to 22.2.1955.

2. TREATMENTS :

All combinations of (1) and (2)+control (2 plots)

(1) 2 levels of N as A/S : N₁=20 and N₂=40 lb./ac.

(2) 2 times of application of N : T₁=Early application during August and T₂=Late application a fortnight before transplanting.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 22'×49'6". (b) 16'6"×44'. (v) 2'9"×2'9". (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Green leaf yield. (iv) to (vii) Nil.

5. RESULTS :

(i) 4103 lb./ac. (ii) 611.0 lb./ac. (iii) Main effect of N and "control vs. others" are highly significant. (iv) Av. yield of green leaf in lb./ac.

Control = 3631 lb./ac.

	T ₁	T ₂	Mean
N ₁	4261	4017	4139
N ₂	4446	4633	4540
Mean	4353	4325	4339

S.E. of any marginal mean or control mean = 176.4 lb./ac.
 S.E. of body of table = 249.5 lb./ac.

Crop :- Tobacco.**Ref :- C.T.R.I. 54(16).****Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.**

Object :— To study the effect of fertilizers on chemical composition of flue-cured Virginia Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) 20 lb./ac. of N as A/S. (ii) (a) Deep black soil. (b) N.A. (iii) 5.11.1954.
 (iv) (a) 4 to 5 ploughings. (b) Transplanting. (c) N.A. (d) 33" × 33". (e) N.A. (v) Nil. (vi) Chatham
 (vii) Unirrigated. (viii) 2 interculturings with hoe. Weeding and removal of orobanche as and when
 necessary. (ix) 0.58". (x) 12.1.1955 to 1.3.1955.

2. TREATMENTS :**Main-plot treatments :**

5 manurial treatments: M_0 =Control, M_1 =Pot. sul. at 50 lb./ac. of K_2O , M_2 =Super at 50 lb./ac. of P_2O_5 , $M_3=M_1+M_2$ and M_4 =F.Y.M. at 6000 lb./ac.

Sub-plot treatments :

4 sources of 20 lb./ac. of N: S_0 =Control, S_1 =Blood meal, S_2 =Horn hoof meal and S_3 =Stera meal.
 N applied as top dressing.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 22' × 13½'. (b) 16½' × 8½'. (v) 2'9" × 2'9". (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of green leaf and bright leaf. (iv) (a) 1954—1955. (b) No. (c) Nil.
 (v) to (vii) Nil.

5. RESULTS :

(i) 3745 lb./ac. (ii) (a) 1549.4 lb./ac. (b) 1067.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of green leaf in lb./ac.

	M_0	M_1	M_2	M_3	M_4	Mean
S_0	3659	4092	3589	3416	3386	3628
S_1	3637	4265	3355	3624	4490	3874
S_2	3258	4566	4186	3955	3658	3925
S_3	3526	4028	3103	3476	3630	3553
Mean	3520	4238	3558	3618	3791	3745

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. M marginal means | = 547.8 lb./ac. |
| 2. S marginal means | = 337.9 lb./ac. |
| 3. S means at the same level of M | = 755.2 lb./ac. |
| 4. M means at the same level of S | = 853.2 lb./ac. |

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 55(4).****Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.**

Object :— To study the effect of fertilizers on chemical composition of flue-cured Virginia Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Tobacco. (b) Tobacco. (c) 20 lb./ac. of N as A/S by broadcast. (ii) (a) Deep black soil. (b) N.A. (iii) 12.11.1955. (iv) (a) 4 ploughings with country plough. (b) Transplanted. (c) N.A. (d) 33" × 33". (e) 1. (v) As per treatments. (vi) Harrison (medium). (vii) Unirrigated. (viii) 3 hand weedings, 1 interculturings with planet junior hoe and 1 with country plough. (ix) 0.05". (ix) 21.1.1956 to 7.3.1956.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(16) above.

5. RESULTS :

(i) 4198 lb./ac. (ii) (a) 1048.0 lb./ac. (b) 535.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of green leaf in lb./ac.

	M ₀	M ₁	M ₂	M ₃	M ₄	Mean
S ₀	3639	2846	4313	3292	3667	3551
S ₁	4300	4180	4515	4431	4287	4343
S ₂	4344	4274	4644	5017	4402	4536
S ₃	4219	4072	4498	4337	4678	4361
Mean	4125	3843	4493	4269	4259	4198

S.E. of difference of two

1. M marginal means = 370.8 lb./ac.
2. S marginal means = 169.4 lb./ac.
3. S means at the same level of M = 378.8 lb./ac.
4. M means at the same level of S = 495.0 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(17).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.

Object :- To investigate the influence of fertilizers on the yield of flue-cured Virginia Tobacco.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Tobacco. (c) 20 lb./ac. of N as A/S. (ii) (a) Deep black soil. (b) N.A. (iii) 2.11.1954. (iv) (a) 4 to 5 ploughings. (b) Transplanting. (c) N.A. (d) 33"×33". (e) N.A. (v) Nil. (vi) *Chatham*. (vii) Unirrigated. (viii) 2 interculturings with hoe. Weeding and removal of orobanche as and when necessary. (ix) 0 53". (x) 18.1.1955 to 28.2.1955.

2. TREATMENTS :

Main-plot treatments :

5 manurial treatments : M₀=Control, M₁=Pot. Sul. at 50 lb./ac. of K₂O, M₂=Super at 50 lb./ac. of P₂O₅, M₃=M₁+M₂ and M₄=F.Y.M. at 6000 lb./ac.

Sub-plot treatments :

5 sources of 20 lb./ac. of N as top dressing : N₀=Control, N₁=A/S, N₂=C/N, N₃=A/S/N and N₄=Urea.

F.Y.M. broadcast one month before transplanting, other fertilizers applied in 6" to 8" deep in furrows a fortnight before transplanting.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 22'×13½'. (b) 16½'×8½'. (v) 2'9"×2'9". (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of green leaf and bright leaf, total bright leaf equivalent and number of leaves per pound. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 5039 lb./ac. (ii) (a) 1549.2 lb./ac. (b) 1070.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of green leaf in lb./ac.

	N ₀	N ₁	N ₂	N ₃	N ₄	Mean
M ₀	4523	4650	4742	5046	4874	4667
M ₁	5314	4362	5642	5440	5238	5205
M ₂	4352	5558	5002	4714	4486	4822
M ₃	6054	5648	5350	5062	5158	5454
M ₄	4752	4586	5590	4602	5210	4948
Mean	5005	4961	5265	4973	4993	5039

S.E. of difference of two

1. M marginal means = 400.0 lb./ac.
2. N marginal means = 276.5 lb./ac.
3. N means at the same level of M = 618.2 lb./ac.
4. M means at the same level of N = 682.5 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 55(5).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.

Object :-To investigate the influence of fertilizers on the yield of flue-cured Virginia Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Tobacco. (b) Tobacco. (c) 20 lb./ac. of N as A/S. (ii) (a) Deep black soil. (b) N.A. (iii) 12.11.1955. (iv) (a) 4 ploughings with country plough. (b) Transplanting. (c) N.A. (d) 33"×33". (e) 1. (v) As per treatments. (vi) Harrison (medium). (vii) Unirrigated. (viii) 3 hand weedings, 1 interculturing with planet junior hoe. (ix) 0.05". (x) 21.1.1956 to 7.3.1956.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(17) on Page 543.

5. RESULTS :

(i) 4724 lb./ac. (ii) (a) 809.2 lb./ac. (b) 623.1 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of green leaf in lb./ac.

	N ₀	N ₁	N ₂	N ₃	N ₄	Mean
M ₀	4130	5371	4570	4366	4085	4504
M ₁	4486	4481	5450	4260	5054	4746
M ₂	4210	4740	4776	4318	4754	4560
M ₃	4726	4860	5374	4313	4842	4827
M ₄	4226	5304	5414	4639	5342	4985
Mean	4356	4951	5117	4379	4819	4724

S.E. of difference of two

1. M marginal means = 208.9 lb./ac.
2. S marginal means = 160.9 lb./ac.
3. S means at the same level of M = 359.7 lb./ac.
4. M means at the same level of S = 383.6 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 56(5).****Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.**

Object :- To investigate the influence of fertilizers on the yield of flue cured Virginia Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Tobacco. (b) Tobacco. (c) N.A. (ii) (a) Deep black soil. (b) N.A. (iii) 8.11.1956.
 (iv) (a) 4 ploughings with country plough. (b) Transplanted. (c) N.A. (d) 33"×33". (e) 1 (v) As per
 treatments (vi) Harrison special (medium). (vii) Unirrigated. (viii) 2 hand weedings, interculturing, 1
 with planet junior hoe and 1 with country plough. (ix) 1.4". (x) 25.1.1957 to 6.3.1957.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no 54(17) on page 543.

5. RESULTS :

(i) 5176 lb./ac. (ii) (a) 863.3 lb./ac. (b) 601.0 lb./ac. (iii) Main effect of N alone is significant. (iv) Av.
 yield of green leaf in lb./ac.

	N ₀	N ₁	N ₂	N ₃	N ₄	Mean
M ₀	5218	5139	5785	5119	5002	5253
M ₁	4751	5260	5229	5278	4914	5086
M ₂	4630	4879	5168	5099	5051	4966
M ₃	4952	4945	5633	5743	5353	5325
M ₄	5121	5159	5430	5525	5018	5251
Mean	4934	5076	5449	5353	5068	5176

S.E. of difference of two

1. M marginal means = 222.9 lb./ac.
2. N marginal means = 155.2 lb./ac.
3. N means at the same level of M = 347.0 lb./ac.
4. M means at the same level of N = 382.1 lb./ac.

Crop :- Tobacco.**Ref :- C.T.R.I. 54(18).****Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.**

Object :- To find out the effect of F.Y.M. charged with hyperphosphate on the yield and quality of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Tobacco. (b) Tobacco. (c) Nil. (ii) (a) Deep black soil. (b) N.A. (iii) 16.9.1954. (iv)
 (a) 6 ploughings with country plough. (b) to (e) N.A. (v) 20 lb./ac. of N as A/S by broadcast. (vi) Chatham.
 (vii) Unirrigated. (viii) 2 interculturings with planet junior hoe and 1 hand weeding. (ix) 6.24". (x) 9.1.1955
 to 22.2.1955.

2. TREATMENTS :

M₀=Control (no manure), M₁=3 tons/ac. of F.Y.M., M₂=50 lb./ac. of P₂O₅ as hyperphosphate charged in
 M₁, M₃=100 lb./ac. of P₂O₅ as hyperphosphate charged in M₁, M₄=50 lb./ac. of P₂O₅ as hyperphos-
 phate+M₁, M₅=100 lb./ac. of P₂O₅ as hyperphosphate+M₁, M₆=50 lb./ac. of ⁴P₂O₅ as Super+M₁, and
 M₇=100 lb./ac. of P₂O₅ as Super+M₁.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 22'×44". (b) 16'6"×38'6". (v) 2'9"×2'9". (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Green leaf yield. (iv) to (vii) Nil.

5. RESULTS :

(i) 5441 lb./ac. (ii) 764.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of green leaf in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇
Av. yield	5566	4999	5548	5523	5457	5323	5305	5806

S.E./mean = 311.9 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 57(8).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.

Object :-To compare the response of cigarette tobacco to different nitrogenous fertilizers with and without K and P.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Tobacco. (b) Tobacco. (c) A/S at 20 lb./ac. of N. (ii) (a) Deep black soil. (b) N.A. (iii) 19.11.1957. (iv) 1 ploughing with country plough. (b) Transplanting. (c) N.A. (d) 33" × 33". (e) 1. (v) No. (vi) Harrison special (medium). (vii) Unirrigated. (viii) Gap filling, 3 intercures with planet junior hoe and 2 hand weedings. (ix) 2.65". (x) 5 pickings from 11.2.1958 to 17.3.1958.

2. TREATMENTS :

All combinations of (1) and (2)+control (2 plots)

(1) 5 sources of 20 lb./ac. of N: S₁=A/S, S₂=C/N, S₃=Urea, S₄=C/A/N and S₅=Nitrophoska green.

(2) 2 levels of manures: M₀=0 and M₁=100 lb./ac. of P₂O₅+50 lb./ac. of K₂O.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) 44.0' × 13.75'. (b) 38.5' × 8.25'. (v) 2'9" × 2'9". (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Incidence of aphids. Spraying was done with Basudin at 2 ozs./10 gallons of water 5 weeks after planting. Orobanche removed and burnt. (iii) Yield of green leaf and total bright leaf equivalent. (iv) to (vii) Nil.

5. RESULTS :

(i) 6344 lb./ac. (ii) 571.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of green leaf in lb./ac.

Control = 6614 lb./ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	Mean
M ₀	6601	6561	5972	6640	6038	6362
M ₁	6041	6129	6374	6354	6138	6207
Mean	6321	6345	6173	6497	6088	6285

S.E. of S marginal mean or control mean = 165.0 lb./ac.

S.E. of M marginal mean = 104.4 lb./ac.

S.E. of body of table = 233.4 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 55(6).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.

Object :-To study the effect of applying fertilizers in holes around plants under deep ploughing conditions on the yield of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Tobacco. (b) Tobacco. (c) 20 lb./ac. of N as A/S was applied in ploughed furrows. (ii) (a) Deep black soil. (b) N.A. (iii) 2.12.1955. (iv) (a) 4 deep ploughings with country plough. (b) Transplanting. (c) N.A. (d) 33"×33". (e) 1. (v) Nil. (vi) Chatham. (vii) Unirrigated. (viii) 3 hand weedings and 2 intercultures with planet junior hoe. (ix) Nil. (x) 9.2.1956 ; 20.2.1956 ; 5.3.1956 and 15.3.1956.

2. TREATMENTS :

6 manurial treatments : T₀=Control, T₁=20 lb./ac. of N, T₂=20 lb./ac. of N+100 lb./ac. of P₂O₅, T₃=20 lb./ac. of N+100 lb./ac. of K₂O, T₄=20 lb./ac. of N+20 lb./ac. of MgO, T₅=20 lb./ac. of N half as A/S and half as A/S/N.
N applied as A/S, P₂O₅ as Super and K₂O as Pot. Sul.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 11'×22'. (b) 5'6"×16'6". (v) 2'9"×2'9". (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of green leaf. (iv) (a) 1955—contd. (b) N.A. (c) Nil. (v) and (vi) Nil. (vii) The planting was to be delayed as deep ploughing could not be done till late due to heavy rains. The growth of plants was also not uniform.

5. RESULTS :

(i) 2665 lb./ac. (ii) 1105.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of green leaf in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Av. yield	1542	2571	2958	3487	2926	2505

S.E./mean = 553.4 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 57(9).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.

Object :-To study the effect of applying fertilizers in holes around plants under deep ploughing conditions on flue cured Virginia Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Tobacco. (b) Tobacco. (c) As per treatments. (ii) (a) Deep black soil. (b) N.A. (iii) 29.10.1957. (iv) (a) 1 ploughing. (b) Transplanting. (c) N.A. (d) 33"×33". (e) 1. (v) Nil. (vi) Harrison special (medium). (vii) Unirrigated. (viii) Gap filling, 1 hand weeding and 3 intercultures with planet junior hoe. (ix) 2.65". (x) 6 pickings from 8.1.1958 to 24.2.1958.

2. TREATMENTS :

Same as in expt. no. 55(6) above.

Fertilizers applied in 6" deep in 4 holes around the plants on 28, 29 Oct. 1957. Before putting the fertilizers small quantities of F.Y.M. were put in the holes. Pot watering of holes followed the application of fertilizers.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 16'6"×38'6". (b) 11'×33'. (v) 2'9"×2'9". (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Small attack of caterpillars controlled by spraying DDT at 2 ozs/10 gallons water. Mild attack of aphids controlled by spraying Basudin. (iii) Yield of green leaf. (iv) (a) 1955—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 8556 lb./ac. (ii) 690.9 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of green leaf in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Av. yield	7346	8719	9376	8904	8852	8137

S.E./mean = 345.4 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 55(7).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.

Object :-To study the effect of applying fertilizers in holes around plants under normal ploughing conditions on cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Tobacco. (b) Tobacco. (c) 20 lb./ac. of N as A/S was applied in ploughed furrows. (ii) (a) Deep black soil. (b) N.A. (iii) 2.12.1955. (iv) (a) 4 normal ploughings with country plough. (b) Transplanting. (c) N.A. (d) 33"×33". (e) 1. (v) Nil. (vi) *Chatham*. (vii) Unirrigated. (viii) 3 hand weedings and 2 intercultures with planet junior hoe. (ix) Nil. (x) 9.2.1956; 20.2.1956; 5.3.1956 and 15.3.1956.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(6) on page 547.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of green leaf. (iv) to (vii) Nil.

5. RESULTS :

(i) 4318 lb./ac. (ii) 886.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of green leaf in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Av. yield	4317	4315	4487	4299	3667	4820

S.E./mean = 443.2 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 56(6).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.

Object :-To study the effect of applying manures in holes around plants under tractor ploughing conditions on cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Tobacco. (b) Tobacco. (c) N.A. (ii) (a) Heavy black soil. (b) N.A. (iii) 19.11.1956. (iv) (a) Deep tractor ploughing. (b) Transplanting. (c) N.A. (d) 33"×33". (e) 1. (v) 100 lb./ac. of A/S applied before transplanting in ploughed furrows. (vi) Harrison special (medium). (vii) Unirrigated. (viii) 2 intercultures with planet junior hoe and 1 hand weeding. (ix) 1.44". (x) 6 pickings from 25.1.1957 to 1.3.1957.

2. TREATMENTS :

6 manurial treatments : T₀=Control, T₁=20 lb./ac. of N as A/S, T₂=20 lb./ac. of N as A/S+100 lb./ac. of P₂O₅ as Super, T₃=20 lb./ac.+of N as A/S+100 lb./ac. of K₂O as Pot. Sul., T₄=20 lb./ac. of N as A/S+100 lb./ac. of P₂O₅ as Super+100 lb./ac. of K₂O as Pot Sul.+20 lb./ac. of Mg. as Mg. Sul. and T₅=20 lb./ac. of N as Urea.

Manures placed in 6" deep holes around the plants.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 16'6"×38'6". (b) 11'×33'. (v) 2'9"×2'9". (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Green leaf yield. (iv) to (vii) Nil.

5. RESULTS :

(i) 6634 lb./ac. (ii) 645.2 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of green leaf in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Av. yield	5580	7050	7002	6792	7134	6248

S.E./mean = 322.6 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 56(7).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.

Object :-To study the effect of applying manures in holes around plants under normal ploughing conditions on the yield of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Tobacco. (b) Tobacco. (c) N.A. (ii) (a) Heavy black soil. (b) N.A. (iii) N.A./19.11.1956. (iv) (a) Normal ploughings. (b) Transplanting. (c) N.A. (d) 33"×33". (e) 1. (v) 100 lb./ac. of A/S applied before transplanting in plough furrows. (vi) Harrison special. (vii) Unirrigated. (viii) 2 interculturalures. (ix) 1.44". (x) 6 pickings from 25.1.1957 to 11.3.1957.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(6) on page 548.

5. RESULTS :

(i) 5584 lb./ac. (ii) 621.2 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of green leaf in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Av. yield	4680	5915	5840	6294	5487	5289

S.E./mean = 310.6 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 57(10).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.

Object :-To study the effect of applying manures in holes around plants under normal ploughing conditions on the yield of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Tobacco. (b) Tobacco. (c) As per treatments. (ii) (a) Deep black soil. (b) N.A. (iii) N.A./29.10.1957. (iv) (a) 3 ploughings with country plough, 2 harrowings with blade harrow. (b) Transplanting. (c) N.A. (d) 33"×33". (e) 1 seedling/holes. (v) Nil. (vi) Harrison special (medium). (vii) Unirrigated. (viii) Gap filling, 1 hand weeding and 3 interculturalures with planet junior hoe. (ix) 2.65". (x) 6 pickings from 11.1.1958 to 24.2.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(6) on page 548.

Fertilizers applied in 6" deep 4 holes around the plants on 25, 26 and 28 October. A small quantity F.Y.M. was first put into the holes.

4. GENERAL :

(i) Normal. (ii) Mild attack of leaf eating caterpillars in early December controlled by spraying DDT at 2 ozs./10 gallons. Incidence of aphids controlled by spraying Basudin at 2 ozs./10 gallons. (iii) Yield of green leaf and total bright leaf equivalent. (iv) (a) 1955—contd. (b) Yes. (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 6872 lb./ac. (ii) 646.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of green leaf in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Av. yield	6129	6777	7066	7220	7207	6830

S.E./mean = 323.2 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 56(8).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.

Object :-To compare the effect of A/S and Urea as a source of N on the yield and quality of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Tobacco. (b) Tobacco. (c) Nil. (ii) (a) Heavy black soil. (b) N.A. (iii) N.A./23.11.1956. (iv) (a) 4 ploughings with country plough. (b) Transplanting. (c) N.A. (d) 33"×33". (e) 1. (v) Nil. (vi) Harrison special (medium). (vii) Unirrigated. (viii) 2 intercultures and 2 hand weedings. (ix) 1.44". (x) 7 pickings from 25.1.1957 to 16.3.1957.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 sources of N : S₁=A/S and S₂=Urea.

(2) 3 levels of N : N₀=0, N₁=20 and N₂=40 lb./ac.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 24'9"×24'9". (b) 19'3"×19'3". (v) 2'9"×2'9". (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Green leaf yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 6626 lb./ac. (ii) 373.0 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of green leaf in lb./ac.

	N ₀	N ₁	N ₂	Mean
S ₁	—	6404'	7227	6816
S ₂	—	6744	6916	6830
Mean	6232	6574	7072	—

S.E. of N or S marginal mean = 107.7 lb./ac.

S.E. of body of table = 152.3 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 57(11).****Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.**

Object :—To compare the effect of A/S and Urea as a source of Z on the yield and quality of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco Tobacco. (b) Tobacco. (c) N.A. (ii) (a) Heavy black soil. (b) N.A. (iii) N.A./20.10.1957. (iv) (a) 1 ploughing with country plough. (b) Transplanting. (c) N.A. (d) 33"×33". (e) 1. (v) N.A. (vi) Harrison special (medium). (vii) Unirrigated. (viii) Gap-filling, removal of sand leaves, 2 hand weedings, interculturing with planet junior hoe 2 times. (ix) N.A. (x) 6 pickings from 30.12.1957 to 13.2.1958.

2. TREATMENTS :

Same as in expt. no. 56(8) on page 550.

3. DESIGN :

(i) Fact, in R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 44'×13.75'. (b) 38.5'×8.5'. (v) 2'9"×2'9". (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Caterpillar attack was controlled by spraying of DDT at 2 ozs./10 gallons of water. Aphids attack was controlled by spraying 2 ozs./10 gallons of Basudin. In case of mosaic disease care was taken not to touch attacked plants. (iii) Green leaf yield and total bright leaf equivalent. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 7467 lb./ac. (ii) 565.0 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of green leaf in lb./ac.

	N ₀	N ₁	N ₂	Mean
S ₁	—	7546	7897	7722
S ₂	—	7244	8020	7632
Mean	6625	7395	7958	—

S.E. of N or S marginal mean = 163.1 lb./ac.
S.E. of body of table = 230.7 lb./ac.

— — —

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 57(12).****Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.**

Object :—To study the effect of tobacco uncomposted and composted stalks on improvement of physical conditions of soil and its effect on response to N, P and K of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Tobacco. (b) Tobacco. (c) 20 lb./ac. of N as A/S. (ii) (a) Deep black soil. (b) N.A. (iii) N.A./25.10.1957. (iv) (a) 2 ploughings. (b) Transplanted. (c) N.A. (d) 33"×33". (e) 1. (v) As per treatments. (vi) Harrison special (medium). (vii) Unirrigated. (viii) Gap-filling, removal of sand leaves, 2 hand weedings. Interculturing was done with planet junior hoe both ways before paddy straw mulching at 3200 lb./ac. and crow barring in summer. (ix) 1.2". (x) 31.12.1957 to 20.2.1958.

2. TREATMENTS :

5 manurial treatments : T₀=Control (3 tons/ac. of F.Y.M. given to 2 plots), T₁=20 lb./ac. of N+100 lb./ac. of P₂O₅+50 lb./ac. of K₂O, T₂=T₁+3 tons/ac. of F.Y.M., T₃=Uncomposted tobacco stalks chaffed with T₁ and T₄=Tobacco stalks chaffed and composted with T₁ (2 plots).

Tobacco stalks were applied at 5 tons/ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) 46'9"×24'9". (b) 41'3"×19'3". (v) 2'9"×2'9". (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Slight incidence of mosaic and incidence of caterpillar attack. Spraying was done once with DDT at 2 ozs. in 10 gallons of water. (iii) Green leaf yield and total bright leaf equivalent. (iv) to (vi) N.A. (vii) To compare the effect of crowbaring with normal cultivation a control plot was laid out adjoining to the main exist. The control plot received 3 ploughings and 2 harrowings. The plot was divided into 2 equal parts (22'×46.75') and N, P and K treatments were applied deep during 3rd week of October. The results presented under non crowbarred area.

5. RESULTS :

(i) 8191 lb./ac. (ii) 705.1 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of green leaf in lb./ac.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Av. yield	8221	8020	8155	7760	8481

S.E. of mean (other than T₀ and T₄) = 315.3 lb./ac.

S.E. of T₀ or T₄ mean = 223.0 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 55(8).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.

Object :- To study the effect of continuous application of N, P and K with and without F.Y.M. on the yield of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Continuous tobacco. (b) Tobacco. (c) N.A. (ii) (a) Deep black soil. (b) N.A. (iii) N.A./2.11.1955. (iv) (a) 4 ploughings with country plough. (b) Transplanting. (c) N.A. (d) 33"×33". (e) 1. (v) Nil. (vi) Harrison special (medium). (vii) Unirrigated. (viii) 3 hand weedings, 2 intercultures with country plough and 1 with planet junior hoe. (ix) 0.12". (x) 6 primings from 7.1.1956 to 20.2.1956.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : N₀=0 and N₁=20 lb./ac.

(2) 2 levels of P₂O₅ as Super : P₀=0 and P₁=100 lb./ac.

(3) 3 levels of K₂O as Pot. Sul. : K₀=0 and K₁=50 lb./ac.

F.Y.M. could not be given as the treatments were applied rather late.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 8. (iv) (a) 13'9"×49'6". (b) 8'3"×44'0". (v) 2'9"×2'9". (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of green leaf. (iv) (a) 1955—contd. (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) Heavy rain. (vii) The seedlings were transplanted on 12.10.1955 but due to heavy rains they have to be replanted on 2.11.1955.

5. RESULTS :

(i) 4487 lb./ac. (ii) 588.1 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of green leaf in lb./ac.

	N ₀	N ₁	Mean	K ₀	K ₁
0	4465	4681	4573	4599	4547
P ₁	4132	4670	4401	4317	4485
Mean	4299	4676	4487	4458	4516
K ₀	4193	4723			
K ₁	4404	4628			

S.E. of marginal mean of N, P or K = 104.0 lb./ac.
 S.E. of body of any table = 147.0 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 56(9).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.

Object :- To study the effect of N, P and K with and without F.Y.M. on the yield and quality of cigarette Tobacco.

1 BASAL CONDITIONS:

(i) (a) Tobacco—Tobacco. (b) Tobacco. (c) Nil. (ii) (a) Heavy black soil. (b) N.A. (iii) N.A./8.11.1956. (iv) (a) 4 ploughings with country plough. (b) Transplanting. (c) N.A. (d) 33"×33". (e) 1. (v) Nil. (vi) Harrison special (medium). (vii) Unirrigated. (viii) 2 intercultures and 2 hand weeding. (ix) Nil. (x) 7 primings from 7.1.1957 to 1.3.1957.

2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M. : F₀=0 and F₁=3 tons/ac.

Sub-plot treatments :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : N₀=0 and N₁=20 lb./ac.

(2) 2 levels of P₂O₅ as Super : P₀=0 and P₁=100 lb./ac.

(3) 2 levels of K₂O as Pot. Sul. : K₀=0 and K₁=50 lb./ac.

3. DESIGN :

(i) 2×2³ split-plot confd. (ii) (a) 2 main-plots/replications ; 2 blocks/main-plot and 4 sub-plots/block. (b) N.A. (iii) 4. (iv) (a) 13'9"×49'6". (b) 8'3"×44'0". (v) 2'9"×2'9". (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Green leaf yield. (iv) (a) 1955—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 5381 lb./ac. (ii) (a) 597.1 lb./ac. (b) 423.0 lb./ac. (iii) Main effects of N, P and K are highly significant. (iv) Av. yield of green leaf in lb/ac.

	F ₀	F ₁	N ₀	N ₁	P ₀	P ₁	Mean
K ₀	5613	5611	5201	6023	5794	5430	5612
K ₁	4955	5345	4655	5645	5210	5088	5150
Mean	5284	5478	4928	5834	5502	5259	5381
P ₀	5531	5474	5112	5893			
P ₁	5037	5482	4744	5774			
N ₀	4698	5159					
N ₁	5871	5796					

S.E. of difference of two

1. F marginal means	= 149.3 lb./ac.
2. N, P or K marginal means	= 105.8 lb./ac.
3. N, P or K means at the same level of F	= 152.7 lb./ac.
4. F means at the same level of N, P or K	= 182.9 lb./ac.
S.E. of body of N×P, N×K or P×K table	= 105.8 lb./ac.

Crop :- Tobacco (*Rabi*).

Ref :- C.T.R.I. 57(13).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.

Object :—To study the effect of N, P and K with and without F.Y.M. on the yield and quality of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Continuous tobacco. (b) Tobacco. (c) As per treatments. (ii) (a) Heavy black soil. (b) N.A. (iii) N.A./29.10.1957. (iv) (a) 2 ploughings with iron mould board plough. (b) Planting with rope. (c) N.A. (d) 33"×33". (e) 1. (v) Nil. (vi) Harrison special (medium). (vii) Unirrigated. (viii) Gap-filling, removal of sand leaves, 2 hand weeding and 3 interculturings with planet junior hoe. (ix) 2.56". (x) 6 primings from 8.1.1958 to 25.2.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(9) on page 553.

4. GENERAL :

(i) Normal. (ii) Caterpillar attack. One spraying with DDT at 2 ozs. in 10 gallons of water. (iii) Green leaf yield and total bright leaf equivalent. (iv) (a) 1955—contd. (b) Yes. (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 6136 lb./ac. (ii) (a) 868.7 lb./ac. (b) 639.5 lb./ac. (iii) Only main effect of N is highly significant. (iv) Av. yield of green leaf in lb./ac.

	F ₀	F ₁	N ₀	N ₁	P ₀	P ₁	Mean
K ₀	6047	6122	5459	6709	6076	6091	6084
K ₁	6043	6329	5435	6938	6168	6205	6186
Mean	6045	6226	5447	6824	6122	6149	6136
P ₀	6146	6098	5423	6821			
P ₁	5944	6354	5471	6827			
N ₀	5251	5642					
N ₁	6839	6809					

S.E. of difference of two

1. F marginal means	= 217.2 lb./ac.
2. N, P or K marginal means	= 159.9 lb./ac.
3. N, P or K means at the same level of F	= 226.1 lb./ac.
4. F means at the same level of N, P or K	= 269.7 lb./ac.
S.E. of body of N×P, N×K or P×K table	= 159.9 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 58(7).****Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.**

Object :—To study the effect of N, P and K with and without F.Y.M. on the yield and quality of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco after tobacco. (b) Tobacco. (c) As per treatments. (ii) (a) Heavy black soil. (b) N.A. (iii) N.A./11.10.1958. (iv) (a) 3 ploughings with country plough before application of F.Y.M. and 1 ploughing with iron mould board plough after applying F.Y.M. (b) Transplanting. (c) N.A. (d) 33" × 33". (e) 1. (v) Nil. (vi) Harrison special (medium). (vii) Unirrigated. (viii) Gap-filling, removal of sand leaves, two hand weedings and 3 intercultures with planet junior hoe. (ix) 11.57". (x) 5 primings from 6.1.1959 to 18.2.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(9) on page 553.

4.

(i) Satisfactory. (ii) Caterpillar attack. 2 sprayings with DDT at 2 ozs. in 10 gallons of water. Attack of aphids. One spraying with Basudin at 2 ozs. in 10 gallons of water. Orobanche—removed and destroyed. (iii) Yield data. (iv) (a) 1955—contd. (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) Heavy rains. (vii) Nil.

5. RESULTS :

(i) 5528 lb./ac. (ii) (a) 1011.5 lb./ac. (b) 545.9 lb./ac. (iii) Main effects of F and N are highly significant. (iv) Av. yield of green leaf in lb./ac.

	F ₀	F ₁	N ₀	N ₁	P ₀	P ₁	Mean
K ₀	5130	5730	4804	6056	5509	5351	5430
K ₁	5108	6144	5046	6206	5787	5465	5626
Mean	5119	5937	4925	6131	5648	5408	5528
P ₀	5353	5944	5064	6232			
P ₁	4885	5930	4786	6030			
N ₀	4365	5485					
N ₁	5873	6389					

S.E. of difference of two

- | | |
|---|-----------------|
| 1. F marginal means | = 252.9 lb./ac. |
| 2. N, P or K marginal means | = 136.5 lb./ac. |
| 3. N, P or K means at the same level of F | = 193.1 lb./ac. |
| 4. F means at the same level of N, P or K | = 287.4 lb./ac. |
| S.E. of body of N × P, N × K or P × K table | = 136.5 lb./ac. |

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 59(7).****Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.**

Object :—To study the effect of N, P or K with and without F.Y.M. on the yield and quality of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco after tobacco. (b) Tobacco. (c) As per treatments. (ii) (a) Heavy black soil. (b) N.A. (iii) N.A./6.11.1959. (iv) (a) 1 ploughing with country plough before the application of F.Y.M. and one harrowing to mix up F.Y.M. 2 ploughings before application of fertilizers. (b) Transplanting. (c) N.A. (d) 33" × 33". (e) 1. (v) Nil. (vi) Harrison special (medium). (vii) Unirrigated. (viii) Gap-filling and removal of sand leaves, 4 hand weedings, 4 intercultures with planet junior hoe and 1 with country plough. (ix) Nil. (x) 6 primings from 8.1.1960 to 22.2.1960.

2. TREATMENTS and 3. DESIGN:

Same as in expt. no. 56(9) on page 553.

4. GENERAL:

(i) Very poor. (ii) Caterpillar attack. Endrine was sprayed thrice at 2 ozs. in 10 gallons of water. Aphids attack. Basudin sprayed once at 2 oz. in 10 gallons of water. Caterpillars were also removed by hand three times. (iii) Yield of green leaf. (iv) (a) 1955—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 2668 lb./ac. (ii) (a) 457.7 lb./ac. (b) 338.8 lb./ac. (iii) Main effect of N is highly significant. (iv) Av. yield of green leaf in lb./ac.

	F ₀	F ₁	N ₀	N ₁	P ₀	P ₁	Mean
K ₀	2482	2820	2103	3199	2571	2731	2651
K ₁	2549	2819	2137	3231	2643	2725	2684
Mean	2516	2819	2120	3215	2607	2728	2668
P ₀	2478	2736	2130	3084			
P ₁	2554	2902	2110	3346			
N ₀	1905	2335					
N ₁	3127	3303					

S.E. of difference of two

- | | |
|---|-----------------|
| 1. F marginal means | = 114.4 lb./ac. |
| 2. N, P or K marginal means | = 84.7 lb./ac. |
| 3. N, P or K means at the same level of F | = 119.8 lb./ac. |
| 4. F means at the same level of N, P or K | = 142.4 lb./ac. |
| S.E. of body of N×P, N×K or P×K table | = 84.7 lb./ac. |

Crop :- Tobacco (*Rabi*).

Ref :- C.T.R.I. 58(8).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.

Object :- To study the response of cigarette Tobacco to different nitrogen fertilizers at different levels of N with and without P and K under normal ploughing.

1. BASAL CONDITIONS:

(i) (a) Tobacco after tobacco. (b) Tobacco. (c) N.A. (ii) (a) Deep black soil. (b) N.A. (iii) N.A./13.11.1958. (iv) (a) 3 ploughings with country plough. (b) Transplanting. (c) N.A. (d) 33"×33". (e) 1. (v) 3 tons/ac. of M.C. (vi) Harrison special (medium). (vii) Unirrigated. (viii) Gap-filling was done twice. 2 interculturings was done with planet junior hoe. Mulching with paddy straw. (ix) 11.6". (x) 5 primings from 27.1.1959 to 11.3.1959.

2. TREATMENTS:

All combinations of (1) and (2)

- (1) 5 sources of N : S₁=A/S, S₂=C/N, S₃=Urea, S₄=C/A/N and S₅=Nitrophoska green.
 (2) 2 levels of N : N₁=20 and N₂=40 lb./ac.

Sub-plot treatments:

2 levels of P₂O₅+K₂O : M₀=0 and M₁=100 lb./ac. of P₂O₅ as Super and 50 lb./ac. of K₂O as Pot. Sul.

3. DESIGN:

(i) Split-plot. (ii) (a) 10 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 22.0'×19.25'. (b) 16.5'×13.75'. (v) 2'9"×2'9". (vi) Yes.

4. GENERAL :

(i) Considerable number of plants were lodged in February due to heavy rain in early stages of crop growth. (ii) Severe incidence of caterpillar. Hand picking of caterpillar, spraying of DDT at 20 ozs. in 10 gallons of water. Incidence of aphids - spraying of Basudin at 2 ozs. in 10 gallons of water. (iii) Yield of green leaf. (iv) (a) 1957—contd. (modified in 1958). (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) Heavy rains. (vii) Nil.

5. RESULTS :

(i) 7004 lb./ac. (ii) (a) 965.5 lb./ac. (b) 633.6 lb./ac. (iii) Main effect of M alone is significant. (iv) Av. yield of green leaf in lb./ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	Mean	N ₁	N ₂
M ₀	6767	6455	6836	6958	7132	6830	6736	6923
M ₁	7580	6953	6948	7054	7355	7178	6872	7484
Mean	7173	6704	6892	7006	7244	7004	6804	7203
N ₁	6962	6678	6735	6583	7064			
N ₂	7385	6731	7048	7429	7423			

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. S marginal means | = 341.7 lb./ac. | 5. S means at the same level of M | = 402.9 lb./ac. |
| 2. N marginal means | = 216.1 lb./ac. | 6. M means at the same level of N | = 190.9 lb./ac. |
| 3. M marginal means | = 135.0 lb./ac. | 7. N means at the same level of M | = 254.8 lb./ac. |
| 4. M means at the same level of S | = 301.8 lb./ac. | S.E. of body of S × N table | = 216.1 lb./ac. |

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 58(9).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.

Object :- To study the response of cigarette Tobacco to different nitrogenous fertilizers at different levels of N with and without P and K under tractor ploughing.

1. BASAL CONDITIONS :

(i) (a) Tobacco after Tobacco. (b) Tobacco. (c) N.A. (ii) (a) Deep black soil. (b) N.A. (iii) 13.11.1958. (iv) (a) 1 ploughing with tractor and 2 ploughings with country plough. (b) Transplanting. (c) N.A. (d) 33" × 33". (e) 1. (v) 3 tons/ac. of M.C. (vi) Harrison special (medium). (vii) Unirrigated. (viii) Gap filling done thrice. Interculture with planet junior hoe two weeks after planking. Mulching with paddy straw one week after interculturing. (ix) 11.6" (x) 6 primings from 16.1.1959 to 11.3.1959

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(8) on page 556.

5. RESULTS :

(i) 8123 lb./ac. (ii) (a) 841.7 lb./ac. (b) 623.9 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of green leaf in lb./ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	Mean	N ₁	N ₂
M ₀	8031	7941	8354	7963	8085	8075	8063	8087
M ₁	8552	8239	8294	8053	7719	8171	7771	8571
Mean	8292	8090	8324	8008	7902	8123	7917	8329
N ₁	7800	7948	8356	7985	7498			
N ₂	8783	8232	8292	8031	8307			

S.E. of difference of two

1. S marginal means	= 297.6 lb./ac.	5. S means at the same level of M	= 370.4 lb./ac.
2. N marginal means	= 188.2 lb./ac.	6. M means at the same level of N	= 197.3 lb./ac.
3. M marginal means	= 139.5 lb./ac.	7. N means at the same level of M	= 234.3 lb./ac.
4. M means at the same level of S	= 311.9 lb./ac.	S.E. of body of S × N table	= 297.6 lb./ac.

Crop :- Tobacco (*Rabi*).

Ref :- C.T.R.I. 58(10).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.

Object :- To compare the effect of organic manures and inorganic fertilizers on the yield and quality of flue cured virginia Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco after tobacco. (b) Tobacco. (c) 20 lb./ac. of N as A/S. (ii) (a) Deep black soil. (b) N.A. (iii) 31.10.1958. (iv) (a) 4 ploughings with country plough and green gram, *sannhemp* and control treatment plots got one more ploughing. (b) Transplanting. (c) N.A. (d) 33" × 33". (e) 1. (v) Nil. (vi) Harrison special (medium). (vii) Unirrigated. (viii) Gap-filling was done twice. 3 hand weedings and 3 intercultures with planet junior hoe. (ix) 11.6". (x) 5 primings from 6.1.1959 to 18.2.1959.

2. TREATMENTS :

9 sources of 20 lb./ac. of N : N₀=Control (no manure), N₁=F.Y.M., N₂=G.N.C., N₃=Castor cake, N₄=*Sannhemp* as G.M., N₅=Green gram as G.M., N₆=A/S, N₇=C/A/N and N₈=Urea.

3. DESIGN :

(i) Balanced lattice. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 27.5' × 22.0'. (b) 22.0' × 16.5'. (v) One row on all sides. (vi) Yes.

4. GENERAL :

(i) Due to heavy rains considerable number of plants were lodged in February. (ii) Severe incidence of caterpillar. Spraying was done with DDT at 2 ozs. in 10 gallons of water. Hand picking and destruction by putting in kerosene water was also done. For caterpillar attack G.M. crops of *sannhemp*, Endrine was sprayed at 1 oz. in 10 gallons of water. On green gram DDT was sprayed at 4½ ozs. in 10 gallons of water and incidence of *orobanche* was also noticed. *Orobanche* were pulled and burnt. (iii) Yield of green leaf. (iv) (a) 1958—contd. (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) Heavy rains during the early stages of the crop growth. (vii) Nil.

5. RESULTS :

(i) 6032 lb./ac. (ii) 926.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of green leaf in lb./ac.

Treatment	N ₀	N ₁	N ₂	N ₃	N ₄	N ₅	N ₆	N ₇	N ₈
Av. yield	5016	6129	6484	6484	6010	5556	6455	6098	6052

S.E./mean (adjusted) = 463.4 lb./ac.

Crop :- Tobacco (*Rabi*).

Ref :- C.T.R.I. 59(8).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.

Object :- To compare the effect of organic manures and inorganic fertilizers on the yield and quality of flue cured virginia Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco after tobacco. (b) Tobacco. (c) As per treatments. (ii) (a) Deep black soil. (b) N.A. (iii) 8.11.1959. (iv) (a) 2 ploughings with country plough and 1 harrowing with planet junior hoe. (b) Transplanting. (c) N.A. (d) 33" × 33". (e) 1. (v) Nil. (vi) Harrison special (medium). (vii) Unirrigated. (viii) 2 gap-fillings, 2 hand weedings, 3 intercultures with planet junior hoe, 1 with country plough and removal of sand leaves. (ix) Nil. (x) 6 primings from 12.1.1960 to 1.3.1960.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 58(10) on page 558.

4. GENERAL :

(i) Normal. (ii) Caterpillar attack. Spraying of Endrin at 2 ozs. in 10 gallons of water and hand picking. Aphids attack. Basudin sprayed at 2 ozs. in 10 gallons of water. *Orobanche*—Pulled out at 10 days interval. (iii) Yield of green leaf. (iv) (a) 1958—contd. (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) Heavy rains. (vii) Green manure crops could not be incorporated in time due to heavy rains in September. The tobacco crop in the 2 green manure treatments was, therefore, raised without any application of manure or fertilizer. The data is analysed as R.B.D. because the efficiency of the balanced lattice over R.B.D. is found to be much less.

5. RESULTS :

(i) 2779 lb./ac. (ii) 365.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of green leaf in lb./ac.

Treatment	N ₀	N ₁	N ₂	N ₃	N ₄	N ₅	N ₆	N ₇	N ₈
Av. yield	2030	2798	3417	3318	2564	2522	2612	2815	2939

S.E./mean = 182.9 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 59(9).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.

Object:—To study the response of cigarette Tobacco to different nitrogenous fertilizers under deep ploughing conditions.

1. BASAL CONDITIONS :

(i) (a) Tobacco after tobacco. (b) Tobacco. (c) 20 lb./ac. of N as A/S. (ii) (a) Deep black soil (b) N.A. (iii) 12.11.1959. (iv) (a) 1 tractor ploughing, 2 ploughings with country plough and hoeing to mix up F Y M. (b) Transplanting. (c) N.A. (d) 33" × 33". (e) 1. (v) F.Y.M. at 3 tons/ac. (vi) Harrison special (medium). (vii) Unirrigated. (viii) 2 gap-fillings, 2 hand weedings, 4 interculturings with planet junior hoe and 1 interculturings with country plough. (ix) 0.66%. (x) 7 primings from 13.1.1960 to 14.3.1960.

2. TREATMENTS :

5 sources of 20 lb./ac of N : S₁=A/S, S₂= Urea, S₃=C/A/N, S₄=Nitrophoska blue and S₅=Complex fertilizer.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5 (effective number=3). (iv) (a) 33.0' × 19.25'. (b) 27.5' × 13.75'. (v) 1 row on all sides. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Caterpillar attack—Twice hand picking, spraying Endrin at 2 ozs. in 10 gallons of water. Aphids attack—Spraying Basudin at 2 ozs. in 10 gallons of water. *Orobanche*—Removed by hand. (iii) Yield of green leaf. (iv) (a) 1959—N.A. (b) No. (c) Nil. (v) and (vi) Nil. (vii) 2 replications suffered due to nematoda infestation, hence they were dropped from analysis. The experiment is analysed as R.B.D.

5. RESULTS :

(i) 4498 lb./ac. (ii) 502.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of green leaf in lb./ac.

Treatment	S ₁	S ₂	S ₃	S ₄	S ₅
Av. yield	4786	4193	4714	4620	4178

S.E./mean = 289.8 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 59(10).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.

Object :- To study the effect of continuous application of P on flue cured cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco after tobacco. (b) Tobacco. (c) As per treatments. (ii) (a) Deep black soil. (b) N.A. (iii) 8.11.1959. (iv) (a) 2 ploughings. (b) Transplanting. (c) N.A. (d) 33"×33". (e) 1. (v) F.Y.M. at 3 tons./ac, Super at 600 lb./ac. and A/S at 100 lb./ac. (vi) Harrison special (medium). (vii) Unirrigated. (viii) 2 gap-fillings, hand weeding as and when required, 4 intercultures with planet junior hoe and 1 interculture with country plough. (ix) Nil. (x) 6 primings from 12.1.1960 to 22.2.1960.

2. TREATMENTS :

8 manurial treatments : T₀=No manure, T₁=Manuring every year, T₂=Manuring in 1st and 2nd years and no manure in 3rd year, T₃=Manuring in 2nd and 3rd year, T₄=Manuring in 1st and 3rd year, T₅=Manuring in 1st year only, T₆=Manuring in 2nd year only and T₇=Manuring in 3rd year only.

Manuring done with 100 lb./ac. of P₂O₅ as Super starting with 1958-1959.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 22.0'×19.25'. (b) 16.5'×13.75'. (v) 1 guard row on all sides of the plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Caterpillar attack—Endrin sprayed thrice at 2 oz. in 10 gallons of water. Hand picking of caterpillars done twice. Aphids attack—Basudin sprayed twice at 2 oz. in 10 gallons of water. *Orobanche*—Removed. (iii) Yield of green leaf. (iv) (a) 1958—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 10362 lb./ac. (ii) 884.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of green leaf in lb./ac.

Treatment	T ₀ +T ₇	T ₁ +T ₂	T ₄ +T ₅	T ₃ +T ₆
Av. yield	10000	10708	10267	10475

S.E./mean = 312.7 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 55(11).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.

Object :- To find out whether Urea can be used in place of A/S as the former has given indications of increasing top grades for cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Continuous tobacco. (b) Tobacco. (c) 20 lb./ac. of N as A/S was broadcast. (ii) (a) Deep black soil. (b) N.A. (iii) 12.11.1955. (iv) (a) 4 ploughings with country plough. (b) Transplanting. (c) N.A. (d) 33"×33". (e) 1. (v) Nil. (vi) Harrison special (medium). (vii) Unirrigated. (viii) 2 hand weedings, 3 intercultures with planet junior hoe and 1 with country plough. (ix) 0.05". (x) 6 primings from 25.1.1956 to 7.3.1956.

2. TREATMENTS :

Main-plot treatments :

2 sources of N : S₁=A/S and S₂=Urea.

Sub-plot treatments :

5 levels of N : N₁=10, N₂=20, N₃=30, N₄=40 and N₅=50 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 16½'×99'. (b) 11'×93½'. (v) 1 row all round each plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of green leaf. (iv) to (vii) Nil.

5. RESULTS :

(i) 2664 lb./ac. (ii) (a) 455.7 lb./ac. (b) 429.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of green leaf in lb./ac.

	N ₁	N ₂	N ₃	N ₄	N ₅	Mean
S ₁	3010	2053	2936	2321	2926	2649
S ₂	2500	2629	3105	3036	2118	2678
Mean	2755	2341	3021	2679	2522	2664

S.E. of difference of two

1. S marginal means = 144.1 lb./ac.
2. N marginal means = 215.0 lb./ac.
3. N means at the same level of S = 304.0 lb./ac.
4. S means at the same level of N = 307.7 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 55(12).****Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.**

Object :—To study whether any response to phosphate can be obtained by different methods of placement on cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Continuous tobacco. (b) Tobacco. (c) 20 lb./ac. of N as A/S. (ii) (a) Deep black soil. (b) N.A. (iii) 15.11.1955. (iv) (a) 4 ploughings with country plough. (b) Transplanting. (c) N.A. (d) 33" × 33". (e) 1. (v) Nil. (vi) Harrison special (medium). (vii) Unirrigated. (viii) 2 hand weedings and 2 inter-culturings with country plough. (ix) 0.05%. (x) 5 primings from 1.2.1956 to 2.3.1956.

2. TREATMENTS :

6 manurial treatments : M₀ = Control, M₁ = Water treatment, M₂ = M₁ + 100 lb./ac. of P₂O₅ as Super, M₃ = M₁ + 20 lb./ac. of N as A/S, M₄ = M₂ + 20 lb./ac. of N as A/S and M₅ = M₁ + 100 lb./ac. of P₂O₅ as spray.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 13½' × 24½'. (b) 8½' × 19½'. (v) 2½' × 2½'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of green leaf. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 5912 lb./ac. (ii) 949.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of green leaf in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅
Av. yield	5825	5748	5958	5866	6440	5634

S.E./mean = 474.7 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 55(13).****Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.**

Object :—To find out the effect of G.M. with maize on yield and quality of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—G.M. (b) Tobacco. (c) As per treatments. (ii) (a) Deep black soil. (b) N.A. (iii) 9.11.1955. (iv) (a) 4 ploughings with country plough. (b) Transplanting. (c) N.A. (c) 33"×33". (e) 1. (v) Nil. (vi) Harrison special (medium). (vii) Unirrigated. (viii) 2 hand-weedings, 2 intercultures with planet junior hoe and 1 with country plough. (ix) 0.05". (x) 6 primings from 19.1.1956 to 25.2.1956.

2. TREATMENTS :

Main-plot treatments .

3 levels of G.M. : M_0 =No maize, M_1 =Maize grown and burried and M_2 =Maize grown and cut.

Sub-plot treatments :

3 levels of N as A/S : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) 16½'×71½'. (b) 11'×61'. (v) One row around the plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of green leaf. (iv) to (vii) Nil.

5. RESULTS :

(i) 3981 lb./ac. (ii) (a) 1378.4 lb./ac. (b) 447.1 lb./ac. (iii) Main effect of M alone is significant. (v) Av. yield of green leaf in lb./ac.

	N_0	N_1	N_2	Mean
M_0	5170	5385	5689	5415
M_1	3334	3363	3980	3559
M_2	2876	3014	3019	2970
Mean	3793	3921	4229	3981

S.E. of difference of two

1. M marginal means = 503.3 lb./ac.
2. N marginal means = 163.3 lb./ac.
3. N means at the same level of M = 282.8 lb./ac.
4. M means at the same level of N = 553.7 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(19).

Site :- Cigar and Cheroot Tobacco Res. Stn., Veda sandur. Type :- 'M'.

Object :- To compare the response of cigar Tobacco to different forms of inorganic nitrogenous fertilizers applied with and without F.Y.M.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Cumbu*. (c) Nil. (ii) (a) Red loam. (b) N.A. (iii) 2.11.1954. (iv) (a) 4 ploughings. (b) Transplanting. (c) N.A. (d) 2.5'×2'. (e) 1. (v) Nil. (vi) *Vellaivazhai (Nicotiana tabacum)*. (vii) Irrigated. (viii) H eing earthing up, weeding and topping. (ix) 6.30". (x) 8.2.1955.

2. TREATMENTS :

All combinations (1) and (2)

(1) 4 sources of 100 lb./ac. of N : S_0 =Control (no application), S_1 =A/S, S_2 =C/N and S_3 =A/S/N.

(2) 2 levels of F.Y.M. : $F_0=0$ and $F_1=20$ C.L./ac.

F.Y.M. applied as broadcast one month before planting. N applied in 2 equal doses as broadcast at planting and as top dressing 6 weeks after planting.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 22.5'×15.5'. (b) 17.5'×10.0'. (v) 2.5'×2.75'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) In the initial stages of plant growth, regular spraying with DDT 550 was done as a precautionary measure against leaf eating caterpillar (*Prodenia litura*) and stem borer. In the later stages the crop was sprayed periodically with tobacco decoction as the crop was found infested with aphids. (iii) Yield of tobacco. (iv) (a) 1953—1955. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2165 lb./ac. (ii) 254.0 lb./ac. (iii) Main effect of S alone is highly significant. (iv) Av. yield cured leaf in lb./ac.

	S ₀	S ₁	S ₂	S ₃	Mean
F ₀	1956	2317	2270	2024	2152
F ₁	1959	2384	2218	2150	2178
Mean	1978	2351	2244	2087	2165

S.E. of S marginal mean = 73.3 lb./ac.
 S.E. of F marginal mean = 51.8 lb./ac.
 S.E. of body of table = 103.7 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 55(22).

Site :- Cigar and Cheroot Tobacco Res. Stn., Veda sandur. Type :- 'M'.

Object :— To compare the response of cigar Tobacco to different forms of inorganic fertilizers applied with and without F.Y.M.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Red loam. (b) N.A. (iii) N.A. (iv) (a) 4 poughings. (b) Transplanting. (c) 8,712 plants/ac. (d) 2.5' × 2'. (e) 1. (v) Nil. (vi) *Vellai vazhai*. (vii) Irrigated. (viii) Weeding and hoeing, mummati digging, earthing-up and topping. (ix) and (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(19) on page 562.

4. GENERAL :

(i) Sub-normal. (ii) Severe incidence of aphids and the same persisted till the end inspite of repeated sprayings with tobacco decoction and endrin. (iii) Yield of cured tobacco. (iv) (a) 1953—1955. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) Commencement of monsoon was late. (vii) Nil.

5. RESULTS :

(i) 1859 lb./ac. (ii) 189.6 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of cured leaf in lb./ac.

	S ₀	S ₁	S ₂	S ₃	Mean
F ₀	1607	1919	2024	1956	1877
F ₁	1585	1874	1961	1944	1841
Mean	1596	1897	1992	1950	1859

S.E. of S marginal mean = 54.7 lb./ac.
 S.E. of F marginal mean = 38.7 lb./ac.
 S.E. of body of table = 77.4 lb./ac.

Crop :- Tobacco.**Ref :- C.T.R.I. 54(20).****Site :- Cigar and Cheroot Tobacco Res. Stn., Veda sandur. Type :- 'M'.**

Object :— To study the fertilizer value of indigenous rock phosphates as compared to Super and B.M. on Cigar Tobacco.

1. BASAL CONDITIONS :

(i) (a) Legume—Tobacco. (b) *Sannhemp*. (c) Nil. (a) Red loam. (b) Nil. (iii) 16.10.1954 to 28.10.1954. (iv) (a) 4 ploughings. (b) Transplanting. (c) N.A. (d) 2.5' × 2'. (e) 1. (v) 20 C.L./ac. of F.Y.M. (vi) *Vellavazhai* (*Nicotiana tobacum*). (vii) Irrigated. (viii) Weeding, hoeing, topping and suckering. (ix) 13.03" (x) 1.2.1955 and 9.2.1955.

2. TREATMENTS :

8 manurial treatments : M_0 = Control, M_1 = 100 lb./ac. of N as A/S, M_2 = M_1 + 200 lb./ac. of P_2O_5 as rock phosphate (Trichy nodules), M_3 = M_1 + 200 lb./ac. of P_2O_5 as rock phosphate (Singhbhum), M_4 = M_1 + 100 lb./ac. of P_2O_5 as Super, M_5 = M_1 + 66 $\frac{2}{3}$ lb./ac. of P_2O_5 as Super + 66 $\frac{2}{3}$ lb./ac. of P_2O_5 as rock phosphate (Trichy nodules), M_6 = M_1 + 66 $\frac{2}{3}$ lb./ac. of P_2O_5 as Super + 66 $\frac{2}{3}$ lb./ac. of P_2O_5 as rock phosphate (Singhbhum) and M_7 = M_1 + 200 lb./ac. of P_2O_5 as B.M.

A/S applied in two equal doses, as broadcast at planting and top dressing 6 weeks after transplanting. P_2O_5 applied in bands just before transplanting.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 30' × 15'. (b) 25' × 10'. (v) 2.5' × 2.5'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Regular spraying with DDT was done as a precautionary measure against leaf eating caterpillar and stem borer. (iii) Yield of tobacco. (iv) (a) 1953—1955. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2499 lb./ac. (ii) 176.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7
Av. yield	2185	2689	2427	2459	2635	2490	2499	2608

S.E./mean = 71.8 lb./ac.

Crop :- Tobacco.**Ref:- C.T.R.I. 55(23).****Site :- Cigar and Cheroot Tobacco Res. Stn., Veda sandur. Type :- 'M'.**

Object :— To study the fertilizer value of indigenous rock phosphates as compared to Super and B.M. on Cigar Tobacco.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Red loam. (b) N.A. (iii) N.A. (iv) (a) 4 ploughings. (b) Transplanting. (c) 8,712 plants/ac. (d) 30" × 24". (e) 1. (v) 20 C.L./ac. of F.Y.M. (vi) *Vellavazhai*. (vii) Irrigated. (viii) Weeding, hoeing, mummati digging, earthing up and topping. (ix) and (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(20) above.

4. GENERAL :

(i) Sub-normal. (ii) Nil. (iii) Yield of cured tobacco. (iv) (a) 1953—1955. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) Commencement of monsoon was late. (vi) Nil.

5. RESULTS :

2431 lb./ac. (ii) 182.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in lb./ac

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇
Av. yield	2352	2521	2404	2413	2467	2399	2345	2546

S.E./mean = 74.4 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(21).

Site :- Cigar and Cheroot Tobacco Res. Stn., Veda sandur. Type :- 'M'.

Object :-To study the effect of different levels of N and different methods of application on the yield and quality of cigar Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Cumbu*. (c) Nil. (ii) (a) Red loam. (b) N.A. (iii) 18.10.1954. (iv) (a) 3 ploughings. (b) Transplanting. (c) N.A. (d) 2½' × 2'. (e) 1. (v) 20 C L./ac. of F.Y.M. (vi) *Vellavazhai* (*Nicotiana tabacum*). (vii) Irrigated. (viii) Weeding, hoeing, topping and suckering. (ix) 13.03". (x) 24.1.1955.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S : N₁=60, N₂=90, N₃=120 and N₄=150 lb./ac.

Sub-plot treatments :

4 methods of application of N : M₁=Broadcast before transplanting, M₂=Half dose as in M₁+half top dressed 6 weeks after transplanting, M₃=Band placement before transplanting and M₄=Half dose as in M₃+top dressed 6 weeks after transplanting.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication; 4 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 16' × 20'. (b) 10' × 15'. (v) 3' × 2.5'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Regular spraying with DDT 550 was done as a safeguard against leaf eating caterpillar and stem-borer. (iii) Yield of tobacco. (iv) (a) 1951—1954. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1943 lb./ac. (ii) (a) 412.0 lb./ac. (b) 189.0 lb./ac. (iii) Main effect of N is significant and that of M is highly significant. (iv) Av. yield of cured leaf in lb./ac.

	M ₁	M ₂	M ₃	M ₄	Mean
N ₁	1620	1769	1652	1949	1748
N ₂	1806	2134	1780	2024	1936
N ₃	1925	1954	1783	2073	1934
N ₄	2169	2184	2183	2073	2152
Mean	1880	2010	1850	2030	1943

S.E. of difference of two

1. N marginal means = 118.9 lb./ac.
2. M marginal means = 54.6 lb./ac.
3. M means at the same level of N = 109.1 lb./ac.
4. N means at the same level of M = 151.9 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(22).

Site :- Cigar and Cheroot Tobacco Res. Stn., Veda sandur. Type :- 'M'.

Object :-To study the effect of different sources of K with other fertilizers on cigar Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—*Cumbu*. (b) *Cumbu*. (c) Nil. (ii) (a) Red loam. (b) N.A. (iii) 14.10.1954. (iv) (a) 4 ploughings. (b) Transplanting. (c) N.A. (d) 2.5'×2'. (e) 1. (v) Nil. (vi) *Vellavazhai* (local). (vii) Irrigated. (viii) Weeding, hoeing, earthing up and topping. (ix) 13.03". (x) 21.1.1955.

2. TREATMENTS :

Main-plot treatments :

5 manurial treatments: M_0 =Control, M_1 =20 C.L./ac. of F.Y.M., M_2 =100 lb./ac. of N as A/S, M_3 =100 lb./ac. of P_2O_5 as Super and M_4 = M_2 + M_3 .

Sub-plot treatments :

5 sources of 100 lb./ac. of K_2O : K_0 =0 (no application), K_1 =Pot. sul., K_2 =Pot. chloride, K_3 =Pot. nitrate and K_4 =Pot. carbonate.

F.Y.M. was applied one month before transplanting. Half dose of N with full doses of K_2O and P_2O_5 applied just before planting in furrows. Remaining half dose of N applied at *mummati* digging.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 19'×10'. (b) 15'×6'. (v) 2'×2'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) During the earlier periods of growth there was an attack of stem-borer which was brought under control by removing the borer from the affected plants. (iii) Yield of tobacco. (iv) (a) 1954—1956. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2435 lb./ac. (ii) (a) 416.0 lb./ac. (b) 242.0 lb./ac. (iii) Main effect of M alone is highly significant. (iv) Av. yield of cured leaf in lb./ac.

	K_0	K_1	K_2	K_3	K_4	Mean
M_0	2255	2105	2314	2275	2435	2277
M_1	2343	2372	2347	2512	2284	2372
M_2	2643	2526	2628	2493	2628	2584
M_3	2246	2439	2217	2270	2376	2310
M_4	2589	2706	2662	2672	2536	2633
Mean	2415	2430	2434	2444	2452	2435

S.E. of difference of two

1. M marginal means = 75.9 lb./ac.
2. K marginal means = 44.2 lb./ac.
3. K means at the same level of M = 139.7 lb./ac.
4. M means at the same level of K = 164.7 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 55(24).

Site :- Cigar and Cheroot Tobacco Res. Stn., Veda sandur. Type :- 'M'.

Object :- To study the effect of different sources of K with other fertilizers on cigar Tobacco.

1. BASAL CONDITIONS :

(i) (a) *Cumbu*—Tobacco. (b) *Cumbu*. (c) Nil. (ii) (a) Grey gravelly loam. (b) N.A. (iii) 13.10.1955. (iv) (a) 4 ploughings. (b) Transplanting. (c) 8,712 plants/ac. (d) 30"×24". (e) 1. (v) Nil. (vi) *Vellavazhai*. (vii) Irrigated. (viii) 1 weeding, 1 hoeing, *mummati* digging, earthing up and topping. (ix) 15.05". (x) 2.2.1956.

2. TREATMENTS :

Same as in expt. no 54(22) on page 565.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 5 sub-plots/main-plot. (b) 100' × 12'. (iii) 5. (iv) (a) 19' × 10'. (b) 15' × 6'. (v) 2' × 2'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of cured leaf. (iv) (a) 1954—1956. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) Commencement of monsoon was late. (vii) Nil.

5. RESULTS :

(i) 2186 lb./ac. (ii) (a) 255.0 lb./ac. (b) 188.0 lb./ac. (iii) Main effect of M alone is significant. (iv) Av. yield of cured leaf in lb./ac.

	K ₀	K ₁	K ₂	K ₃	K ₄	Mean
M ₀	1896	1753	1854	2079	1963	1909
M ₁	2048	2012	1892	2008	1942	1980
M ₂	2500	2493	2303	2488	2679	2493
M ₃	1990	2042	1797	1973	1961	1953
M ₄	2684	2542	2639	2620	2481	2593
Mean	2224	2168	2097	2234	2205	2186

S.E. of difference of two

1. M marginal means = 72.1 lb./ac.
2. K marginal means = 53.2 lb./ac.
3. K means at the same level of M = 119.0 lb./ac.
4. M means at the same level of K = 128.5 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 56(23).

Site :- Cigar and Cheroot Tobacco Res. Stn., Veda sandur. Type :- 'M'.

Object :—To study the effect of different sources of K with other fertilizers on cigar Tobacco.

1. BASAL CONDITIONS :

(i) (a) *Cumbu*—Tobacco. (b) *Cumbu*. (c) Nil. (ii) (a) Grey gravelly loam. (b) N.A. (iii) 20.10.1956. Gaps filled on 30.10.1956. (iv) (a) 4 ploughings. (b) Transplanting. (c) 8,712 plants/ac. (d) 30" × 24". (e) 1. (v) Nil. (vi) *Vellavazhai*. (vii) Irrigated. (viii) *Mummati* digging, topping and hand weeding. (ix) N.A. (x) 5.2.1957.

2. TREATMENTS :

Same as in expt. no. 54(22) on page 565.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 6 (effective replications are 4). (iv) (a) 19' × 10'. (b) 15' × 6'. (v) 2' × 2'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of cured leaves. (iv) (a) 1954—1956. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) Excessive rains soon after transplanting. Growth in 2 replications vitiated completely and hence they are omitted. (vii) Nil.

5. RESULTS :

(i) 2617 lb./ac. (ii) (a) 227.3 lb./ac. (b) 169.7 lb./ac. (iii) Main effect of M alone is highly significant. (iv) Av. yield of cured leaf in lb./ac.

	K ₀	K ₁	K ₂	K ₃	K ₄	Mean
M ₀	2471	2315	2602	2586	2526	2500
M ₁	2667	2661	2657	2472	2390	2569
M ₂	2750	2554	2778	2704	2773	2712
M ₃	2468	2413	2448	2460	2253	2408
M ₄	2816	2934	2916	2937	2871	2895
Mean	2634	2575	2680	2630	2563	2617

S.E. of difference of two

1. M marginal means = 72.0 lb./ac.
2. K marginal means = 53.7 lb./ac.
3. K means at the same level of M = 119.9 lb./ac.
4. M means at the same level of K = 129.1 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(23).

Site :- Cigar and Cheroot Tobacco Res. Sta., Veda sandur. Type :- 'M'.

Object :- To study the effect of different sources of N with other fertilizers on cigar Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—White cholam. (b) White cholam. (c) Nil. (ii) (a) Red loam. (b) N.A. (iii) 23.10.1954. (iv) (a) 4 ploughings. (b) Transplanting. (c) N.A. (d) 2½' × 2'. (e) 1. (v) Nil. (vi) *Vellavazhai* (*Nicotiana tabacum*). (vii) Irrigated. (viii) Weeding, hoeing, *mummati* digging, earthing up and topping. (ix) 6.30". (x) 27.1.1955.

2. TREATMENTS :

Main-plot treatments :

4 manurial treatments: M₀=Control, M₁=20 C.L./ac. of F.Y.M., M₂=100 lb./ac. of K₂O as Pot. Sul. and M₃=100 lb./ac. of P₂O₅ as Super.

Sub-plot treatments :

6 sources of 100 lb./ac. of N: S₀=0 (no application), S₁=A/S, S₂=C/N, S₃=A/S/N, S₄=G.N.C. and S₅=G.N.C.+A/S in 1:1 ratio.

F.Y.M. broadcast 1 month before transplanting. K₂O and P₂O₅ applied in bands at transplanting. N in 2 equal doses applied ½ at transplanting and ½ at the time of digging.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication; 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 19' × 10'. (b) 15' × 6'. (v) 2' × 2'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) During the earlier periods of growth there was a slight attack of stem borer. It was brought under control by removing the borer from the plant. Soon after topping there was a slight attack of aphids which was brought under control by spraying tobacco decoction. (iii) Yield of tobacco. (iv) (a) 1953—1956 (expts. for the years 1955 and 1956 failed). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2058 lb./ac. (ii) (a) 373.0 lb./ac. (b) 247.0 lb./ac. (iii) S effect alone is highly significant. (iv) Av. yield of cured leaf in lb./ac.

	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	Mean
M ₀	1447	1878	1999	1815	2120	2241	1917
M ₁	1578	2168	2314	2178	2439	2162	2173
M ₂	1428	2183	2236	2193	2314	2280	2106
M ₃	1452	2076	1989	2062	2449	2173	2034
Mean	1476	2076	2135	2062	2331	2264	2058

S.E. of difference of two

1. M marginal means = 76.2 lb./ac.
2. S marginal means = 61.8 lb./ac.
3. S means at the same level of M = 174.6 lb./ac.
4. M means at the same level o. S = 192.4 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(24).

Site :- Cigar and Cheroot Tobacco Res. Stn., Vendasandur. Type :- 'M'.

Object :—To investigate the influence of nitrogenous manures on the yield, composition and burning quality of cigar Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—*Cumbu*. (b) *Cumbu (Pennisetum typhoides)*. (c) Nil. (ii) (a) Red loam. (b) N.A. (iii) 30.10 1954. (iv) (a) 4 ploughings. (b) Transplanting. (c) N.A. (d) 2.5' × 2'. (e) 1. (v) Nil. (vi) *Vellavazhai* (local). (vii) Irrigated. (viii) Weeding, hoeing, *mummati* digging, earthing up and topping. Suckering was done periodically and *Orobanche*, a root parasite in tobacco was removed at frequent intervals. (ix) 6.23". (x) 5.2.1955.

2. TREATMENTS :

Main-plot treatments :

5 manurial treatments : M₀=Control (no manure), M₁=20 C.L./ac. of F.Y.M., M₂=100 lb./ac. of K₂O as Pot. Sul., M₃=100 lb./ac. of P₂O₅ as Super and M₄=M₂+M₃.

Sub-plot treatments :

6 sources of 100 lb./ac. of N : S₀=Control (no application), S₁=A/S, S₂=Blood meal, S₃=Fish meal, S₄=Stera meal and S₅=Urea.

F.Y.M. broadcast 1 month before transplanting and other fertilizers applied in bands at transplanting. Nitrogen applied in split doses, $\frac{1}{2}$ at transplanting and $\frac{1}{2}$ at the time of *mummati* digging.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 19' × 10'. (b) 15' × 6'. (v) 2' × 2'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) During the earlier periods of growth there was slight attack of stem borer. It was brought under control by removing the borer from the affected plants. (iii) Yield of tobacco. (iv) (a) 1954—1956. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Stand differences were significant, hence results were calculated by the method of covariance.

5. RESULTS :

(i) 2326 lb./ac. (ii) (a) 426.0 lb./ac. (b) 149.0 lb./ac. (iii) Main effect of S and interaction M × S are significant. (iv) Av. yield of cured leaf in lb./ac.

	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	Mean
M ₀	1994	2188	2541	2599	2507	2464	2382
M ₁	2207	2376	2323	2609	2536	2575	2438
M ₂	1854	2372	2212	2415	2178	1911	2162
M ₃	2231	2367	2391	2652	2536	2193	2395
M ₄	1955	2260	2183	2386	2265	2459	2251
Mean	2048	2313	2330	2532	2404	2326	2326

S.E. of difference of two

1. M marginal means = 122.9 lb./ac.
2. S marginal means = 47.1 lb./ac.
3. S means at the same level of M = 105.4 lb./ac.
4. M means at the same level of S = 156.1 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 55(25).

Site :- Cigar and Cheroot Tobacco Res. Sta., Veda sandur. Type :- 'M'.

Object :—To investigate the influence of nitrogenous manures on the the yield, composition and burning quality of cigar Tobacco.

1. BASAL CONDITIONS :

(i) (a) *Cumbu*—Tobacco. (b) *Cumbu*. (c) Nil. (ii) (a) Grey gravelly loam. (b) N.A. (iii) 5.11.1955. (iv) (a) 4 ploughings. (b) Transplanting. (c) 8,712 plants/ac. (d) 30"×24". (e) 1. (v) Nil. (vi) *Vellavazhai* (*Nicotiana tabacum*). (vii) Irrigated. (viii) Weeding, hoeing, *mummati* digging and earthing up. (ix) 8.25". (x) 14.2.1956.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(24) on page 569.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of tobacco. (iv) (a) 1954–1956. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2588 lb./ac. (ii) (a) 389.0 lb./ac. (b) 183.0 lb./ac. (iii) Main effect of S alone is significant. (iv) Av. yield of cured leaf in lb./ac.

	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	Mean
M ₀	2134	2623	2735	2483	2841	2512	2555
M ₁	2415	2677	2647	2633	2909	2691	2662
M ₂	2260	2599	2526	2614	2836	2638	2579
M ₃	2376	2730	2585	2526	2802	2686	2618
M ₄	2231	2657	2512	2473	2638	2633	2524
Mean	2283	2657	2601	2546	2805	2632	2588

S.E. of difference of two

1. M marginal means = 112.3 lb./ac.
2. S marginal means = 57.9 lb./ac.
3. S means at the same level of M = 129.4 lb./ac.
4. M means at the same level of S = 163.0 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 56(24).

Site :- Cigar and Cheroot Tobacco Res. Stn., Vendasandur. Type :- 'M'.

Object :- To investigate the influence of different nitrogenous manures on the yield, chemical composition and quality of cigar Tobacco.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Red loam. (b) N.A. (iii) 30.10.1956. Gaps filled on 6.11.1956. (iv) (a) 4 ploughings. (b) Transplanting. (c) 8,712 plants/ac. (d) 30"×24". (e) I. (v) Nil. (vi) *Vellavazhai*. (vii) Irrigated. (viii) 1 hand weeding, *mummati* digging and topping. (ix) N.A. (x) 23.2.1957.

2. TREATMENTS and 3. DESIGN:

Same as in expt. no. 54(24) on page 569.

4. GENERAL:

(i) Poor. (ii) Nil. (iii) Yield of cured leaves. (iv) (a) 1954—1956. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) During the first half of the year rainfall was poor. (vii) Nil.

5. RESULTS:

(i) 2632 lb./ac. (ii) (a) 930.9 lb./ac. (b) 553.7 lb./ac. (iii) Main effect of S alone is highly significant. (iv) Av. yield of cured leaf in lb./ac.

	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	Mean
M ₀	2194	2544	2919	2646	2881	2551	2623
M ₁	2361	2703	2522	2813	2696	2857	2659
M ₂	2119	2685	2760	2674	2848	2635	2620
M ₃	2407	2705	2621	2892	2866	2564	2676
M ₄	2231	2485	2679	2568	2813	2723	2583
Mean	2262	2624	2700	2719	2821	2666	2632

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. M marginal means | = 268.7 lb./ac. |
| 2. S marginal means | = 175.1 lb./ac. |
| 3. S means at the same level of M | = 391.5 lb./ac. |
| 4. M means at the same level of S | = 447.2 lb./ac. |

Crop :- Tobacco.

Ref :- C.T.R.I 54(25).

Site :- Cigar and Cheroot Tobacco Res. Stn., Vendasandur. Type :- 'M'.

Object :- To study the residual effect of different manures applied to *cumbu* crop on succeeding cigar Tobacco crop.

1. BASAL CONDITIONS:

(i) (a) Tobacco—*Cumbu* (2 crops)—Tobacco. (b) *Cumbu* (July—October). (c) Nil. (ii) (a) Red loam. (b) N.A. (iii) 1.11.1954. (iv) (a) 4 ploughings. (b) Transplanting. (c) N.A. (d) 2.5'×2'. (e) I. (v) 6.70 tons/ac. of F.Y.M.+100 lb./ac. of N as A/S. (vi) *Vellavazhai*. (vii) Irrigated. (viii) Weeding, hoeing, *mummati* digging, earthing up and topping. (ix) 6.23". (x) 8.2.1955.

2. TREATMENTS

5 manurial treatments: M₀=Control (no manure), M₁=30 lb./ac. of N as A/S, M₂=30 lb./ac. of N as A/S+30 lb./ac. of P₂O₅ as Super, M₃=2.66 tons/ac. of F.Y.M. and M₄=15 lb./ac. of N as A/S+1.33 tons/ac. of F.Y.M.

Treatments were applied to *cumbu* crop (Feb.—June).

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 26.5' × 16'. (b) 22.5' × 12'. (v) 2' × 2'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of cured leaves of tobacco. (iv) (a) 1953—1955. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1855 lb./ac. (ii) 145.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄
Av. yield	1881	1771	1894	1938	1791

S.E./mean = 72.5 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 55(26).

Site :- Cigar and Cheroot Tobacco Res. Stn., Veda sandur. Type :- 'M'.

Object :— To study the residual effect of different manures applied to cumbu crop on succeeding cigar Tobacco crop.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Cumbu (2 crops)—Tobacco. (b) Cumbu (July—Sept.). (c) Nil. (ii) (a) Reddish brown sandy loam. (b) N.A. (iii) 16.11.1955. (iv) (a) 4 ploughings. (b) Transplanting. (c) N.A. (d) 30" × 24". (e) 1. (v) 6.70 tons/ac. of F.Y.M. + 100 lb./ac. of N as A/S. (vi) Vellavazhai. (vii) Irrigated (viii) Weeding hoeing, mummati digging and topping. (ix) 16.22". (x) 5.3.1956.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(25) on page 571.

5. RESULTS :

(i) 2171 lb./ac. (ii) 107.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaves in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄
Av. yield	2180	2073	2225	2159	2220

S.E./mean = 53.5 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(26).

Site :- Cigar and Cheroot Tobacco Res. Stn., Veda sandur. Type :- 'M'.

Object :— To compare the response of chewing Tobacco to different sources of N with and without F.Y.M.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Cumbu. (b) Cumbu. (c) Nil. (ii) (a) Red loam. (b) N.A. (iii) 1.11.1954. (iv) (a) 3 ploughings. (b) Transplanting. (c) N.A. (d) 2.5' × 2'. (e) 1. (v) Nil. (vi) Valmonnai (*Nicotiana tabacum*). (vii) Irrigated. (viii) 1 hand weeding, 1 hoeing, 1 topping, suckering and orobanche removal. (ix) 5.38". (x) 10.2.1955.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 sources of 100 lb./ac. of N : S₀=Control (no application), S₁=A/S, S₂=C/N and S₃=A/S/N.

(2) 2 levels of F.Y.M. : F₀=0 and F₁=10 C.L./ac.

F.Y.M. broadcast 1 month before planting. Nitrogen applied in 2 equal doses, broadcast at planting and top dressed 6 weeks after planting.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 30'×15½'. (b) 25'×10'. (v) 1 row all round. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Spraying with DDT 550 was done as a safeguard against leaf eating caterpillar and stem borer. (iii) Yield of tobacco. (iv) (a) 1952—1954. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2004 lb./ac. (ii) 186.0 lb./ac. (iii) Main effect of F alone is highly significant. (iv) Av. yield of cured leaf in lb /ac.

	S ₀	S ₁	S ₂	S ₃	Mean
F ₀	1847	1958	1716	1830	1838
F ₁	2044	2295	2140	2204	2171
Mean	1946	2127	1928	2017	2004

S.E. of S marginal mean = 53.6 lb./ac.

S.E. of F marginal mean = 37.9 lb./ac.

S.E. of body of table = 75.9 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(27).

Site :- Cigar and Cheroot Tobacco Res. Stn., Veda sandur. Type :- 'M'.

Object :—To study the fertilizer value of indigenous rock phosphate as compared to Super and B.M. on chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Groundnut. (b) Groundnut. (c) Nil. (ii) (a) Red loam. (b) N.A. (iii) 17.11.1954. (iv) (a) 3 ploughings. (b) Transplanting. (c) N.A. (d) 2.5'×2'. (e) 1. (v) 20 C.L./ac. of F.Y.M. (vi) Valmonnai (*Nicotiana tabacum*). (vii) Irrigated. (viii) 1 hand weeding, 1 hoeing, 1 topping and suckering. (ix) 5.38". (x) 8.3.1955.

2. TREATMENTS :

Same as in expt. no. 54(20) on page 564.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 20'×17½'. (b) 15'×12'. (v) 1 row all round. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Regular spraying with DDT 550 was done as a safeguard against leaf caterpillar and stem borer. (iii) Yield of tobacco. (iv) (a) 1953—1955. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2144 lb./ac. (ii) 254.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of cured leaf in lb /ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇
Av. yield	1607	2115	2297	2224	2130	2314	2064	2398

S.E./mean = 103.7 lb./ac.

Crop :- Tobacco.**Ref :- C.T.R.I. 55(27).****Site :- Cigar and Cheroot Tobacco Res. Stn., Veda sandur. Type :- 'M'.**

Object :—To study the fertilizer value of indigenous rock phosphate as compared to Super and B.M. on chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) N.A. (ii) (a) Red loam. (b) N.A. (iii) 24.11.1955. Gas filled on 5 and 16.12.1955. (iv) (a) 4 ploughings. (b) Transplanting. (c) 8712 plants/ac. (d) 30" × 24". (e) 1. (v) 20 C.L./ac. of F.Y.M. (vi) *Monnai*. (vii) Irrigated. (viii) 1 hand weeding, *mammari* digging, earthing up, topping and suckering. (ix) N.A. (x) 22 to 27.3.1957.

2. TREATMENTS :

Same as in expt. no. 54(20) on page 564.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 20' × 17½'. (b) 15' × 12'. (v) 1 row all round. (vi) Yes.

4. GENERAL :

(i) Slightly below normal. (ii) Heavy infestation of *orobanche* and it was constantly hand picked. (iii) Yield of cured leaf. (iv) (a) 1953—1955 (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) Commencement of monsoon was late. (vii) Nil.

5. RESULTS :

(i) 1944 lb./ac. (ii) 271.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇
Av. yield	1695	2009	1836	2063	1845	1911	2072	2117

S.E./mean = 111.0 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 58(11).****Site :- Hookah and Chewing Tobacco Res. Stn., Pusa.****Type :- 'MV'.**

Object :—To study the effect of different levels of N on different varieties of Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sannhemp* (G.M.). (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) 1.10.1958. (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3' × 2'. (e) 1. (v) G.M. with *sannhemp*, (vi) As per treatments. (vii) Irrigated. (viii) 1 hand weeding, topping and suckering. (ix) 5.01". (x) 3.3.1959.

2. TREATMENTS :

Main-plot treatments:

2 levels of N as (½ as A/S + ½ as Mustard cake) : N₀=0 and N₁=50 lb./ac.

Sub-plot treatments :

5 varieties : V₁=Narhwa Sararanjan, V₂=Bori bharao 93, V₃=Bori bharao 10, V₄=Bori Malinagar Thakra and V₅=Cultivator's bulk.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 15' × 30'. (b) 9' × 26'. (v) One row allround. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Leaf curl and mosaic. (iii) Cured leaf yield. (iv) (a) 1958—1961. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2806 lb./ac. (ii) (a) 264.4 lb./ac. (b) 233.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of cured leaf in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₀	2645	2805	2849	2715	2580	2719
N ₁	2829	2879	3194	2779	2778	2892
Mean	2737	2842	3022	2747	2679	2806

S.E. of difference of two

1. N marginal means = 83.6 lb./ac.
2. V marginal means = 116.5 lb./ac.
3. V means at the same level of N = 164.7 lb./ac.
4. N means at the same level of V = 169.4 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 59(11).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sannhemp*. (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) 22.9.1959. (iv) (a) 5 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3' x 2'. (e) 1. (v) G.M. with *sannhemp*. (vi) As per treatments. (vii) Irrigated. (viii) 3 weedings, topping and suckering. (ix) 5.01". (x) 4.3.1960.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of N ($\frac{1}{2}$ as A/S + $\frac{1}{2}$ as mustard cake) : N₀=0 and N₁=50 lb./ac.

(2) 5 varieties : V₁=Narhwa Sararanjan, V₂=Bori bharao 93, V₃=D.P. 401, V₄=Bori Malinagar Thahra and V₅=Cultivator's bulk.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 15' x 30'. (b) 9' x 26'. (v) 3' x 2'. (vi) Yes.

5. GENERAL :

Same as in expt. no. 58(309) on page 574.

5. RESULTS :

(i) 2592 lb./ac. (ii) 424.4 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of cured leaf in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₀	2368	2568	2286	2427	2535	2437
N ₁	2731	2690	2987	2804	2522	2747
Mean	2550	2629	2637	2616	2529	2592

- S.E. of N marginal mean = 94.9 lb./ac.
 S.E. of V marginal mean = 140.8 lb./ac.
 S.E. of body of table = 212.2 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 55(14).

Site :- Central Tobacco Res. Stn., Rajahmundry.

Type :- 'MV'.

Object :- To test the effect of N alone and in combination with P and K on different varieties of Tobacco.

1. BASAL CONDITIONS :

(i) (a) Continuous tobacco. (b) Tobacco. (c) 20 lb./ac. of N as A/S was applied in ploughed furrows. (ii) (a) Deep black soil. (b) N.A. (iii) N.A./15.11.1955. (iv) (a) 4 ploughings with country plough. (b) Transplanting. (c) N.A. (d) 33" × 33". (e) 1. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 2 hand weedings and 2 intercultures with planet junior hoe. (ix) 0.05". (x) 31.1.1956 to 15.3.1956.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of fertilizer : $F_1=20$ lb./ac. of N as A/S and $F_2=20$ lb./ac. of N as A/S+100 lb./ac. of P_2O_5 as Super+50 lb./ac. of K_2O as Pot. Sul.

(2) 2 varieties of cigarette tobacco : $V_1=Chatham$ and $V_2=Harrison$ special (medium).

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 57'9" × 99'. (b) 52'3" × 93'6". (v) 2½' × 2½'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of green leaf. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 4035 lb./ac. (ii) 65.1 lb./ac. (iii) Main effect of N and interaction $F \times V$ are highly significant. (iv) Av. yield of green leaf in lb./ac.

	F_1	F_2	Mean
V_1	4341	4049	4195
V_2	3761	3986	3874
Mean	4051	4018	4035

S.E. of any marginal mean = 32.6 lb./ac.

S.E. of body of table = 46.1 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 58(12).

Centre :- Samastipur (Darbhanga, c.f.).

Type :- MV'.

Object :— To study the effect of different levels of N on different varieties of Tobacco.

1. BASAL CONDITIONS :

(i) (a) and (b) N.A. (c) Nil. (ii) Sandy loam. (iii) Nil. (iv) As per treatments. (v) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3' × 2'. (e) 1. (vi) 1.10.1958. (vii) and (viii) N.A. (ix) 18.8". (x) 3.3.1959.

2. TREATMENTS :

Main-plot treatments :

2 levels of N ($\frac{1}{2}$ as A/S+ $\frac{1}{2}$ as mustard cake) : $N_0=0$ and $N_1=50$ lb./ac.

Sub-plot treatments :

5 varieties : $V_1=Narwha$ Sararanjan, $V_3=Bori$ bharao—93, $V_2=Bori$ bharao—10, $V_4=Bori$ Malinagar Thahra and $V_5=Cultivator's$ bulk.

3. DESIGN :

(i) and (ii) Split-plot, 2 main-plots/replication and 5 sub-plots/main-plots ; 4 replications. (iii) (a) 15' × 30'. (b) 9' × 26'. (iv) Yes.

4. GENERAL :

(i) N.A. (ii) Leaf curl and mosaic. (iii) Cured leaf yield. (iv) (a) 1958—1959. (b) and (c) N.A. (v) (a) Muzaffarpur district. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 1322 lb./ac. (ii) (a) 123.4 lb./ac. (b) 126.2 lb./ac. (iii) Main effects of N and V are highly significant. (iv) Av. yield of cured leaf in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₀	972	1151	1329	1167	931	1110
N ₁	1288	1580	1839	1629	1329	1533
Mean	1130	1366	1584	1398	1131	1322

S.E. of difference of two

1. N marginal means = 39.0 lb./ac.
2. V marginal means = 63.1 lb./ac.
3. V means at the same level of N = 89.2 lb./ac.
4. N means at the same level of V = 88.8 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 58(13).

Centre :- Samastipur (Darbhanga, c.f.).

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Tobacco.

1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(12) on page 576.

5. RESULTS :

- (i) 1392 lb./ac. (ii) (a) 99.3 lb./ac. (b) 230.7 lb./ac. (iii) Main effect of N is highly significant and that of V is significant. (iv) Av. yield of cured leaf in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₀	1257	1182	1494	1408	1106	1289
N ₁	1399	1418	1664	1654	1342	1495
Mean	1328	1300	1579	1531	1224	1392

S.E. of difference of two

1. N marginal means = 31.4 lb./ac.
2. V marginal means = 115.3 lb./ac.
3. V means at the same level of N = 163.1 lb./ac.
4. N means at the same level of V = 149.3 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 58(13).

Centre :- Samastipur (Darbhanga, c.f.).

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Tobacco.

1. BASAL CONDITIONS :

- (i) (a) and (b) N.A. (c) Nil. (ii) Sandy loam. (iii) Nil. (iv) As per treatments. (v) (b) Transplanting. (c) 4 lb./ac. (d) 3' x 2'. (e) 1. (vi) 1.10.1958. (vii) and (v) (x) 3.3.1959.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(12) on page 576.

5. RESULTS :

- (i) 1436 lb./ac. (ii) (a) 149.4 lb./ac. (b) 200.2 lb./ac. (iii) Main effects of N and V are highly significant.
 (iv) Av. yield of cured leaf in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₀	1215	1313	1491	1426	1029	1295
N ₁	1426	1507	1936	1693	1321	1577
Mean	1321	1410	1714	1560	1175	1436

S.E. of difference of two

1. N marginal means = 47.2 lb./ac.
2. V marginal means = 100.1 lb./ac.
3. V means at the same level of N = 141.6 lb./ac.
4. N means at the same level of V = 135.1 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 58(15).****Centre :- Samastipur (Darbhanga, c.f.).****Type :- 'MV'.**

Object :— To study the effect of different levels of N on different varieties of Tobacco.

1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(14) on page 577.

RESULTS :

- (i) 2030 lb./ac. (ii) (a) 100.3 lb./ac. (b) 215.4 lb./ac. (iii) Main effects of N and V are highly significant.
 (iv) Av. yield of cured leaf in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₀	2013	1938	2117	1976	1588	1926
N ₁	2108	1919	2618	2316	1711	2134
Mean	2061	1929	2368	2146	1650	2030

S.E. of difference of two

1. N marginal means = 31.7 lb./ac.
2. V marginal means = 107.7 lb./ac.
3. V means at the same level of N = 152.3 lb./ac.
4. N means at the same level of V = 139.9 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 58(16).****Centre :- Samastipur (Darbhanga, c.f.).****Type :- MV'.**

Object :— To study the effect of different levels of N on different varieties of Tobacco.

1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(12) on page 576.

5. RESULTS:

(i) 1726 lb./ac. (ii) (a) 234.4 lb./ac. (b) 209.4 lb./ac. (iii) Main effects of N and V are significant. (iv) Av. yield of cured leaf in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₀	1991	1899	1983	1940	1630	1889
N ₁	1645	1504	1731	1596	1336	1563
Mean	1819	1702	1857	1768	14.3	1726

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. N marginal means | = 74.1 lb./ac. |
| 2. V marginal means | = 104.7 lb./ac. |
| 3. V means at the same level of N | = 148.1 lb./ac. |
| 4. N means at the same level of V | = 151.8 lb./ac. |

Crop :- Tobacco (*Rabi*).

Ref :- C.T.R.I. 59(12).

Centre :- Samastipur (Darbhanga, c.f.).

Type :- 'M'.

Object :- To study the effect of different levels of N on different varieties of Tobacco.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) Nil. (iv) As per treatments. (v) (a) 4 ploughings Transplanting. (c) 4 lb./ac. (d) 3' x 2'. (e) 1. (vi) 20.9.1959. (vii) and (viii) N.A. (ix) 1 (x) 24.2.1960.

2. TREATMENTS:

All combinations of (1) and (2)

(1) 2 levels of N ($\frac{1}{2}$ as A/S + $\frac{1}{2}$ as mustard cake) : N₀=0 and N₁=50 lb./ac.

(2) 5 varieties : V₁=Narwha Sararanjan V₂=Bori bharao-93, V₃=Bori bharao-10, V₄=Bori Ma Thakra and V₅=Cultivator's bulk.

3. DESIGN:

(i) and (ii) Fact. in R.B.D. with 4 replications. (iii) (a) 15' x 30'. (b) 9' x 26'. (iv) Yes.

4. GENERAL:

(i) N.A. (ii) Leaf curl and mosaic. (iii) Yield of cured leaf. (iv) (a) 1958-1959. (b) and (c) N. (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 1466 lb./ac. (ii) 327.8 lb./ac. (iii) Main effect of V alone is highly significant. (iv) Av. yield of leaf in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₀	1321	1151	1490	1221	1224	1281
N ₁	1508	1475	1920	1872	1475	1650
Mean	1415	1313	1705	1547	1350	1466

S.E. of N marginal mean = 73.3 lb./ac.

S.E. of V marginal mean = 115.9 lb./ac.

S.E. of body of table = 163.9 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 59(13).****Centre :- Samastipur (Darbhanga c.f.).****Type :- 'MV'.**

Object :- To study the effect of different levels of N on different varieties of Tobacco.

1. BASAL CONDITIONS :

(i) (a) and (b) N.A. (c) Nil. (ii) Sandy loam. (iii) Nil. (iv) As per treatments. (v) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3' x 2'. (e) 1. (vi) 3.10.1959. (vii) and (viii) N.A. (ix) 19.27°. (x) 5.3.1960..

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 59(12) on page 579.

5. RESULTS :

(i) 3030 lb./ac. (ii) 194.1 lb./ac. (iii) Main effects of N and V are highly significant. (iv) Av. yield of cured leaf in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₀	2831	2705	3053	2751	2549	2778
N ₁	3139	3243	3534	3433	3060	3282
Mean	2985	2974	3294	3092	2805	3030

S.E. of V marginal mean = 68.6 lb./ac.

S.E. of N marginal mean = 43.4 lb./ac.

S.E. of body of table = 97.0 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 59(14).****Centre :- Samastipur (Darbhanga, c.f.).****Type :- 'MV'.**

Object :- To study the effect of different levels of N on different varieties of Tobacco.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) Nil. (iv) As per treatments. (v) (a) 5 ploughings. (b) Transplanting (c) 4 lb./ac. (d) 3' x 2'. (e) 1. (vi) 3.10.1959. (vii) and (viii) N.A. (ix) 19.27°. (x) 5.3.1960.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 59(12) on page 579.

5. RESULTS :

(i) 2325 lb./ac. (ii) 201.8 lb./ac. (iii) Main effect of N is highly significant and that of V is significant. (iv) Av. yield of cured leaf in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₀	1962	2161	2280	2070	2399	2174
N ₁	2414	2374	2740	2284	2564	2475
Mean	2188	2268	2510	2177	2482	2325

S.E. of V marginal mean = 71.3 lb./ac.

S.E. of N marginal mean = 45.1 lb./ac.

S.E. of body of table = 100.9 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 59(15).****Centre :- Samastipur (Darbhanga, c.f.).****Type :- 'MV'.**

Object :— To study the effect of different levels of N on different varieties of Tobacco.

1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 59(12) on page 579.

5. RESULTS :

(i) 1743 lb./ac. (ii) 262.0 lb./ac. (iii) Main effect of N is highly significant and that of V is significant. (iv) Av. yield of cured leaf in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₀	1539	1484	1726	1645	1263	1531
N ₁	1881	1856	2260	1978	1799	1955
Mean	1710	1670	1993	1812	1531	1743

S.E. of V marginal mean = 92.6 lb./ac.
 S.E. of N marginal mean = 58.6 lb./ac.
 S.E. of body of table = 131.0 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 59(16).****Centre :- Samastipur (Darbhanga, c.f.).****Type :- 'MV'.**

Object :— To study the effect of different levels of N on different varieties of Tobacco.

1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 59(12) on page 579.

5. RESULTS :

(i) 2224 lb./ac. (ii) 281.2 lb./ac. (iii) Main effects of N and V are highly significant. (iv) Av. yield of cured in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₀	1887	2015	2196	2141	1660	1980
N ₁	2478	2487	2685	2586	2097	2467
Mean	2183	2251	2441	2364	1879	2224

S.E. of N marginal mean = 62.9 lb./ac.
 S.E. of V marginal mean = 99.4 lb./ac.
 S.E. of body of table = 140.6 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 58(17).****Centre :- Hazipur (Muzaffarpur, c.f.).****Type :- 'MV'.**

Object :— To study the effect of different levels of N on different varieties of Tobacco.

1. BASAL CONDITIONS :

(i) (a) and (b) N.A. (c) Nil. (ii) Sandy loam. (iii) Nil. (iv) As per treatments. (v) (a) 5 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3' x 2'. (e) 1. (vi) 1.10.1958. (vii) to (ix) N.A. (x) 3.3.1959.

2. TREATMENTS :**Main-plot treatments :**

2 levels of N ($\frac{1}{2}$ as A/S + $\frac{1}{2}$ as mustard cake) : $N_0=0$ and $N_1=50$ lb./ac.

Sub-plot treatments :

5 varieties : $V_1=$ Narhwa Saranranjn $V_2=$ Bori bhurao—93, $V_3=$ Bori bhurao—10, $V_4=$ Bori Maliangar and $V_5=$ Cultivator's buik.

3. DESIGN :

(i) and (ii) Split-plot ; 2 main-plots/replication. 5 sub-plots/main-plot and 4 replication. (iii) (a) 15' x 30'. (b) 9' x 26'. (iv) Yes.

4. GENERAL :

(i) N.A. (ii) Leaf curl and mosaic. (iii) Yield of cured leaf. (iv) (a) 1958—1959. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2834 lb./ac. (ii) (a) 191.7 lb./ac. (b) 256.1 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of cured leaf in lb./ac.

	V_1	V_2	V_3	V_4	V_5	Mean
N_0	2571	2552	2855	2477	2552	2601
N_1	3063	2987	3252	3082	2949	3067
Mean	2817	2770	3054	2780	2751	2834

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. N marginal means | = 60.6 lb./ac. |
| 2. V marginal means | = 128.0 lb./ac. |
| 3. V means at the same level of N | = 181.1 lb./ac. |
| 4. N means at the same level of V | = 172.9 lb./ac. |

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 58(18).

Centre :- Hajipur (Muzaffarpur, c.f.).

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Tobacco.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) Nil. (iv) As per treatments. (v) (a) 3 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3' x 2'. (e) 1. (vi) 1.10.1958. (vii) to (ix) N.A. (x) 3.3.1959.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(17) on page 581.

5. RESULTS :

(i) 3209 lb./ac. (ii) (a) 225.2 lb./ac. (b) 274.3 lb./ac. (iii) Main effects of N and V are highly significant. (iv) Av. yield of cured leaf in lb./ac.

	V_1	V_2	V_3	V_4	V_5	Mean
N_0	2706	2739	3533	3241	2496	2943
N_1	3095	3079	4262	4003	2933	3474
Mean	2901	2909	3898	3622	2715	3209

S.E. of difference of two

1. N marginal means	= 71.2 lb./ac.
2. V marginal means	= 137.1 lb./ac.
3. V means at the same level of N	= 194.0 lb./ac.
4. N means at the same level of V	= 187.5 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 58(19).

Centre :- Hajipur (Muzaffarpur, c.f.).

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Tobacco.

1. **BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 58(18) on page 582.

5. **RESULTS :**

- (i) 2658 lb./ac. (ii) (a) 204.6 lb./ac. (b) 265.3 lb./ac. (iii) Main effects of N and V are highly significant.
(iv) Av. yield of cured leaf in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₀	2009	2188	2852	2463	2236	2350
N ₁	2625	2544	3714	3209	2739	2966
Mean	2317	2366	3282	2836	2488	2658

S.E. of difference of two

1. N marginal means	= 64.7 lb./ac.
2. V marginal means	= 132.6 lb./ac.
3. V means at the same level of N	= 187.6 lb./ac.
4. N means at the same level of V	= 179.8 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 58(20).

Centre :- Hajipur (Muzaffarpur, c.f.).

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Tobacco.

1. **BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 58(18) on page 582.

5. **RESULTS :**

- (i) 2987 lb./ac. (ii) (a) 169.4 lb./ac. (b) 232.2 lb./ac. (iii) Main effects of N and V are highly significant.
(iv) Av. yield of cured leaf in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₀	2609	2674	3014	2901	2382	2716
N ₁	3047	3144	3857	3371	2868	3257
Mean	2828	2909	3436	3136	2625	2987

S.E. of difference of two

1. N marginal means	= 53.6 lb./ac.
2. V marginal means	= 116.1 lb./ac.
3. V means at the same level of N	= 164.2 lb./ac.
4. N means at the same level of V	= 156.3 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 58(21).

Centre :- Hajipur (Muzaffarpur, c.f.).

Type :- 'MV'.

Object :-To study the effect of different levels of N on different varieties of Tobacco.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) Nil. (iv) As per treatments. (v) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3' x 2'. (e) 1. (vi) 1.10.1958. (vii) to (ix) N.A. (x) 3.3.1959.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(17) on page 581.

5. RESULTS :

(i) 2588 lb./ac. (ii) (a) 705.0 lb./ac. (b) 302.0 lb./ac. (iii) Main effect of V alone is significant. (iv) Av. yield of cured leaf in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₀	2236	2285	2755	2512	2155	2389
N ₁	2544	2496	3468	2787	2641	2787
Mean	2390	2391	3112	2650	2398	2588

S.E. of difference of two

1. N marginal means	= 222.9 lb./ac.
2. V marginal means	= 151.0 lb./ac.
3. V means at the same level of N	= 213.5 lb./ac.
4. N means at the same level of V	= 293.3 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 59(17).

Centre :- Hajipur (Muzaffarpur, c.f.).

Type :- 'MV'.

Object :-To study the effect of A/S and mustard cake on different varieties of Tobacco.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) Nil. (iv) As per treatments. (v) (a) 5 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3' x 2'. (e) 1. (vi) 3.10.1959. (vii) to (ix) N.A. (x) 5.3.1960.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of N ($\frac{1}{2}$ as A/S + $\frac{1}{2}$ as Mustard cake) : N₀=0 and N₁=50 lb./ac.

(2) 5 varieties : V₁=Narhwa Sararanjan, V₂=Bori bharao-93, V₃=Bori bharao-10, V₄=Bori Malinagar Thahra and V₅=Cultivator's bulk.

3. DESIGN :

(i) and (ii) Fact. in R.B.D. with 4 replications. (iii) (a) 15' x 30'. (b) 9' x 26'. (iv) Yes.

4. GENERAL :

(i) N.A. (ii) Leaf curl and mosaic. (iii) Yield of cured leaf. (iv) (a) 1958-1959. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2575 lb./ac. (ii) 95.0 lb./ac. (iii) Main effects of N and V are highly significant. (iv) Av. yield of cured leaf in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₀	2302	2723	2538	2352	2202	2423
N ₁	2571	3007	2789	2690	2571	2716
Mean	2437	2865	2664	2521	2387	2575

S.E. of N marginal mean = 21.2 lb./ac.
 S.E. of V marginal mean = 33.6 lb./ac.
 S.E. of body of table = 47.5 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 59(18).

Centre :- Hajipur (Muzaffarpur, c.f.).

Type :- 'MV'.

Object :- To study the effect of A/S and mustard cake on different varieties of Tobacco.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) Nil. (iv) As per treatments. (v) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3' x 2'. (e) 1. (vi) 3.10.1959. (vii) and (viii) N.A. (ix) 19.3°. (x) 5.3.1960.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 59(17) on page 584.

5. RESULTS :

(i) 3244 lb./ac. (ii) 133.9 lb./ac. (iii) Main effects of N and V are highly significant. (iv) Av. yield of cured leaf in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₀	2908	3428	3159	2824	2672	2998
N ₁	3294	4083	3730	3294	3042	3488
Mean	3101	3756	3445	3059	2857	3244

S.E. of N marginal mean = 29.9 lb./ac.
 S.E. of V marginal mean = 47.3 lb./ac.
 S.E. of body of table = 66.9 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 59(19).

Centre :- Hajipur (Muzaffarpur, c.f.).

Type :- 'MV'.

Object :- To study the effect of A/S and mustard cake on different varieties of Tobacco.

BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) Nil. (iv) As per treatments. (v) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3' x 2'. (e) 1. (vi) 3.10.1959. (vii) to (ix) N.A. (x) 5.3.1960.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 59(17) on page 584.

5. RESULTS :

(i) 2329 lb./ac. (ii) 169.1 lb./ac. (iii) Main effects of N and V are highly significant. (iv) Av. yield of cured leaf in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₀	2090	2399	2302	1978	1717	2097
N ₁	2626	2901	2657	2383	2235	2560
Mean	2358	2650	2480	2181	1976	2329

S.E. of N marginal mean = 37.8 lb./ac.
 S.E. of V marginal mean = 59.8 lb./ac.
 S.E. of body of table = 84.5 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 59(20).****Centre :- Hajipur (Muzaffarpur, c.f.).****Type :- 'MV'.**

Object :- To study the effect of A/S and mustard cake on different varieties of Tobacco.

1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 59(17) on page 584.

5. RESULTS :

(i) 3364 lb./ac. (ii) 110.7 lb./ac. (iii) Main effects of N and V are highly significant. (iv) Av. yield of cured leaf in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₀	3159	3501	3386	3111	2723	3176
N ₁	3516	3937	3710	3483	3111	3551
Mean	3338	3719	3548	3297	2917	3364

S.E. of N marginal mean = 24.7 lb./ac.
 S.E. of V marginal mean = 39.1 lb./ac.
 S.E. of body of table = 55.3 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 59(21).****Centre :- Hajipur (Muzaffarpur, c.f.).****Type :- 'MV'.**

Object :- To study the effect of A/S and mustard cake on different varieties of Tobacco.

1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 59(17) on page 584.

5. RESULTS:

(i) 3282 lb./ac. (ii) 152.0 lb./ac. (iii) All effects are highly significant. (iv) Av. yield of cured leaf in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₀	2848	3307	3095	2932	3269	3090
N ₁	3322	4034	3759	3285	2965	3473
Mean	3085	3671	3427	3109	3117	3282

S.E. of N marginal mean = 34.0 lb./ac.
 S.E. of V marginal mean = 53.7 lb./ac.
 S.E. of body of table = 76.0 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(31).

Site :- Wrapper and Hookah Tobacco Res. Stn., Dinhat. **Type :- 'C'.**

Object :- To determine the optimum transplanting period for yield and quality of Motihari Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Top dressing with A/S at 1 md./ac. (ii) (a) Alluvium (*Doras*). (b) N.A. (iii) As per treatments. (iv) (a) 8 ploughings and 8 plankings. (b) Transplanting. (c) 10890 plants/ac. (d) 2' x 2'. (e) 1. (v) G.M. with *dhaincha* + 200 mds./ac. of F.Y.M. (vi) *Motihari* (local). (vii) Irrigated. (viii) Interculturings, weeding, topping and suckering. (ix) 0.21". (x) 29.1.1955 to 11.3.1955.

2. TREATMENTS :

4 dates of transplanting : T₁=20.10.1955, T₂=1.11.1955, T₃=15.11.1955 and T₄=30.11.1955.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 52' x 24'. (b) 48' x 20'. (v) 2' x 2'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of tobacco. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 656 lb./ac. (ii) 79.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of tobacco in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄
Av. yield	718	567	809	529

S.E./mean = 32.4 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(32).

Site :- Cigarette Tobacco Res. Sub-Stn. Farm, Guntur. **Type :- 'C'.**

Object :- To find out whether harvest of Natu Tobacco in the flue-cured tobacco fashion i.e., priming and topping high would improve the crop.

1. BASAL CONDITIONS :

(i) (a) Sorghum—Tobacco. (b) Sorghum. (c) Nil. (ii) (a) Black clay. (b) N.A. (iii) 3.11.1954. (iv) (a) 5 ploughings. (b) and (c) N.A. (d) 33" x 33". (e) N.A. (v) 12 C.L./ac. of F.Y.M. (vi) *Natu—Tokaku*. (vii) Unirrigated. (viii) 2 intercultures and 2 weedings. (ix) 7.65". (x) 31.1.1955 to 3.2.1955.

2. TREATMENTS :

All combinations of (i) and (2)

(1) 2 methods of topping : T₁=At 14 leaves and T₂=at flower head.

(2) 2 methods of harvest : H₁=From bottom to top at different intervals and H₂=From top to bottom all leaves at one time.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) 1/28.57 ac. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of cured leaf. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 774 lb./ac. (ii) 68.6 lb./ac. (iii) Main effects of H and C are highly significant. (iv) Av. yield of cured leaf in lb./ac.

	H ₁	H ₂	Mean
T ₁	712	636	674
T ₂	933	814	874
Mean	823	725	774

S.E. of any marginal mean = 19.8 lb./ac.

S.E. of body of table = 28.0 lb./ac.

Crop :- Tobacco.**Ref :- C.T.R.I. 54(33).****Site :- Cigarette Tobacco Res. Sub-Stn. Farm Guntur.****Type :- 'C'.**

Object :—To find out the optimal number of ploughings and harrowings required for Cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sorghum. (c) Nil. (ii) (a) Black clay. (b) Nil. (iii) 16.10.1954. (iv) (a) As per treatments. (b) Transplanting. (c) N.A. (d) 33"×33". (e) N.A. (v) 20 lb./ac. of N as A/S. (vi) Harrison special. (vii) Unirrigated. (viii) 3 weedings. (ix) 7.65°. (x) 10.1.1955 to 15.2.1955.

2. TREATMENTS :

Main-plot treatments :4 levels of ploughing : P₁=3, P₂=4, P₃=5 and P₄=6.**Sub-plot treatments :**4 levels of harrowing : H₀=0, H₁=1, H₂=2 and H₃=3.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 1/29.41 ac. (b) 1/40 ac. (v) One row around. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of green leaf, bright leaf and total bright leaf equivalent. (iv) (a) 1953—1956. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3651 lb./ac. (ii) (a) 631.9 lb./ac. (b) 427.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of green leaf in lb./ac.

	P ₁	P ₂	P ₃	P ₄	Mean
H ₀	3675	3647	3903	3488	3678
H ₁	4001	3629	3946	3165	3685
H ₂	3685	3436	3777	3379	3569
H ₃	3912	3585	3826	3362	3671
Mean	3818	3574	3863	3349	3651

S.E. of difference of two

1. P marginal means	= 223.4 lb./ac.
2. H marginal means	= 151.3 lb./ac.
3. H means at the same level of P	= 302.6 lb./ac.
4. P means at the same level of H	= 344.4 lb./ac.

Crop :- Tobacco.**Ref :- C.T.R.I. 57(14).****Site :- Tobacco Res. Stn., Hansur.****Type :- 'C'.**

Object :- To study the effect of piercing the stem at different levels of topping on the yield of Tobacco.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) (a) Red sandy loam. (b) N.A. (iii) 3rd week of Oct., 1957. (iv) (a) Ploughing 3 to 4 times. (b) Broadcasting. (c) 3 lb./ac. (d) 33" x 33". (e) N.A. (v) 60 lb./ac. of N+50 lb./ac. of P₂O₅+25 lb./ac. of K₂O. (vi) *Chautikudi*. (vii) Unirrigated. (viii) As per treatments. (ix) N.A. (x) Last week of Jan., 1958.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of topping : T₁=Topping at 10 leaves, T₂=Topping at 12 leaves and T₃=Topping at 14 leaves.

(2) 2 levels of piercing : P₀=No piercing and P₁=Piercing the stem.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 72 plants/plot. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Minor insects, controlled by spraying Bordeaux mixture. (iii) Yield of green leaf (with stem) and cured leaf (without stem) and no. of plants/plot. (iv) (a) 1957—1961. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1440 lb./ac. (ii) 306.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of cured leaf in lb./ac.

	T ₁	T ₂	T ₃	Mean
P ₀	1337	1552	1425	1438
P ₁	1482	1390	1460	1444
Mean	1409	1471	1442	1441

S.E. of T marginal mean = 108.5 lb./ac.

S.E. of P marginal mean = 88.6 lb./ac.

S.E. of body of table = 153.4 lb./ac.

Crop :- Tobacco.**Ref :- C.T.R.I. 58(22).****Site :- Tobacco Res. Stn., Hunsur.****Type :- 'C'.**

Object :- To study the effect of piercing the stem at different levels of topping on the yield of Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) 60 lb./ac. of N+50 lb./ac. of P₂O₅+25 lb./ac. of K₂O. (ii) (a) Red sandy loam. (b) N.A. (iii) 5.10.1958. (iv) (a) Ploughing 3 to 4 times. (b) Broadcasting. (c) 3 lb./ac. (d) 33" x 33". (e) N.A. (v) 60 lb./ac. of N+50 lb./ac. of P₂O₅+25 lb./ac. of K₂O. (vi) *Chautikudi*. (vii) Unirrigated. (viii) As per treatments. (ix) 7.46". (x) 27.2.1959.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(14) on page 589.

5. RESULTS :

(i) 447 lb./ac. (ii) 96.6 lb./ac. (iii) Main effect of T alone is significant. (iv) Av. yield of cured leaf in lb./ac.

	T ₁	T ₂	T ₃	Mean
P ₀	373	473	475	440
P ₁	364	444	553	454
Mean	368	458	514	447

S.E. of T marginal mean = 34.1 lb./ac.

S.E. of P marginal mean = 27.9 lb./ac.

S.E. of body of table = 48.3 lb./ac.

Crop :- Tobacco.**Ref :- C.T.R.I. 58(22).****Site :- Tobacco Res. Stn., Hunsur.****Type :- 'C'.**

Object:—To study the effect of piercing the stem at different levels of topping on the yield of Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) 60 lb./ac. of N+ 50 lb./ac. of P₂O₅+25 lb./ac. of K₂O. (ii) (a) Red sandy loam. (b) N.A. (iii) 27.10.1959 (iv) (a) Ploughing 3 to 4 times. (b) Broadcasting. (c) 3 lb./ac. (d) 33"×33" (e) N.A. (v) 60 lb./ac. of N+50 lb./ac. P₂O₅+24 lb./ac. of K₂O. (vi) *Chautikudi*. (vii) Unirrigated. (viii) As per treatments. (ix) 10.4". (x) 31.1.1960.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(14) on page 589.

5. RESULTS :

(i) 985 lb./ac. (ii) 165.3 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of cured leaf in lb./ac.

	T ₁	T ₂	T ₃	Mean
P ₀	970	1071	913	985
P ₁	917	1027	1040	985
Mean	944	1049	962	985

S.E. of T marginal mean = 58.4 lb./ac.

S.E. of P marginal mean = 47.7 lb./ac.

S.E. of body of table = 82.6 lb./ac.

Crop :- Tobacco.**Ref :- C.T.R.I. 57(15).****Site :- Tobacco Res. Stn., Hunsur.****Type :- 'C'.**

Object:—To study the effect of shading the nursery on the yield of Tobacco.

1. BASAL CONDITIONS :

(i) (a) *Ragi* in *Kharif* and Tobacco in *Rabi*. (b) *Ragi*. (c) 20 lb./ac. of N. (ii) (a) Red sandy loam. (b) N.A. (iii) 10.10.1957 (iv) (a) Ploughing 3 to 4 times. (b) Transplanting. (c) 3 lb./ac. (d) 33"×33". (e) N.A. (v) 80 lb./ac. of N+50 lb./ac. of P₂O₅+25 lb./ac. of K₂O applied as A/S+G.N.C., Super and Potash respectively. (vi) *Chautikudi*. (vii) Unirrigated. (viii) Intercultivation, topping and suckering. (ix) N.A. (x) 20.2.1958.

2. TREATMENTS :

2 cultural treatments : C₁=Planting seedlings from nursery without shade and C₂=Planting seedlings from shaded nursery.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) and (b) 200 plants/plot. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of green leaf with stem and cured leaf without stem. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 690 lb./ac. (ii) 74.7 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	C ₁	C ₂
Av. yield	757	623
S.E./mean = 37.3 lb./ac.		

Crop :- Tobacco.

Ref :- C.T.R.I. 58(23).

Site :- Tobacco Res. Stn., Hunsur.

Type :- 'C'.

Object :— To study the effect of shading the nursery on the yield of Tobacco.

1. BASAL CONDITIONS :

(i) (a) Ragi in *kharif* and Tobacco in *rabi*. (b) Ragi. (c) 20 lb./ac. of N. (ii) (a) Red sandy loam. (b) N.A. (iii) 29.10.1958. (iv) (a) Ploughing 3 to 4 times. (b) Transplanting. (c) 3 lb./ac. (d) 33" x 33". (e) N.A. (v) 80 lb./ac. of N+50 lb./ac. of P₂O₅+25 lb./ac. of K₂O applied as A/S+G.N.C., Super and Potash respectively. (vi) Chautikudi. (vii) Unirrigated. (viii) Intercultivation, topping and suckering. (ix) 7.46". (x) 22.2.1959.

2. TREATMENTS :

Same as in expt. no. 57(15) on page 590.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) and (b) 96 plants/plot. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Sub-normal. (ii) Nil. (iii) Yield of green leaf (with stem) and cured leaf (without stem) and no. of plants/plot. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Levelling of field could be completed very late and planting was completed by 14.11.1958. Due to lack of soil moisture crop was sub-normal.

5. RESULTS :

(i) 505 lb./ac. (ii) 104.8 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	C ₁	C ₂
Av. yield	472	538
S.E./mean = 52.4 lb./ac.		

Crop :- Tobacco.

Ref :- C.T.R.I. 59(23).

Site :- Tobacco Res. Stn., Hunsur.

Type :- 'C'.

Object :— To study the effect of shading the nursery on the yield of Tobacco.

1. BASAL CONDITIONS :

(i) (a) *Ragi* in *kharif* and Tobacco in *rabi*. (b) *Ragi*. (c) 20 lb./ac. of N. (ii) (a) Red sandy loam. (b) N.A. (iii) 26.10.1959. (iv) (a) Ploughing 3 to 4 times. (b) Transplanting. (c) 3 lb./ac. (d) 33"×33". (e) N.A. (v) 80 lb./ac. of N, 50 lb./ac. of P₂O₅ and 25 lb./ac. of K₂O applied as A/S+G.N.C., Super and Potash respectively. (vi) *Chautikudi*. (vii) Unirrigated. (viii) Inter cultivation, topping and suckering. (ix) 10.45°. (x) 31.1.1960.

2. TREATMENTS :

Same as in expt. no. 57(15) on page 590.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) and (b) 120 plants/plot. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of green leaf (with stem) and cured leaf (without stem) and no. of plants/plot. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1063 lb./ac. (ii) 141.8 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	C ₁	C ₂
Av. yield	1058	1069

S.E./mean = 70.9 lb./ac.

Crop :- Tobacco (Kharif).

Ref :- C.T.R.I 57(16),

Site :- Tobacco Res. Stn., Hunsur.

Type :- 'C'.

Object :- To find the effect of shading the nursery on the number of the transplanting seedlings.

1. BASAL CONDITIONS :

(i) (a) and (b) Nil. (c) N.A. (ii) (a) Red sandy loam. (b) N.A. (iii) 24.7.1957. (iv) (a) Ploughing 3 to 4 times. (b) Broadcasting. (c) 3 lb./ac. (d) 33"×33". (e) N.A. (v) Nil. (vi) *Chautikudi*. (vii) Unirrigated. (viii) Nil. (ix) N.A. (x) 19.9.1957 to 19.10.1957.

2. TREATMENTS :

2 cultural treatments: C₀=No shading and C₁=Shading the nursery.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 7. (iv) (a) and (b) 3'×4' of the bed. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) % of transplantable seedlings per bed. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Considerable washing off due to beating rains on 29.7.1957. (vii) N.A.

5. RESULTS :

(i) 237 seedlings/bed. (ii) 48 seedlings/bed. (iii) Treatment difference is significant. (iv) Av. no. of transplantable seedlings/bed.

Treatment	C ₀	C ₁
Av. yield	279	195

S.E./mean = 18 seedlings/bed.

Crop :- Tobacco (Kharif).

Ref :- C.T.R.I. 58(24).

Site :- Tobacco Res. Stn., Hunsur.

Type :- 'C'.

Object :— To study the effect of shading the nursery on the no. of transplantable seedlings.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) Nil. (ii) (a) Red sandy loam. (b) N.A. (iii) 8.8.1958. (iv) (a) Ploughing 3 to 4 times. (b) Broadcasting. (c) 3 lb./ac. (d) 33"×33". (e) N.A. (v) Nil. (vi) Chautikudi. (vii) Unirrigated. (viii) Nil. (ix) N.A. (x) 5 to 17.10.1958.

2. TREATMENTS :

Same as in expt. no. 57(6) on page 592.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) and (b) 20'×4' of the bed. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Damping in the form of wet rot and leaf spot due to *anthracnose* within 3 to 4 weeks respectively after sowing and appropriate spraying of Bordeaux mixture adopted to control the disease. (iii) % of transplantable seedlings per bed. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 47.6%. (ii) 0.33%. (iii) Treatment difference is not significant. (iv) Av. % of transplantable seedlings.

Treatment	C ₀	C ₁
Av. %	43.9	51.3

S.E./mean = 0.16 %.

Crop :- Tobacco (Kharif).

Ref :- C.T.R.I. 59(24).

Site :- Tobacco Res. Stn., Hunsur.

Type :- 'C'.

Object :— To study the effect of shading of nursery on the number of transplantable seedlings.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) Nil. (ii) (a) Red sandy loam. (b) Nil. (iii) 20.7.1959. (iv) (a) Ploughing 3 to 4 times. (b) Broadcasting. (c) 3 lb./ac. (d) 33"×33". (e) N.A. (v) Nil. (vi) Chautikudi. (vii) Unirrigated. (viii) Nil. (ix) 16.9". (x) 3 to 23.9.1959.

2. TREATMENTS :

Same as in expt. no. 57(16) on page 592.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 8. (iv) (a) and (b) 10'×4' of the bed. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Heavy rainfall affected the growth of seedlings adversely. (ii) Anthracnose spread very rapidly affecting the seedling stand and it was controlled by spraying Bordeaux mixture. (iii) % of transplantable seedlings (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 61.7%. (ii) 1.2%. (iii) Treatment difference is highly significant. (iv) Av. % of transplantable seedlings.

Treatment	C ₀	C ₁
Av. yield	52.1	70.8

S.E./mean = 0.42%

Crop :- Tobacco.**Ref :- C.T.R.I. 57(17),****Site :- Tobacco Res. Stn., Hunsur.****Type :- 'C'.**

Object :- To find the optimum seed rate to raise healthy seedlings of flue-cured Tobacco in nursery.

1. BASAL CONDITIONS :

(i) (a) and (b) Nil. (c) N.A. (ii) (a) Red sandy loam. (b) Nil. (iii) 24.7.1957. (iv) (a) Ploughing 3 to 4 times. (b) Broadcasting. (c) As per treatments. (d) and (e) N.A. (v) 20 tons/ac. of F.Y.M. applied before sowing and 50 lb./ac. of N as A/S applied as top dressing. (vi) Harrison special. (vii) Unirrigated. (viii) Nil. (ix) N.A. (x) 8 to 30.9.1957.

2. TREATMENTS :5 seed rates : $R_1=0.75$, $R_2=1.50$, $R_3=3.00$, $R_4=4.50$ and $R_5=6.00$ lb./ac.**3. DESIGN :**(i) R.B.D. (ii) (a) 5. (b) $4' \times 23.75'$. (iii) 4. (iv) (a) and (b) $4' \times 4.75'$. (v) Nil. (vi) Yes.**4. GENERAL :**

(i) Not satisfactory. (ii) Minor insects were controlled by spraying Bordeaux mixture 0.4% at weekly intervals. (iii) % of transplantable seedlings and germination count. (iv) (a) 1957—1960. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Considerable washing off due to beating rains on 29.7.1957. (vii) Nil.

5. RESULTS :

(i) 79.3%. (ii) 0.56%. (iii) Treatment differences are significant. (iv) Av. % of transplantable seedlings.

Treatment	R_1	R_2	R_3	R_4	R_5
Av. %	76.6	84.3	85.9	76.9	71.6

S.E./mean = 0.28 %.

Crop :- Tobacco.**Ref :- C.T.R.I. 58(25).****Site :- Tobacco Res. Stn., Hunsur.****Type :- 'C'.**

Object :- To find out the optimum seed rate to raise healthy seedlings of flue cured Tobacco in nursery.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Tobacco. (c) 20 tons/ac. of F.Y.M. applied before sowing and 50 lb./ac. of N as A/S applied as top dressing. (ii) (a) Red sandy loam. (b) N.A. (iii) 28.5.1958. (iv) (a) Ploughing 3 to 4 times. (b) Broadcasting. (c) As per treatments. (d) and (e) N.A. (v) 20 tons/ac. of F.Y.M. applied before sowing and 50 lb./ac. of N as A/S as top dressing. (vi) Harrison special. (vii) Unirrigated. (viii) Nil. (ix) N.A. (x) 31.7.1958 to 20.8.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(17) above.

4. GENERAL :

(i) Due to lack of rains germination was poor. (ii) No serious pests and diseases and minor insects were controlled by spraying Bordeaux mixture at weekly intervals. (iii) % of transplantable seedlings and germination counts. (iv) (a) 1957—1960. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 65.7%. (ii) 1.8%. (iii) Treatment differences are highly significant. (iv) Av. % of transplantable seedlings.

Treatment	R_1	R_2	R_3	R_4	R_5
Av. %	89.2	65.3	58.5	57.7	53.3

S.E./mean = 0.9 %.

Crop :- Tobacco (Kharif).

Ref :- C.T.R.I. 59(26).

Site :- Tobacco Res. Stn., Hunsur.

Type :- 'C'.

Object :—To find out the optimum seed rate to raise healthy seedlings of flue cured Tobacco in nursery.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) 8 tons/ac. of F.Y.M. applied before sowing and 50 lb./ac. of N as A/S given as top dressing. (ii) (a) Red sandy loam. (b) N.A. (iii) 27.5.1959. (iv) (a) Ploughing 3 to 4 times. (b) Broadcasting. (c) As per treatments. (d) and (e) N.A. (v) 8 tons/ac. of F.Y.M. applied before sowing and 50 lb./ac. of N as A/S given as top dressing. (vi) Harrison special. (vii) Unirrigated. (viii) Nil. (ix) 21.9". (x) 30.7.1959 to 30.8.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(17) on page 594.

4. GENERAL :

(i) Fair. (ii) Anthracnose spread very rapidly affecting the seedling stand ; controlled by spraying Bordeaux mixture (0.4 %) at weekly intervals. (iii) % of transplantable seedlings and germination count. (iv) (a) 1957—1960. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Due to heavy rains the seedlings were washed and it was resown. (vii) Nil.

5. RESULTS :

(i) 58.8 %. (ii) (a) 0.70 %. (b) 0.18 %. (iii) Treatment differences are highly significant. (iv) Av. % of transplantable seedlings.

Treatment	R ₁	R ₂	R ₃	R ₄	R ₅
Av. %	78.8	65.6	57.9	53.1	36.6

S.E./mean = 0.35 %.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(34).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'C'.

Object :—To find out the effect of rabbing and shading of nursery on growth of seedlings and yield of transplanted crop of hookah and chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Maize+Rahar. (b) Maize+Rahar. (c) Nil. (ii) (a) Gangetic alluvium calcareous. (b) N.A. (iii) N.A/20.9.1954. (iv) (a) to (c) N.A. (d) 3'×2'. (e) 1. (v) G.M. with *sannhemp*. (vi) *Bori bharao*—93. (vii) Irrigated. (viii) Interculturing once, weeding twice, topping once as usual and suckering 8 times. (ix) 46.73". (x) 23.2.1955.

2. TREATMENTS:

All combinations of (1) and (2)

(1) 2 treatments of rabbing : R₀—Unrabbed and R₁—Rabbed.

(2) 2 treatments of shading : S₀—Unshaded and S₁—Shaded.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 42'×21'. (b) 38'×15'. (v) 2'×3'. (vi) Yes.

4. GENERAL :

(i) Av. growth and stand. (ii) Leaf curl, mosaic, attack of cutworm, caterpillars. Hand picking of larvae. (iii) No. of transplantable seedlings per bed, weight per seedlings in oz. Cured leaf weight. (iv) (a) 1954—1956. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1913 lb./ac. (ii) 124.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of cured leaf in lb./ac.

	S ₀	S ₁	Mean
R ₀	1918	1992	1955
R ₁	1866	1873	1870
Mean	1892	1933	1913

S.E. of any marginal mean = 36.0 lb./ac.
S.E. of body of table = 20.9 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 55(15).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'C'.

Object :-To determine the effect of rabbing and shading on the growth of seedlings and yield of transplanted crop of hookah and chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Maize+Rahar—Tobacco. (b) Maize+Rahar. (c) Nil. (ii) (a) Gangetic alluvium calcareous. (b) N.A. (iii) N.A./4.10.1955. (iv) (a) 1 ploughing by planet junior cultivator. (b) Transplanting. (c) 2 lb./ac. (d) 3'×2'. (e) 1. (v) G.M. with sannhemp. (vi) *Bori bharao*—93 (medium). (vii) Irrigated. (viii) 3 times weeding and hoeing, 8 suckerings and topping. (ix) 6.11". (x) 11.3.1956.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(34) on page 595.

4. GENERAL :

(i) Average growth. (ii) Leaf curl and mosaic. (iii) Cured leaf yield. (iv) (a) 1954—1956. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1897 lb./ac. (ii) 149.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of cured leaf in lb./ac.

	R ₀	R ₁	Mean
S ₀	1895	1866	1881
S ₁	1925	1902	1914
Mean	1910	1884	1897

S.E. of any marginal mean = 43.2 lb./ac.
S.E. of body of table = 61.1 lb./ac.

Crop :- Tobacco (Rabi) .

Ref :- C.T.R.I. 56(10).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'C'.

Object :-To determine the effect of rabbing and shading on growth of seedlings and yield of transplanted crop of hookah and chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Maize+Rahar—Tobacco. (b) Maize+Rahar. (c) Nil. (ii) (a) Gangetic alluvium calcareous. (b) N.A. (iii) 7.10.1956. (iv) (a) 1 ploughing by planet junior cultivator. (b) Transplanting. (c) 2 lb./ac. (d) 3'×2'. (e) 1. (v) N.A. (vi) *Bori bharao*—93 (medium). (vii) Irrigated. (viii) 3 weedings and hoeings, 6 suckerings and topping. (ix) 14.0". (x) 1.3.1957.

2. TREATMENTS :

Same as in expt. no. 54(34) on page 596.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 15' × 30'. (b) 9' × 26'. (v) 3' × 2'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of cutworm, leaf eating caterpillar ; 50% D.D.T. was sprayed, leaf curl and mosaic attack. (iii) Yield of cured leaf. (iv) (a) 1954—1956. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Hail storm on 9.1.1957. (vii) Nil.

5. RESULTS :

(i) 1381 lb./ac. (ii) 185.3 lb./ac. (iii) Only S effect is significant. (iv) Av. yield of cured leaf in lb./ac.

	R ₀	R ₁	Mean
S ₀	1534	1438	1486
S ₁	1238	1312	1275
Mean	1386	1375	1381

S.E. of any marginal mean = 58.6 lb./ac.

S.E. of body of table = 82.9 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(35).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa.

Type :- 'C'.

Object :-To determine the amount of seed required for one acre of nursery of hookah and chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Maize+Rahar mixture. (b) Maize+Rahar mixture. (c) Nil. (ii) (a) Gangetic alluvium calcareous. (b) N.A. (iii) N.A./29.9.1954. (iv) (a) and (b) N.A. (c) As per treatments. (d) 3' × 2'. (e) 1. (v) G.M. with *sannhemp*. (vi) *Bori bharao*—93 (medium). (vii) Irrigated. (viii) Interculturing twice, weeding twice, topping once as usual and suckering seven times. (ix) 46.7". (x) 6.3.1955.

2. TREATMENTS :

3 seed rates : R₁=2, R₂=4 and R₃=6 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 42' × 20'. (b) 36' × 16'. (v) 3' × 2'. (vi) Yes.

4. GENERAL :

(i) Av. growth and stand. (ii) Leaf curl, mosaic, attack of cut worm and caterpillar. Hand picking of larvae. (iii) No. of seedlings, weight of seedlings and yield of cured tobacco. (iv) (a) 1954—1956. (b) and (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 2181 lb./ac. (ii) 128.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	R ₁	R ₂	R ₃
Av. yield	2174	2130	2238

S.E./mean = 52.4 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 55(16).****Site :- Hookah and Chewing Tobacco Res. Stn., Pusa.****Type :- 'C'.**

Object :—To determine the amount of seed required for one acre of nursery of hookah and chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Maize+Rahar—Tobacco. (b) Maize+Rahar. (c) Nil. (ii) (a) Gangetic alluvium calcareous. (b) N.A. (iii) 4.10.1955. (iv) (a) 1 ploughing by planet junior cultivator. (b) Transplanting. (c) As per treatments. (d) 3'×2'. (e) 1. (v) G.M. with *sannhemp*. (vi) *Bori bharao*—93 (medium). (vii) Irrigated. (viii) 3 weedings and mulching, 7 suckering and topping. (ix) 6.11". (x) 11.3.1956.

2. TREATMENTS :

Same as in expt. no. 54(35) on page 597.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 21'×42'. (b) 15'×38'. (v) 3'×2'. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Leaf curl and mosaic. (iii) Cured leaf yield. (iv) (a) 1954—1956. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1573 lb./ac. (ii) 132.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	R ₁	R ₂	R ₃
Av. yield	1473	1636	1610

S.E./mean = 54.1 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 56(11).****Site :- Hookah and Chewing Tobacco Res. Stn., Pusa.****Type :- 'C'.**

Object :— To determine the amount of seed required for one acre of nursery of Hookah and Chewing Tobacco.

1. BASAL CONDITIONS :

(i) Maize+Rahar—Tobacco. (b) Maize+Rahar. (c) Nil. (ii) Gangetic alluvium calcareous. (b) N.A. (iii) 2.10.1956. (iv) (a) 1 ploughing with plant junior cultivator. (b) Transplanting. (c) As per treatments. (d) 3'×2'. (e) 1. (v) G.M. with *sannhemp*. (vi) *Bori bharao*—93 (medium). (vii) Irrigated. (viii) 4 weedings, mulching, suckering 5 times and topping. (ix) 14.00". (x) 21.2.1957.

2. TREATMENTS :

Same as in expt. no. 54(35) on page 597.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 15'×30'. (b) 9'×26'. (v) 3'×2'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Aphid attack. Spraying of Endrin 19.5% E.C. twice. (iii) Yield of cured leaf. (iv) (a) 1954—1956. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Heavy rain during nursery season. Hail storm on 9.1.1957.

5. RESULTS :

(i) 1324 lb./ac. (ii) 132.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in lb./ac

Treatment	R ₀	R ₁	R ₂
Av. yield	1317	1327	1329

S.E./mean = 34.1 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 58(26).

Site :- Hookah and Chewing Tobacco Res. Sta., Pusa.

Type :- 'C'.

Object :- To study the effect of mixed cropping with shallow-rooted crops on the yield and quality of hookah and chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) G.M. crop *sannhemp*. (c) N.A. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) 9.10.1958. (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3'x2'. (e) 1. (v) G.M. with *sannhemp*. (vi) D.P.—401. (vii) Irrigated. (viii) 2 weedings, topping and suckering. (ix) 7.1". (x) 8.3.1959.

2 TREATMENTS :

4 crops sown with tobacco : C₀=Control, C₁=Garlic, C₂=Onion and C₃=Coriander.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 15'x30'. (b) 9'x26'. (v) 3'x2'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Leaf curl and mosaic. (iii) Cured leaf yield. (iv) (a) 1958—1960. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2547 lb./ac. (ii) 285.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	C ₀	C ₁	C ₂	C ₃
Av. yield	2541	2641	2392	2612

S.E./mean = 116.6 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 59(27).

Site :- Hookah and Chewing Tobacco Res. Sta., Pusa.

Type :- 'C'.

Object :- To study the effect of mixed cropping with shallow-rooted crops on the yield and quality of hookah and chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) G.M. crop *sannhemp*. (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) 21.10.1959. (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3'x2'. (e) 1. (v) G.M. with *sannhemp*. (vi) D.P.—401. (vii) Irrigated. (viii) 3 weedings, topping and suckering. (ix) 19.6". (x) 1.4.1960.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(26) above.

5. RESULTS :

(i) 1636 lb./ac. (ii) 210.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	C ₀	C ₁	C ₂	C ₃
Av. yield	1581	1678	1647	1638

S.E./mean = 85.8 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 57(23).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa.

Type :- 'C'.

Object :- To study the effect of different spacings on the yield of hookah and chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize+*Rahar*. (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) N.A./28.9.1957. (iv) (a) 5 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) As per treatments. (e) 1. (v) G.M. with *sannhemp*. (vi) N.P.—220. (vii) Irrigated. (viii) 2 weedings, topping and suckering. (ix) 49.3". (x) 5.2.1958.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 spacings between rows : R₁=18" and R₂=24".

(2) 2 spacings between plants : S₁=12" and S₃=18".

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 12'×21'. (b) Varying as per treatments. (v) 1 row around. (vi) Yes.

4. GENERAL :

(i) Water lodged. (ii) Leaf curl and mosaic. (iii) Cured leaf yield. (iv) (a) 1957—1958. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2364 lb./ac. (ii) 520.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of cured leaf in lb./ac.

	R ₁	R ₂	Mean
S ₁	2496	2234	2365
S ₂	2412	2314	2363
Mean	2354	2274	2364

S.E. of any marginal mean = 184.1 lb./ac.

S.E. of body of table = 260.4 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 58(27).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa.

Type :- 'C'.

Object :- To study the effect of different spacings on the yield of hookah Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) N.A. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) N.A./6.10.1958. (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) As per treatments. (e) 1. (v) G.M. with *sannhemp*. (vi) NP.—220. (vii) Irrigated. (viii) 2 weedings, topping and suckering. (ix) 7.1". (x) 20.2.1959.

2. TREATMENTS :

Same as in expt. no. 57(23) above.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 12' × 21'. (b) Varying as per treatments. (v) 1 row around. (vi) Yes.

4. GENERAL :

Same as in expt. no. 57(23) on page 600.

5. RESULTS :

(i) 1861 lb./ac. (ii) 312.3 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of cured leaf in lb./ac.

	R ₁	R ₂	Mean
S ₁	1852	2046	1949
S ₂	1863	1682	1772
Mean	1857	1864	1860

S.E. of any marginal mean = 90.1 lb./ac.
S.E. of body of table = 127.5 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(35).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'C'.

Object :- To find out the effect of different spacings on the yield of Tobacco.

1. BASAL CONDITIONS :

(i) (a) Continuous tobacco. (b) Tobacco. (c) Nil. (ii) (a) Deep black soil. (b) N.A. (iii) N.A./29.10.1954. (iv) (a) 4 ploughings with country plough. (b) Transplanting. (c) N.A. (d) As per treatments. (e) 1. (v) 20 lb./ac. of N as A/S broadcast. (vi) *Chatham* (cigarette). (vii) Unirrigated. (viii) 2 intercultures with planet junior and 2 hand weedings. (ix) 6.24". (x) 9.1.1955 to 22.2.1955.

2. TREATMENTS :

5 spacings : S₁ = 33" × 33" (control ; 2 plots), S₂ = 48" × 12", S₃ = 48" × 15", S₄ = 48" × 18" and S₅ = 48" × 21".

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 22' × 33' for S₁ and 24' × 33' for rest. (b) Varying sizes with 1 row omitted all round each plot. (v) 1 row all round each plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Weight of green, cured leaves and the proportion of different grades of cured leaf, dry weight of seed capsules and stalk. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Bright leaf

(i) 586 lb./ac. (ii) 75.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of bright leaf in lb./ac.

Treatment	S ₁	S ₂	S ₃	S ₄	S ₅
Av. yield	592	586	576	608	566

S.E. of S₁ mean = 21.8 lb./ac.
S.E./mean other than S₁ = 30.8 lb./ac.

Green leaf

(i) 6192 lb./ac. (ii) 565 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of green leaf in lb./ac.

Treatment	S ₁	S ₂	S ₃	S ₄	S ₅
Av. yield	5930	6579	6227	6436	5787
	S.E. of S ₁ mean			= 163.1 lb./ac.	
	S.E./mean other than S ₁			= 230.7 lb./ac.	

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 56(12).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'C'.

Object :-To study the effect of different spacings on the yield of Tobacco.

1. BASAL CONDITIONS :

(i) (a) Continuous tobacco. (b) Tobacco. (c) N.A. (ii) (a) Deep black soil. (b) N.A. (iii) N.A./22.11.1956. (iv) (a) 4 ploughings with country plough. (b) Transplanting. (c) N.A. (d) As per treatments. (e) 1. (v) Nil. (vi) Harrison special (medium cigarette). (vii) Unirrigated. (viii) 2 interculturalures—1 with teeth harrow and 1 with planet junior hoe and 2 hand weedings. (ix) Nil. (x) 25.1.1957 to 15.3.1957.

2. TREATMENTS :

3 spacings : S₁=33"×33", S₂=48"×24" and S₃=48"×18".

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 48'0"×41'3". (b) S₁=41'3"×35'9", S₂=44'0"×32'0" and S₃=45'0"×32'0" for 3 replications and S₁=41'3"×35'9", S₂=40'0"×36'0" and S₃=40'0"×37'6" for other 3 replications. (v) N.A. (vi) Yes

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of green leaf. (iv) (a) 1953—1957 (modified in 1955). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 6225 lb./ac. (ii) 341.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of green leaf in lb./ac.

Treatment	S ₁	S ₂	S ₃
Av. yield	6208	6049	6418

S.E./mean = 139.5 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 57(18).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'C'.

Object :-To study the effect of different spacings on the yield of Tobacco.

1. BASAL CONDITIONS :

(i) (a) Continuous tobacco. (b) Tobacco. (c) 20 lb./ac. of N as A/S. (ii) (a) Heavy black soil. (b) N.A. (iii) N.A./19.10.1957. (iv) (a) 1 ploughing with country plough. (b) Planting with rope. (c) N.A. (d) As per treatments. (e) 1. (v) 100 lb./ac. of A/S to supply 20 lb./ac. of N applied deep in the plough furrow during October. (vi) Harrison special (medium flue cured). (vii) Unirrigated. (viii) 2 interculturalures with planet junior hoe and 1 hand weeding. (ix) 2.56". (x) 27.12.1957 to 10.2.1958.

2. TREATMENTS :

Same as in expt. no. 56(12) above.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 41'3"×48". (b) 1/100 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Severe attack of mosaic. Care was taken not to touch affected plants. DDT was sprayed at 2 ozs./10 gallons to check the incidence of caterpillars. (iii) Yield of green leaf. (iv) (a) 1953-1957. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 6870 lb./ac. (ii) 478.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of green leaf in lb/ac.

Treatment	S ₁	S ₂	S ₃
Av. yield	6854	6720	7035

S.E./mean = 195.5 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 57(19).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'C'.

Object :- To find out the optimum combination of ploughing (with iron and wooden plough) combined with harrowing, required for cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Continuous tobacco. (b) Tobacco. (c) 20 lb./ac. of N as A/S. (ii) (a) Deep black soil. (b) N.A. (iii) N.A./28.10.1957. (iv) (a) As per treatments. (b) Transplanting. (c) N.A. (d) 33" x 35". (e) 1. (v) 20 lb./ac. of N as A/S deep behind the country plough in furrows opened twice with ridger during last-week of October. (vi) Harrison special (medium). (vii) Unirrigated. (viii) 2 intercultures with planet-junior hoe both ways and 2 hand weedings. (ix) 1.18". (x) 9.1.1958 to 17.2.1958.

2. TREATMENTS :

Implement	No. of ploughings									
	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀
Iron mould board plough	0	1	2	0	0	1	2	0	1	0
Country plough	3	2	1	0	1	1	0	2	0	6
Blade harrow	2	2	2	5	4	3	3	3	4	2

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 49'6" x 27'6". (b) 44'0" x 22'0". (vi) 2½' x 2½'. (v) Yes.

4. GENERAL :

(i) Normal. (ii) Slight incidence of mosaic. Care was taken not to touch the affected plants. Spraying of DDT at 2 ozs./10 gallons of water was done for caterpillar incidence. (iii) Yield of green leaf. (iv) (a) 1957-1958. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 6986 lb./ac. (ii) 434.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of green leaf in lb/ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀
Av. yield	6753	6788	7008	7262	7529	6945	6773	7229	6757	6817

S.E./mean = 217.4 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 58(28).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'C'.

Object :- To find out the optimum combination of ploughing (with iron and wooden plough) combined with harrowing, required for cigarette Tobacco.

1. BASAL CONDITIONS:

(i) (a) Continuous tobacco. (b) Tobacco. (c) 20 lb./ac. of N as A/S. (ii) (a) Deep black soil. (b) N.A. (iii) N.A./15.11.1958. (iv) (a) As per treatments. (b) Transplanted. (c) N.A. (d) 33" × 33". (e) 1. (v) 3 tons/ac. of F.Y.M. applied by broadcast. 20 lb./ac. of N as A/S by working a deep placing implement. (vi) Harrison special (medium). (vii) Unirrigated. (viii) 4 hand weedings, 2 intercultures with planet junior hoe both ways and 3rd interculture with country plough. (ix) 7.23". (x) 22.1.1959 to 5.3.1959.

2. TREATMENTS and 3. DESIGN:

Same as in expt. no. 57(19) on page 603.

4. GENERAL:

(i) Due to heavy showers received during February lodging of considerable no. of plants took place and some curable leaves got spoiled. (ii) Incidence of caterpillar attack. Spraying was done with DDT at 2 oz. in 10 gallons of water concentration. Spraying was done with Basudin against aphid attacks. (iii) Yield of green leaf. (iv) (a) 1957—1958. (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) During the month of September the field was submerged under rain and flood water for a considerable time. (vii) Nil.

5. RESULTS:

(i) 6268 lb./ac. (ii) 572.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of green leaf in lb./ac.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀
Av. yield	5913	6382	5483	6973	7147	6332	6158	6100	6982	5212

S.E./mean = 286.0 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 58(29).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'C'.

Object :- To study the effect of deep ploughing with tractor and harrowing on the yield of flue cured Tobacco.

1. BASAL CONDITIONS:

(i) (a) Continuous tobacco. (b) Tobacco. (c) N.A. (ii) (a) Deep black soil. (b) N.A. (iii) N.A./13.11.1958. (iv) (a) As per treatments. (b) Transplanting. (c) N.A. (d) 33" × 33". (e) 1. (v) 100 lb./ac. of A/S with the help of deep placing implement. (vi) Harrison special (medium ; cigarette). (vii) Unirrigated. (viii) 1 hand weeding after planting, 1 interculture with planet junior hoe and 1 with country plough. (ix) 7.23". (x) 16.1.1959 to 4.4.1959.

2. TREATMENTS:

Main-plot treatments :

4 levels of ploughing with country plough : P₀=No ploughing, P₁=1, P₂=2 and P₃=3 ploughings.

Sub-plot treatments :

3 levels of harrowing with plain blade harrow : H₀=No harrowing, H₁=1 and H₂=2 harrowings.

3. DESIGN:

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 19.25' × 16.5'. (b) 13.75' × 11.0'. (v) 2½' × 2½'. (vi) Yes.

4. GENERAL:

(i) Considerable number of plants were lodged due to heavy rains in Feb. (ii) Spraying was done with DDT against caterpillars and with Basudin against aphids. Orphanes were removed and burnt as and when it was necessary. (iii) Yield of green leaf. (iv) (a) 1958—contd. (modified in 1959). (b) N.A. (c) Nil. (v) (a) and (b) Nil. (vi) Heavy rains. (vii) Caterpillar attack was quite severe.

5. RESULTS:

(i) 7242 lb./ac. (ii) (a) 716.5 lb./ac. (b) 367.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of green leaf in lb./ac.

	P ₀	P ₁	P ₂	P ₃	Mean
H ₀	7463	7222	7299	6964	7237
H ₁	7930	7489	7335	6810	7391
H ₂	7227	7423	7438	6301	7097
Mean	7540	7378	7357	6692	7242

S.E. of difference of two

1. P marginal means = 292.5 lb./ac.
2. H marginal means = 129.9 lb./ac.
3. H means at the same level of P = 259.9 lb./ac.
4. P means at the same level of H = 361.4 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 59(28).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'C'.

Object :-To study the effect of deep ploughing with tractor and harrowing on the yield of flue cured Tobacco.

1. BASAL CONDITIONS :

(i) (a) Continuous tobacco. (b) Tobacco. (c) 20 lb./ac. of N as A/S. (ii) (a) Deep black soil. (b) N.A. (iii) N.A./11.11.1959. (iv) (a) As per treatments. (b) Transplanting. (c) N.A. (d) 33" x 33". (e) 1. (v) 3 tons/ac. o. F.Y.M.+100 lb./ac. of A/S. (vi) Harrison special (medium; cigarette). (vii) Unirrigated. (viii) 1 hand weeding, 5 interculturings—4 with planet junior hoe and 1 with country plough. (ix) 1.15". (x) 2.2.1960 to 14.3.1960.

2. TREATMENTS :

Main-plot treatments :

4 levels of ploughing : P₀=No ploughing, P₁=1, P₂=2 and P₃=3 ploughings.

Sub-plot treatments :

5 levels of harrowing : H₀=No harrowing, H₁=1, H₂=2, H₃=3 and H₄=4 harrowings.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 33.0' x 22.0'. (b) 27.5' x 16.5'. (v) 2½' x 2¼'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Caterpillar attack noticed. Endrin sprayed at 2 ozs. in 10 gallons of water. Two hand pickings. Aphids attack noticed. Spraying of Basudin at 2 oz. in 10 gallons of water. Orobanche removed at 10 days interval. (iii) Yield of green leaf. (iv) (a) 1958—ccntd. (modified in 1959). (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Heavy rains. (vii) Due to continuous wet weather during the months of August and September, tillage operations could not be properly spread out.

5. RESULTS :

(i) 4510 lb./ac. (ii) (a) 1069.9 lb./ac. (b) 537.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of green leaf in lb./ac.

	H ₀	H ₁	H ₂	H ₃	H ₄	Mean
P ₀	4747	4239	4143	4822	4381	4466
P ₁	4991	4969	3879	4105	4632	4515
P ₂	4025	4590	4746	4044	4701	4421
P ₃	4413	4702	4471	4637	4967	4638
Mean	4544	4625	4310	4402	4670	4510

S.E. of difference of two

1. P marginal means	= 338.3 lb./ac.
2. H marginal means	= 190.1 lb./ac.
3. H means at the same level of P	= 380.2 lb./ac.
4. P means at the same level of H	= 479.7 lb./ac.

Crop :- Tobacco (*Rabi*).

Ref :- C.T.R.I. 56(13).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'C'.

Object :- To study the effect of bunding and ridging on the conservation of soil moisture, yield and quality of cigarette Tobacco in normal cultivation field.

1. BASAL CONDITIONS :

(i) (a) Continuous tobacco. (b) Tobacco. (c) N.A. (ii) (a) Heavy black soil. (b) N.A. (iii) N.A./20.11.1956. (iv) (a) 4 ploughings with country plough. (b) Transplanting. (c) N.A. (d) 33' x 33'. (e) 1. (v) 100 lb./ac. of A/S applied before planting in ploughed furrows. (vi) Harrison special (medium). (vii) Unirrigated. (viii) 1 interculture with placet junior hoe. (ix) 1.14". (x) 4.2.1957 to 11.3.1957.

2. TREATMENTS :

Main-plot treatments :

4 cultural treatments: C₁=Bunding, C₂=Ridging, C₃=Ridging just before planting and C₄=Normal ploughing.

Sub-plot treatments :

2 cultivation treatments: S₁=Normal cultivation and S₂=Artificial mulching with paddy straw.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 33' x 8' 3". (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of green leaf. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 6572 lb./ac. (ii) (a) 543.5 lb./ac. (b) 635.4 lb./ac. (iii) Only interaction C x S is significant. (iv) Av. yield of green leaf in lb./ac.

	C ₁	C ₂	C ₃	C ₄	Mean
S ₁	6682	6766	5961	6534	6486
S ₂	6671	6349	6830	6781	6658
Mean	6676	6558	6396	6658	6572

S.E. of difference of two

1. C marginal means	= 271.8 lb./ac.
2. S marginal means	= 224.6 lb./ac.
3. S means at the same level of C	= 449.3 lb./ac.
4. C means at the same level of S	= 418.1 lb./ac.

Crop :- Tobacco (*Rabi*).

Ref :- C.T.R.I. 56(14).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'C'.

Object :- To study the effect of bunding and ridging on the conservation of soil moisture, yield and quality of cigarette Tobacco in tractor ploughed field.

1. BASAL CONDITIONS :

(i) (a) Continuous tobacco. (b) Tobacco. (c) N.A. (ii) (a) Heavy black soil. (b) N.A. (iii) N.A./ 20.11.1956. (iv) (a) 4 ploughings with country plough. (b) Transplanting. (c) N.A. (d) 33" x 33". (e) 1. (v) 100 lb./ac. of A/S applied before planting in ploughed furrows. (vi) Harrison special (medium). (vii) Unirrigated. (viii) 1 interculture with planet junior hoe. (ix) 1.14". (x) 4.2.1957 to 11.3.1957.

2. TREATMENTS :

Same as in expt. no. 56(13) on page 606.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 24' 9" x 8' 4". (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of green leaf. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 5671 lb./ac. (ii) (a) 460.8 lb./ac. (b) 364.2 lb./ac. (iii) Main effect of S alone is highly significant. (iv) Av. yield of green leaf in lb./ac.

	C ₁	C ₂	C ₃	C ₄	Mean
S ₁	5589	5412	5265	5617	5471
S ₂	6010	5827	5930	5714	5870
Mean	5800	5620	5598	5666	5671

S.E. of difference of two

1. C marginal means = 230.4 lb./ac.
2. S marginal means = 128.8 lb./ac.
3. S means at the same level of C = 257.5 lb./ac.
4. C means at the same level of S = 293.7 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 55(9).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'C'.

Object :- To study the effect of different methods of preparatory cultivation on the yield and quality of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Continuous tobacco. (b) Tobacco. (c) 20 and 40 lb./ac. of N as A/S+50 lb./ac. of P₂O₅ as Kudaca phos. and Super were applied according to treatments in the year 1954-1955 in plough furrows. (ii) (a) Deep black soil. (b) N.A. (iii) N.A /5.11.1955. (iv) (a) As per treatments. (b) Transplanting. (c) N.A. (d) 33" x 33". (e) 1. (v) Nil. (vi) Harrison special (medium). (vii) Unirrigated. (viii) 2 hand weedings, 1 interculture with planet junior hoe and 1 with country plough. (ix) N.A. (x) 16.1.1956 to 2.3.1956.

2. TREATMENTS :

4 cultural treatments : C₁=Ploughing 5 times with country plough (control), C₂=Ploughing 12 times with iron plough, C₃=Unploughed till October and then 2 ploughings with country plough and C₄=Cultivation with planet junior hoe during monsoon and 2 ploughings with country plough later.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 24' 9" x 157' 6". (b) 19' 3" x 132' 0". (v) 2½' x 2½'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of green leaf. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Heavy rains. (vii) Planting was done on 13.10.1955 but due to heavy rains replanting had to be done.

5. RESULTS :

(i) 4963 lb./ac. (ii) 301.2 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of green leaf in lb./ac.

Treatment	C ₁	C ₂	C ₃	C ₄
Av. yield	4859	3889	5427	5678

S.E./mean = 150.6 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 56(18).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'C'.

Object :- To study the effect of different methods of preparatory cultivation on physical condition of soil, yield and quality of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Continuous tobacco. (b) Tobacco. (c) N.A. (ii) (a) Heavy black soil. (b) N.A. (iii) N.A./ 20 and 21.11.1956. (iv) (a) As per treatments. (b) Transplanting. (c) N.A. (d) 33" x 33". (e) N.A. (v) 100 lb./ac of A/S applied before planting in ploughed furrows. (vi) Harrison special (medium). (vii) Un-irrigated. (viii) 2 intercultures. 1 with guntaka and the other with planet junior hoe. (ix) 1.39%. (x) 25.1.1957 to 6.3.1957.

2. TREATMENTS :

4 cultural treatments : C₁=Control (5 ploughings with country plough), C₂=Normal cultivation (5 ploughings with wooden plough), C₃=2 ploughings with iron plough and 5 times with country plough and C₄=Cultivation with planet junior hoe during monsoon and 3 ploughings with country plough.

3. DESIGN :

Same as in expt. no. 55(9) on page 607.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of green leaf. (iv) (a) 1955—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 6134 lb./ac. (ii) 350.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of green leaf in lb./ac.

Treatment	C ₁	C ₂	C ₃	C ₄
Av. yield	5930	6129	6153	6323

S.E./mean = 175.1 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(37).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa.

Type :- 'CV'.

Object :- To find out the effect of piercing and non-piercing of stem on different varieties of hookah and chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Maize+Rahar mixture. (b) Maize+Rahar mixture. (c) Nil. (ii) (a) Gangetic alluvium calcareous. (b) N.A. (iii) N.A./20.10.1954. (iv) (a) to (c) N.A. (d) 3'×2'. (e) 1. (v) G.M. with *sannhemp*. (vi) As per treatments. (vii) Irrigated. (viii) 1 interculturing, 3 weedings, 1 topping as usual and 6 suckerings. (ix) 46.73%. (x) 13.3.1955.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 varieties of tobacco : $V_1 = \text{N.P.}-70$, $V_2 = \text{Bharao}-93$ and $V_3 = \text{Bori Mahespur}$.

(2) 2 levels of piercing : $M_0 = \text{No piercing}$ and $M_1 = \text{Piercing}$.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 18'×40'. (b) 12'×36'. (v) 3'×2'. (vi) Yes.

4. GENERAL :

(i) Crop was poor and the stand was also not good. (ii) Attack of leaf curl, mosaic, cutworm, and caterpillars. Hand picking of larvae. (iii) Yield of cured leaf. (iv) (a) 1953—1958. (modified in 1954). (b) No. (c) Nil. (v) and (vi) Nil. (vii) The land was subject to water lodging.

5. RESULTS :

(i) 1521 lb./ac. (ii) 250.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of cured leaf in lb./ac.

	V_1	V_2	V_3	Mean
M_0	1500	1570	1428	1499
M_1	1474	1669	1485	1543
Mean	1487	1619	1457	1521

S.E. of M marginal mean = 59.1 lb./ac.

S.E. of V marginal mean = 72.4 lb./ac.

S.E. of body of table = 102.4 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 55(10).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa.

Type :- 'CV'.

Object :—To find out the effect of piercing and non-piercing of stem on different varieties of hookah and chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Maize+Rahar—Tobacco. (b) Maize+Rahar. (c) Nil. (ii) (a) Gangetic alluvium calcareous. (b) N.A. (iii) N.A./10.10.1955. (iv) (a) 1 ploughing by planet junior cultivator. (b) Transplanting. (c) 2 lb./ac. (d) 3'×2'. (e) 1. (v) G.M. with *sannhemp*. (vi) As per treatments. (vii) Irrigated. (viii) 4 weedings and mulching, 4 suckerings and topping. (ix) 6.11%. (x) 11 and 12.3.1956.

2. TREATMENTS :

Same as in expt. no. 54(37) on page 608.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 18'×36'. (b) 12'×32'. (v) 3'×2'. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Attack of leaf curl and mosaic. (iii) Cured leaf yield. (iv) (a) 1953—1958 (modified in 1954). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1292 lb./ac. (ii) 204.1 lb./ac. (iii) Only V effect is highly significant. (iv) Av. yield of cured leaf in lb./ac.

	V ₁	V ₂	V ₃	Mean
M ₀	1095	1440	1290	1275
M ₁	1111	1523	1294	1309
Mean	1103	1482	1292	1292

S.E. of M marginal mean = 48.1 lb./ac.
 S.E. of V marginal mean = 58.9 lb./ac.
 S.E. of body of table = 83.3 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 56(16).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa.

Type :- 'CV'.

Object :- To find out the effect of piercing and non-piercing of stem on different varieties of hookah and chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Maize+Rahar—Tobacco. (b) Maize+Rahar. (c) Nil. (ii) (a) Gangetic alluvium calcareous. (b) N.A. (iii) N.A./8.10.1956. (iv) (a) 1 ploughing by planet junior cultivator. (b) Transplanting. (c) 2 lb./ac. (d) 3'×2'. (e) 1. (v) G.M. with *sannhemp*. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings and mulching, 8 suckering and topping. (ix) 14.0". (x) 22.2.1957.

2. TREATMENTS :

Same as in expt. no. 54(37) on page 608.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) 18'×36'. (b) 12'×32'. (v) 3'×2'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of leaf curl and mosaic. (iii) Yield of cured leaf. Measurements of leaf length and breadth. (iv) (a) 1953—1958. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Hailstorm on 9.1.1957. (vii) Nil.

5. RESULTS :

(i) 1894 lb./ac. (ii) 154.5 lb./ac. (iii) Only V effect is highly significant. (iv) Av. yield of cured leaf in lb./ac.

	V ₁	V ₂	V ₃	Mean
M ₀	1905	2120	1758	1928
M ₁	1943	1929	1706	1859
Mean	1924	2025	1732	1894

S.E. of M marginal mean = 39.9 lb./ac.
 S.E. of V marginal mean = 48.9 lb./ac.
 S.E. of body of table = 69.1 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 57(20).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa.

Type :- 'CV'.

Object :- To study the effect of piercing and non-piercing of stem on different varieties of hookah and chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sannhemp*. (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) 28.9.1957
 (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3'×2'. (e) 1. (v) G.M. with *sannhemp*. (vi)
 As per treatments. (vii) Irrigated. (viii) 2 weedings, topping and suckering. (ix) 49.3". (x) 15.2.1958.

2. TREATMENTS :

Same as in expt. no. 54(37) on page 608.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 18'×36'. (b) 12'×32'. (v) 3'×2'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of leaf curl and mosaic. (iii) Cured leaf yield. (iv) (a) 1954—1958. (b) No. (c) Nil.
 (v) to (vii) Nil.

5. RESULTS :

(i) 2156 lb./ac. (ii) 346.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of cured leaf in lb./ac.

	V ₁	V ₂	V ₃	Mean
M ₀	2091	2250	2015	2119
M ₁	2349	2287	1941	2192
Mean	2220	2269	1978	2156

S.E. of M marginal mean = 81.6 lb./ac.
 S.E. of V marginal mean = 100.0 lb./ac.
 S.E. of body of table = 141.4 lb./ac.

Crop :- Tobacco (*Rabi*).

Ref :- C.T.R.I. 58(30).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'CV'.

Object :- To study the effect of piercing and non-piercing of stem on different varieties [of hookah and chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sannhemp*. (c) Nil. (ii) (a) Indogangetic alluvium calcareous. (b) N.A. (iii) 20.9.1958.
 (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3'×2'. (e) 1. (v) G.M. with *sannhemp*. (vi)
 As per treatments. (vii) Irrigated. (viii) 2 weedings, topping and suckering. (ix) 19.1". (x) 21.2.1959.

2. TREATMENTS :

Same as in expt. no. 54(37) on page 608.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 15'×30'. (b) 9'×26'. (v) 3'×2'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of leaf curl and mosaic. (iii) Cured leaf yield. (iv) (a) 1954—1958. (b) No. (c)
 Nil. (v) to (vi) Nil.

5. RESULTS :

(i) 2363 lb./ac. (ii) 137.6 lb./ac. (iii) Only V effect is highly significant. (iv) Av. yield of cured leaf in lb./ac.

	V ₁	V ₂	V ₃	Mean
M ₀	2451	2476	2089	2339
M ₁	2432	2649	2079	2387
Mean	2442	2563	2084	2363

S.E. of M marginal mean = 32.4 lb./ac.
 S.E. of V marginal mean = 39.7 lb./ac.
 S.E. of body of table = 56.2 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 55(17).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'CV'.

Object :- To find out the effect of different planting times on the yield and quality of different varieties of hookah and chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Maize + Rahar Tobacco. (b) Maize + Rahar. (c) Nil. (ii) (a) Gangetic alluvium calcareous. (b) N.A. (iii) As per treatments. (iv) (a) 1 ploughing by planet junior cultivator. (b) Transplanting. (c) 2 lb./ac. (d) 1½' × 1'. (e) 1. (v) G.M. with *sauhenip*. (vi) As per treatments. (vii) Irrigated. (viii) 4 weedings and mulching, 6 suckering and topping. (ix) 6.1", (x) 19.1.1956, 7, 20 and 26.2.1956.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 dates of planting : D₁ = 15.10.1955, D₂ = 1.11.1955 and D₃ = 16.11.1955.

(2) 10 varieties of tobacco : V₁ = N.P.—18, V₂ = N.P.—216, V₃ = N.P.—219, V₄ = N.P.—220, V₅ = N.P.—222, V₆ = T—26, V₇ = T—174, V₈ = T—218, V₉ = T—238 and V₁₀ = *Kharagpur*.

3. DESIGN :

(i) R.B.D. (ii) (a) 30. (b) N.A. (iii) 3. (iv) (a) 7½' × 8'. (b) 4½' × 6'. (v) 1.5' × 1.0'. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Attack of leaf curl. (iii) Cured leaf weight. (iv) (a) 1955—1959. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1925 lb./ac. (ii) 557.5 lb./ac. (iii) All effects are highly significant. (iv) Av. yield of cured leaf in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈	V ₉	V ₁₀	Mean
D ₁	2001	2533	2517	2339	2549	1646	1662	3001	2549	1839	2264
D ₂	1742	2243	2162	2533	2226	1871	1694	2646	1920	1936	2097
D ₃	1420	1145	1468	1662	1049	1065	1275	1468	1888	1694	1413
Mean	1726	1968	2049	2178	1936	1533	1549	2372	2113	1823	1925

S.E. of D marginal mean = 101.8 lb./ac.
 S.E. of V marginal mean = 185.8 lb./ac.
 S.E. of body of table = 321.9 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 56(17).****Site :- Hookah and Chewing Tobacco Res. Stn., Pusa****Type :- 'CV'**

Object :- To find out the effect of different planting times on the yield and quality of different varieties of hookah Tobacco.

1. BASAL CONDITIONS :

(i) (a) Maize and Rahar—Tobacco. (b) Maize and Rahar. (c) Nil. (ii) (a) Gangetic alluvium calcareous. (b) N.A. (iii) As per treatments. (iv) (a) 1 ploughing by plante junior cultivator. (b) Transplanting. (c) 2 lb./ac. (d) $1\frac{1}{2}' \times 1'$. (e) One. (v) G.M. with *sunnhemp*. (vi) As per treatments. (vii) Irrigated. (viii) 6 weedings, mulching, topping and 3 suckering. (ix) 14.0". (x) 24.2.1957 to 12.3.1957.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 dates of planting : $D_1=16.10.1956$, $D_2=1.11.1956$ and $D_3=16.11.1956$.

(2) 12 varieties of tobacco : $V_1=N.P.-18$, $V_2=N.P.-216$, $V_3=N.P.-219$, $V_4=N.P.-220$, $V_5=N.P.-222$, $V_6=T-26$, $V_7=T-174$, $V_8=T-218$, $V_9=T-238$, $V_{10}=Rustica Tabacum$, $V_{11}=Motihari$ and $V_{12}=Kharagpur$.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 12 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) $12' \times 21'$. (b) $10' \times 18'$ (v) $1' \times 1.5'$ (vi) Yes.

4. GENERAL :

(i) Fair (ii) Attack of leaf curl. (iii) Cured leaf yield. (iv) (a) 1955—1959. (b) No. (c) Nil. (v) (a) and (b) Nil (vi) Hail storm on 9.1.1957. (vii) Nil.

5. RESULTS :

(i) 1362 lb./ac. (ii) (a) 638.3 lb./ac. (b) 297.0 lb./ac. (iii) V effect alone is highly significant. (iv) Av. yield of cured leaf in lb./ac.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8	V_9	V_{10}	V_{11}	V_{12}	Mean
D_1	1721	755	1200	1377	1607	1360	1266	2134	1754	2229	1183	1307	1491
D_2	1413	961	1488	1120	1297	1096	1268	1827	1312	2350	1341	1149	1385
D_3	1350	741	1050	1062	1089	1164	1016	1849	1198	1955	1183	869	1210
Mean	1495	819	1246	1186	1331	1207	1183	1937	1421	2178	1235	1108	1362

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. D marginal means | = 130.3 lb./ac. |
| 2. V marginal means | = 121.2 lb./ac. |
| 3. V means at the same level of D | = 210.0 lb./ac. |
| 4. D means at the same level of V | = 239.6 lb./ac. |

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 57(21).****Site :- Hookah and Chewing Tobacco Res. Stn., Pusa.****Type :- 'CV'.**

Object :- To study the effect of planting time on the yield of different varieties of hookah Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sunnhemp*. (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) As per treatments. (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) $1\frac{1}{2}' \times 1'$. (e) 1. (v) G.M. with *sunnhemp*. (vi) As per treatments. (vii) Irrigated. (viii) 4 weedings, topping and suckering. (ix) 49.3". (x) 16.1.1958, 29.1.1958, 8.2.1958 and 25.2.1958.

2. TREATMENTS :

Main-plot treatments :

4 dates of planting : $D_1=15$ th September, $D_2=1$ st October, $D_3=16$ th October and $D_4=1$ st November.

Sub-plot treatments :

12 varieties of tobacco : $V_1=N.P.-18$, $V_2=N.P.-216$, $V_3=N.P.-219$, $V_4=N.P.-220$, $V_5=N.P.-222$,
 $V_6=T-26$, $V_7=T-176$, $V_8=T-218$, $V_9=T-236$, $V_{10}=Rustica\ tabacum$
(back cross), $V_{11}=Motihari$ and $V_{12}=Kharagpur\ local$.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 12 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) $10' \times 21'$.
(b) $8' \times 18'$. (v) $1' \times 1.5'$. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of leaf curl and mosaic. (iii) Cured leaf yield. (iv) (a) 1955—1959. (b) No. (c) Nil.
(v) to (vii) Nil.

5. RESULTS :

(i) 1403 lb./ac. (ii) (a) 1401.7 $\frac{1}{2}$ lb./ac. (b) 342.8 lb./ac. (iii) Only V effect is highly significant. (iv) Av.
yield of cured leaf in lb./ac.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8	V_9	V_{10}	V_{11}	V_{12}	Mean
D_1	1480	1323	1742	1793	1571	1239	1565	1712	1553	2325	1095	1481	1573
D_2	1154	1392	1526	1441	1070	701	1014	1018	1402	1831	827	978	1196
D_3	1149	1647	1510	1611	1035	1049	1089	1236	1835	1840	1264	1465	1394
D_4	1136	1978	1625	1776	1208	676	1371	1420	1854	1756	1060	1508	1447
Mean	1230	1585	1601	1655	1221	916	1260	1347	1661	1938	1062	1358	1403

S.E. of difference of two

1. D marginal means = 286.1 lb./ac.
2. V marginal means = 121.2 lb./ac.
3. V means at the same level of D = 242.4 lb./ac.
4. D means at the same level of V = 368.4 lb./ac.

Crop :- Tobacco (*Rabi*).

Ref :- C.T.R.I. 58(31).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa.

Type :- 'CV'.

Object :—To study the effect of time of planting on the yield and quality of different varieties of hookah Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil (b) *Sannhemp*. (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) As per treatments. (iv) (a) 4 ploughings (b) Transplanting. (c) 4 lb./ac. (d) $1' \times 1\frac{1}{2}'$. (e) 1. (v) G.M. with *sannhemp*. Top crossing with A/S. (vi) As per treatments. (vii) Irrigated. (viii) 6 weedings, topping and suckering. (ix) 19.1". (x) 1, 11, 20.1.1959, 20.2.1959 and 6.3.1959.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(21) on page 613.

5. RESULTS :

(i) 1959 lb./ac. (ii) (a) 702.6 lb./ac. (b) 286.2 lb./ac. (iii) All effects are highly significant. (iv) Av. yield of cured leaf in lb./ac.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈	V ₉	V ₁₀	V ₁₁	V ₁₂	Mean
D ₁	1429	1497	1354	1346	1320	1384	1264	1818	1548	2372	1252	1165	1479
D ₂	1525	2035	1461	1664	1567	1606	1633	1894	1632	2267	1432	1308	1669
D ₃	1670	2229	2115	1900	1758	1819	1472	3086	2099	3583	2091	2710	2211
D ₄	2082	2506	2339	2409	2294	1506	2019	3597	2436	3312	2309	2502	2476
Mean	1677	2067	1817	1830	1735	1679	1597	2599	1929	2884	1771	1921	1959

S.E. of difference of two

1. D marginal means = 143.4 lb./ac.
2. V marginal means = 104.2 lb./ac.
3. V means at the same level of D = 202.4 lb./ac.
4. D means at the same level of V = 241.1 lb./ac.

Crop :- Tobacco (*Rabi*).

Ref :- C.T.R.I. 59(29).

Site :- Hookah and Chewing Tobacco Res. Sta., Pusa.

Type :- 'CV'.

Object :—To study the effect of planting times on the yield of different varieties of hookah and chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sannhemp* (G.M.). (c) Nil. (ii) (a) Indogangetic alluvium calcareous. (b) N.A. (iii) As per treatments. (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 1' × 1½'. (e) 1. (v) G.M. with *sannhemp*. (vi) As per treatments. (vii) Irrigated. (viii) 4 weedings, topping and suckering. (ix) 19.6". (x) 27.12.1959 and 5.2.1960.

2. TREATMENTS :

Main-plot treatments :

4 times of planting : D₁=15th September, D₂=3rd October, D₃=16th October and D₄=2nd November.

Sub-plot treatments :

3 varieties : V₁=N.P.—220, V₂=T—238 and V₃=*Rustica tabaccum* (back cross).

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 10' × 21'. (b) 8' × 18'. (v) 1' × 1.5'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of cutworm and leaf curl. (iii) Yield of cured leaf. (iv) (a) 1955—1959. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1403 lb./ac. (ii) (a) 435.8 lb./ac. (b) 289.8 lb./ac. (iii) Main effects of V and D are highly significant. (iv) Av. yield of cured leaf in lb./ac.

	D ₁	D ₂	D ₃	D ₄	Mean
V ₁	295	955	1340	2003	1148
V ₂	511	1175	1898	2141	1431
V ₃	675	1532	1618	2696	1630
Mean	494	1221	1619	2280	1403

S.E. of difference of two

1. D marginal means	= 177.9 lb./ac.
2. V marginal means	= 102.5 lb./ac.
3. V means at the same level of D	= 204.9 lb./ac.
4. D means at the same level of V	= 244.2 lb./ac.

Crop :- Tobacco.**Ref :- C.T.R.I. 54(38).****Site :- Cigarette Tobacco Res. Sub-Stn., Guntur.****Type :- 'CM'.**

Object:—To find out a method of preparing seed beds to produce more number of transplantable seedlings per unit area in clay soils.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sorghum. (c) Nil. (ii) (a) Black clay. (b) N.A. (iii) 4.9.1954. (iv) (a) 3 ploughings and 2 harrowings. (b) N.A. (c) 3.8 lb./ac. (d) and (e) N.A. (v) 65 lb./ac. of N as A/S+35 lb./ac. of P_2O_5 as Super+52 lb./ac. of K_2O as Pot. Sul. (vi) Harrison special. (vii) Irrigated. (viii) N.A. (ix) 19.81". (x) Plants pulled out on 27.10.1954 to 6.11.1954.

2. TREATMENTS :

8 methods of preparation of seed bed : M_1 =Normal without application of sand (ryots' method), M_2 =Normal with incorporation of sand, M_3 =Earth removed to a depth of 9" and filled with sand and gravel overlaid with 5" layer of earth and sand, M_4 =Earth removed to a depth of 9" and filled with furnace cinder overlaid with 5" layer of earth and sand, M_5 =Earth removed to a depth of 9" and filled with F.Y.M. overlaid with 5" layer of earth and sand, M_6 =Earth removed to a depth of 9" and filled with dry sorghum stubbles and earth in layers overlaid with 5" layer of earth and sand, M_7 =Earth removed to a depth of 9" and filled with groundnut shells overlaid with 5" layer of earth and sand and M_8 =Earth removed to a depth of 9" and filled with paddy husk overlaid with 5" layer of earth and sand.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) $4' \times 6\frac{1}{2}'$. (b) $2\frac{1}{2}' \times 5'$. (v) $9'' \times 9''$. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) A little caterpillar attack and "damping off" disease were observed in all plots. The pest attack was checked by hand picking and "damping off" was controlled by spraying Bordeaux mixture. (iii) Number of transplantable seedlings. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 296 lb./ac. (ii) 71.6 lb./ac. (iii) Treatment differences are significant. (iv) Av. number of transplantable seedlings/bed.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8
Av. number	371	343	251	201	577	60	452	113

SE./mean = 35.8/lb./ac.

Crop :- Tobacco.**Ref :- C.T.R.I. 54(39).****Site :- Cigarette Tobacco Res. Sub. Stn., Guntur.****Type :- 'CM'.**

Object:—To find out whether G.M. with Maize would improve the colour quality of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Black clay. (b) N.A. (iii) 10.10.1954. (iv) (a) 3 ploughings. (b) Transplanting. (c) N.A. (d) 33"×33". (e) N.A. (v) Nil. (vi) Harrison special. (vii) Unirrigated. (viii) 5 weedings and 1 interculture. (ix) 7.65". (x) 8.1.1955 to 7.2.1955.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 crops with manures during previous season : C₁=Maize in *kharif* with 20 lb./ac. of N as A/S+30 lb./ac. of P₂O₅ as Super+6 C.L./ac. of F.Y.M., C₂=Maize in *kharif* without manure, C₃=Fallow with 6 C.L./ac. of F.Y.M. and C₄=Fallow without manure.

(2) 2 levels of N as A/S to tobacco crop : N₀=0 and N₁=20 lb./ac.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 1/51.55 ac. (b) 1/80 ac. (v) 1 row around. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of green leaf, bright leaf and total bright leaf equivalent. (iv) (a) 1953-1955. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2312 lb./ac. (ii) 400.0 lb./ac. (iii) Main effects of N and C are highly significant. (iv) Av. yield of green leaf in lb./ac.

	C ₁	C ₂	C ₃	C ₄	Mean
N ₀	1320	1058	2705	2903	1997
N ₁	1537	1828	3575	3571	2628
Mean	1429	1443	3140	3237	2312

S.E. of N marginal mean = 81.6 lb./ac.

S.E. of C marginal mean = 115.5 lb./ac.

S.E. of body of table = 163.3 lb./ac.

Crop :- Tobacco.

Ref :- G.T.R.I. 57(22).

Site :- Tobacco Res. Stn., Hunsur.

Type :- 'CM'.

Object :- To study the effect of various cultural practices and manurial application on cigarette Tobacco yield.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Tobacco. (c) Nil. (ii) (a) Red sandy loam. (b) N.A. (iii) 5 to 10.8.1957. (iv) (a) Planting 3 to 4 times. (b) As per treatments. (c) 3 lb./ac. (d) 33"×33". (e) N.A. (v) Nil. (vi) Harrison special. (vii) Unirrigated. (viii) Nil. (ix) N.A. (x) 15.10.1957 to 15.12.1957.

2. TREATMENTS :

Main-plot treatments :

2 methods of planting : A₁=Flat and A₂=Ridge planting.

Sub-plot treatments :

2 mulchings : M₀=No mulching and M₁=Mulching.

Sub-sub-plot treatments :

4 manurial applications : B₁=Deep application of 20 lb./ac. of N, B₂=Deep application of 20 lb./ac. of N+40 lb./ac. of P₂O₅+26 lb./ac. of K₂O, B₃=Normal application of 20 lb./ac. of N and B₄=Normal application of 20 lb./ac. of N+40 lb./ac. of P₂O₅+26 lb./ac. of K₂O.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 2 sub-plots/main-plot and 4 sub-sub-plots/sub-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 90 plants. (v) Nil. (vi) Yes.

4. GENERAL :

(i) The crop suffered from drought about a month after planting. (ii) Nil. (iii) Yield of green leaf and bright and medium grades of cured leaf. (iv) (a) No. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 310 lb./ac. (ii) (a) 124.2 lb./ac. (b) 129.3 lb./ac. (c) 82.0 lb./ac. (iii) Interaction A×B alone is significant. (iv) Av. yield of cured leaf in lb./ac.

	B ₁	B ₂	B ₃	B ₄	Mean	M ₀	M ₁
A ₁	218	329	185	353	271	239	303
A ₂	294	388	359	353	348	346	351
Mean	256	358	272	353	310	292	327
M ₀	206	376	235	353			
M ₁	306	341	309	353			

S.E. of difference of two

- | | | | |
|-----------------------------------|----------------|-----------------------------------|----------------|
| 1. A marginal means | = 31.0 lb./ac. | 6. B means at the same level of M | = 41.0 lb./ac. |
| 2. M marginal means | = 32.3 lb./ac. | 7. M means at the same level of B | = 48.0 lb./ac. |
| 3. B marginal means | = 29.0 lb./ac. | 8. B means at the same level of A | = 41.0 lb./ac. |
| 4. M means at the same level of A | = 45.7 lb./ac. | 9. A means at the same level of B | = 47.2 lb./ac. |
| 5. A means at the same level of M | = 44.8 lb./ac. | | |

Crop :- Tobacco.

Ref :- C.T.R.I 58(32).

Site :- Tobacco Res. Stn., Hunsur.

Type :- 'CM'.

Object :- To study the effect of various cultural practices and manurial applications on the yield of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) Nil. (ii) (a) Sandy to red loam. (b) N.A. (iii) 6 and 8.8.1958. (iv) (a) and (b) As per treatments. (c) 3 lb./ac. (d) 33"×33". (e) N.A. (v) Nil. (vi) Harrison special. (vii) Unirrigated. (viii) Nil. (ix) 8.76". (x) 4.10.1958 to 15.11.1958.

2. TREATMENTS :

Main-plot treatments :

2 types of ploughings : P₁=Ordinary and P₂=Tractor ploughing.

Sub-plot treatments :

2 methods of planting : S₁=Flat planting and S₂=Ridge planting.

Sub-sub-plot treatments :

2 mulchings : M₀=No mulching and M₁=Mulching.

Sub-sub-sub-plot treatments :

All combinations of (1) and (2)

(1) 2 types of application : A₁=Deep and A₂=Normal application.

(2) 4 manurial treatments : T₁=20 lb./ac. of N, T₂=40 lb./ac. of N, T₃=20 lb./ac. of N+100 lb./ac. of P₂O₅+50 lb./ac. of K₂O and T₄=40 lb./ac. of N+100 lb./ac. of P₂O₅+50 lb./ac. of K₂O.

3. DESIGN :

(i) Split-plot. (ii) 2 main-plots/replication ; 2 sub-plots/main-plot ; 2 sub-sub-plots/sub-plot and 8 sub-sub-sub-plots/sub-sub-plot. (b) N.A. (iii) 4. (iv) (a) 9×7=63 plants. (b) 7×5=35 plants. (v) 2 rows on all sides. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Weight of green leaf and bright grade of cured leaf. (iv) (a) 1958-1959. (b) Nil. (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 394 lb./ac. (ii) (a) 225.6 lb./ac. (b) 227.2 lb./ac. (c) 201.6 lb./ac. (d) 146.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of bright cured leaf in lb./ac.

	S ₁	S ₂	M ₀	M ₁	A ₁	A ₂	T ₁	T ₂	T ₃	T ₄	Mean
P ₁	379	390	338	437	365	404	330	304	467	437	384
P ₂	376	430	369	437	409	397	353	349	424	485	403
Mean	378	410	351	437	387	401	341	326	445	461	394
T ₁	358	324	283	399	329	353					
T ₂	297	356	274	378	297	356					
T ₃	421	471	423	467	457	435					
T ₄	434	489	422	501	466	457					
A ₁	378	397	382	422							
A ₂	377	424	359	441							
M ₀	342	360									
M ₁	412	461									

S.E. of difference of two

1. P marginal means	= 28.2 lb./ac.	13. T means at the same level of P	= 25.8 lb./ac.
2. S marginal means	= 28.4 lb./ac.	14. S means at the same level of M	= 37.9 lb./ac.
3. M marginal means	= 25.2 lb./ac.	15. M means at the same level of S	= 35.7 lb./ac.
4. A marginal means	= 18.3 lb./ac.	16. S means at the same level of A	= 33.8 lb./ac.
5. T marginal means	= 25.8 lb./ac.	17. S means at the same level of T	= 42.5 lb./ac.
6. P means at the same level of S	= 40.0 lb./ac.	18. A means at the same level of S	= 25.8 lb./ac.
7. S means at the same level of P	= 40.2 lb./ac.	19. T means at the same level of S	= 36.5 lb./ac.
8. P means at the same level of M	= 37.8 lb./ac.	20. M means at the same level of A	= 33.6 lb./ac.
9. M means at the same level of P	= 35.6 lb./ac.	21. M means at the same level of T	= 40.4 lb./ac.
10. P means at the same level of A	= 33.6 lb./ac.	22. A means at the same level of M	= 25.8 lb./ac.
11. P means at the same level of T	= 42.4 lb./ac.	23. T means at the same level of M	= 36.5 lb./ac.
12. A means at the same level of P	= 18.2 lb./ac.	S.E. of body of body of A x T table	= 25.8 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 59(29).

Site :- Tobacco Res. Sta., Hunsur.

Type :- 'CM'.

Object :— To study the effect of various cultural practices and manurial applications on the yield of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) N.A. (ii) (a) Sandy to red loam. (b) N.A. (iii) 30.7.1959. (iv) (a) and (b) As per treatments. (c) 3 lb./ac. (d) 33" x 33". (e) N.A. (v) Nil. (vi) Harrison special. (vii) Unirrigated. (viii) Nil. (ix) 12.2". (x) 5.10.1959 to 28.11.1959.

2. TREATMENTS :

Main-plot treatments :

2 times of ploughing : P₁=Iron plough (Mysex plough 8" to 10") and P₂=Ordinary ploughing (5" to 7").

Sub-plot treatments :

2 methods of planting : S₁=Flat and S₂=Ridge planting.

Sub-sub-plot treatments :

2 types of mulching : M₀=No mulching and M₁=Mulching.

Sub-sub-sub-plot treatments :

All combinations of (1) and (2)

(1) 2 types of application : A_1 =Deep and A_2 =Normal application.(2) 4 manurial treatments : T_1 =20 lb./ac. of N, T_2 =40 lb./ac. of N, T_3 =20 lb./ac. of N+100 lb./ac. of P_2O_5 +50 lb./ac. of K_2O and T_4 =40 lb./ac. of N+100 lb./ac. of P_2O_5 +50 lb./ac. of K_2O .**3. DESIGN :**(i) Split-plot. (ii) (a) 2 main-plots/replication ; 2 sub-plots/main-plot ; 2 sub-sub-plots/sub-plot, and 8 sub-sub-sub-plots/sub-sub-sub-plot. (b) N.A. (iii) 3. (iv) (a) $9 \times 7 = 63$ plants. (b) $7 \times 5 = 35$ plants. (v) 28 plants. (vi) Yes.**4. GENERAL :**

(i) Fair. (ii) N.A. (iii) Weight of green leaf and medium to bright grade of cured leaf. (iv) (a) 1958—1959. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 221 lb./ac. (ii) (a) 329.4 lb./ac. (b) 193.6 lb./ac. (c) 163.4 lb./ac. (d) 104.3 lb./ac. (iii) Main effect of T alone is highly significant. (iv) Av. yield of medium grade leaf in lb./ac.

	S_1	S_2	M_0	M_1	A_1	A_2	T_1	T_2	T_3	T_4	Mean
P_1	247	206	233	220	227	226	172	256	203	272	226
P_2	213	218	236	195	222	218	183	249	187	246	216
Mean	230	212	235	208	225	217	177	252	195	259	221
T_1	196	163	198	157	205	152					
T_2	275	230	269	236	237	268					
T_3	188	202	219	171	196	195					
T_4	265	253	252	266	260	257					
A_1	229	220	232	217							
A_2	231	205	238	198							
M_0	242	227									
M_1	218	197									

S.E. of difference of two

1. P marginal means	= 47.5 lb./ac.	13. T means at the same level of P	= 21.3 lb./ac.
2. S marginal means	= 27.9 lb./ac.	14. S means at the same level of M	= 36.5 lb./ac.
3. M marginal means	= 23.6 lb./ac.	15. M means at the same level of S	= 33.4 lb./ac.
4. A marginal means	= 15.1 lb./ac.	16. S means at the same level of A	= 31.7 lb./ac.
5. T marginal means	= 21.3 lb./ac.	17. S means at the same level of T	= 38.2 lb./ac.
6. P means at the same level of S	= 55.1 lb./ac.	18. A means at the same level of S	= 21.3 lb./ac.
7. S means at the same level of P	= 39.5 lb./ac.	19. T means at the same level of S	= 30.1 lb./ac.
8. P means at the same level of M	= 53.1 lb./ac.	20. M means at the same level of A	= 28.0 lb./ac.
9. M means at the same level of P	= 33.4 lb./ac.	21. M means at the same level of T	= 35.1 lb./ac.
10. P means at the same level of A	= 49.9 lb./ac.	22. A means at the same level of M	= 21.3 lb./ac.
11. P means at the same level of T	= 54.2 lb./ac.	23. T means at the same level of M	= 30.1 lb./ac.
12. A means at the same level of P	= 15.1 lb./ac.	S.E. of body of $A \times T$ table	= 21.3 lb./ac.

Crop :- Tobacco (Kharif).**Ref :- C.T.R.I. 59(25).****Site :- Tobacco Res. Stn., Hunsur.****Type :- 'CM'.**

Object :—To find the effect of F.Y.M. and raking on the number of transplantable seedlings of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) Nil. (ii) (a) Red sandy loam. (b) N.A. (iii) 3.6.1959. (iv) (a) Ploughing 3 to 4 times. (b) Broadcasting. (c) 4½ lb./ac. (d) Nil—being nursery expt. (e) N.A. (v) Nil. (vi) Harrison special. (vii) Unirrigated. (viii) Nil. (ix) 22.6". (x) 30.7.1959 to 8.9.1959.

2. TREATMENTS :

Main-plot treatments :

3 types of rabings : R_0 =No rabing, R_1 =Rabing and ash removed and R_2 =Rabing and ash not removed.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of F.Y.M. : $F_1=10$, $F_2=20$ and $F_3=40$ tons/ac.

(2) 2 methods of application : M_1 =As layer and M_2 =Mixed with the soil.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) and (b) 4'×4.75' of bed. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Due to heavy rains the growth of seedlings was pale and stunted. (ii) *Anthracnose* was observed and it was controlled by spraying Bordeaux mixture and Dithane. (iii) Germination count and transplantable seedlings. (iv) (a) 1959—1961. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1115 seedlings/bed. (ii) (a) 717 seedlings/bed. (b) 510 seedlings/bed. (iii) Main effect of F alone is highly significant. (iv) Av. no. of seedlings/bed.

	R_0	R_1	R_2	Mean	M_1	M_2
F_1	407	555	696	553	526	579
F_2	869	987	1225	1027	881	1173
F_3	1423	1667	2208	1766	1714	1818
Mean	900	1070	1376	1115	1041	1190
M_1	842	1033	1247			
M_2	957	1.07	1505			

S.E. of difference of two

1. R marginal means = 169 seedlings/bed. 5. R means at the same level of M = 207 seedlings/bed.
 2. F marginal means = 120 seedlings/bed. 6. F means at the same level of R = 208 seedlings/bed.
 3. M marginal means = 98 seedlings/bed. 7. R means at the same level of F = 239 seedlings/bed.
 4. M means at the same level of R = 170 seedlings/bed. S.E. of body of F×M table = 120 seedlings/bed.

Crop :- Tobacco (*Kharif*).

Ref :- C.T.R.I. 58(33).

Site :- Tobacco Res. Stn., Hunsur.

Type :- 'CM'.

Object :- To find the effect of F.Y.M. on the number of transplantable seedlings of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) N.A. (ii) (a) Red sandy loam. (b) N.A. (iii) 28.5.1958. (iv) (a) Ploughing 3 to 4 times. (b) Broadcasting. (c) 4½ lb./ac. (d) and (e) Nil. (v) Nil. (vi) Harrison special. (vii) Unirrigated. (viii) Nil. (ix) N.A. (x) 31.7.1958 to 20.8.1958.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of F.Y.M. : $F_1=10$, $F_2=20$ and $F_3=30$ tons/ac.(2) 2 methods of application : $M_1=As$ layer and $M_2=Mixed$ with soil.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) and (b) $4' \times 4.75'$ of bed. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Nil. (ii) *Anthracnose* (leaf spot disease) was observed and was controlled by spraying Bordeaux mixture and Dithane. (iii) Germination count and transplantable seedlings. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Due to heavy rains on 7.5.1958 and 12.5.1958, considerable washing off occurred and hence the beds were resown on 28.5.1958. (vii) Nil.

5. RESULTS :

(i) 1031 seedlings/bed. (ii) 238 seedlings/bed. (iii) None of the effects is significant. (iv) Av. number of seedlings/bed.

	F_1	F_2	F_3	Mean
M_1	946	996	1157	1033
M_2	924	1002	1164	1030
Mean	935	999	1160	1031

S.E. of F marginal mean = 69 seedlings/bed.

S.E. of M marginal mean = 56 seedlings/bed.

S.E. of body of table = 97 seedlings/bed.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 55(18).****Site :- Hookah and Chewing Tobacco Res. Stn., Pusa.****Type :- 'CM'.**

Object :—To study the effect of manures and fertilizers in relation to topping and spacing on the yield and quality of hookah and chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Maize+Rahar—Tobacco. (b) Maize+Rahar. (c) Nil. (ii) (a) Gangetic alluvium calcareous. (b) N.A. (iii) 22, 23 and 25.9.1955. (iv) (a) 1 ploughing by planet junior cultivator. (b) Transplanting. (c) 2 lb./ac. (d) As per treatments. (e) 1. (v) Nil. (vi) *Bori Bharao*—93 (medium). (vii) Irrigated. (viii) 4 weedings and hoeing, 8 suckering and topping. (ix) 6.1". (x) 18, 22.2.1956 and 4, 7.3.1956.

2. TREATMENTS :

Main-plot treatments :2 levels of G.M. : $G_1=G.M.$ by *sannhemp* and $G_2=500$ mds./ac. of F.Y.M.**Sub-plot treatments :**4 levels of N as A/S : $N_0=0$, $N_1=50$, $N_2=100$ and $N_3=150$ lb./ac.**Sub-sub-plot treatments :**

All combinations of (1) and (2)

(1) 3 rates of topping : $T_1=10$, $T_2=12$ and $T_3=14$ leaves/plant.(2) 3 spacings between plants : $S_1=2'$, $S_2=2\frac{1}{2}'$ and $S_3=3'$.

Spacing between rows is 3'.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 4 sub-plots/main-plot and 9 sub-sub-plots/sub-plot. (b) N.A. (iii) 4. (iv) (a) $15' \times 30'$. (b) $9' \times 25'$. (v) $3' \times 2.5'$. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Attack of cutworm and caterpillars. Leaf curl and mosaic. 50% DDT sprayed. (iii) Yield of cured leaf. (iv) (a) 1955—1959. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1824 lb./ac. (ii) (a) 347.9 lb./ac. (b) 458.8 lb./ac. (c) 285.6 lb./ac. (iii) Main effects of G, S, N and T are highly significant. (iv) Av. yield of cured leaf in lb./ac.

	S ₁	S ₂	S ₃	N ₀	N ₁	N ₂	N ₃	T ₁	T ₂	T ₃	Mean
G ₁	2033	1653	1509	1383	1644	1900	2001	1598	1762	1835	1732
G ₂	2240	1841	1669	1623	1825	2023	2196	1836	1945	1969	1917
Mean	2136	1747	1589	1503	1734	1962	2098	1717	1854	1902	1824
T ₁	2030	1681	1440	1396	1679	1839	1955				
T ₂	2153	1786	1622	1491	1785	1955	2185				
T ₃	2226	1774	1706	1622	1740	2091	2156				
N ₀	1741	1411	1358								
N ₁	1963	1690	1550								
N ₂	2352	1874	1659								
N ₃	2489	2014	1791								

S.E. of difference of two

- | | | | |
|--|-----------------|--|-----------------|
| 1. G marginal means | = 41.0 lb./ac. | 6. N means at the same level of G | = 108.1 lb./ac. |
| 2. N marginal means | = 76.5 lb./ac. | 7. G means at the same level of N | = 102.2 lb./ac. |
| 3. T or S marginal means | = 41.2 lb./ac. | 8. S or T means at the same level of G | = 58.3 lb./ac. |
| 4. S or T means at the same level of N | = 82.4 lb./ac. | 9. G means at the same level of S or T | = 62.8 lb./ac. |
| 5. N means at the same level of S or T | = 101.8 lb./ac. | S.E. of body of S×T table | = 50.5 lb./ac. |

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 56(20).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa.

Type :- 'CM'.

Object :—To study the effect of the manures and fertilizers in relation to topping and spacing on the yield and quality of hookah and chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Maize+*Rahar*—Tobacco. (b) Maize+*Rahar*. (c) Nil. (ii) (a) Gangetic alluvium calcareous (b) N.A. (iii) 27.9.1956. (iv) (a) 1 ploughing by planet junior cultivator. (b) Transplanting. (c) 2 lb./ac. (d) As per treatments. (e) 1. (v) Nil. (vi) *Bori Bharao*—53 (medium). (vii) Irrigated. (viii) 6 weedings and hoeings, 9 suckerings and topping. (ix) 14.0°. (x) 13.2.1957.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(18) on page 622.

5. RESULTS :

(i) 1929 lb./ac. (ii) (a) 997.7 lb./ac. (b) 387.3 lb./ac. (c) 279.3 lb./ac. (iii) Main effects of N, S and T are highly significant. (iv) Av. yield of cured leaf in lb./ac.

	S ₁	S ₂	S ₃	T ₁	T ₂	T ₃	N ₀	N ₁	N ₂	N ₃	Mean
G ₁	2231	1838	1583	1617	1897	2137	1618	2000	1955	1963	1884
G ₂	2227	2021	1672	1683	1968	2269	1828	2013	1959	2092	1973
Mean	2229	1930	1627	1650	1933	2203	1723	2007	1957	2028	1929
N ₀	2046	1741	1382	1445	1737	1987					
N ₁	2223	1967	1830	1762	1983	2275					
N ₂	2237	1999	1635	1705	1998	2169					
N ₃	2409	2011	1663	1689	2013	2381					
T ₁	1987	1592	1371								
T ₂	2208	1976	1614								
T ₃	2492	2220	1897								

S.E. of difference of two

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|--|-----------------|--|-----------------|
| 1. G marginal means | = 117.6 lb./ac. | 6. N means at the same level of G | = 91.3 lb./ac. |
| 2. N marginal means | = 64.5 lb./ac. | 7. G means at the same level of N | = 141.7 lb./ac. |
| 3. T or S marginal means | = 40.3 lb./ac. | 8. S or T means at the same level of G | = 57.0 lb./ac. |
| 4. S or T means at the same level of N | = 80.6 lb./ac. | 9. G means at the same level of S or T | = 126.5 lb./ac. |
| 5. N means at the same level of S or T | = 92.2 lb./ac. | S.E. of body of S×T table | = 49.4 lb./ac. |

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 57(26).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'CM'.

Object :—To study the effect of nitrogen fertilizers in combination with topping and spacing on the yield of Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize + *Rahar*. (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. N.A. (iii) 12.9.1957. (iv) (a) 5 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) As per treatments. (e) 1. 500 mds./ac. of F.Y.M. (vi) *Bori Bharao* -10. (vii) Irrigated. (viii) 1 weeding, topping and suckering. N.A. (x) 15.1.1958.

2. TREATMENTS :

Main-plot treatments :

4 levels of N : N₀=0, N₁=50, N₂=100 and N₃=150 lb./ac.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 rates of topping : T₁=10, T₂=12 and T₃=14 leaves/plant.

(2) 3 spacings between plant : S₁=2', S₂=2½' and S₃=3'.

Spacing between rows is 3'. N applied half as A/S and half as mustard cake.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 15'×30'. (b) Plot size varies as per treatments. (v) One row around. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of leaf curl and mosaic. (iii) Yield of cured leaf. (iv) 1955—1960 (modified in 1957 and 1960). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 677 lb./ac. (ii) (a) 241.4 lb./ac. (b) 212.1 lb./ac. (iii) Main effects of N, S and T are highly significant. (iv) Av. yield of cured leaf in lb./ac.

	N ₀	N ₁	N ₂	N ₃	Mean	T ₁	T ₂	T ₃
S ₁	639	740	947	831	789	703	757	906
S ₂	571	626	809	666	668	614	620	769
S ₃	507	479	581	709	574	499	639	583
Mean	572	622	779	735	677	605	672	753
T ₁	507	560	741	616				
T ₂	571	581	803	732				
T ₃	639	724	792	858				

S.E. of difference of two

1. N marginal means = 56.9 lb./ac.
2. T or S marginal means = 43.3 lb./ac.
3. T or S means at the same level of N = 86.6 lb./ac.
4. N means at the same level of T or S = 90.8 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 58(44).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'CM'.

Object :- To study the effect of nitrogen fertilizers in combination with topping and spacing on the yield of Tobacco.

1. BASAL CONDITIONS.

(i) (a) Nil. (b) *Sannhemp*. (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) 8.10.1958. (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) As per treatments. (e) I. (v) G.M. with *sannhemp*; top dressing with A/S and mustard cake. (vi) D.P.—40l. (vii) Irrigated. (viii) Weedings, topping and suckering. (ix) 19.1'. (x) 6.3.1959.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(26) on page 624.

5. RESULTS :

(i) 2063 lb./ac. (ii) (a) 365.7 lb./ac. (b) 302.6 lb./ac. (iii) Main effects of N, T and S are highly significant. (iv) Av. yield of cured leaf in lb./ac.

	N ₀	N ₁	N ₂	N ₃	Mean	T ₁	T ₂	T ₃
S ₁	1708	2106	2378	2663	2214	2045	2206	2390
S ₂	1586	2009	2284	2414	2073	1898	2158	2164
S ₃	1470	1839	2096	2202	1902	1834	1840	2031
Mean	1588	1985	2253	2426	2063	1926	2068	2195
T ₁	1423	1766	2240	2275				
T ₂	1602	2000	2241	2430				
T ₃	1740	2189	2277	2574				

S.E. of difference of two

1. N marginal means = 86.2 lb./ac.
2. S or T marginal means = 61.8 lb./ac.
3. S or T means at the same level of N = 123.5 lb./ac.
4. N means at the same level of T or S = 132.7 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 59(37).****Site :- Hookah and Chewing Tobacco Res. Sta., Pusa. Type :- 'CM'.**

Object :- To study the effect of nitrogen fertilizers in combination with topping and spacing on the yield of Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) N.A. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) 19.9.1959. (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) As per treatments. (e) 1. (v) F.Y.M. and top dressing with A/S and mustard cake. (vi) D.P.—401. (vii) Irrigated. (viii) 3 weedings, topping and suckering. (ix) 19.6". (x) 16.2.1960.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(26) on page 624.

5. RESULTS :

(i) 2558 lb./ac. (ii) (a) 319.7 lb./ac. (b) 302.1 lb./ac. (iii) Main effects of N, S and T are highly significant. (iv) Av. yield of cured leaf in lb./ac.

	N ₀	N ₁	N ₂	N ₃	Mean	T ₁	T ₂	
S ₁	2712	2976	2959	3045	2923	2862	2782	3124
S ₂	2377	2443	2683	2752	2564	2350	2579	2762
S ₃	2039	2156	2235	2324	2188	2002	2167	2398
Mean	2376	2525	2625	2707	2558	2405	2509	2761
T ₁	2114	2330	2513	2661				
T ₂	2350	2401	2687	2599				
T ₃	2663	2844	2676	2862				

S.E. of difference of two

- | | |
|--|-----------------|
| 1. N marginal means | = 75.4 lb./ac. |
| 2. S or T marginal means | = 61.7 lb./ac. |
| 3. S or T means at the same level of N | = 123.3 lb./ac. |
| 4. N means at the same level of S or T | = 125.8 lb./ac. |

Crop :- Tobacco.**Ref :- C.T.R.I. 54(46).****Site :- Central Tobacco Res. Sta., Rajahmundry. Type :- 'CM'.**

Object :- To study the control of powdery mildew on Virginia Tobacco by application of sulphur to the soil.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) Nil. (ii) (a) Black clayey soil. (b) N.A. (iii) N.A./30.10.1954. (iv) (a) 2 to 3 ploughings. (b) Transplanting. (c) N.A. (d) 33"×33". (e) 1. (v) Broadcast 5 tons/ac. of M.C. (vi) Chatham. (Flue-cured). (vii) Unirrigated. (viii) 2 to 3 weedings after planting. Intercultivation with planet junior hoe twice during the first month of the crop. (ix) 0.53". (x) 28.1.1955.

2. TREATMENTS :

Main-plot treatments :

3 levels of sulphur : S₀=0, S₁=40 and S₂=80 lb./ac.

Sub-plot treatments :

2 times of application : T₁=about 6 weeks after planting and T₂= $\frac{1}{2}$ about 5 weeks after planting+half 3 to 4 weeks later.

Sub-sub-plot treatments :

2 priming treatments : P₀=No priming and P₁=Priming of tower leaves.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 2 sub-plots/main-plot and 2 sub-sub-plots/sub-plot. (b) N.A. (iii) 4. (iv) (a) $27\frac{1}{2}' \times 16\frac{1}{2}'$ (60 plants/plot). (b) $22' \times 11'$ (32 plants/plot). (v) $2\frac{3}{4}' \times 2\frac{3}{4}'$. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Powdery mildew, control measures as per treatments. (iii) Observations on the six lower most leaves of every plant in each plot were taken. Each leaf was imagined to have been divided into 8 sections and each infected section, irrespective of the extent of infection was counted as one. The infected sections were counted on upper and lower surfaces of each leaf. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Both the sulphur treatments reduced the powdery mildew considerably. The dose of application and priming did not have significant effect on the incidence. (vii) Nil.

5. RESULTS :

(i) 39.9 sections/plot. (ii) (a) 84.6 sections/plot. (b) 95.6 sections/plot. (c) 58.4 sections/plot. (iii) Main effect of S is significant. (iv) Av. number of sections/plot.

	S ₀	S ₁	S ₂	Mean	P ₀	P ₁
T ₁	—	3.4	6.8	47.5	47.4	47.7
T ₂	—	45.0	2.1	32.2	38.0	26.5
Mean	91.0	24.2	4.5	39.9	42.7	37.1
P ₀	91.3	34.2	2.7			
P ₁	90.6	14.3	6.3			

S.E. of difference of two

- S marginal means = 29.9 sections/plot.
- T marginal means = 27.6 sections/plot.
- P marginal means = 16.9 sections/plot.
- P means at the same level of S = 29.2 sections/plot.
- S means at the same level of P = 51.4 sections/plot.
- P means at the same level of T = 23.8 sections/plot.
- T means at the same level of P = 56.1 sections/plot.
- T means at the same level of S = 47.8 sections/plot.
- S means at the same level of T = 63.8 sections/plot.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 54(48).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'M'.

Object :- To find out the effect of inundating and G.M. with maize on the yield and quality of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Continuous tobacco. (b) Tobacco. (c) N.A. (ii) (a) Black soil. (b) N.A. (iii) N.A./16.10.1954. (iv) (a) 4 ploughings with country plough. (b) Transplanted. (c) N.A. (d) $33'' \times 33''$. (e) 1. (v) As per treatments. (vi) Chatham (cigarette). (vii) Unirrigated. (viii) Hand weeding, interculturing and gap filling. (ix) 4.94". (x) 5.1.1955 to Feb., 1955.

2. TREATMENTS :

Main-plot treatments :

6 basal dressing treatments : B₀=Control, B₁=Inundation by bunding (during *kharif*), B₂=Inundation riding (during *kharif*), B₃=Maize grown and buried, B₄=Maize grown and cut and B₅=Maize from (B₄) buried.

Sub-plot treatments :

3 levels of N as A/S used as top dressing : N₀=0, N₁=20 and N₂=40 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1.70 cents. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Green leaf yield and total bright leaf equivalent. (iv) and (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 4653 lb./ac. (ii) (a) 63.32 lb./ac. (b) 54.24 lb./ac. (iii) Main effects of B and N are highly significant. (iv) Av. yield of green leaf in lb./ac.

	B ₀	B ₁	B ₂	B ₃	B ₄	B ₅	Mean
N ₀	4334	5150	4763	2858	3287	4583	4163
N ₁	4855	5397	5086	3681	4066	5115	4700
N ₂	5311	5740	5353	4090	4365	5715	5095
Mean	4833	5429	5067	3543	3906	5137	4653

S.E. of difference of two

1. B marginal means = 211.1 lb./ac.
2. N marginal means = 127.8 lb./ac.
3. N means at the same level of B = 313.4 lb./ac.
4. B means at the same level of N = 331.5 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 55(19).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'CM'.

Object :- To study the residual effect of maize and cumulative effect of water logging on 3 replications out of 6 of last year experiment.

1. BASAL CONDITIONS :

- (i) (a) Continuous tobacco. (b) Tobacco. (c) 23 and 40 lb./ac. of N as A/S was applied according to treatments in plough furrows in the year 1954—1955. (ii) (a) Deep black soil. (b) N.A. (iii) N.A./3 and 4.11.1955. (iv) (a) 4 ploughings with country plough. (b) Transplanting. (c) N.A. (d) 33"×33". (e) 1. (v) Nil. (vi) Harrison special (medium, cigarette). (vii) Irrigated. (viii) 4 hand weedings, 1 interculture with planet junior hoe and 1 with country plough. (ix) 0.12". (x) 12.1.1956 to 8.3.1956.

2. TREATMENTS :

Same as in expt. no. 54(48) on page 627.

3. DESIGN :

- (i) Split-plot. (ii) (a) 6 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 16½'×71½'. (b) 11'×66'. (v) 2¼'×2¼'. (vi) Yes.

4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Yield of green leaf. (iv) (a) 1954—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

- (i) 4460 lb./ac. (ii) (a) 1176.6 lb./ac. (b) 426.7 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of green leaf in lb./ac.

	B ₀	B ₁	B ₂	B ₃	B ₄	B ₅	Mean
N ₀	3950	3611	3950	4427	4074	4440	4075
N ₁	4594	4083	4506	4537	4149	4898	4461
N ₂	4859	4444	4806	4682	4881	5383	4843
Mean	4468	4076	4421	4549	4368	4907	4460

S.E. of difference of two

1. B marginal means = 554.6 lb./ac.
2. N marginal means = 142.2 lb./ac.
3. N means at the same level of B = 348.3 lb./ac.
4. B means at the same level of N = 623.4 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 55(20).

Site :- Central Tobacco Res. Instt., Rajahmundry.

Type :- 'CM'.

Object :- To study whether row spacing of 4' will be helpful for intercultures, harvest and transport of leaf for general improvement of quality and to find out the optimum population and levels of 'N' at that row spacing.

1. BASAL CONDITIONS :

(i) (a) Continuous tobacco. (b) Tobacco. (c) 20 lb./ac. of N as A/S was applied by broadcasting. (ii) (a) Deep black soil. (b) N.A. (iii) N.A./12.11.1955. (iv) (a) 4 ploughings with country plough. (b) Transplanting. (c) N.A. (d) As per treatments. (e) 1. (v) Nil. (vi) Harriscn special (medium, cigarette). (vii) Unirrigated. (viii) 3 hand weedings, 1 interculture with planet junior hoe and 1 with country plough. (ix) 0.05". (x) 21.1.1956 to 7.3.1956.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 5 planet spacings : $P_0=33'' \times 33''$, $P_1=48'' \times 24''$, $P_2=48'' \times 21''$, $P_3=48'' \times 18''$ and $P_4=48'' \times 15''$.

(2) 2 levels of N as A/S : $N_1=20$ and $N_2=40$ lb./ac.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) $19\frac{1}{2}' \times 33'$ for 33' spacing ; $20' \times 33'$ for 48' spacing. (b) Varies with different row spacings. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of green leaf. (iv) (a) 1953— contd. (modified in 1955). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 5135 lb./ac. (ii) 844.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of green leaf in lb./ac.

	P_0	P_1	P_2	P_3	P_4	Mean
N_1	5082	5147	4900	5694	4939	5192
N_2	5501	5132	5016	4569	5165	5077
Mean	5292	5240	4958	5132	5052	5135

S.E. of N marginal mean = 186.8 lb./ac.

S.E. of P marginal mean = 298.5 lb./ac.

S.E. of body of table = 422.2 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(49).

Site :- Central Tobacco Res. Instt., Rajahmundry.

Type :- 'CM'.

Object :- To find out the effect of different levels of nitrogen per plant with different plant populations per acre.

1. BASAL CONDITIONS :

(i) (a) Continuous tobacco. (b) Tobacco. (c) Nil. (ii) (a) Deep black soil. (b) N.A. (iii) N.A./19.11.1954 (iv) (a) 4 country ploughings. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) Chatham (cigarette). (vii) Unirrigated. (viii) 2 intercultures with planet junior hoe and 2 hand weedings. (ix) 6.24". (x) 7.3.1955 onwards.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N as A/S : $N_0=0$, $N_1=0.78$, $N_2=1.57$ and $N_3=2.35$ grams/plant.

(2) 6 spacings : $S_1=36'' \times 45''$, $S_2=36'' \times 36''$, $S_3=36'' \times 30''$, $S_4=36'' \times 25\frac{1}{2}''$, $S_5=36'' \times 22\frac{1}{2}''$ and $S_6=36'' \times 20''$.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 24. (b) N.A. (iii) 4. (iv) (a) $18' \times 30'$. (b) Varying sizes. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Periodical height and number of leaves per plant at different stages of crop growth green, cured weight of leaves and the proportion of different grades of cured leaf. Count for flower-heads per plant. Dry weight of seed capsules and stalk. (iv) (a) 1951—1954. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Bright leaf equivalent

(i) 364 lb./ac. (ii) 84.2 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of bright leaf equivalent in lb./ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	Mean
N ₀	266	300	253	297	274	224	269
N ₁	274	328	386	431	395	368	364
N ₂	341	341	363	459	386	439	388
N ₃	468	374	478	444	454	386	434
Mean	337	336	370	408	377	354	364

S.E. of N marginal mean = 17.2 lb./ac.
 S.E. of S marginal mean = 21.0 lb./ac.
 S.E. of body of table = 42.1 lb./ac.

Green leaf

(i) 4208 lb./ac. (ii) 683.4 lb./ac. (iii) Main effects of N and S are significant. (iv) Av. yield of green leaf in lb./ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	Mean
N ₀	2773	3335	2673	3495	3445	2784	3084
N ₁	3517	3610	4371	4542	4603	4145	4141
N ₂	3947	4134	4134	4685	4680	5705	4548
N ₃	4713	4272	5496	5236	5341	5363	5070
Mean	3738	3838	4169	4490	4517	4499	4208

S.E. of N marginal mean = 139.5 lb./ac.
 S.E. of S marginal mean = 170.8 lb./ac.
 S.E. of body of table = 341.7 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 54(51).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'CM'.

Object :- To find out the optimum requirements of N, spacing and topping of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco after tobacco. (b) Tobacco. (c) As per treatments and M.C. at 5 C.L./ac. as basal dose.
 (ii) (a) Heavy black soil. (b) N.A. (iii) 16.10.1954. (iv) (a) 4 ploughings with country plough. (b) Transplanted. (c) N.A. (d) As per treatments. (e) 1. (v) 100 lb./ac. of N as A/S. (vi) Chatham. (vii) Unirrigated. (viii) Gap-filling, interculturing and hand weeding. (ix) 4.94". (x) 5.10.1955 to the end of February, 1955.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S : N₀=0, N₁=20 and N₂=40 lb./ac.

(2) 3 spacings : S₁=33"×24½", S₂=33"×28½" and S₃=33"×33".

(3) 3 topping and suckering treatments : T₀=No operation, T₁=Topping only and T₂=Topping and suckering.

3. DESIGN.

(i) 3rd confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 3. (iv) (a) 22' × 51.5'. (b) 16.5' × 51.5'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of green leaf and total bright leaf equivalent. (iv) (a) 1951 to 1954. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 5495 lb./ac. (ii) 289.1 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of green leaf in lb./ac.

	N ₀	N ₁	N ₂	Mean	S ₁	S ₂	S ₃
T ₀	4150	5447	6679	5425	5664	5421	5191
T ₁	4061	5590	6700	5449	5278	5733	5339
T ₂	4257	5542	6678	5491	5544	5276	5656
Mean	4156	5526	6685	5455	5495	5476	5395
S ₁	4201	5297	6988				
S ₂	4134	5739	6557				
S ₃	4133	5543	6511				

S.E. of any marginal mean = 55.6 lb./ac.

S.E. of body of any table = 96.4 lb./ac.

Crop :- Tobacco (*Kabi*).

Ref :- C.T.R.I. 56(21).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'GM'.

Object :—To promote better soil texture by deep tillage and incorporation of organic matter and conservation of moisture by mulching.

1. BASAL CONDITIONS :

(i) (a) Continuous Tobacco. (b) Tobacco. (c) N.A. (ii) (a) Heavy black soil. (b) N.A. (iii) N.A./13.11.1956. (iv) (a) 4 ploughings with country plough. (b) Transplanting. (c) N.A. (d) 33" × 33". (e) 1. (v) 100 lb./ac. of A/S applied before planting in ploughed furrows. (vi) Harrison Special (cigarette). (vii) Unirrigated. (viii) 3 intercultures—2 with planet junior hoe and the third with H.M. *Guntaka*. (ix) N.A. (x) 7.1.1957 to 1.3.1957.

2. TREATMENTS :

Main-plot treatments :

5 manurial treatments (organic) : T₀ = Control, T₁ = 5 tons/ac. of paddy husk, T₂ = 5 tons/ac. of tobacco stalk, T₃ = 6 C.L./ac. of F.Y.M. and T₄ = *Sanai* for G.M.

Sub-plot treatments :

2 manurial treatments (inorganic) : F₁ = 20 lb./ac. of N as A/S and F₂ = 20 lb./ac. of N as A/S + 100 lb./ac. of P₂O₅ as Super + 100 lb./ac. of K₂O as Pot. Sul.

Sub-sub-plot treatments :

2 mulching treatments : M₀ = No mulching and M₁ = Artificial mulching with paddy straw.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 2 sub-plots/main-plot and 2 sub-sub-plots/sub-plot. (b) N.A. (iii) 5. (iv) (a) 27' 6" × 16' 16". (b) 22' 0" × 11' 0". (v) 24' × 24'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of green leaf. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 5498 lb./ac. (ii) (a) 688.5 lb./ac. (b) 519.4 lb./ac. (c) 498.9 lb./ac. (iii) Main effects of T and M are highly significant. (iv) Av. yield of green leaf in lb./ac.

	T ₀	T ₁	T ₂	T ₃	T ₄	Mean	M ₀	M ₁
F ₁	6204	6268	6532	6631	1607	5448	5146	5750
F ₂	6382	6208	6687	6241	2220	5548	5258	5838
Mean	6293	6238	6610	6436	1913	5498	5202	5794
M ₀	5955	6199	6100	6118	1638			
M ₁	6631	6277	7119	6755	2188			

S.E.difference of two

- | | | | |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. T marginal means | = 217.7 lb./ac. | 6. M means at the same level of T | = 223.1 lb./ac. |
| 2. F marginal means | = 103.9 lb./ac. | 7. T means at the same level of M | = 268.9 lb./ac. |
| 3. M marginal means | = 99.8 lb./ac. | 8. M means at the same level of F | = 141.1 lb./ac. |
| 4. F means at the same level of T | = 232.3 lb./ac. | 9. F means at the same level of M | = 144.0 lb./ac. |
| 5. T means at the same level of F | = 272.7 lb./ac. | | |

Crop :- Tobacco (*Rabi*).

Ref :- C.T.R.I. 57(27).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'CM'.

Object :—To promote better soil structure by deep tillage and incorporation of organic matter and conservation of moisture by mulching with paddy straw.

1. BASAL CONDITIONS:

(i) (a) Continuous tobacco. (b) Tobacco. (c) As per treatments. (ii) (a) Deep black soil. (b) N.A. (iii) N.A./26.10.1957. (iv) (a) Crow-barring was done. Following incorporation of organic matter under treatment ploughing was given with iron mould plough. (b) Planted by rope. (c) N.A. (d) 33"×33". (e) 1. (v) As per treatments. (vi) Harrison special (medium ; flue cured cigarette). (vii) Unirigated. (viii) Gap filling, one hand weeding and 2 interculturings with planet junior hoe. (ix) 1.18". (x) 15.12.1957 to 25.2.1958.

2. TREATMENTS and 3. DESIGN:

Same as in expt. no. 56(21) on page 631.

4. GENERAL:

(i) Normal. (ii) Caterpillar attack was controlled by spraying DDT at 2 ozs./10 gallons of water. Eight weeks after planting spraying was done with Basudin against aphid attack. (iii) Yield of green leaf and total bright leaf equivalent. (iv) (a) 1956—1957. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 7597 lb./ac. (ii) (a) 788.2 lb./ac. (b) 548.7 lb./ac. (c) 625.9 lb./ac. (iii) Main effect of T alone is highly significant. (iv) Av. yield of green leaf in lb./ac.

	T ₀	T ₁	T ₂	T ₃	T ₄	Mean	M ₀	M ₁
F ₁	8523	4958	7606	8272	8882	7648	7518	7778
F ₂	8168	4899	7710	8400	8554	7546	7520	7571
Mean	8345	4928	7658	8336	8718	7597	7519	7675
M ₀	8263	4639	7667	8364	8664			
M ₁	8428	5217	7650	8307	8772			

S.E. of difference of two

1. T marginal means	= 249.2 lb./ac.	6. M means at the same level of T	= 280.0 lb./ac.
2. F marginal means	= 109.7 lb./ac.	7. T means at the same level of M	= 318.3 lb./ac.
3. M marginal means	= 125.2 lb./ac.	8. M means at the same level of F	= 177.1 lb./ac.
4. F means at the same level of T	= 245.3 lb./ac.	9. F means at the same level of M	= 166.5 lb./ac.
5. T means at the same level of F	= 303.7 lb./ac.		

Crop :- Tobacco (*Rabi*).

Ref :- C.T.R.I. 58(45).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'CM'.

Object :- To study the effect of mulching with paddy straw right from the commencement of monsoon rains as compared to normal mulching done three weeks after planting on the yield and quality of cigarette Tobacco under crow barring and normal ploughing.

1. BASAL CONDITIONS :

(i) (a) Continuous Tobacco. (b) Tobacco. (c) 20 lb./ac. of N as A/S. (ii) (a) Deep black soil. (b) N.A. (iii) N.A /15 11.1958. (iv) (a) As per treatments. (b) Transplanting. (c) N.A. (d) 33" x 33". (e) 1. (v) 3 tons/ac. of M.C. by broadcasting + 20 lb./ac. of N as A/S applied by working a deep placement implement along the marked lines. (vi) Harrison special (medium ; flue cured cigarette). (vii) Unirrigated. (viii) Gap filling 3 times, 2 hand weedings and 2 intercultures were done with planet junior hoe. (ix) 7.23". (x) 20.1.1958 to 5.3 1958.

2. TREATMENTS :

Main-plot treatments :

2 cultural treatments: C_1 = Hand digging with crow bar in summer and C_2 = Normal ploughings (3 ploughings with country plough and 2 harrowings with blade harrow).

Sub-plot treatments :

4 mulching treatments: M_0 = No mulching, M_1 = Mulching with paddy straw at the onset of monsoons, M_2 = Mulching with paddy straw soon after the 1st interculture with planet junior hoe about 3 weeks after planting and $M_3 = M_1 + M_2$.

During the 3rd week of June mulching was done with paddy straw at 3200 lb./ac. under M_1 and M_3 treatment plots. During the 2nd week of December mulching was done at 3200 lb./ac. under M_2 and M_3 plots.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 22.0' x 19.25'. (b) 16.5' x 13.75'. (v) 2 $\frac{1}{2}$ ' x 2 $\frac{1}{4}$ '. (vi) Yes.

4. GENERAL :

(i) Due to heavy rains in February, considerable amount of lodging took place and quite a good no. of curable leaves were spoiled. The crop growth was normal. (ii) Spraying was done with DDT against caterpillar attack and with Basudin against aphids attack (DDT at 2 ozs. and Bassudin at 1 oz. in 10 gallons of water). (iii) Yield of green leaf. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Due to heavy rains and river floods the complete experimental area was submerged under 6" of water for a considerable time during 1st and 2nd week of September. (vii) Nil.

5. RESULTS :

(i) 7802 lb./ac. (ii) (a) 708.2 lb./ac. (b) 485.9 lb./ac. (iii) Main effect of M alone is highly significant. (iv) Av. yield of green leaf in lb./ac.

	M_0	M_1	M_2	M_3	Mean
C_1	7999	7126	8538	7993	7914
C_2	7218	7156	8041	8346	7690
Mean	7608	7141	8290	8170	7802

S.E. of difference of two

1. C marginal means	= 250.4 lb./ac.
2. M marginal means	= 243.0 lb./ac.
3. M means at the same level of C	= 343.6 lb./ac.
4. C means at the same level of M	= 388.9 lb./ac.

Crop :- Tobacco (*Rabi*).

Ref :- C.T.R.I. 59(38).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'CM'.

Object :- To study the effect of crow-barring and various mulching treatments on the yield and quality of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Continuous tobacco. (b) Tobacco. (c) 3 tons/ac. of F.Y.M. (ii) (a) Deep black soil. (b) N.A. (iii) N.A./6.11.1959. (iv) (a) As per treatments. (b) Transplanting. (c) N.A. (d) 33"×33". (e) 1. (v) 3 tons/ac. of F.Y.M.+100 lb./ac. of A/S. (vi) Harrison special (medium). (vii) Unirrigated. (viii) Twice gapfilling, 3 hand weedings, 2 intercultures with planet junior hoe to the whole expt. and with teeth harrow to plots under 'No mulching' treatment. (ix) N.A. (x) 8.1.1960 to 23.2.1960.

2. TREATMENTS :

Main-plot treatments :

2 cultural treatments : C₁=Crow barring in summer and C₂=Normal ploughing.

Sub-plot treatments :

4 mulching treatments : M₀=No mulching (control), M₁=Mulching with alkathene after the 1st post planting interculture, M₂=Mulching with paddy straw after the 1st post planting interculture, and M₃=Mulching with paddy straw at the beginning of monsoon+mulching with alkathene after the 1st post planting interculture.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 22.0'×19.25'. (b) 16.5'×13.75'. (v) 2½'×2½'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Caterpillar attack—Endrin sprayed thrice at 2 oz./10 gallons. of water Hand picking of caterpillar was done twice. *Orobancha*—removed by hand. (iii) Yield of green leaf. (iv) (a) 1958—contd. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) The experimental site was submerged under water for about a fortnight.

5. RESULTS :

(i) 6788 lb./ac. (ii) (a) 460.8 lb./ac. (b) 513.5 lb./ac. (iii) Main effects of C and M are highly significant. (iv) Av. yield of green leaf in lb./ac.

	M ₀	M ₁	M ₂	M ₃	Mean
C ₁	7089	7580	7228	6958	7214
C ₂	6154	7412	5933	5946	6361
Mean	6622	7496	6580	6452	6788

S.E. of difference of two

- | | |
|-----------------------------------|-----------------|
| 1. C marginal means | = 162.9 lb./ac. |
| 2. M marginal means | = 256.8 lb./ac. |
| 3. M means at the same level of C | = 363.1 lb./ac. |
| 4. C means at the same level of M | = 354.2 lb./ac. |

Crop :- Tobacco (*Rabi*).

Ref :- C.T.R.I. 58(46).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'CM'.

Object :- To study the effect of deep ploughing in summer, incorporation of organic matter in the soil, mulching and topping on the yield and quality of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Continuous tobacco. (b) Tobacco. (c) N.A. (ii) (a) Deep black soil. (b) N.A. (ii) N.A./5 to 7.11.1958, replanting on 14 and 15.11.1958. (iv) (a) 3 ploughings with country plough+2 harrowings with plain blade harrow. (b) Transplanting. (c) N.A. (d) 33"×33". (e) 1. (v) As per treatments. (vi) Harrison special (medium, flue cured). (vii) Unirrigated. (viii) Gap-filling and 2 hand weedings. (ix) 7.23". (x) 19.1.1959 to 10.3.1959.

2. TREATMENTS :

Main-plot treatments :

5 deep ploughing treatments with tractor in summer : P_0 =No tractor ploughing, P_1 =Every year, P_2 =Once in 2 years, P_3 =Once in 3 years and P_4 =Once in 4 years.

Treatments in 1st split :

2 mulching treatments : M_0 =No mulching and M_1 =Mulching with paddy straw at 3 C.L./ac.

Treatments in 2nd split :

4 manurial treatments : F_1 =20 lb./ac. of N as A/S, F_2 = F_1 +100 lb./ac. of P_2O_5 as Super, F_3 = F_1 +100 lb./ac. of K_2O as Pot. Sul. and F_4 = F_1 +100 lb./ac. of P_2O_5 as Super+100 lb./ac. of K_2O as Pot. Sul.

Treatments in 3rd split :

2 levels of MgO as Mag. Sul. : G_0 =0 and G_1 =20 lb./ac.

Treatments in 4th split :

2 types of compost at 3 tons/ac. : C_1 =Tobacco stalk and C_2 =F.Y.M. or M.C.

Treatments in 5th split :

2 topping treatments : T_0 =No topping and T_1 =Topping when 1/10th inflorescence emerges.

Main-plot treatments started with 1st ploughing in summer, 1958.

3. DESIGN :

(i) Split-plot (ii) (a) 5 main-plots/replication, 2 plots/1st split, 4 plots/2nd split, 2 plots/3rd split, 2 plots/4th split and 2 plots/5th split. (b) N.A. (iii) 3. (iv) (a) 24.75' × 19.25'. (b) 19.25' × 13.75'. (v) 2½' × 2½'. (vi) Yes.

4. GENERAL :

(i) Due to heavy rains in February the crop was considerably lodged. (ii) Spraying was done with DDT against caterpillar attack and with Basudin against aphids. Peculiarly the caterpillar persisted upto the capsule bearing stage and caused much damage to curable leaves. (iii) Yield of green leaf. (iv) (a) 1958—contd. (modified in 1959). (b) No. (c) Nil. (v) (a) Guntur. (b) Nil. (vi) Heavy rains. (vii) Due to heavy rains following 1st planting, many plants got either submerged or buried under wet soil, as a consequence of which the experiment was completely replanted after one week. Two-way tables of means—N.A.

5. RESULTS :

(i) 5990 lb./ac. (ii) (a) 3929 lb./ac. (b) 2104 lb./ac. (c) 1260 lb./ac. (d) 1023 lb./ac. (e) 665.7 lb./ac. (f) 655.3 lb./ac. (iii) Main effects of M, C and T are highly significant. (iv) Av. yield of green leaf in lb./ac.

Treatment	P_0	$P_1+P_2+P_3+P_4$	M_0	M_1	F_1	F_2	F_3	F_4
Av. yield	6081	5967	5542	6438	5970	6010	5976	6003
Treatment	G_0	G_1	C_1	C_2	T_0	T_1		
Av. yield	5942	6038	5844	6135	5831	6148		

S.E. of difference of two

1. P marginal means	= 317.0 lb./ac.
2. M marginal means	= 135.8 lb./ac.
3. F marginal means	= 115.0 lb./ac.
4. G marginal means	= 66.0 lb./ac.
5. C marginal means	= 43.0 lb./ac.
6. T marginal means	= 42.3 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 59(39).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'CM'.

Object :- To study the effect of deep ploughing, fertilizers and bulky organic manures on the yield and quality of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Continuous tobacco. (b) Tobacco. (c) As per treatments. (ii) (a) Deep black soil. (b) N.A. (iii) N.A. 9.11.1959. (iv) (a) As per treatments. (b) Transplantation. (c) N.A. (d) 33" × 33". (e) 1. (v) As per treatments. (vi) Harrison special (medium). (vii) Unirrigated. (viii) N.A. (ix) Nil. (x) 11.1.1960 to 2.3.1960.

2. TREATMENTS:

Main-plot treatments:

5 deep ploughing treatments with tractor in summer: P_0 =No tractor ploughing, P_1 =Every year, P_2 =Once in 2 years, P_3 =Once in 3 years and P_4 =Once in 4 years.

Treatments in 1st split:

4 manurial treatments: F_1 =20 lb./ac. of N as A/S, F_2 = F_1 +100 lb./ac. of P_2O_5 as Super, F_3 = F_1 +100 lb./ac. of K_2O as Pot. Sul. and F_4 = F_1 +100 lb./ac. of P_2O_5 as Super+100 lb./ac. of K_2O as Pot. Sul.

Treatments in 2nd split:

2 levels of MgO as Mag. Sul.: G_0 =0 and G_1 =20 lb./ac.

Treatments in 3rd split:

2 types of compost at 3 tons/ac.: C_1 =Tobacco stalk and C_2 =F.Y.M.

Treatments in 4th split:

2 mulching treatments: M_0 =No mulching and M_1 =Mulching with paddy straw at 3 C.L./ac.

3. DESIGN:

(i) Split-plot. (ii) (a) 5 main-plots/replication, 4 plots/1st split, 2 plots/2nd split, 2 plots/3rd split and 2 plots/4th split. (b) N.A. (iii) 3. (iv) (a) 19.25'×24.75'. (b) 13.75'×19.25'. (v) 2½'×2¼'. (vi) Yes.

GENERAL:

(i) Satisfactory. (ii) Caterpillar attack—caterpillars were removed. Endrin sprayed at 2 oz./100 gallons of water. Aphids attack—Basudin sprayed at 2 oz./10 gallons of water. *Orobanche*—removed. (iii) Yield of green leaf. (iv) (a) 1958—contd. (modified in 1959). (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) The entire experimental site remained submerged for several days.

5. RESULTS:

(i) 4614 lb./ac. (ii) (a) 2617 lb./ac. (b) 926.4 lb./ac. (c) 684.3 lb./ac. (d) 492.1 lb./ac. (e) 485.2 lb./ac. (iii) Main effect of M alone is highly significant. (iv) Av. yield of green leaf in lb./ac.

	F_1	F_2	F_3	F_4	G_0	G_1	C_1	C_2	M_0	M_1	Mean
P_0	3717	3935	4253	3998	3889	4062	3993	3958	3595	4357	3976
P_1	4719	4881	4823	4790	4787	4819	4765	4841	4407	5199	4803
$P_2+P_3+P_4$	4574	4913	4783	4786	4804	4724	4716	4813	4352	5176	4764
Mean	4432	4711	4685	4629	4618	4611	4581	4648	4212	5017	4614
M_0	4045	4264	4280	4258	4210	4213	4232	4192			
M_1	4818	5159	5090	5000	5026	5008	4931	5103			
C_1	4409	4727	4608	4581	4562	4600					
C_2	4455	4695	4763	4677	4673	4622					
G_0	4457	4644	4788	4583							
G_1	4407	4778	4582	4675							

S.E. of difference of two

1. P_0 or P_1 with ($P_2+P_3+P_4$) marginal means = 308.4 lb./ac.
2. P_0 with P_1 marginal means = 377.7 lb./ac.
3. F marginal means = 119.5 lb./ac.
4. G marginal means = 62.4 lb./ac.
5. C marginal means = 45.0 lb./ac.
6. M marginal means = 44.3 lb./ac.

Crop : Tobacco (Rabi).**Ref :- C.T.R.I. 55(21).****Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'CM'.**

Object : - To study the direct effect of topping and residual effect of 4 years continuous application of Nitrogen.

1. BASAL CONDITIONS :

(i) (a) Continuous tobacco. (b) Tobacco. (c) As per treatments. (ii) (a) Deep black soil. (b) N.A. (iii) N.A./11.11.1955. (iv) (a) 4 ploughings with country plough. (b) Transplanting. (c) N.A. (d) 33' x 33'. (e) I. (v) Nil. (vi) Harrison special (medium, cigarette). (vii) Unirrigated. (viii) 2 hand weedings, 2 intercultures with planet junior hoe and I with country plough. (ix) 0.05%. (x) 28.1.1956 to 6.3.1956.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.

(2) 3 numbers of leaves/plant (pruned) : $L_0=16$, $L_1=19$ and $L_2=22$ leaves.

(3) 3 topping treatments : $T_0=Control$, $T_1=As$ and when ready and $T_2=Removal$ of remaining leaves and flowers, without topping.

N applied as A/S from 1951 to 1954 to study the residual effect.

3. DESIGN :

(i) 3³ confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 22' x 49½'. (b) 16½' x 44'. (v) 2½' x 2½'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of green leaf. (iv) (a) 1955—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3763 lb./ac. (ii) 252.8 lb./ac. (iii) Main effects of N, L, T and interactions $N \times L$, $L \times T$ and $N \times L \times T$ are significant. (iv) Av. yield of green leaf in lb./ac.

	N_0	N_1	N_2	Mean	T_0	T_1	T_2
L_0	2813	3776	4151	3580	3397	3660	3684
L_1	2811	4176	4722	3903	3545	4112	4052
L_2	3833	3558	5029	3807	3827	4065	3527
Mean	2819	3836	4634	3763	3590	3946	3754
T_0	2621	3582	4566				
T_1	2857	4184	4795				
T_2	2978	3743	4541				

S.E. of any marginal mean = 59.6 lb./ac.
S.E. of body of any table = 103.2 lb./ac.

Crop :- Tobacco.**Ref :- C.T.R.I. 54(52).****Site :- Cigar and Cheroot Tobacco Res. Sta., Veda sandur. Type :- 'CM'.**

Object :—To find out the optimum period of planting and optimum topping and levels of N on cigar Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Cumbu (Pennisetum typhoides)* (c) Nil. (ii) (a) Red loam. (b) N.A. (iii) As per treatments. (iv) (a) 5 ploughings. (b) Transplanting. (c) N.A. (d) 2.5' x 2'. (e) I. (v) 10 C.L./ac. of F.Y.M. (vi) *Vellai vazhai (Nicotiana tabacum)*. (vii) Irrigated. (viii) 2 hand weedings, 1 hoeing, suckers and *orobanche* removed and topping as per treatments. (ix) 17.84%. (x) 5.1.1955 to 3.3.1955.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 2 levels of N : $N_0=0$ and $N_1=100$ lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio.(2) 2 levels of topping : T_1 =Leaving 14 leaves per plant and T_2 =Leaving 16 leaves per plant.

Sub-plot treatments :

8 dates of planting : $D_1=1.10.1954$, $D_2=8.10.1954$, $D_3=15.10.1954$, $D_4=22.10.1954$, $D_5=29.10.1954$, $D_6=5.11.1954$, $D_7=12.11.1954$ and $D_8=19.11.1954$.

G.N.C. applied in two equal doses one at planting and the other at the time of hoeing while A/S applied in two equal doses one at the time of hoeing and the other a week before topping.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 8 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 22.5'×14.5'. (b) 17.5'×8'. (v) 1 row around as border. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Regular spraying with DDT was done as precautionary measures against leaf eating caterpillar and stem borer. (iii) Yield of tobacco. (iv) (a) 1952—1954. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2580 lb./ac. (ii) (a) 368.0 lb./ac. (b) 220.0 lb./ac. (iii) Main effects of N and D are significant. (iv) Av. yield of cured leaf in lb./ac.

	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈	Mean	T ₁	T ₂
N ₀	2486	2706	2483	2628	2433	2047	2217	2412	2426	2337	2514
N ₁	2859	3099	2895	2976	2660	2523	2382	2488	2735	2744	2726
Mean	2673	2903	2689	2802	2547	2285	2300	2450	2581	2541	2620
T ₁	2584	2917	2660	2738	2475	2315	2275	2365			
T ₂	2761	2888	2718	2865	2618	2255	2325	2535			

S.E. of difference of two

1. N or T marginal means = 65.1 lb./ac.
2. D marginal means = 77.8 lb./ac.
3. D means at the same level of N or T = 110.5 lb./ac.
4. N or T means at the same level of D = 121.7 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(53).

Site :- Cigar and Cheroot Tobacco Res. Stn., Veda sandur. Type :- 'CM'.

Object :—To study the effect of different levels of spacing, topping and manuring on the yield and quality of cigar Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Cumbu. (b) Cumbu (*Pennisetum typhoides*). (c) Nil. (ii) (a) Red loam. (b) N.A. (iii) 30.10.1954. (iv) (a) 4 ploughings. (b) Transplanting. (c) and (d) As per treatments. (e) I. (v) Nil. (vi) Vellavazhai (*Nicotiana tabacum*). (vii) Irrigated. (viii) 1 hand weeding, 1 hoeing, sucker and *orobanche* removed and topping as per treatments. (ix) 6.23". (x) 3.2.1955 to 6.2.1955.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of manuring : $M_1=40$ C.L./ac. of F.Y.M. and $M_2=20$ C.L./ac. of F.Y.M.+100 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio.(2) 2 spacings : $S_1=30" \times 20"$ (10454 plants/ac.) and $S_2=30" \times 24"$ (8712 plants/ac.).(3) 2 levels of topping : T_1 =Leaving 12 leaves and T_2 =Leaving 14 leaves.

F.Y.M. broadcast one month before planting. A/S and G.N.C. applied in 2 equal doses, at planting and 6 weeks after planting.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 22.5' × 17.5'. (b) 17.5' × 11.75' for S₁ and 17.5' × 12.00' for S₂. (v) One row around. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Regular spraying in the initial stages with DDT as a precautionary measure against leaf caterpillar (*Prodenia litura*) and stem-borer and 2 to 3 sprayings in later stages with tobacco decoction against aphids were done. (iii) Yield of tobacco. (iv) (a) 1952—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2221 lb./ac. (ii) 234.0 lb./ac. (iii) Main effects of M and T are highly significant while that of S is significant. (iv) Av. yield of cured leaf in lb./ac.

	S ₁	S ₂	Mean	T ₁	T ₂
M ₁	2168	1991	2079	1995	2163
M ₂	2161	2566	2364	2161	2566
Mean	2164	2278	2221	2078	2364
T ₁	2186	1971			
T ₂	2142	2585			

S.E. of any marginal mean = 47.7 lb./ac.

S.E. of body of any table = 67.6 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 55(28).

Site :- Cigar and Cheroot Tobacco Res. Stn., Veda sandur. Type :- 'CM'.

Object :—To study the effect of different levels of spacing, topping and manuring on the yield and quality of cigar Tobacco.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Cumbu*. (c) Nil. (ii) (a) Red loam. (b) N.A. (iii) 15.11.1955. Gaps filled on 26.11.1955 and 6.12.1955 (total gaps 70, 3.2%). (iv) (a) 4 ploughings. (b) Transplanting. (c) and (d) As per treatments. (e) 1. (v) Nil. (vi) *Vellavazhai*. (vii) Irrigated. (viii) 1 hand weeding, 1 hoeing and earthing up. (ix) N.A. (x) 28.2.1956 to 2.3.1956.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(53) on page 638.

4. GENERAL :

(i) Poor. (ii) Negligible attack of borer and virus. Crop badly affected by aphids inspite of repeated sprayings of Endrine and tobacco decoction. (iii) Yield of cured leaves. (iv) (a) 1952—1955. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) Commencement of monsoon was late. (vii) Nil.

5. RESULTS :

(i) 2053 lb./ac. (ii) 149.6 lb./ac. (iii) Main effects of M and T are highly significant. (iv) Av. yield of cured leaf in lb./ac.

	S ₁	S ₂	Mean	T ₁	T ₂
M ₁	1898	1921	1910	1852	1967
M ₂	2216	2178	2197	2129	2264
Mean	2057	2050	2053	1990	2116
T ₁	2017	1964			
T ₂	2097	2134			

S.E. of any marginal mean = 30.6 lb./ac.
S.E. of body of any table = 43.2 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(54).

Site :- Cigar and Cheroot Tobacco Res. Stn., Vedsandur. Type :- 'CM'.

Object :- To find out the optimum planting period, optimum topping and levels of N for chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Cumbu (Pennisetum typhoideum)*. (c) Nil. (ii) (a) Red loam. (b) N.A. (iii) As per treatments. (iv) (a) 3 ploughings. (b) Transplanting. (c) N.A. (d) 2.5' x 2'. (e) 1. (v) 10. C L./ac. of F.I.M. (vi) *Valmonnai (Nicotiana tobacum)*. (vii) Irrigated. (viii) 2 weedings, 1 hoeing, 1 earthing up, suckers and orobinche removal and topping as per treatments. (ix) 13.32%. (x) 4.2.1955 to 31.3.1955.

2. TREATMENTS :

Main-plot treatments :

All Combinations of (1) and (2)

(1) 2 levels of N: $N_0=0$ and $N_1=100$ lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio.

(2) 2 levels of topping: T_1 =Leaving 14 leaves per plant and T_2 =Leaving 16 leaves per plant.

Sub-plot treatments :

8 dates of planting: $D_1=15.10.1954$, $D_2=22.10.1954$, $D_3=29.10.1954$, $D_4=5.11.1954$, $D_5=12.11.1954$, $D_6=19.11.1954$, $D_7=26.11.1954$ and $D_8=3.12.1954$.

G.N.C. applied in two equal doses prior to planting and at hoeing and earthing up, 6 weeks after planting as top dressing A/S applied in two equal doses prior to hoeing and earthing up and one week prior to topping as top dressing.

3. DESIGN :

(i) (a) Split-plot. (ii) (a) 4 main-plots/replication and 8 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 21½' x 14'. (b) 15 x 10'. (v) One row all round. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Regular spraying with DDT 550 was done as a precautionary measure against leaf eating caterpillar and stem borer. (iii) Yield of tobacco. (iv) (a) 1952—1955. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1333 lb./ac. (ii) (a) 3840 lb./ac. (b) 217.0 lb./ac. (iii) Main-effects of N and D are highly significant. (iv) Av. yield of cured leaf in lb./ac.

	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈	Mean	T ₁	T ₂
N ₀	1130	1339	1105	1089	770	905	1101	909	1044	1031	1056
N ₁	1860	1700	1479	1541	1463	1589	1776	1574	1623	1569	1676
Mean	1495	1520	1292	1315	1117	1247	1439	1242	1333	1300	1366
T ₁	1446	1491	1287	1249	1087	1172	1454	1214			
T ₂	1544	1548	1297	1381	1146	1322	1423	1269			

S.E. of difference of two

1. N or T marginal means = 67.9 lb./ac.
2. D marginal means = 76.7 lb./ac.
3. D means at the same level of N or T = 108.5 lb./ac.
4. N or T means at the same level of D = 122.1 lb./ac.

Crop :- Tobacco.**Ref :- C.T.R.I. 55(29).****Site :- Cigar and Cheroot Tobacco Res. Stn., Vendasandur. Type :- 'CM'.**

Object :—To find out the optimum planting period, optimum topping and levels of N on chewing Tobacco.

1. BASAL CONDITIONS :(i) (a) to (c) N.A. (ii) (a) Red loam. (b) N.A. (iii) As per treatments. (iv) (a) 4 ploughings. (b) Transplanting. (c) 8712 plants/ac. (d) 30"×24". (e) 1. (v) 10 C.L./ac. of F.Y.M. (vi) *Monnai*. (vii) Irrigated. (viii) Weeding, hoeing, *mummati* digging, earthing up and topping. (ix) and (x) N.A.**2. TREATMENTS :****Main-plot treatments :**

All combinations of (1) and (2)

(1) 2 levels of N : $N_0=0$ and $N_1=100$ lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio.(2) 2 levels of topping : $T_1=$ Leaving 14 leaves per plant and $T_2=$ Leaving 16 leaves per plant.**Sub-plot treatments :**8 dates of transplanting : $D_1=15.10.1955$, $D_2=22.10.1955$, $D_3=29.10.1955$, $D_4=5.11.1955$, $D_5=12.11.1955$, $D_6=19.11.1955$, $D_7=26.11.1955$ and $D_8=3.12.1955$.**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication and 8 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/294.1 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of cured leaf. (iv) (a) 1952—1955. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Commencement of monsoon was late. (vii) Nil.

5. RESULTS :

(i) 1622 lb./ac. (ii) and (iii) N.A. (iv) Av. yield of cured leaf in lb./ac.

	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈	Mean	T ₁	T ₂
N ₀	1055	1093	1104	1056	1189	1515	1400	1775	1273	1289	1257
N ₁	1706	1804	1844	1855	1908	2146	1914	2596	1972	1926	2017
Mean	1380	1448	1474	1456	1548	1830	1657	2186	1622	1608	1637
T ₁	1375	1410	1523	1446	1509	1758	1683	2160			
T ₂	1385	1486	1425	1466	1587	1902	1631	2212			

Crop :- Tobacco.**Ref :- C.T.R.I. 54(55).****Site :- Cigar and Cheroot Tobacco Res. Stn., Vendasandur. Type :- 'CM'**

Object :—To study the effect of different levels of spacing, topping and manuring on the yield and quality of chewing Tobacco.

1. BASAL CONDITIONS :(i) (a) Tobacco—*Cumbu* (*Pennisetum typhoideum*). (b) *Cumbu* (*Pennisetum typhoideum*). (c) Nil. (ii) (a) Red loam. (b) N.A. (iii) 11.11.1954. (iv) (a) 3 ploughings. (b) Transplanting. (c) and (d) As per treatments. (e) 1. (v) Nil. (vi) *Valmonnai* (*Nicotiana tabacum*). (vii) Irrigated. (viii) 1 hand weeding, 1 hoeing and 1 earthing up, topping as per treatments. (ix) 7.67". (x) 21.3.1955.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of manuring : $M_1=40$ C.L./ac. of F.Y.M. and $M_2=20$ C.L./ac. of F.Y.M.+100 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio.

(2) 2 spacings : $S_1=20'' \times 20''$ (10450 plants/ac.) and $S_2=30'' \times 24''$ (8712 plants/ac.)

(3) 2 levels of topping : T_1 =Leaving 10 leaves and T_2 =Leaving 14 leaves.

F.Y.M. broadcast one month before transplanting.

G.N.C. broadcast at planting and A/S top dressed 6 weeks after planting.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) $25' \times 28'$. (b) $20' \times 16\frac{1}{2}'$ for S_1 and $20' \times 16'$ for S_2 . (v) One row around. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nothing noteworthy. Regular spraying with DDT 550 was done as a safeguard against leaf eating caterpillars and stem borer. (iii) Yield of tobacco. (iv) (a) 1952—1956. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2323 lb./ac. (ii) 199.0 lb./ac. (iii) Main effects of M and S are highly significant. Interaction $S \times T$ is significant. (iv) Av. yield of cured leaf in lb./ac.

	S_1	S_2	Mean	T_1	T_2
M_1	2358	2117	2238	2185	2291
M_2	2542	2275	2409	2410	2407
Mean	2450	2196	2323	2297	2349
T_1	2357	2236			
T_2	2543	2156			

S.E. of any marginal mean

= 40.6 lb./ac.

S.E. of body of any table

= 57.4 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 55(30).

Site :- Cigar and Cheroot Tobacco Res. Stn., Veda sandur.

Type :- 'CM'.

Object :- To study the effect of different levels of spacing, topping and manuring on the yield and quality of chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Red loam. (b) N.A. (iii) N.A. (iv) (a) 4 ploughings. (b) Transplanting. (c) and (d) As per treatments. (e) One. (v) Nil. (vi) *Monnai*. (vii) Irrigated. (viii) Weeding and hoeing, *mummati* digging and earthing up. Topping as per treatments. (ix) and (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(55) on page 641.

4. GENERAL :

(i) The crop in general, was poor in patches and hence not uniform in growth. (ii) Heavy infestation of or-banche. (iii) Yield of cured leaf. (iv) (a) 1952—1956. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) Commencement of monsoon was late. (vii) Nil.

5. RESULTS :

(i) 2793 lb./ac. (ii) 215.0 lb./ac. (iii) Main effects of M and S are highly significant. (iv) Av. yield of cured leaf in lb./ac.

	S ₁	S ₂	Mean	T ₁	T ₂
M ₁	2690	2674	2682	2650	2674
M ₂	3069	2738	2903	2992	2814
Mean	2880	2706	2793	2841	2744
T ₁	2914	2768			
T ₂	2844	2644			

S E. of any marginal mean = 43.9 lb./ac.
S E. of body of any table = 62.1 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 56(5).

Site :- Cigar and Cheroot Tobacco Res. Stn., Vedsandur. Type :- 'CM'.

Object :- To study the effect of different levels of spacing, topping and harrowing on the yield and quality of chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Red loam. (b) N.A. (iii) N.A. (iv) (a) 4 ploughings (b) Transplanting. (c) and (d) As per treatments. (e) 1. (v) Nil. (vi) *Momai*. (vii) Irrigated. (viii) Weeding and hoeing *mummati* digging and earthing up and topping as per treatments. (ix) and (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(55) on page 641.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of cured leaf. (iv) (a) 1952—1956. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) Excessive rains in the month of October. (vii) Nil.

5. RESULTS :

(i) 2444 lb./ac. (ii) 106.3 lb./ac. (iii) Main effects of M, S, T and interaction $M \times S$ are highly significant. (iv) Av. yield of cured leaf in lb./ac.

	S ₁	S ₂	Mean	T ₁	T ₂
M ₁	2205	2247	2226	2116	2335
M ₂	2795	2529	2662	2573	2751
Mean	2500	2388	2444	2345	2543
T ₁	2359	2291			
T ₂	2601	2485			

S.E. of any marginal mean = 21.7 lb./ac.
S.E. of body of any table = 30.7 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 56(22).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'ICM'.

Object :- To study the effect of irrigation, manuring and topping on the yield and quality of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Continuous tobacco. (b) Tobacco. (c) N.A. (ii) (a) Heavy black soil. (b) N.A. (iii) 21.11.1956. (iv) (a) 4 ploughings with country plough. (b) Transplanting. (c) N.A. (d) 33" x 33". (e) 1. (v) 100 lb./ac. of A/S applied before transplanting in ploughed furrows. (vi) Harrison special (medium). (vii) Irrigated. (viii) 1 interculture with country plough and 1 with planet junior hoe. (ix) 1.4". (x) 7 primings from 25.1.1957 to 15.3.1957.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of irrigation : I_0 =No irrigation and I_1 =2 irrigations, 4 weeks and 7 weeks after transplantation.

(2) 2 levels of manuring : M_0 =20 lb./ac. of N as A/S and M_1 =N at 20 lb./ac. as A/S+ P_2O_5 at 100 lb./ac. as Super+ K_2O at 100 lb./ac. as Pot. Sul.

(3) 2 levels of topping : T_0 =No topping and T_1 =Topping.

3. DESIGN :

(i) 2³ fact. confd. (ii) (a) 4 plots/block ; 2 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 19'3" x 55'. (b) 13'9" x 9'6". (v) 1 row of 33" width around each plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of green leaf. (iv) to (vii) Nil.

5. RESULTS :

(i) 7394 lb./ac. (ii) 676.6 lb./ac. (iii) Main effect of I is highly significant. (iv) Av. yield of green leaf in lb./ac.

	I_0	I_1	Mean	T_0	T_1
M_0	6444	8287	7366	7077	7655
M_1	5944	8902	7423	7011	7835
Mean	6194	8594	7394	7044	7745
T_0	5765	8323			
T_1	6624	8865			

S.E. of any marginal mean = 239.2 lb./ac.

S.E. of body of any table = 338.3 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 57(28).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'ICM'.

Object :- To study the effect of irrigation in combination with fertilizers and topping on the yield and quality of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco after tobacco. (b) Tobacco. (c) Manurial expt. was conducted during 1955 and 1956. Treatments included, no manure, F.Y.M. at 5 tons/ac., paddy husk and paddy straw at 10 tons/ac. (ii) (a) Deep black soil. (b) N.A. (iii) 12.11.1957. (iv) (a) 2 ploughings with country plough and 1 harrowing. (b) Planted by rope. (c) N.A. (d) 33" x 33". (e) 1. (v) Nil. (vi) Harrison special (medium). (vii) Irrigated. (viii) Gap-filling and pot watering during the week after planting. 1 weeding and 2 interculturings. Su. kering after topping done periodically. (ix) 2.6". (x) 6 primings from 5.2.1958 to 18.3.1958.

2. TREATMENTS :

Main-plot treatments :

8 levels of irrigation : I_0 =No irrigation, I_1 =4, I_2 =7, I_3 =9, I_4 =4 and 7, I_5 =7 and 9, I_6 =4 and 9 and I_7 =4, 7 and 9 weeks after planting.

Sub-plot treatments :

2 levels of fertilizers : M_1 =20 lb./ac. of N as A/S and M_2 = M_1 +100 lb./ac. of P_2O_5 as Super+100 lb./ac. of K_2O as Pot. Sul.

Sub-sub-plot treatments :2 levels of topping : T_0 = No topping and T_1 = Topping at flowering.

Fertilizers applied by hand in furrows.

3. DESIGN :(i) Split-plot. (ii) (a) 8 main-plots/replication ; 2 sub-plots/main-plot and 2 sub-sub-plots/sub-plot. (b) N.A. (iii) 3. (iv) (a) $22' \times 16.5'$. (b) $16.5' \times 11'$. (v) $2\frac{1}{2}' \times 2\frac{1}{2}'$. (vi) Yes.**4. GENERAL :**

(i) Fair. (ii) Mild aphids attack controlled by spraying Basudin at 2 ozs. in 10 gallons of water. Incidence of orobanche quite heavy. (iii) Yield of green leaf and total bright leaf equivalent. (iv) to (vii) Nil.

5. RESULTS :

(i) 9965 lb./ac. (ii) (a) 1937.9 lb./ac. (b) 1293.4 lb./ac. (c) 1032.6 lb./ac. (iii) Main effects of I and M are highly significant. (iv) Av. yield of green leaf in lb./ac.

	I_0	I_1	I_2	I_3	I_4	I_5	I_6	I_7	Mean	T_0	T_1
M_1	7948	8453	10562	10657	10481	12328	10523	12242	10399	10503	10295
M_2	7178	8188	7582	8737	9983	12919	10659	11003	9531	9635	9427
Mean	7563	8320	9072	9697	10232	12624	10591	11622	9965	10069	9861
T_0	7476	8406	8931	9634	10172	12846	10955	12134			
T_1	7650	8235	9213	9760	10292	12401	10227	11110			

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. I marginal means | = 791.1 lb./ac. | 6. T means at the same level of I | = 596.2 lb./ac. |
| 2. M marginal means | = 264.0 lb./ac. | 7. I means at the same level of T | = 896.4 lb./ac. |
| 3. T marginal means | = 210.8 lb./ac. | 8. T means at the same level of M | = 298.1 lb./ac. |
| 4. M means at the same level of I | = 746.8 lb./ac. | 9. M means at the same level of T | = 337.8 lb./ac. |
| 5. I means at the same level of M | = 951.2 lb./ac. | | |

Crop :- Tobacco.**Ref :- C.T.R.I. 58(47).****Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'ICM'.**

Object :- To study the effect of irrigation in combination with fertilizers and topping on the yield and quality of cigarette Tobacco.

1. BASAL CONDITIONS :(i) (a) Tobacco after Tobacco. (b) Tobacco. (c) As per treatments. (ii) (a) Deep black soil. (b) N.A. (iii) 31.10.1958. (iv) (a) Four ploughings with country plough. (b) Transplanting. (c) N.A. (d) $3\frac{1}{2}' \times 3\frac{1}{2}'$. (e) 1. (v) 3 tons/ac. of M.C. (vi) Harrison special (medium). (vii) Irrigated. (viii) Gapfilling, 2 hand weedings, 3 intercultures with planet jounior hoe, 1 interculture with hand hoe and suckering following topping. (ix) $11.6''$. (x) 5 primings from 6.1.1959 to 18.2.1959.**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 57(28) on page 644.

4. GENERAL :

(i) Lodging in February due to heavy rains. (ii) Caterpillar attack—hand picking and destroying of caterpillars, spraying DDT at 2 oz. in 10 gallons of water, suspicion of root knots—drenching with Bordeaux mixture. Orbanche removed and burned. (iii) Yield of green leaf. (iv) (a) 1957—contd. (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) Heavy rains. (vii) Due to heavy rainfall in early stages of the crop, irrigations 4 weeks after planting was cancelled. Thus there were only 4 effective irrigational treatments.

5. RESULTS :

(i) 9010 lb./ac. (ii) (a) 1104.5 lb./ac. (b) 999.1 lb./ac. (c) 1008.4 lb./ac. (iii) Main effect of I is highly significant and main effect of T is significant. (iv) Av. yield of green leaf in lb./ac.

	I ₁	I ₂	I ₃	I ₅	Mean	T ₀	T ₁
M ₀	8102	9822	9257	9475	9164	8861	9467
M ₁	7950	9402	8775	9292	8855	8683	9027
Mean	8026	9612	9016	9384	9010	8772	9247
T ₀	7788	9263	8958	9080			
T ₁	8264	9961	9074	9688			

S.E. of difference of two

- | | | | |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. I marginal means | = 318.8 lb./ac. | 6. T means at the same level of I | = 411.7 lb./ac. |
| 2. M marginal means | = 203.9 lb./ac. | 7. I means at the same level of T | = 431.7 lb./ac. |
| 3. T marginal means | = 205.8 lb./ac. | 8. T means at the same level of M | = 291.1 lb./ac. |
| 4. M means at the same level of I | = 407.9 lb./ac. | 9. M means at the same level of T | = 289.8 lb./ac. |
| 5. I means at the same level of M | = 429.9 lb./ac. | | |

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 59(40).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'ICM'.

Object:—To study the effect of irrigation in combination with fertilizers and topping on the yield and quality of Cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco after Tobacco. (b) Tobacco. (c) 3 tons/ac. of F.Y.M. + fertilizers as per treatments. (ii) (a) Deep black soil (b) N.A. (iii) 6.11.1959. (iv) (a) 4 ploughings with country plough. (b) Transplanting. (c) N.A. (d) 33" × 33". (e) 1. (v) F.Y.M. at 3 tons/ac. (vi) Harrison special (medium). (vii) Irrigated. (viii) 2 gap fillings, 4 hand weedings, 2 interculturings with plantet junior hoe. Removal of sand leaves and suckering done in topped plots 4 times. (ix) Nil. (x) 6 primings from 8.1.1960 to 23.2.1960.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(28) on page 644.

4. GENERAL :

(i) Normal. (ii) Caterpillar attack—twice hand picking and destroying, spraying Endrine at 2 oz in 10 gallons of water twice. Aphids attack Basudin sprayed once at 2 oz in 10 gallons of water. Powdery mildew sulphur applied in row at 25 lb./ac. by mixing with sand. Orobanche removed. (iii) Yield of green leaf. (iv) (a) 1957—1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 8130 lb./ac. (ii) (a) 1444.7 lb./ac. (b) 823.2 lb./ac. (c) 760.2 lb./ac. (iii) Main effect of I and M are highly significant. Interaction I × M × T is significant. (iv) Av. yield of green leaf in lb./ac.

	I ₀	I ₁	I ₂	I ₃	I ₄	I ₅	I ₆	I ₇	Mean	T ₀	T ₁
M ₁	5189	7132	8401	7749	7518	9027	8852	9514	7948	7941	7955
M ₂	5835	7059	8429	7436	9034	10373	7948	10389	8313	8179	8447
Mean	5612	7096	8415	7592	8276	9700	8400	9952	8130	8060	8201
T ₀	5596	7082	8081	7456	7859	9360	8986	10062			
T ₁	5628	7110	8749	7729	8693	10040	7814	9842			

S.E. of difference of two

1. I marginal means	= 589.8 lb./ac.	6. T means at the same level of I	= 438.9 lb./ac.
2. M marginal means	= 264.0 lb./ac.	7. I means at the same level of T	= 666.5 lb./ac.
3. T marginal means	= 155.2 lb./ac.	8. T means at the same level of M	= 219.5 lb./ac.
4. M means at the same level of I	= 475.3 lb./ac.	9. M means at the same level of T	= 228.7 lb./ac.
5. I means at the same level of M	= 678.8 lb./ac.		

Crop :- Tobacco.

Ref :- C.T.R.I. 58(34).

Site :- Tobacco Res. Sta., Hunsur.

Type :- 'D'.

Object :—To study the effect of insecticides to control the stem borer in the nursery of Tobacco.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) (a) Red sandy loam. (b) N.A. (iii) 3.5.1958. (iv) (a) Ploughing 3 to 4 times. (b) Broadcasting. (c) 4.5 lb./ac. (d) 33" × 33". (e) N.A. (v) F.Y.M. at 20 tons/ac. + A/S at 16 grams/bed. at weekly intervals. (vi) Harrison special. (vii) Unirrigated. (viii) Thinning and gap filling. (ix) 16.8". (x) 3.7.1958 to 18 8 1958.

2. TREATMENTS :

4 insecticidal treatments : T₀ = Control (water application), T₁ = Endrex 20 E.C.—0.125%, T₂ = Folidol E. 605—0.03% and T₃ = Gresrol 550—0.33%.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b) 8' × 4'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Bordeaux mixture and dithane (10 oz. in 4 gallons) were sprayed to control leaf spot disease. (iii) Healthy and affected seedlings. (iv) (a) 1958—1960 (failed in 1959—1960). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 8.95%. (ii) 5.28%. (iii) Treatment differences are not significant. (iv) Mean incidence of stem borer in percentage.

Treatment	T ₀	T ₁	T ₂	T ₃
Mean %	10.93	4.58	8.88	11.43

S E./mean = 2.64%

Crop :- Tobacco (Kharif).

Ref :- C.T.R.I. 58(35).

Site :- Tobacco Res. Sta., Hunsur.

Type :- 'D'.

Object :—To find out the effect of different insecticides to control the aphids on Tobacco..

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) Nil. (ii) (a) Red sandy loam. (b) N.A. (iii) 10.8.1958. (iv) (a) 3 to 4 ploughings. (b) Transplanting. (c) 3 lb./ac. (d) 33" × 33". (e) N.A. (v) Nil. (vi) Flue cured virginia tobacco. (vii) Unirrigated. (viii) Nil. (ix) 7.46" in 15 days. (x) 12.11.1958.

2. TREATMENTS :

6 insecticidal sprayings : T₀ = Control (no spray), T₁ = Water spraying, T₂ = Basudin 20 E.C. 0.15%, T₃ = Ekatox 20 E.C. 0.10%, T₄ = Endren 20 E.C. 0.25% and T₅ = Folidol 605.E. 0.03%.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 30 plants. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) As per treatments. (iii) Lab count on aphid mortality in 5 random infested leaves. Field count of affected plants and % decrease in aphid infested leaves taken 15 days after spraying. (iv) (a) 1958—1960. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 68.34%. (ii) 15.19%. (iii) Treatment differences are highly significant. (iv) Mean % of decrease in aphids infection.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Mean %	29.26	41.98	82.76	79.22	87.96	88.88

S.E./mean = 7.60 %.

Crop :- Tobacco.

Ref :- C.T.R.I. 59(30).

Site :- Tobacco Res. Stn., Hunsur.

Type :- 'D'.

Object :—To find out the effect of different insecticides to control the aphids on Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) Nil. (ii) (a) Red sandy loam. (b) N.A. (iii) 9.8.1959. (iv) (a) 4 ploughings. (b) Transplanting. (c) 3 lb./ac. (d) 33"×33". (e) N.A. (v) Nil. (vi) Flue cured virginia tobacco. (vii) Unirrigated. (viii) Nil. (ix) 12.2" in 21 days. (x) 10.10.1959.

2. TREATMENTS :

7 insecticidal treatments : T₀=Control (no spray), T₁=Water spraying, T₂=Basudin 20 E.C. 0.15 %, T₃=Ekatox 20 E.C. 0.10 %, T₄=Endrex 20 E.C. 0.25%, T₅=Folidol 605 E 0.03% and T₆=Malathion 50 E.C. 0.10%.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 30 plants. (v) Nil. (vi) Yes.

4. GENERAL :

Same as in expt. no. 58(35) on page 647.

5. RESULTS :

(i) 52.73%. (ii) 34.83%. (iii) Treatment differences are not significant. (iv) Mean % of decrease in aphid infection.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆
Mean %	69.50	89.74	47.32	40.99	31.35	51.81	38.38

S.E./mean = 17.41%.

Crop :- Tobacco.

Ref :- C.T.R.I. 58(36).

Site :- Tobacco Res. Stn., Hunsur.

Type :- 'D'.

Object :—To study the effect of fungicidal spraying on leaf-spot in nursery of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) (a) Red sandy loam. (b) N.A. (iii) 15.4.1958. (iv) (a) Ploughing 3 times. (b) Broadcasting. (c) 4½ lb./ac. (d) and (e) N.A. (v) Nil. (vi) Harrison special. (vii) Unirrigated. (viii) Nil. (ix) 6.09". (x) 6.7.1958.

2. TREATMENTS :

6 insecticidal treatments : T₀=Control, T₁=Copper sandoz 53 0.125%, T₂=Dithane Z.78 0.15%, T₃=Fermate 0.09%, T₄=Cupravit 0.4% and T₅=Coppesan 0.4%.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) and (b) 4' × 4.75'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Since the germination was not uniform, gap-filling was done. (ii) As per treatments. (iii) 25 random leaves/replication were selected and number of spots were taken. (iv) (a) 1958—1960. (b) No. (c) Nil. (v) and (vi) Nil. (vii) 1½ months old seedlings were transplanted on bed at 2" × 2" spacing. Artificial inoculation with spores of "Collecto-Trichum Tabacum".

5. RESULTS :

(i) 2151 spots. (ii) 964 spots. (iii) Treatment differences are highly significant. (iv) Av. number of spots on 25 random leaves.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Av. number of spots	5259	1815	890	1145	1782	2014

S.E./mean = 393 spots.

Crop :- Tobacco.

Ref :- C.T.R.I. 58(37).

Site :- Tobacco Res. Stn., Hunsur.

Type :- 'D'.

Object :- To study the effect of sulphur application to soil in controlling powdrey mildew on Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) Nil. (ii) (a) Red soil. (b) N.A. (iii) 5.7.1958. (iv) (a) Ploughing 3 to 4 times. (b) Transplanting. (c) 3 lb./ac. (d) 33" × 33". (e) N.A. (v) Nil. (vi) Flue cured Virginia tobacco. (vii) Unirrigated. (viii) Nil. (ix) 12.1", 4.01", 5.87" and 6.02" for 4 stations. (x) 5.9.1958.

2. TREATMENTS :

4 times of application of 40 lb./ac. of sulphur : T₀=Control (no application), T₁=After 4 weeks of planting in one dose, T₂=In two doses at 4 and 6 weeks after planting and T₃=In one dose at planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 3 (one replication at each place). (iv) (a) and (b) 30 plants/plot. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) As per data. (iii) % diseased plants and number of diseased leaves/100 plants (infected). (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Diseased plants

(i) 17.53 %. (ii) 13.64 %. (iii) Treatment differences are not significant. (iv) Mean % of diseased plants.

Treatment	T ₀	T ₁	T ₂	T ₃
Av. number of diseased plants	29.07	11.42	19.04	10.58

S.E./mean = 7.88 %.

Diseased leaves

(i) 42.21 leaves/100 plants. (ii) 39.19 leaves/100 plants. (iii) Treatment differences are not significant. (iv) Mean number of diseased leaves/100 plants.

Treatment	T ₀	T ₁	T ₂	T ₃
Av. number of diseased leaves	75.03	25.89	46.49	21.43

S.E./mean = 22.63 leaves/100 plants.

Crop :- Tobacco.**Ref :- C.T.R.I. 59(31).****Site :- Tobacco Res. Stn., Hunsur.****Type :- 'D'.**

Object :—To study the effect of fungicidal spraying on leaf spots in nursery on cigarette Tobacco.

1. BASAL CONDITIONS :(i) (a) Nil. (b) Tobacco. (c) Nil. (ii) (a) Red sandy loam. (b) N.A. (iii) 30.5.1959. (iv) (a) Ploughing 3 to 4 times. (b) Broadcast. (c) $4\frac{1}{2}$ lb./ac. (d) N.A. (e) N.A. (v) Nil. (vi) Harrison Special. (vii) Unirrigated. (viii) Nil. (ix) 23.08. (x) 12.9.1959.**2. TREATMENTS :**9 fungicidal spraying treatments : T_0 =Control, T_1 =Copper sandoz 53 0.125%, T_2 =Dithane Z.78 0.150%, T_3 =Fermate 0.090%, T_4 =Cupravit 0.400%, T_5 =Coppersan 0.400%, T_6 =Shell copper 0.400% and T_7 =Bordeaux mixture 4.450%.**3. DESIGN :**(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) and (b) $4' \times 4.75'$. (v) Nil. (vi) Yes.**4. GENERAL :**(i) Fair. (ii) 100 random leaves/replication are selected and number of spots are counted. (iii) N.A. (iv) (a) 1958—1960 (but 2 more treatments were added in 1959). (b) No. (c) Nil. (v) and (vi) Nil. (vii) $1\frac{1}{2}$ months old seedlings were transplanted on bed at $2' \times 2'$ spacing. Artificial inoculation was done with spores of *collectio tricham tabacum*.**5. RESULTS :**

(i) 3203 spots. (ii) 1158 spots. (iii) Treatment effects are highly significant. (iv) Av. number of spots of 100 random leaves.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. number of spots	6286	3687	1831	3452	3377	1748	3054	2192

S.E./mean = 473 spots.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 59(32).****Site :- Tobacco Res. Stn., Hunsur.****Type :- 'D'.**

Object :—To find out the best control measure for root knot nematodes in nursery on cigarette Tobacco.

1. BASAL CONDITIONS :(i) (a) Nil. (b) Cigarette tobacco. (c) Nil. (ii) (a) Red sandy loam. (b) N.A. (iii) 17.10.1959. (iv) (a) 3 ploughings. (b) Broadcast. (c) $4\frac{1}{2}$ lb./ac. (d) and (e) N.A. (v) Nil. (vi) Harrison Special. (vii) Unirrigated. (viii) Nil. (ix) N.A. (x) 4.1.1960.**2. TREATMENTS :**2 chemical treatments : C_0 =No fumigation (control) and C_1 =Soil fumigation of nursery area with shell D.D.**3. DESIGN :**(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 6. (iv) (a) and (b) $8' \times 4'$. (v) No. (vi) Yes.**4. GENERAL :**

(i) Fair. (ii) As per treatments. (iii) % of infested seedlings. (iv) (a) 1958—contd. (Failed in 1958). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 6.7%. (ii) 1.0%. (iii) Treatment difference is significant. (iv) Av. % of incidence of root knot.

Treatment	C_0	C_1
% of incidence	11.0	3.5

S.E./mean = 0.17 %.

Crop :- Tobacco (*Rabi*).

Ref :- C.T.R.I. 56(19).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'D'.

Object :—To study the effect of hormones in suppression of suckers and on the yield of hookah and chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Maize+*Rahar*—Tobacco. (b) Maize+*Rahar*. (c) Nil. (ii) (a) Gangetic alluvium calcareous. (b) N.A. (iii) 24.10.1956. (iv) (a) 1 ploughing by planet junior cultivator (b) Transplanting. (c) 2 lb./ac. (d) 3'×2'. (e) 1. (v) G.M. with *sannhemp*. (vi) *Bori Bharao*—93 (medium). (vii) Irrigated. (viii) 2 weedings, 4 suckering and topping. (ix) 14.00". (x) 30.3.1957.

2. TREATMENTS :

4 chemical treatments : C₀=Control, C₁=N.A.A., C₂=I.B.A. and C₃=Mustard oil.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 15'×30'. (b) 9'×26'. (v) 3'×2'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Leaf curl and mosaic. (iii) Weight of suckers and yield of cured leaf. (iv) (a) 1956—1959. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Hailstorm on 9.1.1957. (vii) Nil.

5. RESULTS :

(i) 1712 lb./ac. (ii) 137.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	C ₀	C ₁	C ₂	C ₃
Av. yield	1831	1644	1702	1671

S.E./mean = 56.0 lb./ac.

Crop :- Tobacco (*Rabi*).

Ref :- C.T.R.I. 57(24).

Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'D'.

Object :—To study the effect of hormones and growth inhibitions in the suppression of suckers and on yield and quality of hookah and chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sannhemp*. (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) 21.9.1957. (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3'×2'. (e) 1. (v) G.M. with *sannhemp*+50 lb./ac. of N ($\frac{1}{2}$ as A/S and $\frac{1}{2}$ as mustard cake). (vi) *Bori Bharao*—10. (vii) Irrigated. (viii) 2 weedings, topping and suckering. (ix) 49.28". (x) 19.2.1958.

2. TREATMENTS

5 chemical treatments : C₀=Control, C₁=N.A.A., C₂=I.B.A., C₃=M.H. 40 and C₄=Mustard oil.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 15'×30'. (b) 9'×26'. (v) 3'×2'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Leaf curl and mosaic. (iii) Cured leaf yield, green and dry weight of suckers. (iv) (a) 1956—1959. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2145 lb./ac. (ii) 285.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	C ₀	C ₁	C ₂	C ₃	C ₄
Av. yield	2057	2081	2094	2399	2094

S.E./mean = 116.4 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 58(38).****Site :- Hookah and Chewing Tobacco Res. Stn., Pusa. Type :- 'D'.**

Object—To study the effect of hormones and growth inhibitions in the suppression of suckers and on the yield and quality of hookah and chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sannhemp*. (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) 2.10.1958. (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3'×2'. (e) 1. (v) G.M. with *sannhemp*+50 lb./ac. of N ($\frac{1}{2}$ as A/S+ $\frac{1}{2}$ as mustard cake). (vi) D.P.—401. (vii) Irrigated. (viii) 2 weedings, topping and suckering. (ix) 7.00". (x) 10.3.1959.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(24) on page 651.

5. RESULTS :

(i) 2428 lb./ac. (ii) 221.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	C ₀	C ₁	C ₂	C ₃	C ₄
Av. yield	2403	2406	2357	2489	2485

S.E./mean = 90.4 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 59(33).****Site :- Hookah and Chewing Tobacco Res. Stn., Pusa.****Type :- 'D'.**

Object:—To study the effect of hormones and growth inhibitions in suppression of suckers and on yield and quality of hookah and chewing Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sannhemp*. (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) 22.9.1959. (iv) (a) 4 ploughings. (b) Transplanting. (c) 4 lb./ac. (d) 3'×2'. (e) 1. (v) G.M. with *sannhemp*+50 lb./ac. of N ($\frac{1}{2}$ as A/S+ $\frac{1}{2}$ as mustard cake). (vi) D.P.—401. (vii) Irrigated. (viii) 4 weedings, topping and suckering. (ix) 19.27". (x) 4.3.1960.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(24) on page 651.

5. RESULTS :

(i) 2661 lb./ac. (ii) 396.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in lb./ac.

Treatment	C ₀	C ₁	C ₂	C ₃	C ₄
Av. yield	2630	2575	2623	2749	2729

S.E./mean = 161.8 lb./ac.

Crop :- Tobacco (Rabi).**Ref :- C.T.R.I. 58(39).****Site :- Hookah and Chewing Tobacco Res Stn., Pusa.****Type :- 'D'.**

Object :—To study the effect of shell-DD soil fumigant in the control of earthworms in Tobacco nurseries.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) 50 lb./ac. of N. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) 18.8.1958. (iv) (a) 4 spadings. (b) Broadcast. (c) 4 lb./ac. (d) and (e) N.A. (v) Nil. (vi) D.P.—401. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 9 to 17.10.1958.

2. TREATMENTS :

2 chemical treatments : C_0 =Control and C_1 =Application of shell-D-D soil fumigant at 400 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) and (b) $6\frac{1}{2}' \times 4'$. (v) Nil. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Earthworms. (iii) Weight of earthmounds, number of transplantable seedlings/plot. (iv) (a) 1958-1961. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 710 seedlings/plot. (ii) 189.7 seedlings/plot. (iii) Treatment difference is not significant. (iv) Av. number of seedlings/plot.

Treatment	C_0	C_1
No of seedlings/plot.	721	689

S.E./mean = 54.8 seedlings/plot.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 59(34).

Site :- Hookah and Chewing Tobacco Res. Sta., Pusa. Type :- 'D'.

Object :- To study the effect of shell-D-D soil fumigant in the control of earthworms in Tobacco nurseries.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize+*Rahar*. (c) Nil. (ii) (a) Indo-gangetic alluvium calcareous. (b) N.A. (iii) 1.9.1959. (iv) (a) 4 ploughings. (b) Broadcast. (c) 4 lb./ac. (d) and (e) N.A. (v) (a) F.Y.M. on 1.7.1959. (vi) D.P.-401. (vii) Irrigated. (viii) 2 weedings. (ix) Nil. (x) 8 to 10.11.1959.

2. TREATMENTS :

9 chemical treatments : C_0 =Control, C_1 =Application of Shell-D-D fumigant at 450 lb./ac., C_2 =Application of neem cake at 1000 lb./ac., C_3 =Application of Chlordane as dust at 98 lb./ac., C_4 =Application of Chlordane as spray at 2 lb./ac., C_5 =Application of Aldrin as dust at 98 lb./ac., C_6 =Application of Aldrin as spray at 2 lb./ac., C_7 =Application of Dieldrin as dust at 98 lb./ac. and C_8 =Application of Dieldrin as spray at 2 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) $6\frac{1}{2}' \times 4'$. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Earthworms. (iii) Weight of earthmounds, and no. of transplantable seedlings per plot. (iv) (a) 1958-1961 (with changed treatments). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 309 seedlings/plot. (ii) 86.8 seedlings/plot. (iii) Treatment differences are significant. (iv) Av. number of seedlings/plot.

Treatment	C_0	C_1	C_2	C_3	C_4	C_5	C_6	C_7	C_8
Av. number of seedlings	206	340	367	225	291	311	257	445	336

S.E./mean = 43.4 seedlings/plot.

Crop :- Tobacco.**Ref :- C.T.R.I. 54(40).****Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'D'.****Object :-** To find out the effect of seed rate on damping off disease in flue cured Tobacco.**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Tobacco nursery. (c) F.Y.M. at 10 tons/ac. (ii) (a) Black clayey soil. (b) N.A. (iii) 21.9.1954. (iv) (a) Ploughing 2 to 3 times and planking. (b) Broadcast. (c) to (e) N.A. (v) F.Y.M. at 10 tons/ac. mixed well in the upper layer of soil in the beds just before sowing. In addition, top dressing of 240 lb./ac. of A/S applied in 3 to 4 doses. (vi) *Chatham* (a flue-cured variety). (vii) Unirrigated. (viii) Pressing the seed beds after sowing and weeding at regular intervals. (ix) N.A. (x) 16, 19 and 29.11.1954.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 seed rates : $R_1=1.0$, $R_2=1.66$, $R_3=3.3$ and $R_4=5.0$ lb./ac.(2) 2 perenox treatments : P_0 =No prophylactic treatment and P_1 =Prophylactic treatment with perenox at 4 oz. in 10 gallons.

The prophylactic treatment was given once, 4 days before sowing. Uniform sprayings were given at one fourth gallon/bed after sowing as and when necessary.

3. DESIGN :(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 8. (iv) (a) and (b) $5' \times 3.5'$. (v) Nil. (vi) Yes.**4. GENERAL :**

(i) Seedlings grew satisfactorily during the nursery season. (ii) Nil. (iii) Area 'damped off', total number of seedlings obtained and number of transplantable seedlings. (iv) to (vii) Nil.

5. RESULTS :

(i) 430 plants/plot. (ii) 99.6 plants/plot. (iii) Main effect of R alone is highly significant. (iv) Av. number of transplantable seedlings/plot.

	R_1	R_2	R_3	R_4	Mean
P_0	365	356	498	521	435
P_1	324	412	505	456	424
Mean	345	384	502	489	430

S.E. of R marginal mean = 24.9 plants/plot.
 S.E. of P marginal mean = 17.6 plants/plot.
 S.E. of body of table = 35.2 plants/plot.

Crop :- Tobacco.**Ref :- C.T.R.I. 54(41).****Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'D'.****Object :-** To study the control measures for powdery mildew in Virginia Tobacco by spraying fungicides.**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Tobacco. (c) Nil. (ii) (a) Black clayey soil. (b) N.A. (iii) 8.11.1954. (iv) (a) 2 to 3 ploughings and planking. (b) Transplanting. (c) 5760 seedlings/ac. (d) $33'' \times 33''$. (e) 1. (v) 5 tons/ac. of M.C. (vi) Harrison Special. (vii) Nil. (viii) 2 to 3 weedings and intercultivation with planet junior hoe twice during the first month of the crop. (ix) 0.53%. (x) 4.2.1955.

2. TREATMENTS :

Main-plot treatments :

2 dates of spraying : $D_1=7.1.1955$ and $D_2=27.1.1955$.

Sub-plot treatments :

6 fungicides : F_0 =Unsprayed (control), F_1 =Karathane W.P. 25(0.1%), F_2 =Thiovit (0.5%), F_3 =Z.78 (0.3%), F_4 =PerenoxDithane (0.25%) and F_5 =Water.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replications and 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) $19\frac{1}{2}' \times 16\frac{1}{2}'$. (b) $13\frac{1}{2}' \times 11'$. (v) Two guard rows between plots. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Observations on the six lowermost leaves of every plant in each plot were taken. Each leaf was imagined to have been divided into 8 sections and each infected section, irrespective of the extent of infection was counted as one. The infected sections were counted on upper and lower surfaces of each leaf. (iv) (a) 1954—1955. (b) and (c) Nil. (v) and (vi) Nil. (vii) The experiment has been analysed as R.B.D. separately for two dates of sprayings. As plot-wise data are not available the results are given separately for two dates of spraying.

5. RESULTS :

For D_1

(i) 51.9 infected sections/plot. (ii) 12.2 infected sections/plot. (iii) Treatment differences are significant. (iv) Av. number of infected sections/plot.

Treatment	F_0	F_1	F_2	F_3	F_4	F_5
Av. yield	89.7	17.8	3.3	64.8	47.8	91.3

S.E./mean = 6.1 infected sections/plot.

For D_2

(i) 83.9 infected sections/plot. (ii) 22.8 infected sections/plot. (iii) Treatment differences are not significant. (iv) Av. number of infected sections/plot.

Treatment	F_0	F_1	F_2	F_3	F_4	F_5
Av. yield	121.0	49.8	43.0	76.5	80.3	132.8

S.E./mean = 11.4 infected sections/plot.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(42).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'D'.

Object :- To study the effect of various fungicides on 'damping off' of flue-cured Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco nursery. (c) F.Y.M. at 10 tons/ac. (ii) (a) Black clayey soil. (b) N.A. (iii) 22.2.54. (iv) (a) Ploughing 2 to 3 times and planking. Raised seed beds, upper layer mixed with sand at the rate of 50 tons/ac. and F.Y.M. (b) Broadcast. (c) 3.33 lb./ac. (d) and (e) N.A. (v) F.Y.M. at 10 tons/ac. mixed well in the upper layer of soil in the beds just before sowing. Top dressing of 240 lb./ac. of A/S applied in 3 to 4 doses. (vi) Chatham. (vii) Unirrigated. (viii) Pressing the seed beds after sowing and weeding at regular intervals. (ix) N.A. (x) 8, 16, 26 and 30.11.1954.

2. TREATMENTS :

8 fungicides : F_0 =Control (Unsprayed), F_1 =Perenox (0.25%), F_2 =Blitox (0.25%), F_3 =Fermate (0.09%), F_4 =Chestnut compound (0.313%), F_5 =Dithane Z. 78 (0.15%), F_6 =Wetcol (0.375%) and F_7 =Bordeaux mixture (0.4%).

Wetcol is desiccated bordeaux mixture, hence the two treatments were added this year. Prophylactic spraying with each fungicide was given five days before sowing. After sowing, fungicides were sprayed uniformly as and when necessary.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 8. (iv) (a) and (b) 5' x 3.5'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Seedlings grew satisfactorily during the nursery season. (ii) Nil. (iii) Area 'damped off', total number of seedlings obtained and no. of transplantable seedlings. (iv) to (vii) Nil.

5. RESULTS :

(i) 554 plants/plot. (ii) 148.9 plants/plot. (iii) Treatment differences are highly significant. (iv) Av. number of transplantable seedlings/plot.

Treatment	F ₀	F ₁	F ₂	F ₃	F ₄	F ₅	F ₆	F ₇
Av. number	90	609	553	589	502	533	521	535

S.E./mean = 52.6 plants/plot.

Crop :- Tobacco.

Ref :- C.T.R.I. 54(43).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'D'.

Object :—To find out the most advantageous dose of Perenox against damping off in flue cured Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco nursery. (c) F.Y.M. at 10 tons/ac. (ii) (a) Black clayey soil. (b) N.A. (iii) 13.9.1954. (iv) (a) Ploughing 2 to 3 times and planking. Raised seed beds, upper layer mixed with sand at the rate of 50 tons/ac. and F.Y.M. (b) Seed broadcast (c) 3.33 lb./ac. (d) and (e) N.A. (v) F.Y.M. at the rate of 10 tons/ac. mixed well in the upper layer of soil in the beds just before sowing. In addition top dressing of 240 lb./ac. of A/S applied in 3 to 4 doses. (vi) *Chatham*. (vii) Unirrigated. (viii) Pressing the seed beds after sowing and weeding at regular intervals. (ix) N.A. (x) 2, 8, 15, 19 and 29.11.1954.

2. TREATMENTS :

6 doses of perenox : D₀=Control (no spraying), D₁=2½, D₂=5, D₃=7½, D₄=10 and D₅=12½ gallon/cent of area.

One prophylactic spraying of Perenox (4 oz. in 10 gallons) was given. In all eleven sprayings of Perenox (2 oz. in 10 gallons) were given according to weather conditions.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 12. (iv) (a) and (b) 5' x 3½'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Seedlings grew satisfactorily during the nursery season. (ii) Nil. (iii) Area "damaged off", total number of seedlings and no. of transplantable seedlings. (iv) to (vii) Nil.

5. RESULTS :

(i) 453 plants/plot. (ii) 189.8 plants/plot. (iii) Treatment differences are highly significant. (iv) Av. number of transplantable seedlings/plot.

Treatment	D ₀	D ₁	D ₂	D ₃	D ₄	D ₅
Av. yield	40	513	530	479	509	644

S.E./mean = 54.8 plants/plot.

Crop :- Tobacco.**Ref :- C.T.R.I. 54(44).****Site :- Central Tobacco Res. Instt., Rajahmundry.****Type :- 'D'.**

Object :- To study the effect of hormones on rooting and establishment of tobacco seedlings and eventually on the yield and quality of Tobacco.

1. BASAL CONDITIONS :

(i) (a) No. (b) Tobacco. (c) 100 lb./ac. of A/S. (ii) (a) Deep black soil. (b) N.A. (iii) 20.10.1954. (iv) (a) Ploughing and levelling. (b) Transplanting. (c) N.A. (d) 33"×33". (e) N.A. (v) 100 lb./ac. of A/S. (vi) Harrison (special). (vii) Unirrigated. (viii) 3 weedings, interculture one month after transplanting and gap-filling thrice at weekly intervals after transplanting. (ix) 0.53". (x) 1st week of December, January, February and March.

2. TREATMENTS :

6 fungicidal treatments : T₀= Control, T₁= Control (Charcoal powder), T₂=Indole acetic acid 0.05%, T₃= Indole acetic acid 0.1%, T₄=Indole acetic acid 0.2%, T₅=Indole butyric acid 0.05%, T₆=Indole butyric acid 0.1% and T₇=Indole butyric acid 0.2%.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 22'×22'. (b) 19½'×19½'. (v) 2 rows left as border. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Height, number of leaves, number of gaps, yield of cured leaf and grades of leaves. (iv) to (vii) Nil.

5. RESULTS :

(i) 85.6 gms./plant. (ii) 12.94 gms./plant. (iii) Treatment differences are highly significant. (iv) Av. weight of cured leaf in gms./plant.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Av. yield	77.4	83.0	90.0	86.0	85.7	91.4	85.6	85.5

S.E./mean = 6.47 gms./plant.

Crop :- Tobacco.**Ref :- C.T.R.I. 54(45).****Site :- Cigar and Chercot Tobacco Res. Stn., Veda sandur. Type :- 'D'.**

Object :- To investigate the effect of vegetable oils and their emulsions in controlling the growth of suckers in cigar Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Cumbu. (b) Cumbu. (c) N.A. (ii) (a) Red loam. (b) N.A. (iii) 23.10.1954. (iv) (a) 4 ploughings. (b) Transplanting. (c) N.A. (d) 2.5'×2'. (e) 1. (v) 20 C.L./ac. of F.Y.M.+50 lb./ac. of N as A/S. (vi) Vellavazhai. (vii) Irrigated. (viii) 1 hand weeding, 1 hoeing, 1 mummatti digging and 1 topping. (ix) 6.30". (x) 22.1.1955.

2. TREATMENTS :

13 sucker controlling treatments : T₁= Control (unsuckered), T₂=Control (suckered), T₃=Coconut oil, T₄= Groundnut oil, T₅=Glycerine, T₆=Neem oil, T₇=Sesamum oil, T₈=Gum solution, T₉=Coconut oil emulsion, T₁₀=Groundnut oil emulsion, T₁₁=Glycerine solution, T₁₂=Neem oil emulsion and T₁₃=Sesamum oil emulsion.

The glycerine solution, gum solution and oil emulsions at 25% by volume concentration applied to the top most 4 leaf axils immediately after topping.

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 6. (iv) (a) 5'×10'. (b) 5'×6'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Weight of suckers at intervals of 10 days from the treated 4 leaf axils as well as from the whole plants. (iv) (a) 1954—1955. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Total suckers from all leaf axils of 6 treated plants

(i) 1182 gms. (ii) 241.4 gms. (iii) Treatment differences are significant. (iv) Av. weight of suckers from 6 treated plants in gms.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Av. weight	—	842	1125	1205	1076	1420	1186
Treatment	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂	T ₁₃	
Av. weight	974	1392	1133	888	1635	1311	

S.E./mean = 98.5 gms.

Suckers from top 4 treated leaf axils of 6 treated plants

(i) 309 gms. (ii) 160.5 gms. (iii) Treatment differences are significant. (iv) Av. weight of suckers from top 4 treated leaf axils in gms.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Av. weight	—	388	17	152	396	370	437
Treatment	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂	T ₁₃	
Av. weight	341	131	450	292	618	117	

S.E./mean = 65.5 gms.

Crop :- Tobacco.

Ref :- C.T.R.I. 50(40).

Site :- Hanekare, Kothanahalli and Thorasettiahalli (Maddur) Type :- 'D'.
and Hunsur.

Object :—To find out the suitable control measures against leaf spot Anthracnose in fields on Tobacco.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Red soil in Hanekare, Kothanahalli and Hunsur. Black in thorasettiahalli. (b) N.A. (iii) 23.6.1958. (iv) (a) Ploughing. (b) Broadcasting. (c) 3 lb./ac. (d) 33"×33". (e) N.A. (v) Nil. (vi) Harrison special. (vii) Unirrigated. (viii) Nil. (ix) 3.55" in 7 days at Maddur and 6.35" in 9 days at Hunsur. (x) 25.8.1958.

2. TREATMENTS :

All combinations of (1) and (2)

- (1) 2 levels of priming : P₀=No priming and P₁=Priming of leaves.
(2) 2 levels of spraying-dithane Z-78 : S₀=No spraying and S₁=Spraying.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 3 in Hanekare, 2 in Kothanahalli, 2 in Thorasettiahalli and 1 in Hunsur. (iv) (a) and (b) 500 plants/plot. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) As per observations. (iii) No. of *Anthracnose* spots upto 7 basal leaves from 10 random plants/plot. (iv) (a) 1958—1960. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Expt. conducted by Tobacco Res. Stn., Hunsur.

5. RESULTS :

I Spots/plant

(i) 68.1 spots/plant. (ii) 18.7 spots/plant. (iii) Treatment differences are not significant. (iv) Av. no. of *Anthracnose* spots/plot.

	S ₀	S ₁	Mean
P ₀	82.4	78.5	80.5
P ₁	53.6	57.8	55.7
Mean	68.0	68.2	68.1

S.E. of S or P marginal mean = 4.7 spots/plant
 S.E. of body of table = 6.6 spots/plant

H Frog eye/plant

(i) 54.7 frog eye spots/plant. (ii) 7.8 frog eye spots/plant. (iii) Treatment differences are not significant.
 iv) Av. no. of frog eye spots/plant.

	S ₀	S ₁	Mean
P ₀	72.5	60.2	66.4
P ₁	45.3	40.8	43.0
Mean	58.9	50.5	54.7

S.E. of S or P marginal mean = 1.9 frog eye spots/plant.
 S.E. of body of table = 2.8 frog eye spots/plant.

Crop :- Tobacco.

Ref :- C.T.R.I. 59(35).

Site :- Kothanahalli, Thorasettihalli (Maddur) and Hunsur. Type :- 'D'.

Object :-To find out the suitable control measures against leaf spot Anthracnose in fields on Tobacco.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Kothanahalli and Hunsur—Red soil. Thorasettihalli—Black soil. (b) N.A. (iii) 17.6.1959. (iv) (a) Ploughing. (b) Broadcasting. (c) 3 lb./ac. (d) 33"×33". (e) N.A. (v) Nil. (vi) Harrison (special). (vii) Unirrigated. (viii) Nil. (ix) N.A. (x) 19.8.1959.

2. TREATMENTS :

Same as in expt. no. 58(40) on page 658.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 2 in Kothanahalli 2 in Thorasettihalli and 4 in Hunsur. (iv) (a) and (b) 500 plants/plot. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) As per observations. (iii) No. of *Anthracnose* spots upto 7 basal leaves from 10 random plants/plot. (iv) (a) 1958—1960. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

I Anthracnose spots/plant

(i) 115.7 spots/plant. (ii) 37.35 spots/plant. (iii) Treatment differences are significant. (iv) Av. no. of *Anthracnose* spots/plant.

	S ₀	S ₁	Mean
P ₀	159.8	123.1	141.4
P ₁	102.8	77.2	90.0
Mean	131.3	100.2	115.7

S.E. of any marginal mean = 9.34 spots/plant.
 S.E. of body of table = 13.21 spots/plant.

II Frog eye spots/plant

(i) 48.9 spots/plant. (ii) 12.79 spots/plant. (iii) Treatment differences are significant. (iv) Av. no. of frog eye spots/plant.

	S ₀	S ₁	Mean
P ₀	67.7	41.7	54.7
P ₁	53.6	32.7	43.1
Mean	60.6	37.2	48.9

S.E. of any marginal mean = 3.20 spots/plant.

S.E. of body of table = 45.2 spots/plant.

Crop :- Tobacco.

Ref :- C.T.R.I. 55(31).

Site :- Cigar and Cheroot Tobacco Res. Stn., Vendasandur

Type :- 'DC'.

Object :- To study the effect of topping and certain vegetable oils and their emulsions in controlling the growth of suckers in cigar Tobacco.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Red loam. (b) N.A. (iii) 2.11.1955 : Gaps filled on 7.11.1955. (iv) (a) 4 ploughings. (b) Transplanting. (c) 8,712 plants/ac. (d) 30"×24". (e) 1. (v) 89 tons/ac. of F.Y.M. + 50 lb./ac. of N as A/S. (vi) *Vellavazhai*. (vii) Irrigated. (viii) 1 hand weeding and *mummati* digging, topping as per treatments. (ix) N.A. (x) 10.2.1956.

2. TREATMENTS :

Main-plot treatments :

2 levels of topping : T₁=Topping at 10 leaves and T₂=Topping at 14 leaves.

Sub-plot treatments :

13 sucker controlling treatments : S₁=Control (unsuckered), S₂=Control (suckered), S₃=Coconut oil, S₄=Groundnut oil, S₅=Glycerine, S₆=*Neem* oil, S₇=Sesamum oil, S₈=Gum solution, S₉=Coconut emulsion, S₁₀=Groundnut oil emulsion, S₁₁=*Neem* oil emulsion and S₁₂=Sesamum oil emulsion.

The glycerine solution, gum solution and oil emulsions at 25% by volume concentration applied to the top most 4 leaf axils immediately after topping.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replications ; 12 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 10'×5'. (b) 6'×5'. (v) 2' on either side. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of cured leaves. (iv) (a) 1955—N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) Commencement of monsoon was late. (vii) Nil.

5. RESULTS :

(i) 1684 lb./ac. (ii) (a) 267.7 lb./ac. (b) 189.9 lb./ac. (iii) Main effect of T alone is highly significant. (iv) Av. yield of cured leaf in lb./ac.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	S ₉	S ₁₀	S ₁₁	S ₁₂	Mean
T ₁	1377	1670	1326	1706	1488	1597	1500	1483	1440	1534	1500	1556	1515
T ₂	1614	1846	2122	1820	1982	1938	1837	1767	1798	1815	1764	1946	1854
Mean	1496	1758	1724	1763	1735	1768	1668	1625	1619	1674	1632	1751	1684

S.E. of difference of two :

1. T marginal means	=	44.6 lb./ac.
2. S marginal means	=	77.5 lb./ac.
3. S means at the same level of T	=	109.6 lb./ac.
4. T means at the same level of S	=	114.3 lb./ac.

Crop :- Tobacco (Rabi).

Ref :- C.T.R.I. 57(25).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'R'.

Object :- To study the effect of different crops in rotation with tobacco on the yield and quality of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) As per treatments. (b) Tobacco. (c) 20 lb./ac. of N as A/S. (ii) (a) Deep black soil. (b) N.A. (iii) 31.10.1957. (iv) (a) to (e) N.A. (v) M.C. at 3 tons/ac. and A/S at 20 lb./ac. of N. (vi) Harrison special (medium). (vii) Unirrigated. (viii) Gap filling and interculture with planet junior hoe. (ix) 0.27". (x) 5 primings from 9.1.1958 to 6.2.1958.

2. TREATMENTS :

5 rotational treatments : A=Cluster beans--Sorghum--Fallow--Tobacco, B=Chillies with 20 lb./ac. of N--Fallow--Fallow--Tobacco, C=Chillies with 40 lb./ac. of N--Fallow--Dry paddy--Tobacco, D=Fallow--Cotton with 20 lb./ac. of N--Fallow--Tobacco and E=Fallow--Tobacco--Fallow--Tobacco.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 5. (iv) (a) 23'4½"×38'6". (b) 19'3"×33'. (v) One guard row on all side. (vi) Yes

4. GENERAL :

(i) Good. (ii) Catterpillar attack. DDT spraying at 2 oz in 10 gallons of water. Aphids attack Basudin and Endrin sprayed. (iii) Yield of green leaf. (iv) (a) 1957--contd. (b) No. (c) Nil. (v) and (vi) Nil. (vii) The experiment could not be analysed because of lack of information on all treatment effects in the 1st cycle of the rotation experiment.

5. RESULTS :

Treatment	A ₂	B ₂	C ₂	D ₂	E ₁ +E ₂	G.M.
Av. yield	5780	5684	2635	5029	5970	5178

Crop :- Tobacco.

Ref :- C.T.R.I. 58(42).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'R'.

Object :- To study the effect of different crops in rotation with tobacco on yield and quality of cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Deep black soil. (b) N.A. (iii) 17.11.1958. (iv) (a) to (e) N.A. (v) M.C. at 3 tons/ac. and A/S at 20 lb./ac. of N. (vi) Tobacco : Harrison spacial (medium). (vii) Unirrigated. (viii) N.A. (ix) 7.2". (x) From 20.1.1959 to 4.3.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(25) above.

4. GENERAL :

(i) Normal. (ii) Caterpillar attack on tobacco. Spraying was done with DDT at 2 ozs. in 10 gallons of water. Orobanche was removed once. (iii) Yield of green leaf. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Heavy rains. (vii) Nil.

RESULTS :

(i) 5915 lb./ac. (ii) 408.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of green leaf in lb./ac.

Treatment	A ₁	B ₂	C ₁	D ₁	E ₁
Av. yield	4634	8455	3721	5404	7359

S.E./mean = 182.8 lb./ac.

Crop :- Tobacco.

Ref :- C.T.R.I. 58(43).

Site :- Central Tobacco Res. Instt., Rajahmundry. Type :- 'R'.

Object :—To study the effect of different crops in rotation on the yield and quality of Cigarette Tobacco.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) F.Y.M. at 3 tons/ac. and A/S at 100 lb./ac. to tobacco and F.Y.M. at 3 tons/ac. to corriander. (ii) (a) Deep black soil. (b) N.A. (iii) 17.11.1958. (iv) (a) 2 ploughings with country plough. (b) Transplanted. (c) N.A. (d) 33"×33". (e) 1. (v) 3 tons/ac. of M.C. broadcast in May. A/S at 100 lb./ac. applied by working a deep placing implement. (vi) Harrison special (medium). (vii) Unirrigated. (viii) Interculturing was done with planet junior hoe two times. (ix) 7.2". (x) From 16.1.1959 to 4.3.1959.

2. TREATMENTS :

5 rotations of crops : A=Fallow—Tobacco—Dry Paddy—Fallow, B=Fallow—Tobacco—Fallow—Corriander, C=Fallow—Tobacco—Cowpea—Sorghum, D=Gingelly—Tobacco—Gingally—Tobacco and E=Fallow—Tobacco—Fallow—Tobacco.

3. DESIGN :

(i) R B.D. (ii) (a) 10. (b) N.A. (iii) 5. (iv) (a) 23'4½"×38'6". (b) 16'6"×33'0". (v) One guard row on all sides. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Aphids attack on tobacco. Basudin was sprayed at 1 oz in 5 gallons of water. (iii) Yield of green leaf. (iv) to (vi) Nil. (vii) Gingelly crop failed.

5. RESULTS :

(i) 7770 lb./ac. (ii) 632.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of green leaf in lb./ac.

Treatment	A ₁	B ₁	C ₁	D ₁ +D ₂ +E ₁ +E ₂
Av. yield	7807	8585	6250	7937

S.E./mean = 282.7 lb./ac.

Crop :- White cholam (Andropogon sorghum).

Ref :- C.T.R.I. 54(28).

Site :- Cigar and Cheroot Tobacco Res. Stn., Veda sandur. Type :- 'M'.

Object :—To study the effect of different fertilizers on cholam crop in rotation with Tobacco.

1. BASAL CONDITIONS:

(i) (a) Tobacco—*Cholam*. (b) Tobacco. (c) 50 lb./ac. of N as A/S+8.93 tons/ac. of F.Y.M. (ii) (a) Red loam. (b) N.A. (iii) 22.2.1954. (iv) (a) 4 ploughings. (b) Line-sowing. (c) N.A. (d) 12'×9'. (e) 1. (v) Nil. (vi) CO—9. (vii) Irrigated. (viii) 1 thinning and 1 weeding. (ix) 1.71". (x) 27.5.1954.

2. TREATMENTS:

5 manurial treatment: M_0 =Control (no manure), M_1 =30 lb./ac. of N as A/S, M_2 =30 lb./ac. of N as A/S+30 lb./ac. of P_2O_5 as Super, M_3 =2.68 tons/ac. of F.Y.M. and M_4 =15 lb./ac. of N as A/S+1.34 tons/ac. of F.Y.M.

Treatment applied broadcast at sowing.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 19'×10'. (b) 16'×9'. (v) 1.5'×0.5'. (vi) Yes.

4. GENERAL:

(i) Normal. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1954—1956. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 1069 lb./ac. (ii) 375.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M_0	M_1	M_2	M_3	M_4
Av. yield	977	1219	895	944	1310

S.E./mean = 187.5 lb./ac.

Crop :- White cholam (*Andropogon sorghum*).

Ref :- C.T.R.I. 55(35).

Site :- Cigar and cheroot Tobacco Res. Stn., Veda sandur. Type :- 'M'.

Object :- To study the effect of different fertilizers on cholam crop in rotation with Tobacco.

1. BASAL CONDITIONS:

(i) (a) Tobacco—*Cholam*. (b) Tobacco. (c) 20 C.L./ac. of F.Y.M.+50 lb./ac. of N as A/S. (ii) (a) Reddish brown sandy loam. (b) N.A. (iii) 22.2.1955. (iv) (a) 4 ploughings. (b) Line sowing. (c) N.A. (d) 12'×9'. (e) 1. (v) Nil. (vi) CO—9. (vii) Irrigated. (viii) Thinning and weeding. (ix) 5.87". (x) 3.6.1955.

2. TREATMENTS to 4. GENERAL:

Same as in expt. no. 54(28) on page 662.

5. RESULTS:

(i) 2497 lb./ac. (ii) 509.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M_0	M_1	M_2	M_3	M_4
Av. yield	2278	2559	2459	2429	2762

S.E./mean = 254.5 lb./ac.

Crop :- Cumbu (*Pennisetum typoides*).

Ref :- C.T.R.I. 54(29).

Site :- Cigar and Cheroot Tobacco Res. Stn., Veda sandur. Type :- 'M'.

Object :- To study the effect of diffeet manures on Cumbu crop and its residual effects on succeeding Cumbu and Tobacco crops.

1. BASAL CONDITIONS :

(i) (a) Tobacco—*Cumbu*—*Cumbu*—Tobacco. (b) Tobacco. (c) 6.70 tons/ac. of F.Y.M.+100 lb./ac. of N as A/S. (ii) (a) Red loam. (b) N.A. (iii) 26.2.1954. (iv) (a) 4 ploughings. (b) Line sowing. (c) N.A. (d) 12"×9". (e) N.A. (v) Nil. (vi) CO.—3. (vii) Irrigated. (viii) Thinning and weeding. (ix) 8.71". (x) 2.6.1954.

2. TREATMENTS :

5 manurial treatments : M_0 =Control (no manure), M_1 =30 lb./ac. of N as A/S, M_2 =30 lb./ac. of N as A/S+30 lb./ac. of P_2O_5 as Super, M_3 =2.66 tons/ac. of F.Y.M., M_4 =15 lb./ac. of N as A/S+1.33 tons/ac. of F.Y.M.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 26.5'×16'. (b) 18'×12'. (v) One row around. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1953—1955. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Second crop of *cumbu* (July—October) failed completely.

5. RESULTS :

(i) 1430 lb./ac. (ii) 210.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M_0	M_1	M_2	M_3	M_4
Av. yield	1442	1238	1434	1549	1489

S.E./mean = 105.0 lb./ac.

Crop :- *Cumbu* (*Pennisetum typoides*).

Ref :- C.T.R.I. 55(33).

Site :- Cigar and Cheroot Tobacco Res. Stn., Veda sandur. Type :- 'M'.

Object :— To study the effect of different manures on *Cumbu* crop and its residual effects on succeeding *Cumbu* and Tobacco crop.

1. BASAL CONDITIONS :

(i) (a) Tobacco—*Cumbu*—*Cumbu*—Tobacco. (b) Tobacco. (c) 6.7 tons/ac. of F.Y.M.+100 lb./ac. of N. (ii) (a) Reddish brown sandy loam. (d) N.A. (iii) 24.2.1955. (iv) (a) 4 ploughings. (b) Line sowing. (c) N.A. (d) 12"×9". (e) N.A. (v) Nil. (vi) CO—3. (vii) Irrigated. (viii) Weeding and thinning. (ix) 5.58". (x) 26.5.1955.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(29) on page 663.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1953—1955. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1109 lb./ac. (ii) 272.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M_0	M_1	M_2	M_3	M_4
Av. yield	1020	829	1345	1262	1087

S.E./mean = 136.0 lb./ac.

Crop :- Cumbu (*Pennisetum typoides*).

Ref :- C.T.R.I. 55(24).

Site :- Cigar and Cehroot Tobacco Res. Stn., Veda sandur. Type :- 'M'.

Object :- To study the residual effect of manures applied to previous Cumbu crop on succeeding crop.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Cumbu—Cumbu—Tobacco. (b) Cumbu. (c) As per treatments. (ii) (a) Reddish brown sandy loam. (b) N.A. (iii) 20.7.1955. (iv) (a) 4 ploughings. (b) Line sowing. (c) N.A. (d) 12"×9". (e) N.A. (v) Nil. (vi) CO.—3. (vii) Irrigated. (viii) Weeding and thinning. (ix) 2.42". (x) 22.10.1955.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(29) on page 663.

The manures were applied to the previous *cumbu* crop.

4. GENERAL :

(i) Sub-normal. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1953—1955. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 439 lb./ac. (ii) 1860 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄
Av. yield	393	361	458	512	470

S.E./mean = 93.0 lb./ac.

Crop :- Cumbu (*Pennisetum typoides*).

Ref :- C.T.R.I. 54(30).

Site :- Cigar and Cheroot Tobacco Res. Stn., Veda sandur. Type :- 'M'.

Object :- To study the effect of different fertilizers on the Cumbu crop coming in rotation with Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Cumbu. (b) Tobacco. (c) F.Y.M. at 20 C.L./ac. + 50 lb./ac. of N as A/S. (ii) (a) Red loam. (b) N.A. (iii) 25.6.1954. (iv) (a) 4 ploughings. (b) and (c) N.A. (d) 12"×9". (e) N.A. (v) Nil. (vi) CO.—3. (vii) Irrigated. (viii) 1 thinning and 1 weeding. (ix) 3.48". (x) 24.9.1954.

2. TREATMENTS :

15 manurial treatments : M₀ = Control (no manure), M₁ = 20 lb./ac. of N as A/S, M₂ = 30 lb./ac. of P₂O₅ as Super, M₃ = 30 lb./ac. of P₂O₅ as rock phosphate, M₄ = 30 lb./ac. of N as F.Y.M., M₅ = M₁ + M₂, M₆ = M₁ + M₃, M₇ = M₄ + M₂, M₈ = M₄ + M₃, M₉ = 30 lb./ac. of P₂O₅ as F.Y.M. reinforced with Super, M₁₀ = 30 lb./ac. of P₂O₅ as F.Y.M. reinforced with rock phosphate, M₁₁ = 15 lb./ac. of N as A/S + 15 lb./ac. of N as F.Y.M., M₁₂ = M₁₁ + 30 lb./ac. of P₂O₅ as Super, M₁₃ = M₁₁ + 30 lb./ac. of P₂O₅ as rock phosphate and M₁₄ = M₁₁ + 20 lb./ac. of P₂O₅ as rock phosphate + 10 lb./ac. of P₂O₅ as Super.

F.Y.M. and reinforced F.Y.M. broadcast a fortnight before sowing. Other fertilizers broadcast at sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 6. (iv) (a) 19'×10'. (b) 16'×9'. (v) 1.5'×0.5'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1953—1954. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 550 lb./ac. (ii) 124.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain n lb./ac.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇
Av. yield	511	675	629	484	496	526	526	532
Treatment	M ₈	M ₉	M ₁₀	M ₁₁	M ₁₂	M ₁₃	M ₁₄	
Av. yield	581	526	560	584	475	608	532	

S.E./mean = 50.6 lb./ac.