

NATIONAL INDEX

OF

AGRICULTURAL

FIELD

EXPERIMENTS

VOL. 14 PART 3

WEST BENGAL

1960—65



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FOREWORD

The I. C. A. R. has adopted the 'Co-ordinated approach' to crop improvement as its strategy in agricultural research. This approach is based on the principle of giving high priority to problem solving research and for the purpose an intimate knowledge of research in progress and trends of results is very essential. To give impetus to this approach, I. C. A. R. started a scheme for collecting data of all field experiments conducted in the country. It was aimed at compilation of agronomic experiments in the country, with a view to indicate the gaps in the knowledge and to avoid duplication. The scheme entitled: "National Index of Field Experiments" is running under the Institute of Agricultural Research Statistics which has rendered a very valuable service by preparing compendia of agricultural field experiments conducted in the country. Two series of the compendia containing results of about 7,200 and 12,000 experiments conducted during the periods 1948-53 and 1954-59 respectively have already been published by the Institute. The present is the third series of compendia and is expected to contain the results of about 18,000 experiments conducted during the period 1960-65.

The number and the types of experiments have been increasing at a fast rate. Further, many of the experiments were being repeated over a number of years. The conclusions drawn from such experiments should take into account the seasonal variations. For this purpose, it was necessary to carry out consolidated analysis of results over years. Thus, the task of compilation, analysis and interpretation of results of experiments being covered in the third series became more formidable compared to those covered in the earlier two series.

The preparation of this compendium has been possible by the whole-hearted co-operation of State Departments of Agriculture, Agricultural Universities and Central Research Institutes who ungrudgingly made the results of their experimental research available. My thanks are due to various officers of these 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 of results of scientific experiments in agriculture in India may be maintained up-to-date in a consolidated form.

B. K. SONI

Deputy Director General (AS)

Indian Council of Agricultural Research

NEW DELHI,

January 1, 1973.

PREFACE

The present set of volumes form Part III in the series of compendia of Agricultural Field Experiments being published under the project of National Index of Field Experiments. Volumes comprising in Parts I and II of the series pertaining to the periods 1948-53 and 1954-59 were published in 1962 and 1965 and contained the results of about 7,200 and 12,000 experiments respectively. The present volumes include results of experiments conducted during the period 1960-65. During the last decade there has been an enormous increase in agricultural research and experimentation, so much so that, for the period 1960-65 to which the present volumes refer, results of about 18,000 experiments are available.

Like the earlier two series, the compendium for Part III is divided into 15 volumes, one each for (1) Andhra Pradesh, (2) North-Eastern Region (Assam, Manipur, Nagaland, Meghalaya, Tripura, Arunachal Pradesh and Mizoram), (3) Bihar, (4) Gujarat, (5) Kerala, (6) Madhya Pradesh, (7) Maharashtra, (8) Mysore, (9) Orissa, (10) North-Western Region (Punjab, Haryana, Jammu & Kashmir and Himachal Pradesh), (11) Rajasthan, (12) Tamil Nadu, (13) Uttar Pradesh, (14) West Bengal and (15) All Central Institutes. A departure has, however, been made in the presentation of the material contained in each volume. Whereas the results of individual experiments were presented in the volumes of previous series, the present series contains results of pooled statistical analysis of experiments that were conducted for two or more years and concluded during the period 1960-65. In respect of those experiments conducted only for one year, and also those conducted for more than one year but were continuing beyond 1965, the results of individual experiments have been presented.

The work under the scheme was carried out at the Institute of Agricultural Research Statistics. As it was spread over a number of years, there were changes, in the officers responsible for the scheme. In successive stages, collection and analysis of data were carried out under the guidance of Shri T.P. Abraham, Assistant Statistical Adviser, now Joint Director, Central Statistical Organisation, Government of India; Dr. B.N. Tyagi, Senior Statistician, now Joint Director of Agriculture (Statistics), Uttar Pradesh and Shri M.G. Sardana, Senior Statistician, now Officer-on-Special Duty, Central Statistical Organisation, Government of India. The final stage of analysis and the printing was carried out under the guidance of Shri K.S. Krishnan, Senior Statistician and Shri P.N. Bhargava, Statistician-cum-Associated Professor of the Institute. At the preparatory stage, the work of the third series of compendia was looked after by Shri O.P. Kathuria, Junior Statistician, now Statistician in Indian Agricultural Research Institute. Subsequently, Shri R.K. Khosla, Junior Statistician, was responsible for the actual working of the scheme. Sarva Shri B.L. Choudhry, P.P. Rao, M.L. Sahni, H.C. Jain, R.K. Ghai, G.L. Khurana, J.K. Kapoor, U.N. Dixit, P.K. Batra and Suresh Chand, statistical staff of this Institute, deserve special mention for their careful and painstaking work in the analysis of the data, combination of results of similar experiments and proof reading of the compendia volumes.

The collection of experiments for various stations was done by the regional staff of the Institute 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 Agricultural Universities who made the data of the experiments conducted under their jurisdiction readily available to the staff of the Institute. The I. A. R. S. acknowledges with thanks their willing co-operation without which the consolidation of the results would not have been

possible. The Institute is also thankful to various officers in the State Departments of Agriculture and Agricultural Universities who worked as Regional Supervisors for the project from time to time and provided guidance to the regional staff working in the scheme. The list of the names of the regional supervisors and regional staff of the project is given on the following pages.

NEW DELHI,
June 1, 1974

D. SINGH
Director
Institute of Agricultural Research Statistics
(I. C. A. R.)

**Regional Supervisors and Regional Staff of the National Index of
Field Experiments**

Sl. No.	Region & Headquarters	Statistical staff from the Institute of Agricultural Research Statistics	Regional Supervisor
1.	Andhra Pradesh (Hyderabad)	<ol style="list-style-type: none"> 1. Shri C. H. Rao 2. Shri G. V. S. R. Krishna 3. Shri P. R. Yeri 	<ol style="list-style-type: none"> 1. Shri P. Govinda Rao, Head of the Agri. Res. Instt. 2. Shri S. Vittal Rao, H. Q. Dy. Director (Research)
2.	Assam (Shillong)	<ol style="list-style-type: none"> 1. Shri A. Sinha 2. Shri K. D. Saha 	<ol style="list-style-type: none"> 1. Shri U. C. Borah, Research Officer (Stat.)
3.	Bihar (Sabour)	<ol style="list-style-type: none"> 1. Shri R. K. Jain 2. Shri S. M. G. Saran 	<ol style="list-style-type: none"> 1. Shri G. P. Singh, Statistician
4.	Gujarat (Ahmedabad)	<ol style="list-style-type: none"> 1. Shri S. P. Doshi 	<ol style="list-style-type: none"> 1. Dr. D. K. Desai, Dy. Director of Agriculture (Stat.) 2. Shri J. B. Trivedi, I/C. Dy. Director (Stat.) 3. Shri R. L. Shah, Dy. Director of Agriculture (Stat.)
5.	Kerala (Trivandrum)		<ol style="list-style-type: none"> 1. Shri N. George John, Research Officer 2. Shri G. Rama Chandran Nair, Research Officer 3. Shri K. George, Research Officer
6.	Madhya Pradesh (Bhopal)	<ol style="list-style-type: none"> 1. Shri Rama Rao Patil 2. Shri S. S. Kutaula 	<ol style="list-style-type: none"> 1. Shri A. G. Khare, Dy. Director of Agriculture (Stat.)
7.	Maharashtra (Poona)	<ol style="list-style-type: none"> 1. Shri P. R. Yeri 2. Shri B. Ramakrishnan 	<ol style="list-style-type: none"> 1. Shri V. G. Sharma, Sr. Statistician 2. Shri G. C. Shaligram, Dy. Statistician 3. Shri D. T. Sawant, Asstt. Statistician
8.	Mysore (Bangalore)	<ol style="list-style-type: none"> 1. Shri K. A. Balakrishnan 2. Shri P. T. N. Nambiar 	<ol style="list-style-type: none"> 1. Dr. N. P. Patil, Director of Research
9.	Orissa (Bhubaneswar)	<ol style="list-style-type: none"> 1. Shri Rama Rao Patil 	<ol style="list-style-type: none"> 1. Shri B. Mishra, Dy. Director of Agri. (Hq.) 2. Shri A. Mishra, Chief Statistician

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|---|---|--|
| 10. Punjab, Haryana,
Himachal
Pradesh, Jammu
& Kashmir
(Ludhiana) | 1. Shri B. L. Kaistha
2. Shri U. N. Dixit
3. Shri D. L. Manocha
4. Shri M. S. Batra
5. Shri D. P. Singh | 1. Shri P. S. Sahota,
Director of Crop Insurance
2. Shri Darshan Singh,
Asstt. Statistician
3. Shri M. S. Pannu,
Statistician, Department of
Agriculture
4. Dr. D. Raghavarao,
Prof. & Head, Dept. of
Maths. & Stat., P.A.U.,
Ludhiana |
| 11. Rajasthan
(Jaipur) | 1. Shri N. K. Ohri
2. Shri C. H. Rao | 1. Shri H. C. Kothari,
Dy. Director (Statistics),
Department of Agriculture |
| 12. Tamil Nadu
(Coimbatore) | 1. Shri P. Narayanan
2. Shri M. V. George | 1. Shri K. R. Nagaraja Rao,
Secretary, Research Council
2. Dr. K. Ramakrishnan,
Associate Dean
3. Dr. D. Daniel Sunderaraj,
Principal |
| 13. Uttar Pradesh
(Lucknow) | 1. Shri S. N. Bajpai
2. Shri M. P. Saksena
3. Shri G. N. Bahuguna
4. Shri O. P. Sharma
5. Shri R. Sharma
6. Shri C. B. Tiwari
7. Shri R. S. Singh
8. Shri A. C. Srivastava | 1. Dr. K. Kishen, Jt. Director
of Agriculture (Statistics)
2. Shri K. P. Avasthy,
Officer-on-Special Duty |
| 14. West Bengal
(Calcutta) | 1. Shri A. K. Mukherjee
2. Shri A. Sinha | 1. Shri S. N. Mukherjee,
Dy. Director of Agriculture
(Statistics) |
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ABBREVIATIONS COMMON TO EXPERIMENTS ON ANNUAL AND PERENNIAL CROPS AND EXPERIMENTS ON CULTIVATORS' FIELDS GIVEN IN EXPERIMENTAL DATA

Crop :—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 is given in brackets.

Abbreviations adopted for States are as follows :

1.	A.P.	—	Andhra Pradesh	11.	Mn.	—	Manipur
2.	As.	—	Assam	12.	Ms.	—	Mysore
3.	Bh.	—	Bihar	13.	N.L.	—	Nagaland
4.	Gj.	—	Gujarat	14.	Or.	—	Orissa
5.	H.P.	—	Himachal Pradesh	15.	Pb.	—	Punjab
6.	Hr.	—	Haryana	16.	Rj.	—	Rajasthan
7.	J.K.	—	Jammu & Kashmir	17.	T.N.	—	Tamil Nadu
8.	K.	—	Kerala	18.	Tr.	—	Tripura
9.	M.P.	—	Madhya Pradesh	19.	U.P.	—	Uttar Pradesh
10.	Mh.	—	Maharashtra	20.	W.B.	—	West Bengal

For the experiments conducted under the schemes sponsored by the Indian Council of Agricultural Research, like the All India Co-ordinated Agronomic Experiments (Model Agronomic Experiments and 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 abbreviation MAE or SFT is given in the bracket against the year in which the experiment is conducted.

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

For Central Institutes, the corresponding standard abbreviations have been adopted as given below :

C. A. Z. R. I.	—	Central Arid Zone Research Institute.
C. P. C. R. I.	—	Central Plantation Crops Research Institute.
C. P. R. I.	—	Central Potato Research Institute.
C. R. R. I.	—	Central Rice Research Institute.
C. S. S. R. I.	—	Central Soil Salinity Research Institute.
C. T. C. R. I.	—	Central Tuber Crops Research Institute.
C. T. R. I.	—	Central Tobacco Research Institute.
C. T. R. L.	—	Cotton Technological Research Laboratory.
I. A. R. I.	—	Indian Agricultural Research Institute.
I. G. F. R. I.	—	Indian Grassland & Fodder Research Institute.
I. H. R.	—	Institute of Horticultural Research.
I. I. S. R.	—	Indian Institute of Sugarcane Research.
I. L. R. I.	—	Indian Lac Research Institute.
J. A. R. I.	—	Jute Agricultural Research Institute.
J. T. R. L.	—	Jute Technological Research Laboratory.
S. B. I.	—	Sugarcane Breeding Institute.

In case of the experiments conducted on cultivators' fields, whether Council of Agricultural Research scheme or by the State Government (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. In factorial experiments, the treatments will be abbreviated as, for example, Cultural-*cum*-Manurial as CM.

Object :—A statement of the objective of the experiment is given indicating the main crop and the type of the experiment.

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 critical differences for individual effect means which are significant.

Other abbreviations used in the Experimental Data

Kg	=	Kilogram(s)	Dical. Phos.	=	Dicalcium Phosphate
Kg/ha.	=	Kilogram(s) per hectare	Zn. Sul.	=	Zinc Sulphate
N	=	Nitrogen	Cu. Sul.	=	Copper Sulphate
P	=	Phosphate	Mg. Sul.	=	Magnesium Sulphate
K	=	Potash	Mn. Sul.	=	Manganese Sulphate
Nitro. Phos.	=	Nitrogen Phosphate	Ammo. Molybdate	=	Ammonium Molybdate
Ammo. Phos.	=	Ammonium Phosphate	B.	=	Boron
A/S	=	Ammonium Sulphate	Fe. Sul.	=	Ferrous Sulphate
A/S/N	=	Ammonium Sulphate Nitrate	F. M.	=	Fish Manure
C/A/N	=	Calcium Ammonium Nitrate	G. N. C.	=	Groundnut Cake
A/N	=	Ammonium Nitrate	M. C.	=	Municipal Compost
A/C	=	Ammonium Chloride	T. C.	=	Town Compost
C/N	=	Chilean Nitrate	G. M.	=	Green Manure
Mur. Pot.	=	Muriate of Potash	G. L. M.	=	Green Leaf Manure
Pot. Sul.	=	Potassium Sulphate	F. Y. M.	=	Farm Yard Manure
Super.	=	Super Phosphate	C. M.	=	Cattle Manure

The information regarding the particulars of research stations may be obtained under the respective items as given below :

PARTICULARS OF RESEARCH 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 fortnightly 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.

and Soil analysis :

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

conducted on different crops that have been included in the

following heads is to be read against the respective items under next page.

BASAL CONDITIONS*A. For experiments on annual crops :*

(i) (a) Crop rotation followed, if any. (b) Previous crop. (c) Manuring of previous crop (State amount and kind). (ii) Soil type. (iii) Date of sowing/planting. (iv) Cultural practices : (a) Preparatory cultivation. (b) Method of sowing. (c) Seed-rate. (d) Spacing. (e) No. of seedlings per hole. (v) Basal manuring given to the whole experiment with time and method of application. (vi) Variety (indicate also early, medium or late). (vii) Irrigated or un-irrigated. (viii) Important post-sowing/planting cultural operations such as weeding, etc. (ix) Rainfall during crop season. (x) Date of harvest.

B. For experiments on perennial crops :

(i) Previous history of the experimental area (Give manuring and other operations). (ii) Soil type. (iii) Method of propagation of plants. (iv) Variety. (v) Date and method of sowing/planting (including spacing). (vi) Age of seedlings at the time of planting. (vii) Basal manuring given to the whole experimental area. (viii) Important cultural operations during the experimental year. (ix) Inter-cropping, if any. (x) Irrigated or un-irrigated (If irrigated, give the source, number, interval and intensity of irrigation). (xi) Rainfall during the experimental year. (xii) Date(s) of harvest.

C. For experiments on cultivators' fields :

(i) (a) Crop rotation followed, if any. (b) Previous crop. (c) Manuring of previous crop (State amount and kind). (ii) Soil type and soil analysis, if available. (iii) Basal manuring (Give 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) Date of sowing/planting. (vii) Irrigated or un-irrigated. (viii) Important post-sowing/planting cultural operations such as weeding, etc. (ix) Rainfall during crop season. (x) Date of harvest.

DESIGN*A. For experiments on annual crops :*

(i) Abbreviations for designs : C. R. D.—Completely Randomised Design ; R. B. D.—Randomised Block Design ; L. Sq.—Latin Square ; Fact.—Factorial ; Confd.—Confounded ; other designs and modifications of the above to be indicated in full. (indicate confounded effects, if any). (ii) (a) No. of plots per block (in a split-plot experiment, the number of main-plots per replication as well as the number of sub-plots per main-plot should be given). (b) Block dimensions. (iii) No. of replications. (iv) (a) Gross plot-size. (b) Net plot-size. (v) Border or guard rows kept. (vi) Whether treatments are randomised (independently 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 ; Fact.—Factorial ; Confd.—Confounded ; other designs and modifications of the above to be indicated in full. (indicate confounded effects, if any) (ii) (a) No. of plots per block (in split-plot experiments, the number of main-plots per replication as well as the number of sub-plots per main-plot should be given). (b) Block dimensions. (iii) No. of replications. (iv) (a) Net plot-size. (b) No. of trees per plot (In case of experiments on grasses give plot-size). (v) Border or guard rows kept. (vi) Whether treatments are randomised (independently in each block).

C. For experiments on cultivators' fields :

(i) Design with No. of plots/block and No. of replications (In split-plot experiments, the number of main-plots per replication as well as the number of sub-plots per main-plot should be given). (ii) Method of selection of sites with number and distribution of experiments. (iii) (a) Gross plot-size. (b) Net plot-size. (iv) Whether treatments are randomised (independently in each block).

GENERAL INFORMATION

A. For experiments on annual crops :

(i) General crop condition during growth (if lodged, state date of lodging). (ii) Incidence of pests and diseases and control measures taken, if any. (iii) Types of quantitative observations taken. (iv) (a) If the experiment has continued for more than one year, indicate year of commencement and year of termination. (b) Whether treatments assigned to the same plots every year. (c) Reference to combined analysis, if any. (v) Other centres, if any, where the same experiment has been conducted with reference numbers. (vi) Abnormal occurrences such as heavy rains, frost, storm, drought, etc. (vii) Any other important information.

B. For experiments on perennial crops :

(i) General crop condition during growth. (ii) Incidence of pests and diseases and control measures taken, if any. (iii) Types of quantitative observations taken. (iv) If the experiment has continued for more than one year, indicate year of commencement and year of termination (Give reference of previous years, if any). (v) Other centres, if any, where the same experiment has been conducted with reference numbers. (vi) Reference to combined analysis, if any. (vii) Abnormal occurrences such as heavy rains, frost, storm, drought, etc. (viii) Any other important information.

C. For experiments on cultivators' fields :

(i) General crop condition during growth. (ii) Incidence of pests and diseases and control measures taken, if any. (iii) Types of quantitative observations taken. (iv) In case of repetition in successive years. (a) Year of commencement and termination. (b) Whether treatments assigned to the same plots every year. (c) Reference to combined analysis, if any. (v) In case of repetition at other places, give names with references, if any. (vi) Abnormal occurrences such as heavy rains, drought, etc. (viii) Any other important information.

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	Barley	<i>Hordeum vulgare</i> L.	Ja'dhan	Joba	Jaba, Barlhi or Jaba dhana	Barley	Baarli arisi	Barley	Barley akki	Satu ; Jav	Jav	Jau	Jaun
4	Maize	<i>Zea mays</i> L.	Gom dhan	Bhutta	Macca	Mokka- Jonna	Makka- cholam	Cholam Makka- cholam	Masukina Jola	Makka	Makkai	Makka	Makki, Makayee
5	Lentil	<i>Lens esculenta</i> Moench ; <i>Lens culinaris</i> Medic.	Masurmah	Masuri	Masur	Chirus- enaga	Masur Paruppu	—	Masooru bele	Masur	Masur	Masur	Massar
6	Arhar	<i>Cajanus cajan</i> Milsp. ; <i>Cajanus indicus</i> Sprengl.	Arahar	Arahar	Harad	Kandulu	Thuvarai	Thuvaran payaru	Thogari	Tur	Tuver	Arhar	Harhar, Arhar
7	Gram	<i>Cicer arietinum</i> L.	Butmah	Chola	Boot	Sanagalu	Kadalai, Sundal Kadalai	Kadala	Kadale	Harbara	Chana	Chana	Chhole ; Chana
8	Onion	<i>Allium cepa</i> L.	Piyaz	Piaj	Peas, Ulli	Ulli	Vengayam; Erangayam	Ulli	Eerulli	Kanda	Dun ; Kando	Piaz	Ganda ; Payaz
9	Potato	<i>Solanum tuberosum</i> L.	Alóguti	Alu	Bilati Alu	Bangala- dumpa, Ulagadda	Uruzhai kilangu	Urala kizangu	Alu gedde	Batata	Aloo, Batata	Aaloo	Alu
10	Cauliflower	<i>Brassica oleracea</i> L. var. <i>botrytis</i> L.	Phool Kabi	Fulkapi	Fula kobi	Poogobi	Gospoovu	Cauliflower	Hukosu	Phul kobi, Fulvar	Ful kobi, Fulvar	Phool Gobhi	Phul o
11	Raddish	<i>Raphanus Sativus</i> L.	Mula	Mula	Mula	Mullangi	Mullangi	Mullanki	Mullangi	Mula	Mu o	Mooli	Muli
12	Chillies	<i>Capsicum frutescens</i> L.	Jalakiya	Lanka; Marich	Lanka	Mirapakaya	Milakai	Mulaku	Menasina- kayi	Mirchi	Marcha	Lalmirich	Lalmirch
13	Mukhi kachu	<i>Colocasia antiquorum</i> Schott.	—	Kachu	Saru	Chema- dumalu	Sambu ; Sapan kizhangu	Chembu	Kesa vina gedde	Alu	Alvi	Akhi	arvi

Sl. No.	Name of Crop	Botanical Name	Assamese	Bengali	Oriya	Telugu	Tamil	Malayalam	Kannada	Marathi	Gujarati	Hindi	Punjabi
14	Sugarcane	<i>Saccharum officinarum</i> L.	Kuhiar	Akh	--	Cheruku	Karumbu	Karimbu	Kabbu	Oos	Sherdi	Ganna ; Kamad ; Naishakar	Kamad ; Ganna ; Eakh
15	Cotton	<i>Gossypium spp.</i>	Kapah	Karpas ; Tula	Kapa	Pratti	Paruthi	Paruthi	Hatti	Kapus	Kapas	Kapas	Kapah
16	Jute	<i>Corchorus spp.</i>	Marapat	Shada pat ; Tosha pat	Jhota	Janumu	Chanapai	Chanambu	Senabu	Joot	Moti	Jute	Patsan
17	Groundnut	<i>Arachis hypogaea</i> L.	China badam	Chena badam	China-badam	Nelashanga	Nilakadala	Nilak-kadala	Kadale kayi	Bhuimug	Bhoising ; Magafali	Mungphali	Mungfali
18	Mustard	<i>Brassica juncea</i> Coss.	Sariah	Rai Sarisha	Rai	Avalu	Kadugu	Kaduku	Kempu-sasive	Mohri	Rai	Rai	Rai
19	Toria	<i>Brassica campestris</i> var. <i>toria</i> Duthie	Sariah	Tori sarisha	--	Ava	Kadugu	--	--	Saras	Sarsav	Toria	Toria
20	Soyabean	<i>Glycine hispida</i> ; <i>Glycine max</i> Merr.	Garomah	Gari Kalai	--	Soya-chikkudu	Soya-payaru	Soyabean	Soyabean	Soybin	Soyabin	Soyabean or Bhat	Soyabean
21	Sesamum	<i>Sesamum orientale</i> L. <i>Sesamum indicum</i> L.	Til	Til	Rasi	Nuvvulu	Ellu	Ellu	Yellu	Til, Tili	Tal	Til	Til
22	Niger	<i>Guizotia abyssinica</i> Cass	Sorguja	Sarguza	Alashi	Verrinuvvulu	Peyellu	--	Huchellu	Karale ; Khursani	Ramtal	Ramtil	Ramtil
23	Mosambi	<i>Citrus sinensis</i> Osbeck	Malta ; Mozambique	Mosambi	Mitha kamala ; Mhata kamala	Battayi	Sathugudi ; Cheeni	Madura naranga	Sathkudi	Mosambi	Mosambi	Malta Mausmce	Malta
24	Pineapple	<i>Ananus sativa</i> Schutt. ; <i>Ananus comosus</i> Merr.	Matikathal	Anarash	Sapuri, Saphrd, ' anasa	Anasa	Annasi palam	Kaitha chakka	Ananas	Ananas	Anenas	Ananas	Ananas
25	Banana	<i>Musa paradisiaca</i> L.	Kol	Paka kala	Kadali	Arati	Vazhaipazam	Vazha	Bale	Kele	Kela	Kela	Kela
26	Mango	<i>Mangifera indica</i> L.	Am	Am	Amba	Mamidi	Mangai	Mavu	Mavu	Amba	Keri	Aam	Amb

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WEST BENGAL

(Salient features of experimentation)

The general information regarding the agro-climatic regions, extent of irrigation, cropping pattern, etc. of the State of West Bengal has been given in the first and second series of the National Index of Agricultural Field Experiments already published for the periods 1948-53 and 1954-59 respectively.

The present volume includes the results of 392 experiments conducted during the period 1960-65, as against 339 experiments for the period 1954-59 and 265 experiments for the period 1948-53. Besides, experiments belonging to All India Co-ordinated Agronomic Experiments scheme of I.C.A.R. are also included in the present compendium. The consolidated results of experiments conducted for more than one year and concluded during the period 1960-65 numbering 160 and forming 59 groups, have been presented with crop-wise and type-wise distribution in Table 1 below.

TABLE 1
Number of groups of experiments concluded during the period 1960-65
(Crop-wise and Type-wise)

Type Crop	M	C	CV	CM	IM	D	X	Total
Paddy	14(35)	—	—	1(2)	—	7(18)	—	22(55)
Wheat	5(14)	—	—	—	—	—	—	5(14)
Lentil	3(9)	2(6)	—	—	—	—	—	5(15)
Arhar	—	2(6)	—	—	1(3)	—	—	3(9)
Gram	—	—	1(3)	—	—	—	—	1(3)
Potato	5(13)	2(5)	—	—	1(3)	2(4)	—	10(25)
Sugarcane	3(9)	—	—	—	—	2(8)	—	5(17)
Jute	1(3)	—	—	—	—	—	—	1(3)
Groundnut	1(2)	—	—	—	—	—	—	1(2)
Mustard	1(3)	—	—	—	—	—	—	1(3)
Rai	1(3)	—	—	—	—	—	—	1(3)
Toria	1(3)	1(4)	—	—	—	—	—	2(7)
Mixed crops	—	—	—	—	—	—	2(4)	2(4)
TOTAL	35(94)	7(21)	1(3)	1(2)	2(6)	11(30)	2(4)	59(160)

Figures in brackets indicate the total No. of experiments in the groups.

The results of experiments conducted for only one year during the period under report and also of those experiments which are continued beyond 1965 numbering 232 have been presented. The distribution of all experiments according to crop and type of experiment is presented in Table 2.

TABLE 2

Number of experiments crop-wise and type-wise

Type Crop	M	MV	C	CV	CM	CMV	I	IV	IM	D	X	R	Total
Paddy	105	7	—	—	7	—	—	—	—	22	—	—	141
Wheat	26	6	—	—	—	—	—	—	—	—	—	—	32
Maize	1	—	—	1	—	1	—	—	—	—	—	—	3
Lentil	9	—	12	1	—	—	—	—	—	—	—	—	22
Arhar	—	—	6	—	—	—	—	—	3	—	—	—	9
Gram	2	—	—	3	—	—	—	—	—	—	—	—	5
Onion	2	—	2	—	—	—	—	—	—	—	—	—	4
Potato	32	—	5	—	—	—	—	—	3	12	—	—	52
Cauliflower	2	—	—	—	—	—	—	—	—	—	—	—	2
Raddish	—	—	1	—	—	—	—	—	—	—	—	—	1
Mukhikachu	1	—	—	—	—	—	—	—	—	—	—	—	1
Sugarcane	11	—	—	—	—	—	—	—	—	9	—	—	20
Cotton	1	—	—	—	—	—	—	—	—	—	—	—	1
Jute	7	—	—	—	—	—	—	—	—	—	—	—	7
Groundnut	4	—	3	6	3	—	—	—	—	—	—	—	16
Mustard	3	—	—	2	—	—	—	—	—	1	—	—	6
Rai	3	—	3	—	—	—	—	—	—	—	—	—	6
Toria	7	—	3	—	—	—	4	—	—	—	—	—	14
Soyabean	—	1	1	—	—	—	—	—	—	—	—	—	2
Mosambi	—	—	—	—	—	—	—	—	—	1	—	—	1
Pineapple	1	—	2	1	—	—	—	—	—	1	—	—	5
Sesamum	—	1	—	—	2	—	—	—	—	—	—	—	3
Banana	9	—	10	—	—	—	—	—	—	—	—	—	19
Mango	—	—	—	—	—	—	—	2	—	2	—	—	4
Mixed crops	—	—	—	—	—	—	—	—	—	—	14	—	14
Rotational	—	—	—	—	—	—	—	—	—	—	—	2	2
TOTAL	226	15	48	14	12	1	4	2	6	48	14	2	392

It will be observed from the table that Paddy is the main crop, which accounts for a maximum number of experiments reported for the period 1960-65. These account for about 36% of the total number of experiments reported. Next is Potato crop, which accounts for 13% of the total number of experiments, the other important crops on which the experiments were conducted were namely Wheat, Sugarcane, Jute and Banana.

About 56 per cent of the experiments are of purely manurial type and nearly 19 per cent of the experiments are of cultural, cultural-cum-variatal and cultural-cum-manurial type. The experiments to investigate the effect of various types of insecticides, pesticides and weedicides were very few in number.

The Randomised Block Design was most commonly adopted for the experimental purposes for various crops. In addition to above type of design, Split-plot Design and factorial confounded designs were also adopted.

The salient features of experimentation on various crops are discussed crop-wise in the following section :—

Paddy :—The crop covers about 4,670 thousand hectares i.e. about 70 per cent of the total cropped area. The number of experiments reported under the crop were 141, of which 89 per cent were conducted under unirrigated conditions. 55 experiments forming 22 groups were concluded during the period under report. M and D type of experiments accounted for 105 and 22 experiments respectively. While the remaining experiments were distributed among the two groups, namely MV and CM types in the State. No experiment on cultural and cultural-*cum*-varietal type was conducted. In manurial experiments, the levels of Nitrogen varied from 0 to 201.8 Kg/ha., Phosphate from 0 to 672.5 Kg/ha. and that of Potash ranged from 0 to 224.2 Kg/ha. Different forms of Nitrogen and time of application of Nitrogen as a factor were also tried in some of the experiments. In cultural-*cum*-manurial trials, spacing, dates of transplanting and different levels of nitrogenous fertilizers were tried as factors. 97 experiments were laid out in Randomised Block Design/factorial Randomised Block Design, the number of replications in general vary from 4 to 6. 30 experiments were laid out in Split-plot Design and 14 in confounded factorial design, the number of replications varied from 2 to 6 in each case. In manurial-*cum*-varietal trials, the varieties commonly tried were Dular (early), Raghusail (medium), Patnai-23, Bhasamanik (medium), Dudsar and Badhkalamkai.

Wheat :—Wheat occupies about 41 thousand hectares i.e. 0.6 per cent of the total cropped area. 32 experiments were reported on this crop, of which six experiments were conducted under irrigated conditions. 14 experiments forming 5 groups concluded during the period under report. M and MV type of experiments accounted for 26 and 6 respectively. In the manurial experiments, the levels of Nitrogen ranged from 0 to 67.2 Kg/ha. and that of Phosphate and Potash from 0 to 44.8 Kg/ha. Sources of Nitrogen was another factor tried in some of these experiments. In manurial-*cum*-varietal types of experiments, the levels of Nitrogen ranged from 0 to 134.4 Kg/ha. The types of design adopted were mainly confounded, factorial and Split-plot. However, in one experiment, Latin Square Design was also adopted. The number of replications in confounded as well as Split-plot Design generally varied from 2 to 6. The varieties tried in the experiments were NP 710 (medium), NP 798 (medium) and NP 799.

Pulse crops :—Pulses occupy 810 thousand hectares i.e. 12.2 per cent of the total cropped area. 22, 9 and 5 experiments were reported on Lentil, Arhar and Gram respectively. 6 experiments on Lentil and 3 experiments on Arhar were conducted under irrigated conditions. Majority of the experiments were of C type, of which 12 experiments were on Lentil and 6 experiments on Arhar. 9 and 2 experiments of manurial type were reported on Lentil and Gram respectively. 3 and 1 experiments of CV type on Gram and Lentil were conducted respectively. 3 experiments on Arhar crop were of IM type.

In manurial treatments of Lentil crop, the levels of Nitrogen ranged from 0 to 22.4 Kg/ha. and that of Phosphate from 0 to 89.7 Kg/ha. Cultural treatments such as seed broadcasting, spacing between rows and different dates of sowing were tried as factors in these experiments. 21 experiments were laid out in Randomised Block Design/factorial R.B.D., one experiment was laid out in Split-plot Design. B-77 (medium) was the predominant variety which was tried in these experiments.

Under Arhar crop, 6 experiments were laid out with Randomised Block Design and 3 with Split-plot Design. The number of replications tried in these experiments were generally 4. In R.B.D., spacing and cultural treatments were tried as factors. In Split-plot Design, levels of irrigation as main-plot and levels of Phosphate as sub-plot were tried as factors. B-7 variety was tried in these experiments.

Potato :—Potato occupies 71 thousand hectares which is 1.05 percent of the total cropped area. During the period under report, 52 experiments on Potato were conducted, of which 25 were carried out under irrigated conditions. Most of the experiments were of M and D type while very few experiments carried out were under C and IM. In manurial experiments, the levels of Nitrogen and Phosphate varied from 0 to 179.3 Kg/ha. and corresponding levels varied from 0 to 135 Kg/ha. in respect of Potash. In some of the experiments, bulky manures like F.Y.M. and green manures were included as one of the factors. In experiments under D type, certain weedicides and fungicides were tried as factors in addition to normal spraying procedures. The type of the designs adopted for the experimentation were Randomised Block Design, factorial Randomised Block Design and Latin Square Design. However, in majority of the cases, Randomised Block Design was adopted while Latin Square was confined to only 5 experiments. The number of replications in each case generally varied from 2 to 4 excepting in Latin Square Design where six replications were taken. The varieties tried in these experiments were B—65, Royal Kidney (medium), Voran (medium) and Bhanjang.

Sugarcane :—Sugarcane occupies 41 thousand hectares i.e. 0.6 % of the total cropped area. 20 experiments under the crop are reported in the volume of which 17 experiments forming 5 groups concluded during the period 1960—65. About 50 percent of the total experiments were conducted under irrigated conditions. 11 experiments were of manurial type and remaining were of D type.

In manurial experiments, the levels of Nitrogen varied from 0 to 179 Kg/ha., the corresponding levels of Phosphate and Potash varied from 0 to 134.5 Kg/ha. and 0 to 112 Kg/ha. respectively. In some cases, nitrogenous fertilizers were also included as one of the factors. In D type experiments, certain chemical treatments like Endrin, D.D.T. etc. were tried as one of the factors. Mostly Randomised Block Design was adopted for the conduct of experiments. The varieties included under different trials were Co 527 (medium), Bo 17, Co 419 and Bo 529.

Jute :—Jute crop occupies 456 thousand hectares i.e. 6.9% of the total cropped area. 7 experiments were reported on this crop, of which 5 experiments were conducted under irrigated conditions. Three experiments forming one group concluded during the period under report. All the experiments were of manurial type. All combinations of various levels of Nitrogen, Phosphate and Potash were tried as factors. Different sources of Nitrogen were also tried as one of the factors. The levels of Nitrogen ranged from 0 to 67Kg/ha. and that of Phosphate and Potash from 0 to 45 Kg/ha. 5 experiments were laid out in Fact. R.B.D., one in Latin Square Design and one in confounded design. The varieties tried in these experiments were IRO 632 (medium) and D 152.

Oilseed crops :—Oilseeds occupy 153 thousand hectares i.e. 2.3 percent of the total cropped area. 16 and 14 experiments were reported on Groundnut and *Toria* respectively. 6 experiments each on Mustard and Rai were conducted. Three experiments on *Sesamum* were also reported. 7 experiments on *Toria* and two experiments each on Groundnut and Mustard were conducted under irrigated conditions.

On Groundnut crop, the distribution of experiments type-wise was 4 manurial type, 3 cultural type, 6 cultural-cum-varietal and three cultural-cum-manurial type. All combinations of N, P and K were tried as factors in these experiments. F.Y.M. was also tried as factor. The levels of Nitrogen ranged from 0 to 22.4 Kg/ha., Phosphate from 0 to 67.2 Kg/ha. and that of Potash from 0 to 44.8 Kg/ha. In cultural experiments, row-spacings and plant-spacings were tried as factors in addition to other cultural treatments. In cultural-cum-manurial experiments, spacing between rows and within rows, dates of sowing and fertilizer doses were tried as factors. Three experiments were laid out in R.B.D./Fact. R.B.D., 7 experiments in confounded factorial design and 6 in Split-plot Design. The number of replications in these experiments ranged from 2 to 4. The varieties tried were AK8—11, AK10 (B30), AK8—11 (B—31-medium) and B31 from AK 108—11.

On *Toria* crop, 7 experiments forming two groups concluded during the period under report. The distribution of experiments according to various types was 7 manurial type, 3 cultural type and 4 irrigational type. In manurial experiments, the levels of Nitrogen and Phosphate ranged from 0 to 67.2 Kg/ha. in each case. In cultural experiments, dates of sowing was tried as factor. 12 experiments were laid out in R.B.D./Fact. R.B.D., each with 4 replications and two experiments were laid out in factorial confounded design, each with one replication. The varieties tried in these experiments were B—54 and B—65.

On Mustard crop, three experiments forming one group concluded during the period under report. The experiments were distributed as three manurial type, two cultural-cum-varietal type and one D type. In manurial type, all combinations of N and P were tried. The levels of these fertilizers ranged from 0 to 67.2 Kg/ha. Four experiments were laid out in R.B.D./Fact. R.B.D. and two in Split-plot Design. The number of replications tried in these experiments were 4. The variety tried in these experiments was B—54.

On Rai crop, three experiments forming one group concluded during the period under report. The type of experiments were 3 each of manurial and cultural type. In manurial experiments, all combinations of N and P were tried as factors. The levels of N and P ranged from 0 to 67.2 Kg/ha. In cultural experiments, dates of sowing was tried as factor. The design adopted in the experiments was R.B.D./Fact. R.B.D. with replications ranging from 4 to 5.

Banana :—19 experiments were reported on Banana crop. Mostly the experiments were conducted under irrigated conditions. 9 and 10 experiments were of manurial type and cultural type respectively. The experiments were laid out in R.B.D./Fact. R.B.D. with generally 4 replications.

PARTICULARS OF RESEARCH STATIONS AND SOIL ANALYSIS

1. State Agriculture Farm, Berhampore.

A. General Information :

(i) In Murshidabad district ; 2.4 Km. from Berhampore Court with Lat.—24° N/Long.—88° E/Alt.—18.89 m. above m.s. level. The topography of the experimental area is flat. (ii) Sandy Loam soil (Alluvial soil) with pH 6.2 to 8.4. (iii) Established in 1921. (iv) (1) Groundnut—Mustard and Rape ; (2) Til—Mustard and Rape ; (3) Til—Linseed ; (4) Groundnut—Linseed. (v) All India Co-ordinated Oilseeds, Rape and Mustard Project and Co-ordinated Oilseeds Scheme (Now merged with All India Co-ordinated Oilseeds Project).

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	
0.2	0.8	0.6	1.1	5.3	8.4	
July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
10.1	7.6	8.1	5.1	0.2	—	47.5

(Av. monthly rainfall in cm. ; based on the data for the period 1960—64).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) : Irrigation facilities are available from the tanks by operating irrigation pumps. (ii) proper drainage system exists.

D. Soil type and Soil analysis :

(i) Broad soil type : Depth—3.04 to 4.57 m. ; Colour—Brown ; Structure—Crumb. (ii) Chemical analysis : Total N—0.077 % to 0.123 % ; Available N—0.008 % to 0.011 % ; Available P₂O₅—44.4 to 80.6 Kg/ha. ; Organic Carbon—0.671 % to 0.870 % ; Available K₂O—High. (iii) Mechanical analysis : Sand—58 % , Silt—22.7 % to 25.7 % , Clay—16.3 % to 19.3 %.

E. No. of Experiments :

Paddy—1, Lentil—5, Arhar—5, Gram—3, Potato—1, Sugarcane—1, Groundnut—12, Mustard—3, Toria—7, Soyabean—1 and Mixed crops—6.

2. State Agriculture Farm, Bhanjang.

A. General Information :

(i) In Darjeeling district ; 4.8 Km. from Ghoom Rly. Stn. with altitude ranging from 2073 to 2195 m. above m.s.l. Terrace cultivation in steep hill slope. (ii) Hilly tract. (iii) Established in 1957. (iv) Potato followed by fallow is the normal cropping pattern. (v) Breeding work on Potato in addition to different varietal, agronomical and cultural trials.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	
1.0	3.0	7.1	14.8	35.3	81.7	
July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
18.5	91.4	54.8	11.4	3.2	0.4	322.6

(Av. monthly rainfall in cm. ; based on the data for the period 1960—64).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) : Irrigational facilities available since 1957. (ii) Natural drainage system. Proper drainage system exists.

D. Soil type and Soil analysis :

(i) Depth—30 to 41 cm. ; Colour—Light brown ; Structure—Sandy loam. (ii) Chemical analysis : Available N—440 Kg/ha. ; P_2O_5 —33 Kg/ha. ; pH—5.5. (iii) Mechanical analysis : N.A.

E. No. of Experiments :

Potato—19.

3. State Seed Multiplication Farm, Bhajanghat.**A. General Information :**

In Nadia district ; 8 Km. from Majdia railway station (E.Rly.). The topography of the land in most cases is high. (ii) Jute growing area. (iii) Established in 1956. (iv) Drilled *Aus* and Jute fibre followed by Mustard and *Kalai*. Jute Seed followed by pulses. *Cap.* fibre followed by Barley. Transplanted *Aus* and *Aman* followed by Barley. (v) Seed multiplication.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	
—	1.5	2.4	4.8	10.6	37.9	
July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
27.9	23.8	26.4	8.2	0.8	—	144.3

(Av. monthly rainfall in cm. ; based on the data for the period 1960—65).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) : Nil at present. (ii) Except a few hectares, mostly naturally drained.

D. Soil type and Soil analysis :

(i) Depth—Not measured. ; Colour—Mostly grey ; Structure—Mostly light. (ii) Chemical analysis : pH-6.5 to 8.3 (Alkaline), soluble salts (millimhos/cm.)—0.054 to 0.476 (normal), Organic Carbon (%)—0.140 to 0.450 (low), Available P_2O_5 —22.9 Kg/ha. (medium). (iii) Mechanical analysis :—N.A.

E. No. of Experiments :

Mustard—3.

4. State Agriculture Farm, Burdwan.**A. General Information :**

(i) In Burdwan taluka of Burdwan district ; 5 Km. from Burdwan Rly. Stn. Latitude—23° N, Longitude—88° E and Altitude—102'. Experiments are distributed through out the farm having high, medium and medium—low situation of land. (ii) Old Alluvium tract. (iii) Established in 1950. (iv) Jute—Paddy—Wheat/Potato/Mustard ; Paddy—Paddy—Wheat ; Paddy—Potato—Til ; Paddy—Paddy. (v) Agronomical, varietal, pesticidal and micro-nutrient trials on Paddy etc.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	
0.5	1.1	0.7	2.6	7.2	12.5	
July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
16.0	12.2	10.9	4.9	0.4	—	69.0

(Av. monthly rainfall in cm. ; based on the data for the period 1960—65).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) : Jheel Banka river ; about 28 ha. in *Kharif* and 20 ha. in *Rabi* can be irrigated from this source by electrical and diesel operated pumps ; rest area is rain-fed.
(ii) Yes. ; a Jheel lying inside the farm from one end to the other, can be utilised both for irrigation and drainage purposes.

D. Soil type and Soil analysis :

(i) N.A. (ii) Chemical analysis :

High land :

pH	Soluble salts (Mellimhos/cm.)	Available N (in Kg/ha.)	Available P (in Kg/ha.)	Texture
5.8 (A) to 6.3 (N)	0.25 (N)	228.6 (L)	15.7 (L)	
	0.70 (N)	235.4 (L)	22.4 (L)	

Low Land :

5.5 (A)	0.25 (N)	195.6 (VL)	12.3 (L)	Sandy Clay loam.
6.2 (N)	0.40 (N)	301.5 (M)	25.8 (M)	Sandy loam.

(iii) Mechanical analysis :—N.A.

E. No. of Experiments :

Paddy—16, Wheat—8, Potato—3 and Sugarcane—8.

5. State Agriculture Farm, Chinsurah.**A. General Information :**

(i) In Hooghly taluka of Hooghly district ; 2 Km. from Chuchura railway station with Lat.—22°52'N/Long.—88°24'E/Alt.—8.62 metres. This research station has high, medium and low lands suitable for different types of Paddy. (ii) Stiff alluvium clay (Ganga flat land). (iii) Established in 1908. (iv) Rice in *Kharif* followed by Rice in *Rabi* or Wheat, Lentil. (v) Breeding and agronomy of Paddy crop with a view to evolve high yielding disease resistant good quality Paddy varieties to suit cultivation in different levels of lands in different agro-climatic zones of West Bengal.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1.6	1.3	3.1	5.0	10.2	19.0	30.3	22.5	22.3	9.2	1.3	0.0	125.8

(Av. monthly rainfall in cm. ; based on the data for the period 1960—64).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) : Deep tube-well is the only source of irrigation but cannot command more than 6 ha. (ii) Proper drainage system exists.

D. Soil type and Soil analysis :

(i) Broad soil type—Typical Clayey.

Depth	0—15 cm.	15—50 cm.	50—120 cm.
Colour	Olive brown	Greyish brown	Dark grey-brown
Structure	Loam puddled, compact, cracks on drying.	Clay loam, Blocky, slowly permeable.	Mottled clay.

(iii) Chemical analysis : (Recent-over dry basis) for depth 0—15 cm.

pH	Carbon	N	P ₂ O ₅	K ₂ O	Fe ₂ O ₃	Al ₂ O ₃	CaO	R ₂ O ₃
5.74	0.69	0.07	0.04	0.72	5.73	7.48	0.40	13.21

(iii) Mechanical analysis : (Recent-over dry basis) for depth 0—15 cm.

Coarse sand	Fine sand	Salt	Clay
0.1 %	48.4 %	40.2 %	10.1 %

E. No. of Experiments :

Paddy—76, Gram—1 and Banana—19.

6. State Agriculture Farm, Cooch Bihar.

A. General Information :

(i) In Cooch Bihar taluka of Cooch Bihar district ; 1 Km. from Cooch Bihar railway station with Lat.—25° 57' 40" N/Long.—89°54' 35" E./Alt.—41.45 meters above mean sea level. The general topography of the experimental area is sandy loam. (ii) Alluvial formation and has a large admixture of sand. (iii) Established in 1937. (iv) Jute, *Aus*, *Aman Rabi*. (v) No definite programme. Experiments allotted by Department of Agriculture, West Bengal.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
0.7	0.6	3.6	9.1	31.7	73.8	59.7	80.2	30.8	9.8	2.0	—	302.0

(Av. monthly rainfall in cm. ; based on the data for the period 1962—66).

G. Irrigation and Drainage Facilities :

(i) (a) and (b) : Partial irrigation from 1968. (ii) There is no proper drainage system.

D. Soil type and Soil analysis :

(i) Depth—30 cm. ; Colour—Various shades of ash colour ; Structure—Sandy loam. (ii) Chemical analysis : N.A. (iii) Mechanical analysis N.A.

E. No. of Experiments :

Paddy—4, Wheat—1, Jute—2 and Toria—1.

7. State Agriculture Farm, Fulia.

A. General Information :

(i) In Santpur Dev. Block of Nadia district ; 3 Km. from Fulia Rly. Stn. with Lat.—20° 10' N/Long.—88° 34' 34" E/Alt.—14.6 m. above m.s.l. The topography of the experimental area is undulating lands. (ii) N.A. (iii) Established in 1953. (iv) (a) *Aus-Kalai*, Wheat, Potato, Gram. (b) Jute - Mustard (*Rai*). (c) Jute—*Aman*. (d) Jute for seeds—Gram. (v) Seed multiplication farm.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
2.4	2.6	2.3	3.0	7.5	8.0	15.3	10.3	11.6	4.1	0.3	—	68.2

(Av. monthly rainfall in cm. ; based on the data for the period 1960—64).

C. Irrigation and Drainage Facilities :

(i) (a) Two deep tubewells from 1953 and (b) Three shallow tubewells from 1963. (ii) No proper drainage system exists.

D. Soil type and Soil analysis :

(i) 15 cm. to 45 cm. deep ; light brown to dark brown in colour, single to crumb structure. (ii) Chemical analysis and (iii) Mechanical analysis : N.A.

E. No. of Experiments :

Wheat—4, Potato - 18, Mukhikachu (*Colocasia antiquorum*)—1, Cotton—1 and Jute—4.

8. State Agriculture Farm/District Seed Farm, Hathwara.**A. General Information :**

(i) In Hathwara taluka of Purulia district with Lat. - 23° 22' N/Long. - 86° 24' E/Alt.- 215 m. above m.s.l. Lands are undulating and situated in clear four steps. Lands situated in top most step are locally called "tar" ; those situated in the second step are called "Baid" ; those in the third step are called "Kanali" and those in the lower most situation are called "Bahal". Water flows from the higher lands to the lower, eroding top soils. (ii) Red gravelly type of tract. (iii) Established in 1956. (iv) *Kharif*: Paddy in the medium and low lands ; Maize, Arhar, Groundnut and Millets in the high lands. (v) To find out suitable varieties with manurial and cultural practices for this region.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1.3	0.7	2.6	2.3	4.3	18.3	27.9	29.0	23.6	9.9	5.8	0.2	125.9

(Av. monthly rainfall in cm. ; based on the data for the period 1959-67).

C. Irrigation and Drainage Facilities :

(i) (a) Tanks and wells. (b) Since inception. (ii) Proper drainage system exists.

D. Soil type and Soil analysis :

(i) Depth—15.23 cm. ; Colour-Grey, reddish grey and reddish ; Structure-Gravelly. (ii) Chemical analysis : pH-4.9 to 6.9, Soluble salts-0.032 to 0.198 millimhos/cm., Organic Carbon-0.120 % to 0.705 %, P₂O₅-22.4 to 86.4 Kg/ha. and K₂O-67.2 Kg/ha. to 33.6 Kg/ha. (iii) Mechanical analysis : Not Available.

E. No. of Experiments :

Paddy-4.

9. District Seed Farm, Kalimpong.**A. General Information :**

(i) In Kalimpong taluka of Darjeeling district ; 72 Km. from Siliguri Rly. Stn. with Lat. - 27° N/Long. - 87° E/Alt. - 1005 metres above m. s. l. The general topography of the experimental area is undulated terraced land facing East. (ii) It represents the hilly tract. (iii) Established in 1907. (iv) *Kharif*:—Maize, Soyabean, Paddy, G. M., Summer vegetables ; *Rabi*—Wheat, Barley, Oats, Mustard, Potato, Winter vegetables and fruits. (v) Varietal, cultural and entomological trials.

B. Normal Rainfall:

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1.8	1.3	4.1	4.8	13.7	41.4	66.0	62.2	34.0	5.1	1.3	—	235.7

(Av. monthly rainfall in cm. ; based on the data for the period 1960—66).

C. Irrigation and Drainage Facilities :

(i) (a) & (b) : Nil. (ii) Yes ; water logging problem is negligible.

D. Soil type and Soil analysis :

(i) Depth-91 to 122 cm.; Colour-Dark brown to black; Structure-Medium to fine sandy clay loam. (ii) Chemical analysis : N. A. (iii) Mechanical analysis : N. A.

E. No. of Experiments :

Maize—3.

10. State Agriculture Farm, Kalyani.**A. General Information :**

(i) In Kalyani taluka of Nadia district. (ii) Alluvial tract. (iii) Established in 1953. (iv) Normal cropping patterns followed by the farm are :—Jute (Fibre)—Paddy-Wheat/Barley/Mustard. ; Maize-Paddy—Barley. (v) N. A.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
6.6	—	—	—	—	30.4	10.7	23.5	16.5	13.3	—	—	101.0

(Monthly rainfall in cm. for the period from June, 1966 to May, 1967).

C. Irrigation and Drainage facilities :

(i) (a) Coir filter tubewell and deep tubewell. (b) N. A. (ii) Not yet arranged.

D. Soil type and Soil analysis :

(i) Board soil type—Sandy to sandy loam.
(ii) and (iii) (Chemical and Mechanical analysis) : N.A.

E. No. of Experiments :

Wheat—10, Lentil—3, Arhar—3, Potato—4, Jute—1, Rai—1, Toria—1 and Soyabean—1.

11. State Agriculture Farm, Krishnagar.**A. General Information :**

(i) In Nadia district ; 8 Km. from Krishnagar City Rly. Stn. The general topography of the experimental area is plane and flat land with Lat.—23.5° N/Long.—88.5° E/Alt—17 m. (ii) Gangetic alluvium tract. (iii) Established in 1934. (iv) Fruits :—Mango, Lichi, Musambi, etc. ; Vegetables :—Tomato, Cauliflower, egg plant, etc. (v) Research and development of fruits and vegetables. Breeding, propagation, root-stock, fertilizer and physiological studies of fruits and vegetables.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1.0	0.5	0.7	3.3	8.2	24.3	20.7	20.6	23.8	6.1	0.5	—	109.7

(Av. monthly rainfall in cm. ; based on the data for the period 1961-66).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) : Yes, since 1945 by deep tubewell, etc.
(ii) Yes, proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type—Ganga riverine. ; Depth—61 to 91 cm. ; Colour—Light grey ; Structure—Granular.

(ii) Chemical analysis : CaO :—0.42% ; P₂O₅—0.011% ; K₂O—0.92% ; N₂—0.053% ; pH—6.4 to 6.5.

(iii) Mechanical analysis : Coarse sand—0.48% ; Fine sand—44.17% ; Silt—25.65% ; Clay—21.32%.

E. No. of Experiments :

Onion—4, Potato—1, Cauliflower—2, Raddish—1, Mosambi—1 and Mango—4.

12. State Agriculture Farm, Malda.**A. General Information :**

(i) In Malda district ; nearest R.S. is Malda with Lat.—25° 2' N/Long.—88° 8'E/Alt.—32.3 m. (ii) Ganga riverine tract. (iii) Established in 1926. (iv) Mango, Wheat, Oil-seeds, Jute. (v) Research on perennial crops and Paddy, Wheat, etc.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
0.1	0.2	1.8	2.1	8.2	10.3	38.0	23.5	23.8	5.1	0.2	—	113.3

(Av. monthly rainfall in cm. ; based on the data for the period 1960—66).

C. Irrigation and Drainage Facilities :

(i) (a) Yes, irrigation facilities available since 1952. (b) Irrigation by tank. (ii) Yes, there is a proper drainage system.

D. Soil type and Soil analysis :

(i) Broad soil type—Loam and silty clay loam ; Depth—15 cm. ; Colour—Brown ; Structure—N.A. (ii) Chemical analysis : Fe_2O_3 —4.10% ; Al_2O_3 —8.46% ; Mn_2O_4 —0.11% ; CaO —0.65% ; MgO —1.16% ; K_2O —1.25% ; P_2O_5 —0.097% ; N—0.10% ; Cl.—0.021% ; pH—6.5. (iii) Mechanical analysis : N.A.

E. No. of Experiments :

Paddy—5, Wheat—8, Lentil—6, Potato—3, Rai—1 and Toria—5.

13. State Agricultural Farm, Maynaguri.**A. General Information**

(i) In Khagrabari taluka of Jalpaiguri district ; 1.6 Km. from New Maynaguri (B.G.) Rly. Stn. with Lat.—22° 25' N/Long.—87° 19' E/Alt.—83 m. above m.s.l. (ii) It represents alluvial tract. (iii) Established in 1926. (iv) *Aus* followed by *Aman* ; Jute (*cap.*) followed by *Aman* ; *Aus* and Jute followed by *Rabi*. (v) Production of Nucleus seed and farm pedigree seeds.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
9.2	0.5	1.0	1.8	13.0	23.8	28.0	23.7	20.2	3.9	0.2	0.1	116.4

(Av. monthly rainfall in cm. ; based on the data for the period 1960—64).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation is done by deep tube well and tank since 1952. (ii) No.

D. Soil type and Soil analysis :

(i) Depth—59 to 90 cm. ; Colour—Blackish ; Structure—Clay. (ii) and (iii) (Chemical and Mechanical analysis) : N.A.

No. of Experiments :

Sugarcane—2.

14. State Agricultural/District Seed Farm, Midnapur.**A. General Information :**

(i) In Midnapur district ; about 4 Km. from Midnapur Rly. Stn. with Lat.—22° 25' N/Long.—87° 19' E/Alt.—48 m. above m.s.l. The topography of the experimental area is

high land, soil is sandy and laterite type, slopes downward. (ii) Red Laterite. (iii) Established in 1937. (iv) Paddy (H.Y.V.) only in *Kharif*. Sugarcane, Mustard and Wheat only in *Rabi*. Vegetables, etc. (v) Entomological, varietal and fertilizer trials on Paddy, Sugarcane, etc.

B. Normal Rainfall :

Information N.A.

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Yes, from masonry well and deep tubewell. (ii) Yes, proper system exists.

D. Soil type and Soil analysis :

(i) Depth—15 to 18 cm. ; Colour—Red ; Structure—Sandy Loam. (ii) Chemical analysis : pH.—4.9 to 5.2 ; Org. Carbon—0.5 to 0.65 % ; P_2O_5 —30 to 70 % ; K_2O —Medium ; Soluble salts—0.20 to 0.25 millimhos/cm. (iii) Mechanical analysis : N.A.

E. No. of Experiments :

Paddy—6, Groundnut—4 and Mixed crops—9.

15. State Agriculture/District Seed Farm, Mohit Nagar.

A. General Information :

(i) In Jalpaiguri distt. ; Nearest Rly. Stn.—Jalpaiguri with Lat.— $26^{\circ}32' N$ /Long.— $88^{\circ} 43' E$ /Alt.—82.6 m. (ii) Acidic and high rainfall tract. (iii) and (iv) N.A. (v) Manurial and cultural trials on Paddy crop.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
0.7	1.1	3.0	9.6	32.4	68.7	94.6	87.2	48.0	1.2	1.7	1.9	350.1

(Av. monthly rainfall in cm. ; based on the data for the period 1960-66).

C. Irrigation and Drainage facilities :

(i) (a) Yes, Irrigation facilities are available. The year from which irrigation facilities are available is N.A. (b) Irrigation by tank. (ii) Yes, there is a proper drainage system.

D. Soil type and Soil analysis :

(i) Broad soil type—Sandy loam ; Depth—15 cm. ; Colour—Brown ; Structure—Sandy loam. (ii) Chemical analysis : pH.—5.4 ; Av. P—0.002 ; Ex. K—0.191 ; C—1.74. (iii) Mechanical analysis : Coarse sand 1.7 % ; Fine sand—57.81 % ; Silt—19.70 % ; Clay—11.15 %.

E. No. of Experiments :

Paddy—5.

16. State Agriculture Farm, Monmothongar.

A. General Information :

(i) In Basirhat taluka of 24-Parganas district ; 45 Km. from Canning railway station with Lat.— $22^{\circ}19' N$ /Long.— $88^{\circ}40' E$ /Alt.—8.8 m. above m.s.l. The topography of the experimental area is low lying. (ii) Saline tract. (iii) Established in 1955. (iv) *Aman* Paddy—Fallow. Very recently *Aman* Paddy followed by Cotton has been started. (v) N.A.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
0.3	1.0	0.7	2.6	5.2	11.9	14.3	14.9	13.8	6.3	0.2	—	71.2

(Av. monthly rainfall in cm. ; based on the data for the period 1960-65).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Nil. (ii) Yes.

D. Soil type and Soil analysis :

(i) Depth—120 cm. ; Colour—Grey. (ii) Chemical analysis :

Depth	pH.	Conduc- tivity mmhos/cm.	Org. Carbon percentage	Exch. Ca. me/ 100 gm.	Exch. Mg. me/ 100 gm.	Exch. Na. me/ 100 gm.	Exch. K. me/ 100 gm.
30 cm.	6.8	0.386	0.37	8.10	12.69	2.26	0.96
60 cm.	6.6	0.331	0.32	6.48	14.31	2.59	2.18
90 cm.	4.8	0.463	0.49	4.32	10.53	2.37	1.05
120 cm.	4.0	0.772	0.82	2.29	7.96	2.16	0.64

(iii) Mechanical analysis :

Depth	Clay %	Silt %	Sand %
30 cm.	46.3	41.2	12.5
60 cm.	49.3	39.2	11.5
90 cm.	51.3	38.2	10.5
120 cm.	51.3	37.7	10.5

E. No. of Experiments :

Sesamum—1.

17. State Agriculture Farm, Nalhati.**A. General Information :**

(i) In Nalhati (East) taluka of Birbhum district ; 2 Km. from Nalhati Rly. Stn. The layout of the farm not yet done. The plots are irregular in shape. The lands are undulated. (ii) Laterite tract. (iii) Established in 1955. (iv) Paddy, Wheat and pulses are main crops. (v) I.C.A.R. scheme for investigation on correlation of soil test with crop responses.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
0.9	2.3	0.5	5.7	12.2	18.8	30.2	19.3	21.9	10.6	0.5	—	122.9

(Av. monthly rainfall in cm. ; based on the data for the period 1960-64).

C. Irrigation and Drainage Facilities :

(i) (a) Yes, since 1963-64. (b) One jheel lying in the lowest end of the farm by which irrigation is being made. (ii) Proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type : Loam ; Depth—76 cm. ; Colour—Brown, black, ash ; Structure—Loamy, Clay.

(ii) Chemical analysis :

Particulars		pH	Soluble salts (millimohs/cm.)	Organic Carbon (%)	Available Phosphorus Kg/ha.
Block 'A'	High	5.2(A)	0.25(N)	0.48(L)	20.6
	Medium	5.6(A)	0.22(N)	0.54(M)	22.0
	Low	6.1(A)	0.15(N)	0.30(L)	28.0
Block 'B'	High	6.4(N)	0.35(N)	0.48(L)	34.1
	Medium	7.4(N)	0.30(N)	0.51(M)	17.5
	Low	6.8(N)	0.35(N)	0.39(L)	17.5
Block 'C'	High	6.1(N)	0.26(N)	0.51(M)	43.0
	Medium	5.7(A)	0.1(N)	0.39(L)	25.8
	Low	5.9(A)	0.15(N)	0.39(L)	25.8
Block 'D'	High	5.9(A)	0.25(N)	0.36(L)	21.5
	Medium	5.0(A)	0.18(N)	0.30(L)	29.1
	Low	5.6(A)	0.35(N)	0.57(M)	15.2
Block 'E'	High	6.7(N)	0.25(N)	0.36(L)	12.6
	Medium	6.0(N)	0.27(N)	0.39(L)	13.4
	Low	5.1(A)	0.16(N)	0.54(M)	13.4
Block 'F'	High	6.6(N)	0.40(N)	0.54(M)	29.6
	Medium	6.0(N)	0.25(N)	0.63(M)	18.4
	Low	5.2(A)	0.19(N)	0.54(M)	24.6
Block 'G'	High	5.7(A)	0.23(N)	0.39(L)	24.6
	Medium	5.5(A)	0.35(N)	0.30(L)	20.2
	Low	5.7(A)	0.19(N)	0.30(L)	37.0
Block 'H'		5.2(A)	0.20(N)	0.42(L)	20.2
Orchard Block 'A'		5.6(A)	0.2(N)	0.32(L)	24.6
Low Block		5.8(A)	0.1(N)	0.57(M)	20.2

N.B. :—A—Acidic ; N—Normal ; L—Low ; M—Medium.

(iii) Mechanical analysis : N.A.

E. No. of Experiments :

Paddy—4 ; Gram—1 and Sugarcane—4.

18. State Agriculture Farm, Salbari.

A. General Information :

(i) In Salbari taluka of Darjeeling district ; 12 Km. from Siliguri Rly. Stn. with Lat.—26° 43' N/Long.—88° 26' E. The topography of the experimental area is terraced and cultivation is in slopes. (iii) Established in 1962. (iv) Pineapple. (v) Propagation, cultural and breeding trials on Pineapple.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	63.8	57.5	0.2	9.4	--	130.9

(The rainfall data is in cm. for the year 1965).

C. Irrigation and Drainage Facilities :

(i) No. (ii) Yes, proper drainage system exists.

D. Soil type and Soil analysis :

(i) Broad soil type—Sandy loam ; Depth, Colour and Structure : N.A. (ii) and (iii) (Chemical and Mechanical analysis) : N.A.

E. No. of Experiments :

Pineapple—4.

19. State Agriculture/District Seed Farm, Sirgur.*A. General Information :*

(i) In Hooghly district ; 4 Km. from Sirgur Rly. Stn. with Lat.—22° 53' N/Long—88° 1' E/Alt.—16.2 m. (ii) Alluvial tract. (iii) N.A. (iv) Potato—Paddy. (v) Agronomic experiments on Paddy, Potato, vegetables, etc.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1.6	2.0	1.8	4.6	9.3	22.2	26.6	21.7	20.6	7.6	1.0	0.1	119.1

(Av. monthly rainfall in cm. ; based on the data for the period 1960—66).

C. Irrigation and Drainage Facilities :

(i) Yes, irrigation by tank. (ii) Yes, proper drainage system exists.

D. Soil type and Soil analysis :

(i) Broad soil types—Clay and clay loam ; Depth—15 cm. ; Colour—Brown ; Structure—Alluvial. (ii) Chemical analysis : N.A. (iii) Mechanical analysis : N.A.

E. No. of Experiments :

Potato. 4.

20. State Agriculture/District Seed Farm, Suri.*A. General Information :*

(i) In Birbhum district ; 3 Km. from Suri Rly. Stn. with Lat.—23° 55' N/Long.—87° 32' E/Alt.—66.8 m. above m.s.l. (ii) Lateritic tract. (iii) Established in 1922. (iv) Paddy-vegetables. (v) Agronomic experiments on Paddy.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
0.6	1.3	1.0	1.8	7.2	18.6	22.1	20.0	17.1	8.4	1.2	—	99.3

(Av. monthly rainfall in cm. ; based on the data for the period 1960—66).

C. Irrigation and Drainage Facilities :

(i) (a) Yes, irrigation facilities are available. (b) Irrigation by tanks. (ii) Yes, there is a proper drainage system.

D. Soil type and Soil analysis :(i) Broad soil type—Lateritic sandy loam ; Depth—15 cm. ; Colour—Red ; Structure—Lateritic Soil. (ii) Chemical analysis : Fe₂O₃—3.76%, CaO—0.11%, MgO—0.12%, K₂O—0.26%, P₂O₅—0.336%, N—0.036%, pH.—6.1. (iii) Mechanical analysis : N.A.

E. No. of Experiments :

Paddy-12.

21. State Agriculture Farm, Susunia.*A. General Information :*

(i) In Bankura district ; nearest Rly. Stn. is Bankura with Lat.-86° E/Long.-23.5° N/Alt. 100.5 m. (ii) Terraced land. (iii) Established in 1953. (iv) Paddy in *Kharif*; Wheat and Mustard in *Rabi*. (v) Multiplication of Paddy, Wheat, etc. and cultural and manurial trials on Paddy, Wheat, Mustard, etc.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1.0	2.3	2.9	2.9	6.0	19.4	28.4	28.0	19.6	8.2	0.2	0.2	119.1

(Av. monthly rainfall in cm. ; based on the data for the period 1960-66).

C. Irrigation and Drainage Facilities :

(i) (a) Yes, since the inception of the farm. (b) Tank. (ii) Yes, proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type- Sandy loam ; Depth - 430 cm. in depth and grey in colour. (ii) Chemical analysis : pH. - 9.3 to 5.4 ; Organic C - Low ; P₂O₅ - Medium. (iii) Mechanical analysis : N.A.

E. No. of Experiments :

Paddy - 2.

22. State Agricultural Farm, Bamandanga.

Information from A to D : N.A.

E. No. of Experiments :

Sugarcane - 2.

EXPERIMENTAL DATA

Crop :- Paddy (Aus).

Ref :- W.B. 60(60).

Site :- State Agri. Farm, Berhampore.

Type :- 'M'.

Object :- To study the effect of continuous application of A/S, B.M. and lime on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Aus Paddy. (c) As per treatments. (ii) Ganga riverines. (iii) For block 1 and 2—7.6.60 to 15.6.60 and for Block 3 and 4—4.6.60 to 13.6.60. (iv) (a) 2 to 3 ploughings and laddering. (b) Broadcast. (c) 74 Kg/ha. (d) and (e) Nil. (v) N.A. (vi) Dular (early). (vii) Unirrigated. (viii) 1—2. weedings and thinning. (ix) 90 cm. (x) 1st week of Dec. 60.

2. TREATMENTS:

Treatments in one direction :

All combinations of (1) and (2)

(1) 4 levels of N : $N_0=0$, $N_1=33.6$, $N_2=67.2$ and $N_3=100.9$ Kg/ha.

(2) 3 levels of Lime : $L_0=0$, $L_1=5.0$ and $L_2=10.0$ Q/ha.

Treatments in orthogonal direction :

3 levels of P_2O_5 : $P_0=0$, $P_1=22.4$ and $P_2=44.8$ Kg/ha.

P_2O_5 as B.M. applied as land preparation on 26.5.60 and N as A/S applied on 29.7.60 after transplantation. Lime applied once in 4 years.

3. DESIGN :

(i) Strip-plot. (ii) (a) 12 strips in one direction and 3 in orthogonal direction. (b) N.A. (iii) 4. (iv) (a) For blocks (1 and 2) 7.2 m. \times 6.3 m. : For blocks (3 and 4) 7.2 m. \times 6.1 m. (b) For blocks : (1 and 2) 6.6 m. \times 5.6 m. : For blocks (3 and 4) 6.6 m. \times 5.5 m. (v) 30 cm. \times 30 cm. (vi) Yes.

4. GENERAL:

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1949—contd. (b) Yes. (c) N.A. (v) Chinsurah and Suri (for Aman). (vi) Nil. (vii) Expt. for 1961 onwards failed.

5. RESULTS :

(i) 1141 Kg/ha. (ii) (a) 429.6 Kg/ha. (b) 510.3 Kg/ha. (c) 559.0 Kg/ha. (iii) Main effect of N is highly significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	L_0	L_1	L_2	Mean
N_0	516	630	629	633	614	528	592
N_1	1250	1404	1058	1248	1202	1262	1237
N_2	1302	1495	1397	1280	1500	1414	1398
N_3	1301	1256	1453	1249	1438	1323	1337
Mean	1092	1196	1134	1102	1188	1132	1141
L_0	1082	1136	1090				
L_1	1184	1222	1160				
L_2	1011	1231	1152				

C.D. for N marginal means = 245.3 Kg/ha.

Crop :- Paddy (Aus).**Ref :- W.B. 63(40), 64(12).****Site :- State Agri. Farm, Burdwan.****Type :- 'M'.**

Object :—To see the effect of N, P and K alone and in combinations on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay loam. (iii) 1.7.63 to 3.7.63 ; 15.7.64. (iv) (a) 2—3 ploughings+laddering. (b) Transplanting. (c) N.A. (d) 23 cm.×23 cm. (e) 1 to 2. (v) N.A. (vi) Dular (medium). (vii) Unirrigated. (viii) 1 to 2 weedings and thinning. (ix) N.A. (x) 16.9.63 and 17.9.63 ; 10.10.64.

2. TREATMENTS :

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

(1) 3 levels of N as Urea : $N_0=0$, $N_1=44.8$ and $N_2=67.2$ Kg/ha.(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=22.4$ and $P_2=44.8$ Kg/ha.(3) 3 levels of K_2O as Mur. Pot. : $K_0=0$, $K_1=22.4$ and $K_2=44.8$ Kg/ha. P_2O_5 and K_2O as Super and Mur. Pot. on 1.7.63 and Urea applied as top dressing 4 weeks after plantation.**3. DESIGN :**

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 10.1 m.×10.1 m. (b) 9.5 m.×9.5 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1963—contd. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Experiment for 1965 N.A. The experiment is continued after 1965. Hence individual results are presented below. :—

5. RESULTS :**63(40)**

(i) 2852 Kg/ha. (ii) 399.7 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	2754	2706	2772	2804	2704	2723	2744
N_1	2845	3089	2977	3055	2938	2918	2970
N_2	2897	2707	2918	2677	2852	2993	2841
Mean	2832	2834	2889	2845	2831	2878	2852
K_0	2828	2972	2736				
K_1	2653	2855	2986				
K_2	3014	2676	2944				

64(12)(i) 2733 Kg/ha. (ii) 290.3 Kg/ha. (iii) Interaction $K \times N \times P$ alone is significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	2783	2594	2749	2777	2761	2589	2709
N_1	2824	2807	2768	2902	2798	2699	2800
N_2	2606	2817	2650	2749	2777	2546	2691
Mean	2738	2739	2723	2809	2779	2611	2733
K_0	2766	2800	2862				
K_1	2841	2695	2800				
K_2	2606	2723	2505				

Crop :- Paddy (Aman).

Ref :- W.B. 60(46).

Site :- State Agri. Farm, Burdwan.

Type :- 'M'.

Object :- To study the effect of N, P and K alone and in combinations on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Loam and clay loam. (iii) 6.8.60 to 9.8.60. (iv) (a) 2-3 ploughings, laddering etc. (b) Transplanting. (c) N.A. (d) 30 cm. × 23 cm. (e) 2-3. (v) N.A. (vi) *Raghusail* (medium). (vii) Unirrigated. (viii) 2-3 weedings by hand and thinning. (ix) 101 cm. (x) 21.12.60 and 22.12.60.

2. TREATMENTS :

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

(1) 2 levels of N as A/S : $N_0=0$ and $N_1=22.4$ Kg/ha.

(2) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=22.4$ Kg/ha.

(3) 2 levels of K_2O as Mur. Pot. : $K_0=0$ and $K_1=22.4$ Kg/ha.

Manures applied on 5.9.60 by broadcasting.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 8.9 m. × 11.3 m. (b) 8.3 m. × 10.7 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL:

(i) Fair. (ii) N.A. (iii) Yield of grain. (iv) (a) 1956-60. (b) Yes. (c) N.A. (v) Chinsurah and Midnapore. (vi) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 3256 Kg/ha. (ii) 176.9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	K_0	K_1	Mean
N_0	3234	3298	3308	3224	3266
N_1	3272	3222	3180	3314	3247
Mean	3253	3260	3244	3269	3256
K_0	3282	3206			
K_1	3224	3314			

Crop :- Paddy (Aus).

Ref :- W.B. 60(45).

Site :- State Agri. Farm, Burdwan.

Type :- 'M'.

Object :- To study the effect of A/S and A/C on the yield of Paddy.

1. BASAL CONDITIONS -

(i) (a) Wheat—*Aus*. (b) Wheat. (c) N.A. (ii) Loam and clay loam. (iii) 5.6.60 and 7.6.60. (iv) (a) 1-2 ploughings and laddering. (b) Broadcasting. (c) to (e) N.A. (v) N.A. (vi) *Dharial* (medium). (vii) Unirrigated. (viii) 2-3 weedings and thinning. (ix) 101 cm. (x) 16.9.60 and 17.9.60.

2. TREATMENTS :

All combinations of (1) and (2)+control (no manure)

(1) 2 sources of N : $S_1=A/S$ and $S_2=A/C$.

(2) 2 levels of N : $N_1=44.8$ and $N_2=67.2$ Kg/ha.

Manures were applied on 6.7.60 by broadcasting.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 10.4 m. × 7.9 m. (b) 9.8 m. × 7.3 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1956—60. (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 3353 Kg/ha. (ii) 861.9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control=2972 Kg/ha.

	S ₁	S ₂	Mean
N ₁	3316	3270	3293
N ₂	3662	3544	3603
Mean	3489	3407	3448

Crop :- Paddy (Aman).

Ref :- W.B. 60(50), 61(34), 62(38), 64(30).

Site :- State Agri. Farm, Burdwan. Type :- 'M'.

Object :—To study the effect of different nitrogenous fertilizers on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) No. (b) *Aman* Paddy. (c) As per treatments. (ii) Clay loam. (iii) 15.6.60/26 to 28.7.60; 23.7.61; 29.7.62; 14, 15.8.64. (iv) (a) 2 to 3 ploughings and laddering. (b) Transplanting. (c) N.A. (d) 30 cm. × 23 cm. (e) 2; 2 to 3; 1 to 2 during 1962 and 64. (v) N.A. (vi) *Raghusail* (medium). (vii) Unirrigated. (viii) 2 hand weedings and 1 thinning during 60, 62 and 64; N.A. during 61. (ix) 101 cm.; 77 cm.; 74 cm. (x) 16, 17.12.60; 7 to 9.12.61; 26.12.62 and 20 to 22.12.64.

2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure)

(1) 5 sources of N : S₁=A/S, S₂=C/N, S₃=A/C, S₄=A/S/N and S₅=Urea.

(2) 2 levels of N : N₁=44.8 and N₂=67.2 Kg/ha.

Fertilizers applied on 28.8.60 by broadcasting.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 11. (b) N.A. (iii) 4. (iv) (a) 14.6 m. × 5.5 m. (b) 14.0 m. × 4.9 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—64 [Expt. for 63 N.A.]. (b) Yes. (c) N.A. (v) Malda. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × years interaction is absent. Hence individual results are given.

5. RESULTS:

60(50)

(i) 3242 Kg/ha. (ii) 286.6 Kg/ha. (iii) Main effect of S is significant and control vs. others are significant. (iv) Av. yield of grain in Kg/ha.

Control=3791 Kg/ha.

	S ₁	S ₂	S ₃	S ₄	S ₅	Mean
N ₁	3387	3787	3527	3216	3378	3459
N ₂	3211	3873	3267	3173	3052	3315
Mean	3299	3830	3397	3194	3215	3387

C.D. for S marginal means=292.6 Kg/ha.

C.D. for control vs. others=304.3 Kg/ha

61(34)

(i) 2827 Kg/ha. (ii) 506.3 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control=3233 Kg/ha.

	S ₁	S ₂	S ₃	S ₄	S ₅	Mean
N ₁	2533	3158	2810	3026	2894	2884
N ₂	2235	2853	2715	3000	2640	2689
Mean	2384	3006	2762	3013	2767	2786

62(38)

(i) 3034 Kg/ha. (ii) 520.6 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control=2839 Kg/ha.

	S ₁	S ₂	S ₃	S ₄	S ₅	Mean
N ₁	3127	2795	3330	2978	3445	3135
N ₂	2842	3067	3328	3064	2561	2972
Mean	2984	2931	3329	3021	3003	3054

64(20)

(i) 3274 Kg/ha. (ii) 245.7 Kg/ha. (iii) Only control vs. others effects is significant. (iv) Av. yield of grain in Kg/ha.

Control=3119 Kg/ha.

	S ₁	S ₂	S ₃	S ₄	S ₅	Mean
N ₁	3199	3682	3312	3374	3524	3418
N ₂	3598	3627	3484	3236	3247	3439
Mean	3399	3654	3398	3305	3385	3428

C.D. for control vs. others=260.9 Kg/ha.

Crop :- Paddy (Aman).

Ref :- W.B. 62(37), 64(21).

Site :- State Agri. Farm, Burdwan.

Type :- 'M'.

Object :-To see the effect of Basic slag, Super and other Organic matter on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A., No. (b) N.A., Aman Paddy. (c) N.A. (ii) Clay loam. (iii) 2.8.62, 10.8.64. (iv) (a) 2 to 3 ploughing and laddering. (b) Transplanting. (c) N.A. (d) 23 cm. × 23 cm. (e) 1 to 2. (v) N.A. (vi) *Raghusail* (medium). (vii) Unirrigated. (viii) Hand weeding and thinning (ix) 74 cm., N.A. (x) 16.12.62, 19.12.64.

2. TREATMENTS :

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

(1) 2 sources of P_2O_5 : S_1 =Super and S_2 =Basic slag.

(2) 2 levels of P_2O_5 : P_1 =33.6 and P_2 =56.0 Kg/ha.

(3) 2 levels of G.M. : G_0 =0 and G_1 =125.5 Q/ha. of Wheat.

Extra treatments : T_0 =Control and T_1 =125.5 Q/ha. of Wheat straw.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 6.1 m. × 8.5 m. (b) 5.5 m. × 7.9 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1962—contd. [Expt. for 63 failed]. (b) Yes. (c) Nil [Expt. for 65 N.A.]. (v) and (vi) N.A. (vii) Since the Expt. is contd. beyond 65 individual results are presented.

5. RESULTS :

62(37)

(i) 2979 Kg/ha. (ii) 361.1 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

T_0 =2846 Kg/ha. and T_1 =3042 Kg/ha.

	S_1	S_2	P_1	P_2	Mean
G_0	2942	3020	2971	2992	2981
G_1	2936	3052	3063	2926	2994
Mean	2939	3036	3017	2959	2988
P_1	2981	3053			
P_2	2898	3019			

64(21)

(i) 3557 Kg/ha. (ii) 308.2 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

T_0 =3324 Kg/ha. and T_1 =3565 Kg/ha.

	S_1	S_2	P_1	P_2	Mean
G_0	3468	3580	3577	3470	3524
G_1	3714	3577	3620	3672	3646
Mean	3591	3578	3598	3571	3585
P_1	3588	3608			
P_2	3594	3548			

Crop :- Paddy (Aman).

Ref :- W.B. 61(33), 62(35).

Site :- State Agri. Farm, Burdwan.

Type :- 'M'.

Object :- To study the effect of Foliage spraying of Urea on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. ; No. (b) N.A. ; Aman Paddy. (c) N.A. ; As per treatments. (ii) Clay loam. (iii) 15, 16.9.61; 5.8.62. (iv) (a) 2 to 3 ploughings and 1-laddering both years. (b) Transplanting. (c) Nil. (d) 23 cm. × 23 cm. (e) 2 to 3 and 1 to 2. (v) N.A. (vi) Patnai (medium). (vii) Unirrigated. (viii) 2 hand weeding and thinning. (ix) 51 cm. and 76 cm. (x) 9.12.61 and 17.12.62.

2. TREATMENTS :

8 spraying treatments: T_0 =Control, T_1 =Urea at 2.2 Kg/ha., T_2 =Urea at 2.8 Kg/ha., T_3 =Urea at 3.4 Kg/ha., T_4 =Urea at 3.9 Kg/ha., T_5 =Urea at 4.5 Kg/ha., T_6 =Urea at 5.0 Kg/ha. and T_7 =Urea at 5.6 Kg/ha.

Spraying done 3 times, once in every fortnight. 1st spraying done 4 weeks after transplantation at 1123 litres/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 8.9 m. × 11.3 m. (b) 8.3 m. × 10.7 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1961—62. (b) Yes. (c) The results are presented under 5. Results. (v) Nil. (vi) No. (vii) Error variances are heterogeneous and Treatments × years interaction is absent.

5. RESULTS :

61(33)

(i) 3180 Kg/ha. (ii) 227.5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	3074	3151	3441	2993	3330	3061	3301	3089

62(35)

(i) 2230 Kg/ha. (ii) 128.7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
	2198	2110	2349	2122	2291	2228	2252	2291

Crop :- Paddy (Aman).

Ref :- W.B. 60(64), 61(35),

Site :- State Agri. Farm, Chinsurah.

62(41), 63(36), 64(15), 65(1).

Type :- 'M'.

Object :- To see the effect of B.M. on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) No. (b) Aman Paddy. (c) As per treatments. (ii) Clay. (iii) 12.7.60 ; 9.7.61 ; 23.7.62 ; 19.7.63 ; 25.7.64 ; 31.7.65. (iv) (a) 2—3 ploughings+laddering for 61(35), 62(41), 63(36), 64(15) ; 3 ploughings+laddering for 60(64) ; 2 ploughing+spading+laddering for 65(1). (b) Transplanting. (c) Nil. (d) 23 cm. × 23 cm. (e) 1 to 2 for 60(64), 62(41), 63(36), 64(15) ; 2 for 61(35), 65(1). (v) N.A. (vi) Bhasamari (medium). (vii) Unirrigated. (viii) 2 weedings and thinning for 60(64), 61(35), 62(41) ; 1—2 weedings+thinning for 63(36), 64(15), 65(1). (ix) 110 cm. ; 75 cm. ; 89 cm. ; 88 cm. ; 10 cm. ; 66 cm. (x) 19.12.60 ; 27.12.61 ; 10.12.62 ; 9.12.63 ; 15.12.64 and 27.12.65.

2. TREATMENTS :

4 levels of P_2O_5 as B.M. : $P_0=0$, $P_1=22.4$, $P_2=44.8$ and $P_3=67.2$ Kg/ha.

B.M. applied on 14.6.60.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 10. (iv) (a) 19.5 m. \times 4.6 m. (b) 18.6 m. \times 3.7 m. (v) 46 cm. \times 46 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of grain. (iv) (a) 1955—contd. (b) Yes. (c) N.A. (v) and (vi) Nil. (vii) Since the expt. continued beyond 65. Individual results are given below.

5. RESULTS :

60(64)

(i) 3720 Kg/ha. (ii) 179.0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	P_0	P_1	P_2	P_3
Av. yield	3426	3750	3793	3909

C.D. = 163.8 Kg/ha.

61(35)

(i) 3596 Kg/ha. (ii) 308.5 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	P_0	P_1	P_2	P_3
Av. yield	3357	3499	3715	3812

C.D. = 282.3 Kg/ha.

62(41)

(i) 2982 Kg/ha. (ii) 154.2 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	P_0	P_1	P_2	P_3
Av. yield	2665	2852	3133	3277

C.D. = 141.1 Kg/ha.

63(36)

(i) 3665 Kg/ha. (ii) 224.5 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	P_0	P_1	P_2	P_3
Av. yield	3488	3612	3763	3797

C.D. = 205.5 Kg/ha.

64(15)

(i) 3887 Kg/ha. (ii) 216.3 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	P_0	P_1	P_2	P_3
Av. yield	3595	3864	3981	4107

C.D. = 197.9 Kg/ha.

65(1)

(i) 2830 Kg/ha. (ii) 407.6 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	P_0	P_1	P_2	P_3
Av. yield	2549	2713	2875	3184

C.D. = 372.9 Kg/ha.

Crop :- Paddy (Aman).

Ref :- W.B. 59(46), 60(56), 61(56).

Site :- State Agri. Farm, Chinsurah.

Type :- 'M'.

Object :- To see the effect of high doses of N, P and K on the yield of Paddy.

1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *Aman*. (c) As per treatments, N.A. (ii) Ganga low land clay. (iii) 4.8.60 ; 21.7.61.
 (iv) (a) 2—3 ploughings, 2 ladderings. (b) Transplanting. (c) N.A. (d) 23 cm. × 23 cm. (e) 2 to 3, (v) N.A.
 (vi) Late soil (medium). (vii) Unirrigated. (viii) 2 hand weedings and thinning ; N.A. (ix) 110 cm. ; 112 cm.
 (x) 2.12.60 ; 6.12.61.

2. TREATMENTS :

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

(1) 3 levels of N : $N_1=33.6$, $N_2=100.9$ and $N_3=201.8$ Kg/ha.

(2) 2 levels of P_2O_5 : $P_0=0$ and $P_1=224.2$ Kg/ha.

(3) 2 levels of K_2O : $K_0=0$ and $K_1=224.2$ Kg/ha.

3. DESIGN :

- (i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 19.5 m. × 4.6 m. (b) 18.6 m. × 3.7m. (v) 46 cm. × 46 cm. (vi) Yes.

4. GENERAL :

- (i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1959 to 1961. (b) Yes. (c) Pooled results are given under 5. Results. (v) and (vi) Nil. (vii) Experiment for 1959 is also included for purposes of pooling Error variances are homogeneous and Treatments × years interaction is present.

5. RESULTS :

- (i) 2783 Kg/ha. (ii) 379.6 Kg/ha. (based on 22 d.f. made up of years × treatments). (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	K_0	K_1	Mean
N_1	2966	2920	3051	2835	2943
N_2	2928	2895	2942	2882	2912
N_3	2505	2482	2608	2379	2494
Mean	2800	2766	2867	2699	2783
K_0	2876	2857			
K_1	2723	2674			

C.D. for N marginal means = 185.6 Kg/ha.

Years	N_1	N_2	N_3	Sig.	P_0	P_1	Sig.
1959	2587	2179	2296	N.S.	2230	2478	N.S.
1960	3259	3349	2759	**	3249	2996	N.S.
1961	2982	3208	2424	**	2919	2823	N.S.
Pooled	2943	2912	2494	**	2800	2766	N.S.

Years	K_0	K_1	Sig.	G.M.	S.E./plot
1959	2430	2278	N.S.	2354	309.7
1960	3178	3067	N.S.	3122	419.3
1961	2992	2750	N.S.	2871	400.6
Pooled	2867	2699	N.S.	2783	379.6

Crop :- Paddy (Aman).**Ref :- W.B. 64(40).****Site :- State Agri. Farm, Chinsurah.****Type :- 'M'.**

Object :- To see the effect of Urea, T. C. and Dug-well-lative compost on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clayey. (iii) 1st week of August '64. (iv) (a) 2 to 3 ploughings and laddering. (b) Transplanting. (c) 30 Kg/ha. (d) 25 cm. x 25 cm. (e) 2-3. (v) Nil. (vi) *Bhasamanik* (medium). (vii) Unirrigated. (viii) 2 hand weedings+thinning. (ix) 90 cm. (x) Last week of December '64.

2. TREATMENTS :

7 manurial treatments : T_0 =Control (no manuring), T_1 =33.6 Kg/ha. of N as Dug-well-lative compost. T_2 =33.6 Kg/ha. of N as T.C., T_3 =33.6 Kg/ha. N as Urea, T_4 =67.2 Kg/ha. of N supplied $\frac{1}{2}$ from Dug-well-lative compost and $\frac{1}{2}$ from Urea, T_5 =67.2 Kg/ha. of N supplied $\frac{1}{2}$ from T.C. and $\frac{1}{2}$ from Urea and T_6 =67.2 Kg/ha. of N as Urea only.

The bulky manures were applied before puddling of soil. In the treatments where Urea alone was used $\frac{1}{2}$ of the total amount applied at the time of Puddling of the soil and rest $\frac{1}{2}$ after one month of transplantation. In the combination treatments, the bulky manures were applied before puddling of soil and urea applied one month after transplantation.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 9.8 m. x 5.2 m. (b) 9.1 m. x 4.6 m. (v) 30 cm. x 30 cm. (vi) Yes.

4. GENERAL :

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

5. RESULTS :

(i) 2910 Kg/ha. (ii) 255.6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	2377	3095	3120	3159	3336	3210	2075

C.D.=379.6 Kg/ha.

Crop :- Paddy (Aman).**Ref :- W.B. 63(2).****Site :- State Agri. Farm, Chinsurah.****Type :- 'M'.**

Object :—To find out if there is any differential response to equal amount of Urea applied in soil and foliar spray in Aman Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Ganga low land. (iii) 15 to 18th July '63. (iv) (a) 2 to 3 ploughings, 2 puddling (b) Transplanting. (c) 22 Kg/ha. (d) 25 cm. x 25 cm. (e) 2-3. (v) N.A. (vi) NC-764. (vii) Irrigated. (viii) Hand weeding+thinning. (ix) 96 cm. (x) N.A.

2. TREATMENTS :

7 methods of application of N : T_0 =Control, T_1 =Soil application of $\frac{1}{2}$ at puddling+ $\frac{1}{2}$ one month after transplantation and $\frac{1}{2}$ at budding, T_2 =Soil application of $\frac{1}{2}$ at transplanting and $\frac{1}{2}$ at budding, T_3 =Foliar application (2% concentration) $\frac{1}{2}$ when seedlings are rooting+ $\frac{1}{2}$ one month after transplantation+ $\frac{1}{2}$ at budding time, T_4 =Foliar application (2% concentration) $\frac{1}{2}$ one month after transplantation+ $\frac{1}{2}$ at budding time, T_5 =Foliar application (5% concentration) $\frac{1}{2}$ when seedlings were rooting+ $\frac{1}{2}$ one month after transplantation+ $\frac{1}{2}$ at budding time and T_6 =Foliar application (5% concentration) $\frac{1}{2}$ one month after transplantation+ $\frac{1}{2}$ at budding time.

33.6 Kg/ha. of N applied as Urea both in soil and foliar application.

3. DESIGN :

(j) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 9.1 m. × 4.6 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of grain. (iv) (a) 1963 and 1964. (b) Yes. (b) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 2696 Kg/ha. (ii) 310.5 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆
Av. yield	2354	3243	3116	3134	2909	2802	3018

C.D.=460.9 Kg/ha.

Crop :- Paddy (Aman).**Ref :- W.B. 60(65).****Site :- State Agri. Farm, Chinsurah.****Type :- 'M'.**

Object :—To see the effect of N, P and K alone and in combination on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay. (iii) 16.7.60 (iv) (a) 2—3 ploughings+laddering. (b) Transplanting. (c) N.A. (d) 23 cm. × 23 cm. (e) 1—2. (v) N.A. (vi) *Patnai*—23. (vii) Unirrigated. (viii) 1 to 2 weedings+thinning. (ix) 110 cm. (x) 4.12.60.

2. TREATMENTS :

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

(2) 2 levels of N as A/S : N₀=0 and N₁=22.4 Kg/ha.(2) 2 levels of P₂O₅ as Super : P₀=0, and P₁=22.4 Kg/ha.(3) 2 levels of K₂O as Mur. Pot. : K₀=0 and K₁=22.4 Kg/ha.

A/S applied on 13.9.60, Super applied on 1.7.60 and Mur. Pot. on 3.8.60. Fertilizers applied by broadcasting.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) 11.6 m. × 8.5 m. (b) 11.0 m. × 7.9 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1955 to 1960. (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 3605 Kg/ha. (ii) 229.2 Kg/ha. (iii) Main effect of P alone is significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	K ₀	K ₁	Mean
N ₀	3411	3674	3461	3624	3542
N ₁	3574	3761	3636	3700	3668
Mean	3492	3718	3548	3662	3605
K ₀	3471	3626			
K ₁	3514	3810			

C.D. for P marginal means=168.5 Kg/ha.

Crop :- Paddy (Boro).**Ref :- W.B. 60(16).****Site :- State Agri. Farm, Chinsurah.****Type :- 'M'.**

Object :—To study the effect of organic and inorganic manures on the growth and yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Ganga low land clay. (iii) 16.11.60/1.1.61. (iv) (a) 3 to 4 ploughings and laddering. (b) Transplanting. (c) 30 Kg/ha. (d) 23 cm. × 23 cm. (e) One. (v) N.A. (vi) Chinsurah Boro (medium) (vii) Irrigated. (viii) 2 to 3 weedings. (ix) 12 cm. (x) Last week of April '61.

2. TREATMENTS:

4 sources of 112.1 Kg/ha. of N : S_0 =Control, S_1 =Mustard cake, S_2 =A/S and S_3 =Mustard cake+A/S. Manures applied during final puddling of the field.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 13.0 m. × 7.1 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1958 to 1960. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2706 Kg/ha. (ii) 552 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	S_0	S_1	S_2	S_3
Av. yield	2139	2905	2781	2997

Crop :- Paddy (Aman).**Ref :- W.B. 61(36), 62(55).****Site :- State Agri. Farm, Chinsurah.****Type :- 'M'.**

Object :—To study the efficiency of N nutrients from organic and inorganic sources on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. ; No. (b) N.A. ; Aman Paddy. (c) As per treatments. (ii) Clay. (iii) 16.7.61 ; 21.7.62. (iv) (a) 2 to 3 ploughings and 2 ladderings. (b) Transplanting. (c) N.A. (d) N.A. ; 23 cm. × 23 cm. (e) 2 to 3 ; 1 to 2. (v) N.A. (vi) Patnai (medium). (vii) Unirrigated. (viii) 2 to 3 weedings and 1 thinning during 1961 ; 1 to 2 weedings and 1 thinning during 1962. (ix) 75 cm. and 89 cm. (x) 4.12.61 to 8.12.61 ; 1.12.62.

2. TREATMENTS :

8 sources of 33.6 Kg/ha. of N : S_0 =Control, S_1 =Urea, S_2 =A/S, S_3 =Cowdung, S_4 =Oil cake, S_5 =Nitrophos. (ODDA), S_6 =Nitrophos (PEC) and S_7 =Ammono. Phos. Other details N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 11.6 m. × 8.5 m. (b) 11.0 m. × 7.9 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1961 and 1962. (b) Yes. (c) N.A. (v) Hathwara. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × years interaction is absent. Hence individual results are presented.

5. RESULTS :**61(36)**

(i) 3274 Kg/ha. (ii) 190.6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5	S_6	S_7
Av. yield	2906	3282	3456	3119	3601	3343	3153	3331

C.D.=280.3 Kg/ha.

62(55)

(i) 2690 Kg/ha. (ii) 513.9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇
Av. yield	2548	2378	2483	2644	3354	2562	2628	2923

Crop :- Paddy (Aman).

Ref :- W.B. 63(38), 64(18), 65(2).

Site :- State Agri. Farm, Chinsurah.

Type :- 'M'.

Object :-To see the effect of high dose of Phosphate manuring application on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay. (iii) 18.8.63 ; 1.8.64 ; 19.7.65. (iv) (a) 2—3 ploughings and laddering. (b) Transplanting. (c) N.A. for 63 and 64 and 37 to 40 Kg/ha. for 65. (d) 23 cm. × 23 cm. for 63 and 64, 30 cm. × 30 cm. for 65 (e) 1—2. (v) N.A. (vi) Bhasamanik (medium). (vii) Unirrigated. (viii) 1—2 weedings+ thinning. (ix) N.A. ; 6 cm. and 79 cm. (x) 24.12.64, 18.12.64, 15.12.65.

2. TREATMENTS :

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

(1) 2 levels of N as A/S : N₀=0 and N₁=112.1 Kg/ha.

(2) 2 levels of P₂O₅ as Super P₁=336.3 and P₂=672.5 Kg/ha.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 9.1 m. × 4.6 m. (b) 8.5 m. × 4.0 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Yield of grain. (iv) (a) 1963—contd. (b) Yes. (c) No. (v) and (vi) Nil. (vii) The experiment is continued after 1965. Hence individual results are presented.

5. RESULTS :

63(38)

(i) 2653 Kg/ha. (ii) 277.9 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.

Control=2912 Kg/ha.

	N ₀	N ₁	Mean
P ₁	2804	2114	2459
P ₂	3190	2247	2718
Mean	2997	2180	2588

C.D. for N marginal mean=302.8 Kg/ha.

64(18)

(i) 3288 Kg/ha. (ii) 388.6 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control=3159 Kg/ha.

	N ₀	N ₁	Mean
P ₁	3314	3227	3270
P ₂	3223	3516	3370
Mean	3268	3372	3320

65(2)

(i) 3248 Kg/ha. (ii) 434.5 Kg/ha. (iii) Main effects of 'N' and 'P' are significant. (iv) Av. yield of grain in Kg/ha.

Control=3099 Kg/ha.

	N_0	N_1	Mean
P_1	3236	2781	3008
P_2	3791	3185	3488
Mean	3514	2983	3248

C.D. for N or P Marginal means=473.4 Kg/ha.

Crop :- Paddy (Aman).

Ref :- W.B. 64(58).

Site :- State Agri. Farm, Chinsurah.

Type :- 'M'.

Object :—To see if there is any differential response to equal amount of urea applied in soil and as foliar spray on the yield of Paddy.

1. **BASAL CONDITIONS :**

(i) (a) No. (b) Paddy. (c) As per treatments (ii) Clay. (iii) Last week of July 64. (iv) (a) 2 to 3 ploughings and laddering. (b) Transplanting. (c) 22 to 28 Kg/ha. (d) 25 cm.×25 cm. (e) 2 to 3. (v) N.A. (vi) *Bhasamanik* (medium). (vii) Unirrigated. (viii) 2 weedings and thinning. (ix) 90 cm. (x) Middle of December 64.

2. **TREATMENTS :**

All combinations of (1) and (2)+control (no manure)

(1) 2 levels of N as Urea : $N_1=33.6$ and $N_2=67.2$ Kg/ha.

(2) 3 types of application of Urea : T_1 =Soil application, T_2 =Spraying of Urea with 2% solution and T_3 =Spraying of Urea with 5% solution.

The total quantity of N from Urea was applied in 4 equal split doses ; 1st dose was applied after one month of transplantation and the rest doses were applied at an interval of 10 days.

3. **DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 5.2 m.×9.8 m. (b) 4.6 m ×9.1 m. (v) 30 cm.×30 cm. (vi) Yes.

4. **GENERAL :**

(i) Normal. (ii) N.A. (iii) Yield of grain. (iv) (a) 1964—contd. (b) and (c) N.A. (v) to (vii) Nil.

RESULTS :

(i) 2510 Kg/ha. (ii) 388.3 Kg/ha. (iii) Only 'control vs. others' is significant. (iv) Av. yield of grain in Kg/ha.

Control=2009 Kg/ha.

	T ₁	T ₂	T ₃	Mean
N ₁	2587	2795	2428	2603
N ₂	2327	2875	2548	2583
Mean	2457	2835	2488	2593

C.D. for 'control vs. others' = 441.0 Kg/ha.

Crop :- Paddy (Aman). Ref :- W.B. 60(66), 61(45), 62(57), 63(51), 64(19), 65(4).

**Site :- State Agri. Farm, Type :- 'M'.
Chinsurah.**

Object :- To study the effect of A/S with or without lime on the Aman Paddy.

1. **BASAL CONDITIONS :**

(i) (a) No. (b) Aman Paddy. (c) As per treatments. (ii) Clay. (iii) 12.7.60; 24.7.61; 30.7.62; 24.7.63; 19.7.64; 25.7.65. (iv) (a) 1 to 2 ploughings and laddering for 60(66); 2 to 3 ploughings and laddering for 61(45), 63(51); 2 to 3 ploughings and spading for 62(57); 2 to 3 ploughings and laddering and land preparation for 64(19); 3 to 4 ploughings and laddering for 65(4). (b) Transplanting. (c) 35 to 42 Kg/ha for 60(66); N.A. for others. (d) 23 cm. x 23 cm. (e) 1 to 2 during 60, 62, 63, 64 and 2 to 3 during 61 and 65. (v) N.A. (vi) Bhasamanik (medium). (vii) Unirrigated. (viii) 1 to 2 weeding and thinning. (ix) 110, 112, 89, N.A., 105 and 65 cm. respectively. (x) 1st week of Dec. 60; 25.12.61; 11.12.62; 28.12.63; 18.12.64 and 16.12.65.

2. **TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N : N₀=0, N₁=22.4 and N₂=44.8 Kg/ha.

(2) 3 levels of lime : L₀=0, L₁=50.2 and L₂=100.4 Kg/ha.

N as A/S applied by broadcasting. Lime applied once in 4 years.

3. **DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 10.4 m. x 5.8 m. (b) 9.8 m. x 5.2 m. (v) 30 cm. x 30 cm. (vi) Yes.

4. **GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1945—contd. (b) Yes. (c) N.A. (v) to (vi) Nil. (vii) The experiment is continued after 1965 have individual results are presented.

5. **RESULTS :**

60(66)

(i) 3192 Kg/ha. (ii) 154.5 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	L ₀	L ₁	L ₂	Mean
N ₀	2947	2926	2891	2921
N ₁	3269	3347	3156	3257
N ₂	3283	3541	3367	3397
Mean	3166	3271	3138	3192

C.D. for N marginal means = 129.9 Kg/ha.

61(45)

(i) 2786 Kg/ha. (ii) 305.4 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	L ₀	L ₁	L ₂	Mean
N ₀	2217	2206	2493	2305
N ₁	2873	2782	3152	2936
N ₂	3144	3115	3088	3116
Mean	2145	2701	2911	2786

C.D. for N marginal means=257.3 Kg/ha.

62(57)

(i) 2785 Kg/ha. (ii) 174.9 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	L ₀	L ₁	L ₂	Mean
N ₀	2246	2311	2432	2330
N ₁	2847	2805	2890	2847
N ₂	3166	3184	3184	3178
Mean	2753	2767	2835	2785

C.D. for N marginal means=147.0 Kg/ha.

63(51)

(i) 3007 Kg/ha. (ii) 263.8 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	N ₀	N ₁	N ₂	Mean
L ₀	2543	3217	3322	3027
L ₁	2551	2988	3065	2868
L ₂	2869	3183	3324	3125
Mean	2654	3129	3237	3007

C.D. for N marginal means=221.8 Kg/ha.

64(19)

(i) 3215 Kg/ha. (ii) 287.2 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	N ₀	N ₁	N ₂	Mean
L ₀	3016	3128	3233	3126
L ₁	2854	3331	3420	3202
L ₂	2955	3403	3595	3318
Mean	2942	3287	3416	3215

C.D. for N marginal means=241.3 Kg/ha.

65(4)

(i) 2858 Kg/ha. (ii) 337.5 Kg/ha. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in Kg/ha.

	N ₁	N ₂	N ₃	Mean
L ₀	2500	2993	2832	2775
L ₁	2544	2947	2736	2742
L ₂	2824	3097	3268	3057
Mean	2623	3006	2945	2858

C.D. for N marginal means=283.6 Kg/ha.

Crop :- Paddy (*Aman*).

Ref :- W.B. 65(77).

Site :- State Agri. Farm, Chinsurah.

Type :- 'M'.

Object :-—To study the effect of application of Nitrogenous fertilizer in the form of A/S on the reproductive phase.

1. BASAL CONDITIONS :

(i) (a) No. (b) *Aman*—Paddy. (c) N.A. (ii) Clayey. (iii) July 65. (iv) (a) 2 ploughings and 1 laddering. (b) Transplanting. (c) N.A. (d) 15 cm. × 23 cm. (e) 1. (v) 11.2 Kg/ha. of N as F.Y.M. (vi) *Patnai*—23. (vii) N.A. (viii) 1 to 2 weeding and thinning. (ix) and (x) N.A.

2. TREATMENTS :

8 times of application of N : T₀=Control (no application of fertilizer), T₁=25th Sept. 65, T₂=30th Sept. 65, T₃=5th Oct. 65, T₄=10th Oct. 65, T₅=15th Oct. 65, T₆=20th Oct. 65, T₇=25th Oct. 65.

44.8 Kg/ha. of N was applied in the treated plot ; 11.2 Kg/ha. of N as F.Y.M. was applied as basal and rest 33.6 Kg/ha. of N as A/S was applied as top dressing in a single dose.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 9.7 m. × 5.2 m. (b) 9.1 m. × 4.6 m. (v) 61 cm. kept as border. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Measure of N₂ content in the fully matured grain. (iv) (a) 1965—67. (b) Yes. (c) N.A. (v) and (vi) Nil. (vii) Data analysed after angular transformation.

5. RESULTS :

(i) 7.5 degree. (ii) 0.3 degree. (iii) Treatment differences are highly significant. (iv) Mean value of N content in degrees.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Mean infestation in degrees	7.1	7.2	7.4	7.7	7.4	7.9	7.7	7.8

C.D. = 0.4 degrees.

Transformed back %	1.53	1.58	1.67	1.78	1.66	1.90	1.81	1.82
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Crop :- Paddy (Aman).

Ref :- W.B. 60(67), 61(44), 62(56), 63(37), 64(16), 65(5).

**Site :- State Agri. Farm,
Chinsurah.**

Type :- 'M'.

Object :- To see the effect of A/S with or without F.Y.M. on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay. (iii) 28.7.60; 23.7.61; 30.7.62; 24.7.63; 22.7.64; 25.7.65. (iv) (a) 2 to 3 ploughings and laddering. (b) Transplanting. (c) 44 to 49 Kg/ha. for 65(5); N.A. for others. (d) 23 cm. x 23 cm. (e) 2 to 3 for 61(44), 1 to 2 for others. (v) 92.2 Q/ha. of F.Y.M. for 65(5); N.A. for others. (vi) *Bhasamanik* (medium). (vii) Unirrigated. (viii) 2 to 3 weedings and thinning. (ix) N.A., 112 cm.; 89 cm.; 88 cm.; N.A. and 66 cm. respectively. (x) 1st week of Dec. 60; 5.12.61; 25.12.62; 28.12.63; 6.12.64 and 16.12.65.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 5 levels of N as A/S : $N_0=0$, $N_1=33.6$, $N_2=67.2$, $N_3=100.19$ and $N_4=134.5$ Kg/ha.

(2) 2 levels of F.Y.M. : $F_0=0$ and $F_1=92.2$ Q/ha.

In 1961 2 levels of F.Y.M. were taken as main-plots and 5 levels of N as A/S as sub-plots.

3. DESIGN :

(i) Fact. in R.B.D. and split-plots for 1961. (ii) (a) 10, 2 main-plots/replication; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 10.4 m. x 5.8 m, (b) 9.8 m. x 5.2 m. (v) 30 cm. x 30 cm, (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1965—contd. (b) and (c) N.A. (v) and (vi) Nil. (vii) The experiment is continued after 1965. Hence individual results are presented.

5. RESULTS :

60(67)

(i) 2955 Kg/ha. (ii) 233.6 Kg/h. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	N_3	N_4	Mean
F_0	2815	2890	2876	3092	3133	2961
F_1	2685	3124	2903	2998	3033	2949
Mean	2750	3007	2890	3045	3083	2955

61(44)

(i) 2936 Kg/ha, (ii) (a) 423.2 Kg/ha. (b) 407.9 Kg/ha. (iii) Main effect of N and interaction ($N \times F$) are highly significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	N_3	N_4	Mean
F_0	2962	3196	3699	3004	2876	3147
F_1	3453	3062	2716	2321	2066	2724
Mean	3208	3129	3208	2662	2471	2936

C.D. for N marginal means = 421.0 Kg/ha.

C.D. for N means at the same level of F = 595.4 Kg/ha.

C.D. for F means at the same level of N = 668.7 Kg/ha.

62(56)

(i) 3278 Kg/ha. (ii) 289.0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	N ₀	N ₁	N ₂	N ₃	N ₄	Mean
F ₀	2956	3401	3368	3562	3553	3368
F ₁	3294	3170	3248	3244	2978	3187
Mean	3125	3286	3308	3403	3266	3278

63(37)

(i) 2697 Kg/ha. (ii) 439.5 Kg/ha. (iii) Main effects of N and F are highly significant. (iv) Av. yield of grain in Kg/ha.

	N ₀	N ₁	N ₂	N ₃	N ₄	Mean
F ₀	3120	3443	3067	2741	2635	3001
F ₁	3298	2716	2079	1751	2117	2392
Mean	3209	3080	2573	2246	2376	2697

C.D. for N marginal means=450.0 Kg/ha.

C.D. for F marginal means=284.7 Kg/ha.

64(16)

(i) 2794 Kg/ha. (ii) 557.4 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain Kg/ha.

	N ₀	N ₁	N ₂	N ₃	N ₄	Mean
F ₀	2300	3049	2451	3510	3146	2891
F ₁	1906	2708	2307	2966	3599	2697
Mean	2103	2878	2379	3238	3373	2794

C.D. for N marginal means=570.8 Kg/ha.

65(5)

(i) 2484 Kg/ha. (ii) 703.6 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	N ₀	N ₁	N ₂	N ₃	N ₄	Mean
F ₀	2764	3109	2831	2434	2394	2706
F ₁	2701	2284	2042	1579	2701	2261
Mean	2732	2696	2436	2006	2548	2484

Crop :- Paddy (*Aman*).

Ref :- W.B. 65(78).

Site :- State Agri. Farm, Chinsurah.

Type :- 'M'.

Object :- To see the effect of application of Nitrogenous fertilizer in single and split doses on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) N.A. (ii) Clayey. (iii) July 65. (iv) (a) 2 ploughings and 1 laddering. (b) Transplanting. (c) 15 to 78 Kg/ha. (d) 25 cm. × 15 cm. (e) 1. (v) N.A. (vi) *Bhasamanik* (medium). (vii) N.A. (viii) 2 weedings and 1 thinning. (ix) N.A. (x) Nov.-Dec. 65.

2. TREATMENTS :

All combinations of (1) and (2)+a coat rol

(1) 3 types of fertilizer application : M_1 =Single dose at the time of transplanting, M_2 =Two equal split doses, one at the time of the transplanting and other one month after transplanting and M_3 =4 equal split doses; each at an interval of 20 days beginning from transplanting period.

(2) 2 doses of N as A/S : N_1 =33.6 and N_2 =67.3 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 9.1 m. × 5.2 m. (b) 8.5 m. × 4.6 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of grain. (iv) (a) 1965—66. (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 2743 Kg/ha. (ii) 467.8 Kg/ha. (iii) Control vs. others is significant. (iv) Av. yield of grain in Kg/ha.

Control=2227 Kg/ha.

	M_1	M_2	M_3	Mean
N_1	2645	2903	2658	2735
N_2	3094	2931	2746	2924
Mean	2869	2917	2702	2829

C.D. for control vs. others=530.8 Kg/ha.

Crop :- Paddy (*Aman*).

Ref :- W.B. 60(57), 61(46), 62(43), 63(27), 64(7), 65(6).

**Site :- State Agri. Farm,
Chinsurah.**

Type :- 'M'.

Object :—To study the effect of continuous application of A/S, B.M. and F.Y.M. on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Paddy. (b) *Aman*—Paddy. (c) As per treatments. (ii) Ganga clay low land. (iii) 1.8.60 to 7.8.60; 10 to 12.8.61; 8, 9.8.62; 13, 14.8.63; 2nd week of Aug. 64 and 13.8.65 respectively. (iv) (a) 2 ploughings and laddering. preparation of land for 60(57); 3 to 4 ploughings and laddering for 61(46), 65(6); 2 to 3 ploughings and laddering for 62(43), 63(27), 64(7). (b) Transplanting. (c) Nil. (d) 23 cm. × 23 cm. (e) 1 to 2. (v) N.A. (vi) *Bhasamanik* (medium). (vii) Unirrigated. (viii) 1 to 2 hand weedings and thinning for 60(57); 64(7); 2 to 3 hand weeding and thinning for 61(46), 65(6); 2 hand weeding and thinning for 62(43), 63(27). (ix) 64 cm.; 53 cm; N.A.; 57 cm.; 45 cm. and 66 cm. (x) Middle of Dec. 60; 10 to 12.12.61; 12 to 14.12.62; 14.12.63; 15 to 18.12.64 and 10.12.65 respectively.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 5 levels of N as A/S : N_0 =0, N_1 =33.6, N_2 =67.2, N_3 =100.9 and N_4 =134.5 Kg/ha.

(2) 3 levels of P_2O_5 as B.M. : P_0 =0, P_1 =22.4 and P_2 =44.8 Kg/ha.

Sub-plot treatments :

2 levels of F.Y.M. : F_0 =0 and F_1 =92.2 Q/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 15 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 9.9 m. \times 5.8 m. (b) 9.3 m. \times 5.2 m. (v) 30 m. \times 30 m. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of grain. (iv) (a) 1948—contd. (b) Yes. (c) N.A. (v) Suri and Berham-pur. (vi) Crops slightly affected due to storm in the month of Oct. 63 for 63(27); N.A. for others. (vii) The Expt. continued beyond 65. Hence individual results are presented below.

5. RESULTS :

60(57)

(i) 2897 Kg/ha. (ii) (a) 211.9 Kg/ha. (b) 179.4 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	N ₀	N ₁	N ₂	N ₃	N ₄	F ₀	F ₁	Mean
P ₀	2926	2984	2912	2753	2642	2828	2859	2843
P ₁	2916	3164	2937	2849	2695	2929	2896	2913
P ₂	3001	3171	2914	2860	2725	2936	2932	2934
Mean	2948	3106	2921	2821	2687	2898	2896	2897
F ₀	2922	3118	2952	2831	2664			
F ₁	2974	3095	2889	2811	2710			

C.D. for N marginal means = 196.0 Kg/ha.

61(46)

(i) 2625 Kg/ha. (ii) (a) 406.6 Kg/ha. (b) 283.9 Kg/ha. (iii) Main effect of N and interaction N \times F is highly significant. (iv) Av. yield of grain in Kg/ha.

	N ₀	N ₁	N ₂	N ₃	N ₄	F ₀	F ₁	Mean
P ₀	2554	2903	2863	2430	2282	2598	2615	2606
P ₁	2663	2905	2665	2602	2308	2581	2676	2629
P ₂	2827	2974	2673	2462	2262	2704	2575	2640
Mean	2681	2927	2734	2498	2284	2628	2622	2625
F ₀	2451	2900	2801	2528	2457			
F ₁	2912	2954	2666	2468	2111			

C.D. for N marginal means = 376.0 Kg/ha.

C.D. for F means at the same level of N = 187.4 Kg/ha.

C.D. for N means at the same level of F = 189.0 Kg/ha.

62(43)

(i) 2962 Kg/ha. (ii) (a) 322.9 Kg/ha. (b) 230.1 Kg/ha. (iii) Main effect of N and interaction N \times F are highly significant. (iv) Av. yield of grain in Kg/ha.

	N ₀	N ₁	N ₂	N ₃	N ₄	F ₀	F ₁	Mean
P ₀	3009	3048	3063	2700	2891	2918	2966	2942
P ₁	3259	2895	3014	2885	2642	2946	2932	2939
P ₂	3340	3129	2969	2915	2676	3034	2978	3006
Mean	3203	3024	3015	2833	2737	2966	2959	2962
F ₀	3108	3106	3060	2770	2787			
F ₁	3297	2942	2971	2897	2687			

C.D. for N marginal means = 298.7 Kg/ha.
 C.D. for N means at the same level of F = 151.1 Kg/ha.
 C.D. for F means at the same level of N = 151.9 Kg/ha.

63(27)

(i) 2733 Kg/ha. (ii) (a) 449.1 Kg/ha. (b) 340.7 Kg/ha. (iii) Main effects of N and interaction N×F are highly significant. (iv) Av. yield of grain in Kg/ha.

	N ₀	N ₁	N ₂	N ₃	N ₄	F ₀	F ₁	Mean
P ₀	3217	3113	2994	2347	2282	2806	2775	2791
P ₁	3234	3184	2741	2420	2164	2741	2756	2748
P ₂	3337	3239	2477	2226	2019	2734	2586	2660
Mean	3263	3179	2737	2331	2155	2760	2706	2733
K ₀	3121	3187	2737	2331	2298			
K ₁	3405	3171	2598	2341	2013			

C.D. for N marginal means = 415.7 Kg/ha.
 C.D. for N means at the same level of F = 214.8 Kg/ha.
 C.D. for F means at the same level of N = 224.9 Kg/ha.

64(7)

(i) 2671 Kg/ha. (ii) (a) 425.5 Kg/ha. (b) 291.9 Kg/ha. (iii) Main effects of N and interaction N×F are highly significant. Interaction N×P×F is significant. (iv) Av. yield of grain in Kg/ha.

	N ₀	N ₁	N ₂	N ₃	N ₄	F ₀	F ₁	Mean
P ₀	3057	3111	2778	2170	2370	2698	2696	2697
P ₁	3174	2974	2780	2202	2220	2688	2652	2670
P ₂	3117	3216	2566	2140	2187	2644	2646	2645
Mean	3116	3100	2708	2171	2259	2677	2665	2671
F ₀	2858	3215	2839	2157	2313			
F ₁	3374	2985	2576	2185	2204			

C.D. for N marginal means = 393.7 Kg/ha.
 C.D. for N means at the same level of F = 197.6 Kg/ha.
 C.D. for F means at the same level of N = 192.7 Kg/ha.

65(6)

(i) 1942 Kg/ha. (ii) (a) 256.1 Kg/ha. (b) 157.3 Kg/ha. (iii) Main effects of N and interaction $N \times F$ are highly significant. (iv) Av. yield of grain in Kg/ha.

	N ₀	N ₁	N ₂	N ₃	N ₄	F ₀	F ₁	Mean
P ₀	2377	2333	1920	1545	1287	1851	1934	1893
P ₁	2611	2347	1952	1542	1383	1991	1943	1967
P ₂	2671	2392	1799	1538	1436	1983	1951	1967
Mean	2553	2358	1890	1542	1369	1942	1943	1942
F ₀	2319	2380	2023	1618	1369			
F ₁	2787	2335	1758	1465	1368			

C.D. for N marginal means = 236.9 Kg/ha.
 C.D. for N means at the same level of F = 114.5 Kg/ha.
 C.D. for F means at the same level of N = 103.8 Kg/ha.

Crop :- Paddy (Aman).

Ref :- W.B. 60(55), 61(63).

Site :- State Agri. Farm, Chinsurah.

Type :- 'M'.

Object :- To see the effect of A/S and A/C on Aman Paddy.

1. BASAL CONDITIONS :

(i) (a) Gram—*Aman*. (b) Gram. (c) As stated in treatment for 60(55), N.A. for 61(63). (ii) Clay for 60(55), Ganga low land clay for 61(63). (iii) 12.7.60 for 60(55), 11.7.61 for 61(63). (iv) (a) 2 to 3 ploughings 1 spading and 1 laddering for 60(55); 2 to 3 ploughings for 61(63). (b) Transplanting, (c) and (d) N.A. (e) 2 to 3. (v) N.A. (vi) *Bhasamanik* (medium) for 60(55) and *Badkalamkati* (early) 61(63). (vii) Un-irrigated. (viii) 2 hand weeding for 60(55), 2 to 3 weeding and thinning for 61(63). (ix) 110 cm. for 60(55), N.A. for 61(63). (x) 3.12.60, 3.11.61.

2. TREATMENTS :

Main-plot treatments :

2 types of rotation : R₁=*Aman—Khasan* and R₂=*Aman* only.

Sub-plot treatments :

3 sources of 33.6 Kg/ha. of N : S₀=Control, S₁=A/S and S₂=A/C.
 Fertilizer applied 4 or 5 weeks after transplanting by broadcasting.

3. DESIGN :

(i) Split plot. (ii) (a) 2 main-plots/block; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 10.4 m. × 5.8 m. (b) 9.8 m. × 5.2 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1958–61. (b) Yes. (c) Nil. (v) No. (vi) N.A. (vii) Sub plot error variances are heterogeneous. Hence individual results are presented.

5. RESULTS :

60(55)

(i) 2617 Kg/ha. (ii) (a) 254.3 Kg/ha. (b) 364.8 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	S ₀	S ₁	S ₂	Mean
R ₁	2632	2591	2862	2695
R ₂	2375	2643	2598	2539
Mean	2504	2617	2730	2617

61(63)

(i) 2050 Kg/ha. (ii) (a) 424.9 Kg/ha. (b) 185.9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of rain in Kg/ha.

	S ₀	S ₁	S ₂	Mean
R ₁	1928	2110	2132	2057
R ₂	2037	2112	1981	2043
Mean	1982	2111	2050	2050

Crop :- Paddy (*Aman*).

Ref :- W.B. 60(58), 61(47), 62(44), 63(28), 64(8), 65(10).

Site :- State Agri. Farm,
Chinsurah.

Type :- 'M'.

Object :- To study the effect of continuous application of A/S, B.M. and lime on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) No. (b) *Aman*- Paddy. (c) As per treatments. (ii) Ganga clay low land. (iii) 23 to 25.7.60; 18 to 20.8.61; 3 to 6.8.62; 8 to 11.8.63; 8.8.64 and 14.8.65. (iv) (a) 2 to 3 ploughings+land preparation in 60; 62 to 64; 3 to 4 ploughings and land preparation in 61 and 2 ploughings, puddling and laddering in 65. (b) Transplanting. (c) N.A. (d) 23 cm. x 23 cm. (e) 2; 2 to 3; 1; 1 to 2 in 63 to 65. (v) N.A. (vi) *Bhasamanik* (medium). (vii) Unirrigated. (viii) 2 hand weedings and thinning. (ix) N.A.; 133 cm.; N.A.; 57 cm.; 45 cm. and 60 cm. (x) N.A.; 18 to 21.12.61; 16 to 18.12.62; 16 to 18.12.63; 16.12.64 and 12.12.65.

2. TREATMENTS :

Treatments in one direction :

All combinations of (1) and (2)

(1) 5 levels of N as A/S : N₀=0, N₁=33.6, N₂=67.2, N₃=100.9 and N₄=134.4 Kg/ha.(2) 3 levels of lime : L₀=0 L₁=502.1 and L₂=1004.2 Kg/ha.

Treatments in perpendicular direction :

3 levels of P₂O₅ as B.M. : P₀=0, P₁=22.4 and P₂=44.8 Kg/ha.

A/S and B.M. applied 6 weeks after transplantation during 60 and 4 weeks after transplantation during other years. Lime applied once in 4 years and applied on 5.6.60.

3. DESIGN :

(i) Strip-plot. (ii) (a) 15 strips in 1 direction and 3 strips in orthogonal direction. (b) N.A. (iii) 6. (iv) (a) 9.9 m. x 5.3 m. (b) 9.3 m. x 4.7 m. (v) 30 cm. x 30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of grain. (iv) (a) 1948-contd. (b) Yes. (c) N.A. (v) Berhampore (*Aus*) and Suri. (vi) N.A. (vii) Nil.

5. RESULTS :

60(58)

(i) 3141 Kg/ha. (ii) (a) 410.0 Kg/ha. for (N x L) (b) 302.7 Kg/ha. for N x P (c) 198.4 Kg/ha. for (N x P x L) (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	L ₀	L ₁	L ₂	Mean
N ₀	3057	3021	3091	3110	2997	3062	3056
N ₁	3303	3314	3394	3366	3313	3332	3337
N ₂	3179	3126	3196	3213	3231	3056	3167
N ₃	3123	3110	3137	3079	3101	3189	3123
N ₄	3023	3072	2971	3044	3014	3009	3022
Mean	3137	3129	3158	3162	3131	3130	3141
L ₀	3177	3142	3167				
L ₁	3109	3146	3138				
L ₂	3124	3097	3168				

C.D. for N marginal means = 157.9 Kg/ha.

61(47)

(i) 2632 Kg/ha. (ii) (a) 370.0 Kg/ha. (b) 339.0 Kg/ha. (c) 219.1 Kg/ha. (iii) Main effects of N, P and interaction N×P are highly significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	L ₀	L ₁	L ₂	Mean
N ₀	1786	2159	2350	2166	2118	2011	2098
N ₁	2367	2746	2812	2649	2656	2620	2642
N ₂	2698	2985	2883	2898	2735	2933	2855
N ₃	2868	2871	2833	2844	2890	2837	2857
N ₄	2743	2767	2611	2763	2589	2768	2707
Mean	2492	2705	2697	2664	2598	2634	2632
L ₀	2560	2735	2697				
L ₁	2460	2684	2649				
L ₂	2457	2697	2748				

C.D. for N means at the same level of P = 183.9 Kg/ha.

C.D. for P means at the same level of N = 170.1 Kg/ha.

62(44)

(i) 300.8 Kg/ha. (ii) (a) 293.9 Kg/ha. for (N×L). (b) 321.4 Kg/ha. for (N×P). (c) 347.0 Kg/ha. for (N×L×P). (iii) Main effect of N and interaction N×P are highly significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	L ₀	L ₁	L ₂	Mean
N ₀	2902	3055	3218	3176	3090	2909	3058
N ₁	3246	3146	3072	3050	3305	3109	3155
N ₂	3243	3004	2847	2966	3070	3058	3031
N ₃	3043	2952	2874	3021	2944	2903	2956
N ₄	2934	2791	2795	2815	2833	2872	2840
Mean	3074	2990	2961	3006	3048	2970	3008
L ₀	3074	2975	2969				
L ₁	3082	3039	3024				
L ₂	3065	2955	2890				

C.D. for N marginal means = 113.2 Kg/ha.
 C.D. for N means at the same level of P = 216.87 Kg/ha.
 C.D. for P means at the same level of N = 229.16 Kg/ha.

63(28)

- (i) 2907 Kg/ha. (ii) (a) 368.1 Kg/ha. for (N×L). (b) 531.3 Kg/ha. for (N×P). (c) 265.6 Kg/ha. for (N×P×L).
 (iii) Main effects of N and interaction N×P are highly significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	L ₀	L ₁	L ₂	Mean
N ₀	3739	3024	3138	2955	3038	2909	271
N ₁	3259	3327	3270	3277	3311	3268	293
N ₂	3071	3005	2903	3018	2976	2985	364
N ₃	2910	2614	2547	2723	2750	2598	2690
N ₄	2781	2558	2456	2515	2552	2728	2598
Mean	2952	2906	2863	3006	3048	2970	319
L ₀	2934	2896	2864				
L ₁	3003	2945	2828				
L ₂	2920	2877	2896				

C.D. for N marginal means = 141.7 Kg/ha.
 C.D. for N means at the same level of P = 200.38 Kg/ha.
 C.D. for P means at the same level of N = 234.08 Kg/ha.

64(8)

- (i) 3052 Kg/ha. (ii) (a) 385.6 Kg/ha. for (N×L). (b) 331.8 Kg/ha. for (N×P). (c) 222.2 Kg/ha. for (N×P×L).
 (iii) Main effects of N and interaction N×P are highly significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	L ₀	L ₁	L ₂	Mean
N ₀	2909	3014	3224	3170	3007	2970	3049
N ₁	3526	3407	3637	3492	3615	3464	3523
N ₂	3411	3142	3178	3295	3196	3240	3244
N ₃	2927	2759	2784	2906	2785	2779	2823
N ₄	2796	2552	2516	2525	2649	2692	2621
Mean	3114	2975	3068	3078	3050	3029	3052
L ₀	3161	2966	3106				
L ₁	3102	2984	3066				
L ₂	3079	2975	3032				

C.D. for N marginal means = 148.8 Kg/ha.
 C.D. for N means at the same level of P = 189.9 Kg/ha.
 C.D. for P means at the same level of N = 165.4 Kg/ha.

65(10)

- (i) 2178 Kg/ha. (ii) (a) 340.9 Kg/ha. for (N×L). (b) 574.4 Kg/ha. for (N×P). (c) 231.4 Kg/ha. for (N×P×L).
 (iii) Main effect of N and interaction N×P are significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	L ₀	L ₁	L ₂	Mean
N ₀	2343	2545	2716	2653	2533	2416	2535
N ₁	2222	2384	2587	2410	2379	2412	2400
N ₂	2177	2220	2398	2219	2250	2327	2265
N ₃	1912	1917	1861	1865	1990	1835	1897
N ₄	1943	1781	1651	1695	1762	1918	1792
Mean	2121	2169	2243	2168	2183	2182	2178
L ₀	2123	2156	2226				
L ₁	2146	2199	2206				
L ₂	2095	2155	2298				

C.D. for N marginal means = 175.9 Kg/ha.
 C.D. for N means at the same level of P = 179.1 Kg/ha.
 C.D. for P means at the same level of N = 159.5 Kg/ha.

Crop :- Paddy (Aman)

Ref :- W.B. 62(47) ; 63(39)

Site :- State Agri. Farm, Chinsurah.

Type :- 'M'.

Object :—To see the effect of Phosphate manuring with different doses of N on the yield of Paddy.

1. BASAL CONDITIONS :

(a) to (c) N.A. (ii) Clay. (iii) 17.6.62 ; 21.7.63. (iv) (a) 1—2 ploughing and puddling for 62(47), 2 ploughings and harrowing 63(39). (b) Transplanting. (c) N.A. (d) 23 cm. × 23 cm. (e) 2—3. (v) N.A. (vi) *Bhasmauik* (medium). (vii) Unirrigated. (viii) 1 to 2 weedings and thinning. (ix) N.A. (x) 30.11.62 ; 9.12.63.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S: N₀=0, N₁=28, N₂= 34, N₃=39 Kg/ha.

Sub-plot treatments :

P₀=0, P₁=45 Kg/ha. of P₂O₅ as Super.

N as A/S top dressed after 4 weeks of transplantation by broadcasting.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block ; 2 sub-plots/main-plots. (b) N.A. (iii) 3. (iv) 10.4 m. × 5.8 m. (b) 9.8 m. × 5.2 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1962+63. (b) Yes. (c) N.A. (v) No. (vi) N.A. (vii) Sub-plot-errors variances are heterogeneous. Hence individual results are presented.

5. RESULTS :

62(47)

(i) 2991 Kg/ha. (ii) (a) 351.2 Kg/ha. (b) 245.5 Kg/ha. (iii) None of the effect is significant. (iv) Av. yield of grain in Kg/ha.

	N ₀	N ₁	N ₂	N ₃	Mean
P ₀	2898	3145	3049	3319	3103
P ₁	2771	2760	3163	2823	2879
Mean	2834	2952	3106	3071	2991

63(39)

(i) 2723 Kg/ha. (ii) (a) 432.2 Kg/ha. (b) 318.5 Kg/ha. (iii) None of the effect is significant. (iv) Av. yield of grain in Kg/ha.

	N ₀	N ₁	N ₂	N ₃	Mean
P ₀	2814	2599	2410	2741	2641
P ₁	2792	2823	2879	2726	2805
Mean	2803	2711	2644	2734	2723

Crop :- Paddy (Aman).

Ref. :- W.B. 60(40), 61(27).

Type :- State Agri. Farm, Cooch Bihar.

Type :- 'M'.

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

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Buxa reverine. (iii) 20.7.60 ; 10.8.61. (iv) (a) Ploughing and laddering. (b) Transplanting. (c) Nil. (d) 23 cm. × 30 cm. (e) 2 to 3. (v) N.A. (vi) *Dudsar* (medium). (vii) Unirrigated. (viii) 1—2 hand weedings and thinning. (ix) 189 cm. and 272 cm. (x) 13.12.60 and 14.12.61.

2. TREATMENTS :

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

(1) 2 levels of N as A/S : N₀=0 and N₁=22.4 Kg/ha.

(2) 2 levels of P₂O₅ as Super : P₀=0, and P₁=22.4 Kg/ha.

(3) 2 levels of K₂O as Mur. Pot. : K₀=0 and K₁=22.4 Kg/ha.

3. DESIGN :

(i) 2³ Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 8.4 m. × 11.6 m. (b) 7.8 m × 11.0 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of grain. (iv) (a) 1957—1961. (b) Yes. (c) N.A. (v) Midnapur and Chinsurah. (vi) N.A. (vii) Variances are heterogeneous and Treatments × years interaction is absent. Hence individual years results are being given.

5. RESULTS :

60(40)

(i) 2756 Kg/ha. (ii) 319.5 Kg/ha. (iii) None of the effect is significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	K ₀	K ₁	Mean
N ₀	2629	2659	2682	2606	2644
N ₁	2978	2756	2826	2908	2867
Mean	2804	2708	2754	2757	2756
K ₀	2754	2754			
K ₁	2853	2661			

61(27)

(i) 2380 Kg/ha. (ii) 65.3 Kg/ha. (iii) Main effect of N and interaction N×P and N×K are highly significant and interaction N×P×K is significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	K ₀	K ₁	Mean
N ₀	2310	2268	2254	2325	2289
N ₁	2427	2516	2459	2484	2472
Mean	2368	2392	2356	2404	2380
K ₀	2310	2403			
K ₁	2427	2381			

C.D. for N marginal means = 49.9 Kg/ha.

C.D. for the body of N×P or N×K table = 70.5 Kg/ha.

Crop :- Paddy (Aman).

Ref :- W.B. 60(38), 61(26).

Site :- State Agri. Farm, Cooch Bihar.

Type :- 'M'.

Object :- To study the effect of N, P and K on the yield of Paddy.

1. BASAL CONDITIONS :

(a) to (c) N.A. (ii) Buxa reverine. (iii) 20.7.60, 2.8.61. (iv) (a) 3 to 4 ploughings for 60(30), 2 to 3 ploughing and paddling for 61(26). (b) Transplanting. (c) N.A. (d) 23 cm. × 30 cm. (e) 2 to 3. (v) Nil. (vi) Dudsar (medium) (vii) Unirrigated. (viii) 2 to 3 hand weedings. (ix) 189 cm. for 1960 and N.A. for 1961. (x) 14.12.60, 15/16.12.61.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N₁=33.6, N₂=100.9 and N₃=201.8 Kg/ha.

(2) 2 levels of P₂O₅ as Super : P₀=0, P₁=224.2 Kg/ha.

(3) 2 levels of K₂O as Mur. Pot. : K₀=0 and K₁=224.2 Kg/ha.

3. DESIGN :

(i) 3×2×2 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 11.9 m. × 8.5 m. (b) 11.3 m. × 7.9 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) 1959-61. (b) Yes. (c) N.A. (v) No. (vi) N.A. (vii) Results for 1959 have been included for purpose of pooling. Error variances are homogeneous and Treatments × years interaction is present.

5. RESULTS :

(i) 2378 Kg/ha. (ii) 478.9 Kg/ha. (based on 9 d.f. made up of Treatments \times years interaction) (iii) Main effects of of K is significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	K ₀	K ₁	Mean
N ₁	2523	2255	2579	2498	2539
N ₂	2336	2418	2609	2145	2377
N ₃	2304	2133	2388	2050	2219
Mean	2388	2369	2525	2231	2378
K ₀	2499	2551			
K ₁	2275	2187			

C.D. for K marginal means=228.2 Kg/ha.

Years	N ₁	N ₂	N ₃	Sig.	P ₀	P ₁	Sig.	K ₀	K ₁	Sig.	G.M.	S.E./plot
1960	2924	2962	2688	N.S.	2881	2835	N.S.	2910	2806	N.S.	2858	334.1
1961	2153	1792	1748	*	1894	1902	N.S.	2140	1656	N.S.	1898	270.7
Pooled	2539	2377	2219	N.S.	2388	2369	N.S.	2525	2231	N.S.	2378	478.9

Crop :- Paddy (Aman).

Ref :- W.B. 61(13), 62(42), 63(42).

Site :- State Agri. Farm, Hathwara.

Type :- 'M'.

Object ;—To study the effect of N from organic and inorganic sources on the yield of Paddy.

1. BASAL CONDITIONS ;

(i) (a) to (c) N.A. (ii) Sandy clay loam. (iii) 28.8.61, 11, 12.8.62, 16.8.63. (iv) (a) 2 to 3 ploughings, and laddering. (b) Transplanting. (c) 37 Kg/ha. (d) 23 cm. \times 23 cm. (e) 2 to 3 in 1961, 62 and 1 to 2 in 1963. (v) N.A. (vi) Badkalankati. (medium). (vii) Unirrigated. (viii) Hand weeding and thinning in 1961 and 1963, 2 hand weedings in 1962. (ix) 99 cm., 77 cm., 55 cm. (x) 5, 6.12.61, 29, 30.11.62, 28.11.63.

2. TREATMENTS :

8 sources of 33.6 Kg/ha of N : S₀=Control (no manure), S₁=Urea, S₂=A/S, S₃=Cowdung S₄=Oilcake, S₅=Nitrophos (ODDA), S₆=Nitrophos (PEC) and S₇=Ammono. Phos.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 8.8 m. \times 9.1 m. (b) 8.2 m. \times 8.5 m. (v) 30 cm. \times 30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of grain. (iv) (a) 1961 to 1963. (b) Yes. (c) Results of combined analysis giving under 5. (v) and (vi) N.A. (vii) Error variances are heterogeneous and Treatments \times years interaction is present.

5. RESULTS :

(i) 1586 Kg/ha. (ii) 398.5 Kg/ha. (based on 14 d.f. made up of Treatments \times years interaction). (iii) Treatment differences are not significant. (iv) An yield of grain in Kg/ha.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇
Av. yield	1255	1616	1483	1759	1720	1659	1588	1605

Years	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	Sig.	G.M.	S.E./plot
1961	1590	1669	1422	1677	2008	1848	1740	1536	*	1686	207.3
1962	1150	1545	1428	1641	1862	1691	1574	1613	**	1563	116.7
1963	1025	1634	1598	1958	1289	1438	1449	1667	*	1507	309.0
Pooled	1255	1616	1483	1759	1720	1659	1588	1605	N.S.	1586	398.5

Crop :- Paddy (Aman).

Ref :- W.B. 60 (39).

Site :- State Agri. Farm, Hathwara.

Type :- 'M'.

Object :- To study the effect of N, P and K on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy clay loam. (iii) 10.8.60. (iv) (a) 2 to 3 ploughings. (b) Transplanting. (c) 30 to 37 Kg/ha. (d) 23 cm. x 23 cm. (e) 2 to 3. (v) Nil. (vi) *Badkalamkati*. (vii) Unirrigated. (viii) Hand weeding. (ix) 67 cm. (x) 29.11.60. and 30.11.60.

2. TREATMENTS :

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

(1) 2 levels of N as Urea : N₀=0 and N₁=22.4 Kg/ha.

(2) 2 levels of P₂O₅ as Super : P₀=0 and P₁=22.4 Kg/ha.

(3) 2 levels of K₂O as Mur. Pot. : K₀=0 and K₁=22.4 Kg/ha.

3. DESIGN :

(i) Fact in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 8.8 m. x 9.1 m. (b) 8.2 m. x 8.5 m. (v) 30 cm. x 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1957 to 1960. (b) Yes. (c) N.A. (v) Cooch Bihar, Midnapur, Burdwan and Chinsura. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2246 Kg/ha. (ii) 140.8 Kg/ha. (iii) Main effect of N is highly significant and P effect is significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	K ₀	K ₁	Mean
N ₀	1920	2112	2010	2022	2016
N ₁	2444	2506	2497	2453	2475
Mean	2182	2309	2254	2238	2246
K ₀	2201	2306			
K ₁	2163	2312			

C.D. for Nor P marginal means = 103.5 Kg/ha.

Crop :- Paddy (Aman).
Site :- State Agri. Farm, Majhian.

Ref :- W.B. 60 (43)
Type :- 'M'.

Object :—To study the effect of A/S and A/C on the yield of Paddy.

1. **BASAL CONDITIONS :**

(i) (a) *Khasani Aman*. (b) *Khasani*. (c) 33.6 Kg/ha of N as A/S and A/C. (ii) (a) Loam and clay loam. (iii) 4.8.60. (iv) (a) 2 to 3 ploughings and 2 ladderings. (b) Transplanting. (c) 37 Kg/ha. (d) 23 cm. × 23 cm. (e) 2 to 3 (v) Nil. (vi) *Nagru* (medium). (vii) Unirrigated. (viii) 2 to 3 hand weedings. (ix) N.A. (x) 14.12.60.

2. **TREATMENTS :**

Main plot treatments :

2 types of rotations : $R_1 = Aman\ Khasani$ and $R_2 = Aman$ alone.

Sub-plot treatments :

3 sources of 33.6 Kg/ha of N : $S_0 = Control$, $S_1 = A/S$ and $S_2 = A/C$.

Fertilizer applied as top-dressing on 22.9.60.

3. **DESIGN :**

(i) Split-plot. (ii) (a) 2 main plots/replication 3 sub-plots/main-plot (b) N.A. (iii) 4. (iv) (a) 7.3 m. × 9.1 m. (b) 6.7 m. × 8.5 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. **GENERAL :**

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1950 only. (b) Yes. (c) N.A. (v) (a) *Nalhati*. (vi) N.A. (vii) Yield of *Khasani* N.A.

5. **RESULTS :**

(i) 2403 Kg/ha. (ii) (a) 203.7 Kg/ha. (b) 249.5 Kg/ha. (iii) Main effect of S alone is significant. (iv) Av. yield of grain in Kg/ha.

	S_0	S_1	S_2	Mean
R_1	2139	2377	2570	2362
R_2	2201	2607	2325	2444
Mean	2170	2492	2548	2403

C.D. for S marginal means = 271.8 Kg/ha.

Crop :- Paddy (Aman).
Site :- Seed Multiplication Farm, Majhian.

Ref. :- W.B. 61 (58)
Type :- 'M'.

Object :—To see the effect of Urea and C/A/N and Super on the yield of Paddy.

1. **BASAL CONDITIONS :**

(i) (a) Gram—*Aman*. (b) Gram. (c) As per treatments. (ii) Clay and clay loam. (iii) 8.7.61. (iv) (a) 2 to 3 ploughing. (b) Transplanting. (c) and (d) N.A. (e) 2 to 3. (v) N.A. (vi) *Badkalamkai* (medium). (vii) Unirrigated. (viii) 2 weedings and thinning. (ix) 66 cm (x) 13.11.61 and 14.11.61.

2. **TREATMENTS :**

Main plot treatments :

2 types of rotations : $R_1 = Aman-Gram$ and $R_2 = Aman$ alone.

Sub-plot treatments :

6 manurial treatments : $M_0 = Control$, $M_1 = 33.6 Kg/ha$ of N as Urea, $M_2 = 33.6 Kg/ha$ of N as C/A/N, $M_3 = 33.6 Kg/ha$ of P_2O_5 as super, $M_4 = M_1 + M_2$ and $M_5 = M_1 + M_3$.

Time and method of application N.A.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 6 sub-plots/ main-plot. (b) N.A. (iii) 4. (iv) (a) 9.1 m. × 7.6 m. (b) 8.5 m. × 7.0 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1960 to 62. (b) Yes. (c) N.A. (v) (a) No. (b) Nil. (vi) N.A. (vii) Expt. failed in 1960 and 1962 N.A.

5. RESULTS :

(i) 1740 Kg/ha. (ii) (a) 279.2 Kg/ha. (b) 336.9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	Mean
R ₁	1830	1759	1886	1833	1669	1594	1762
R ₂	1547	1720	1918	1759	1866	1496	1718
Mean	1688	1740	1902	1796	1768	1545	1740

Crop :- Paddy (Aman).

Ref :- W.B. 62(46).

Site :- Seed Multiplication Farm; Majhian.

Type :- 'M'.

Object:—To see the effect of N and P on Paddy. (Aman-gram Rotation).

1. BASAL CONDITIONS :

(i) (a) Gram-Aman. (b) Gram. (c) As per treatments. (ii) Clay and clay loam. (iii) 27.7.62 and 28.7.62. (iv) (a) 2 to 3 ploughings+1 laddering. (b) Transplanting. (c) and (d) N.A. (e) 1—2. (v) N.A. (vi) *Bad kalāmkali*. (vii) Unirrigated. (viii) Weeding (1—2)+thinning. (ix) N.A. (x) 16.11.62 to 18.11.62.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 sources of 34 Kg/ha. of N : S₀=No N, S₁=Urea and S₂=C/A/N.

(2) 2 levels of P₂O₅ : P₀=0 and P₁=34 Kg/ha.

Sub-plot treatments :

2 types of rotation : R₁ Aman-Gram and R₂=Aman alone.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 9.1 m. × 7.6 m. (b) 8.5 m. × 7.0 m. (v) 61 cm. kept as border around each plot. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) 1961—1962. (b) Yes. (c) N.A. (v) (a) No. (b) Nil. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 1944 Kg/ha. (ii) (a) 200.6 Kg/ha. (b) 171.7 Kg/ha. (iii) Main effect of S is significant and interaction S × P is highly significant. (iv) Av. yield of grain in Kg/ha.

	S ₀	S ₁	S ₂	R ₁	R ₂	Mean
P ₀	1767	1922	2283	1930	2052	1991
P ₁	1896	1939	1859	1904	1892	1898
Mean	1832	1930	2071	1917	1972	1944
R ₁	1817	1951	1983			
R ₂	1847	1909	2159			

C.D. for S marginal means=151.2 Kg/ha.

C.D. for body of S×P table=213.7 Kg/ha.

Crop :- Paddy (Aman).

Ref :- W.B. 60(51), 61(29), 62(51), 63(55).

Site :- State Agri. Farm, Malda.

Type :- 'M'.

Object :—To study the effect of nitrogenous fertilizers on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Wheat—Aus. (b) Wheat. (c) As per treatments. (ii) Loam and silty clay loam. (iii) 12.6.60, 22.6.61, 18.6.62, 3.6.63; (iv) (a) 3 to 4 ploughings+Harrowing. 2 to 3 ploughings+laddering, 2 ploughings+laddering, ploughing+harrowing. (b) Broadcasting. (c) N.A. (d) 23 cm.×23 cm. for 63(55): N.A for others. (e) 1 to 2 for 63(55): N.A. for others. (v) N.A. (vi) Dular (early) (vii) Unirrigated. (viii) 2 hand weedings and thinning. (ix) 136 cm., N.A., 101 cm., N.A. (x) 19.9.60 and 20.9.60; 24.9.61 and 25.9.61, 3.10.62; 29.9.63.

2. TREATMENTS :

All combinations of (1, and (2)+a control (no manure)

(1) 5 sources of N : S₁=A/S, S₂=C/N, S₃=A/C, S₄=A/S/N and S₅=Urea.

(2) 2 levels of N : N₁=44.8 and N₂=67.2 Kg/ha.

Fertilizers were applied by broadcasting.

3. DESIGN :

(i) R.B.D. (ii) (a) 11. (b) N.A. (iii) 4. (iv) (a) 9.1 m.×6.1 m. (b) 8.5 m.×5.5 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of grain. (iv) 1959 to 1963. (b) Yes. (c) Results of combined analysis given under 5. Results. (v) Burdwan for 60(51), N.A. for others. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×years interaction is present. Experiment conducted during the year 1959 failed.

5. RESULTS :

(i) 1096 Kg/ha. (ii) 295.7 Kg/ha. (based on 30 d.f. made up of Treatments×years interaction). (iii) Main effects of N and control vs. other treatments are highly significant. (iv) Av. yield of grain in Kg/ha.

Control=810 Kg/ha.

	S ₁	S ₂	S ₃	S ₄	S ₅	Mean
N ₁	1058	1061	1101	1021	1020	1052
N ₂	1109	1321	1258	1104	1193	1197
Mean	1083	1191	1180	1062	1106	1124

C.D. for control vs other treatments=158.3 Kg/ha.

C.D. for N marginal means =95.5 Kg/ha.

Years	S ₁	S ₂	S ₃	S ₄	S ₅	Sig.	N ₁	N ₂	Sig.	G.M.	S.E./plot
1960	2146	2108	2321	2153	1900	*	2017	2237	**	2057	221.2
1961	835	1004	894	711	897	**	855	881	N.S.	856	103.8
1962	502	576	568	555	682	**	481	673	**	561	89.7
1963	850	1078	934	830	946	**	856	1000	**	910	128.1
Pooled	1083	1191	1180	1062	1106	N.S.	1052	1197	**	1096	295.7

Group :- Paddy (Aus).

Ref :- W.B. 64(28).

Site :- State Agri. Farm, Malda.

Type :- 'M'.

Object :- To see the effect of N and P with or without F.Y.M. on the yield of Paddy.

1. BASAL CONDITIONS :

(i) Wheat-Aus. (b) Wheat. (c) As per treatments. (ii) Loam to clay loam. (iii) 11.5.64 (iv) (a) 2 ploughings+laddering. (b) Broadcasting. (c) to (e) N.A. (v) N.A. (vi) *Dular* (medium). (vii) Unirrigated. (viii) 2 weedings+thinning. (ix) N.A. (x) 22.8.64 to 26.8.64.

2. TREATMENTS.:

Main-plot treatments :

2 levels of F.Y.M. : F₀=0 and F₁=100.4 Q/ha.

Sub-plot treatments :

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

(1) 2 levels of N as A/S : N₁=33.6 and N₂=67.2 Kg/ha.

(2) 2 levels of P₂O₅ as Super : P₁=33.6 and P₂=67.2 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 9.1 m. × 6.1 m. (b) 8.5 m. × 5.5 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) No. (b) and (c) N.A. (v) and (vi) Nil. (vii) Experiment with the same treatments conducted on Paddy crop in 1963 and 1965 but data N.A.

5. RESULTS :

(i) 1601 Kg/ha. (ii) (a) 179.4 Kg/ha. (b) 215.7 Kg/ha. (iii) Control vs. others and main effect of N are highly significant. (iv) Av. yield of grain in Kg/ha.

Control=1142 Kg/ha.

	N ₁	N ₂	P ₁	P ₂	Mean
F ₀	1496	1816	1701	1610	1656
F ₁	1626	1926	1720	1722	1776
Mean	1561	1871	1710	1833	1716
P ₁	1551	1870			
P ₂	1571	1872			

C.D. for N marginal means=157.5 Kg/ha.

C.D. for Control vs. others=173.6 Kg/ha.

Crop :- Paddy (Aman).

Ref :- W.B. 60,41).

Site :- State Agri. Farm, Midnapore.

Type :- 'M'.

Object :- To study the effect of N, P and K on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Latratic. (iii) 28.7.60. (iv) (a) 4 ploughings. (b) Transplanting. (c) 32 to 37 Kg/ha. (d) 23 cm. x 23 cm. (e) 2-3. (v) N.A. (vi) *Boldar* (N.A.). (vii) Unirrigated. (viii) 2 hand weedings (ix) 112 cm. (x) 4.12.60.

2. TREATMENTS :

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

(1) 2 levels of N as A/S : $N_0=0$, and $N_1=22.4$ Kg/ha.

(2) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=22.4$ Kg/ha.

(3) 2 levels of K_2O as Mur. Pot. : $K_0=0$ and $K_1=22.4$ Kg/ha.

Fertilizer applied by broadcasting : A.S+Mur. Pot. applied on 28.8.60 and Super on 24.7.60.

3. DESIGN :

(i) 2^3 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 8.2 m. x 10.1 m. (b) 7.6 m. x 9.5 m. (v) 30 cm. x 30 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grain. (iv) (a) 1958 to 1960. (b) Yes. (c) N.A. (v) Chinsurah, Hathuma, Burdwan and Cooch Behar. (vi) and (vii) Nil.

5. RESULTS :

(i) 2051 Kg/ha. (ii) 410.9 Kg/ha. (iii) None of the effect is significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	K_0	K_1	Mean
N_0	1873	2057	1975	1955	1965
N_1	2243	2031	2065	2209	2137
Mean	2058	2044	2020	2082	2051
K_0	2084	1956			
K_1	2032	2132			

Crop :- Paddy (Aman).

Ref :- W.B. 62(36).

Site :- State Agri. Farm, Midnapore.

Type :- 'M'.

Object :- To see the effect of Basic slag, Super and other Organic matter on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Laterite loam. (iii) 13.7.62 and 11.7.62. (iv) (a) 2 to 3 ploughings and laddering. (b) Transplanting. (c) and (d) N.A. (e) 1 to 2. (v) N.A. (vi) *Badkalamkati* (early). (vii) N.A. (viii) Weeding and thinning. (ix) 91 cm. (x) 27.11.62 and 28.11.62.

2. TREATMENTS :

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

(1) 2 sources of P_2O_5 : S_1 =Super and S_2 =Basic slag.

(2) 2 levels of P_2O_5 : $P_0=33.6$ and $P_1=56.0$ Kg/ha.

(3) 2 levels of G.M. $G_0=0$ and $G_1=125.5$ Q/ha. of Paddy straw.

T_0 =Control and $T_1=125.5$ Q/ha. of Paddy straw.

Fertilizers applied on 4.7.62 and 5.7.62.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 6.7 m. × 11.6 m. (b) 6.1 m. × 11.0 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1962—63. (b) Yes. (c) N.A. (v) and (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 1595 Kg/ha. (ii) 275.1 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

$T_0 = 1514$ and $T_1 = 1570$ Kg/ha.

	S ₁	S ₂	P ₁	P ₂	Mean
G ₀	1662	1574	1555	1680	1618
G ₁	1655	1542	1644	1553	1598
Mean	1658	1558	1600	1616	1608
P ₁	1662	1538			
P ₂	1655	1577			

Crop :- Paddy (Kharif).

Ref :- W.B. 65(46).

Site :- State Agri. Farm, Midnapore.

Type :- 'M'.

Object :—To see the effect of different levels of N in the form of A/S on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) No. (b) Aus—Paddy. (c) N.A. (ii) Laterite. (iii) 6.7.65. (iv) (a) 2 ploughings and 1 laddering. (b) Line sowing. (c) 74 to 79 Kg/ha. (d) 23 cm. between rows. (e) 1. (v) T.C. at 37.7 Q/ha. + P₂O₅ and K₂O at 22.4 and 16.8 Kg/ha. as Super and Mur. Pot. (vi) Dular (medium). (vii) Irrigated. (viii) 2 weedings and thinning. (ix) 67.3 cm. (x) 8.11.65.

2. TREATMENTS :

4 levels of N as A/S: T₁=0, T₂=22.4, T₃=44.8 and T₄=67.3 Kg/ha.

N as A/S were applied by broadcasting 1/3rd of the total N were applied at the time of land preparation and 2/3rd top dressed one month after transplanting.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 10.7 m. × 27.4 m. (iii) 4. (iv) (a) 10.7 m. × 6.7 m. (b) 10.1 m. × 6.1 m. (v) 61 cm. × 61 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grain. (iv) (a) 1965—contd. (b) No. (c) Nil. (v) No. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 2039 Kg/ha. (ii) 544.7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T ₁	T ₂	T ₃	T ₄
Av. yield	1876	2304	2528	1448

Crop :- Paddy (Aman).**Ref :- W.B. 60(19).****Site :- State Agri. Farm, Midnapore.****Type :- 'M'.**

Object :—To study the effect of Basic Slag, Super and organic matters on the yield of Paddy.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Latratic track. (iii) 20.7.60 and 21.7.60. (iv) (a) 3 to 4 ploughings and spading etc. (b) Transplanting. (c) 30 to 35 Kg/ha. (d) 23 cm.×23 cm. (e) 2—3. (v) N.A. (vi) *Badkalamkati* (medium). (vii) Unirrigated. (viii) 2 to 3 hand weedings. (ix) 112 cm. (x) 22.11.66.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 sources of 44.8 Kg/ha. of P_2O_5 : S_0 =No P_2O_5 , S_1 =Basic slag and S_2 =Super.(2) 4 types of basal dressing at 62.8 Q/ha.: B_0 =No G.M., B_1 =Paddy straw, B_2 =Cowdung and B_3 =Ipomea.

Manures applied on 22.6.60.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) 6.7 m.×11.6 m. (b) 6.1 m.×11.0 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grain. (iv) (a) 1957—60. (b) Yes. (c) N.A. (v) Burdwan. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 2106 Kg/ha. (ii) 297.2 Kg/ha. (iii) Main effect of B alone is significant. (iv) Av. yield of grain in Kg/ha.

	B_0	B_1	B_2	B_3	Mean
S_0	1883	2244	2319	2116	2140
S_1	1988	2128	2209	2093	2104
S_2	1918	2244	1965	2162	2072
Mean	1930	2205	2164	2124	2106

C.D. for B marginal means=198.7 Kg/ha.

Crop :- Paddy (Aman).**Ref :- W.B. 62(36), 63(50).****Site :- State Agri. Farm, Midnapore.****Type :- 'M'.**

Object :—To see the effect of Basic slag, Super and other organic matters on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. ; No. (b) N.A. ; *Aman*—Paddy. (c) N.A. ; As per treatments. (ii) Laterite loam. (iii) 13, 14.7.62 ; 3 to 6.9.63. (iv) (a) 2 to 3 ploughings and laddering. (b) Transplanting. (c) N.A. (d) N.A. ; 22 cm.×23 cm. (e) 1 to 2. (v) N.A. (vi) *Badkalamkati* (early). (vii) Unirrigated. (viii) 2 weedings and thinning. (ix) 91 cm. ; N.A. (x) 27, 28.11.62 ; 27.11.63.

2. TREATMENTS :

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

(1) 2 sources of P_2O_5 : S_1 =Super and S_2 =Basic slag.(2) 2 levels of P_2O_5 : P_1 =33.6 and P_2 =56.0 Kg/ha.(3) 2 levels of G.M.: G_0 =0 and G_1 =125.5 Q/ha. of Paddy straw.Extra treatments : T_0 =Control and T_1 =125.5 Q/ha. of Paddy straw. Fertilizers applied on 4 and 5.7.62.

3. DESIGN :

- (i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 6.7 m. × 11.6 m. (b) 6.1 m. × 11.0 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

- (i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1962—63. (b) Yes. (c) N.A. (v) and (vi) N.A. (vii) Error variances are heterogenous and Treatments × years interaction is absent. Hence individual year results are presented.

5. RESULTS :

62(36)

- (i) 1595 Kg/ha. (ii) 275.1 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

$$T_0 = 1514, T_1 = 1570 \text{ Kg/ha.}$$

	S ₁	S ₂	P ₁	P ₂	Mean
G ₀	1662	1574	1555	1680	1618
G ₁	1655	1542	1644	1553	1598
Mean	1658	1558	1600	1616	1608
P ₁	1662	1538			
P ₂	1653	1577			

63(50)

- (i) 736 Kg/ha. (ii) 166.5 Kg/ha. (iii) Interaction S × P × G alone is highly significant. (iv) Av. yield of grain in Kg/ha.

$$T_0 = 762, T_1 = 575 \text{ Kg/ha.}$$

	S ₁	S ₂	P ₁	P ₂	Mean
G ₀	829	796	796	829	812
G ₁	708	680	755	633	694
Mean	768	738	775	731	753
P ₁	790	760			
P ₂	747	715			

Crop :- Paddy (Aman).

Ref :- W.B. 61(57), 62(49).

Site :- State Agri. Farm, Mohitnagar.

Type :- 'M'.

Object :- To study the effect of Urea with or without Dolomite on the yield of Paddy.

1. BASAL CONDITIONS :

- (i) (a) N.A. ; No. (b) N.A. ; Aman-Paddy. (c) N.A. ; As per treatment. (ii) Tista riverine ; Sandy loam. (iii) 11.8.61 ; 6.8.62. (iv) (a) 2 to 3 ploughings and 1 laddering. (b) Transplanting. (c) N.A. (d) 23 cm. × 23 cm. (e) 2—3 ; 1—2. (v) 44.8 Kg/ha. of P₂O₅ as B.M. (vi) Indra sail (medium). (vii) Unirrigated. (viii) 1—3 weedings and thinning. (ix) N.A. (x) December 61 ; 28.12.62.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as Urea : $N_0=0$, $N_1=22.4$, $N_2=44.8$ Kg/ha.

(2) 3 levels of Dolomite : $D_0=0$, $D_1=10.0$ and $D_2=20.1$ Kg/ha.

Dolomite applied on 8.6.61 for land preparation, Urea; N.A.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 6.6 m. \times 8.5 m. (b) 5.9 m. \times 7.9 m. (v) 30 cm. \times 30 cm. (vi) Yes.

4. GENERAL :

(i) N.A.; Fair. (ii) N.A. (iii) Yield of grain. (iv) (a) 1961—62. (b) Yes. (c) N.A. (v) to (vi) Nil. (vii) variances are homogenous and interaction of Treatments \times years is absent.

5. RESULTS :

(i) 1248 Kg/ha. (ii) 411.7 Kg/ha. (based on 56 d.f.). (iii) None of the effect is significant. (iv) Av. yield of grain in Kg/ha.

	D_0	D_1	D_2	Mean
N_0	1439	1181	1535	1385
N_1	1283	1054	1180	1172
N_2	1207	1065	1287	1186
Mean	1310	1100	1334	1248

Years	D_0	D_1	D_2	Sig.	N_0	N_1	N_2	Sig.	G.M.	S.E./plot
1961	1122	787	1318	*	1137	1019	1071	N.S.	1076	414.1
1962	1497	1412	1350	N.S.	1633	1325	1301	N.S.	1420	392.8
Pooled	1310	1100	1334	N.S.	1385	1172	1186	N.S.	1248	411.7

Crop :- Paddy (Aman).

Ref :- W.B. 60(21), 61(38), 62(50).

Site :- State Agri. Farm, Mohitnagar.

Type :- 'M'.

Object :- To study the effect of Super, Basic slag and B.M. with or without Urea on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) 7.8.60, 1st week of August 61 ; 6.8.62. (iv) (a) 3 to 4 ploughings ; 2 to 3 ploughings and local cultural operations and 2 to 3 ploughings and 1 laddering. (b) Transplanting. (c) Nil. (d) N.A. in 60, 61 and 23 cm. \times 23 cm. in 62, (e) 2 to 3 seedlings/hill in 60 and 62, N.A. in 61. (v) N.A. (vi) Indra sail (medium). (vii) Unirrigated. (viii) 2 to 3 hand weedings ; weedings and thinning ; 1 to 2 weedings+thinning. (ix) N.A. (x) 16, 17.12.60, 18, 19.12.61; 27, 28.12.62.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 sources of 44.8 Kg/ha. of P_2O_5 : S_0 =No control, S_1 =B.M., S_2 =Super and S_3 =Basic slag.

(2) 2 levels of N as Urea : $N_0=0$ and $N_1=33.6$ Kg/ha.

Manures applied on 30.7.60.

Super and B.M. applied on 23.6.61, Basic slag on 24.6.61 and Urea on 8.9.61.

Urea applied as top dressing : Super, B.M. and Basic slag as basal in June 62.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) $10.1 \text{ m}^2 \times 8.4 \text{ m}^2$ (b) $9.5 \text{ m}^2 \times 7.8 \text{ m}^2$ (v) $30 \text{ cm.} \times 30 \text{ cm.}$ (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1960—62. (b) Yes. (c) N.A. (v) and (vi) N.A. (vii) Error variances are heterogeneous and Treatments \times years interaction is absent. Hence individual years results are presented.

5. RESULTS :

60(21)

(i) 2052 Kg/ha. (ii) 279.6 Kg/ha. (iii) Main effect of S alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	S ₀	S ₁	S ₂	S ₃	Mean
N ₀	1532	2571	2188	1805	2024
N ₁	1721	2501	2250	1844	2079
Mean	1626	2536	2219	1824	2052

C.D. for S marginal means = 290.8 Kg/ha.

61(38)

(i) 2092 Kg/ha. (ii) 266.8 Kg/ha. (iii) Main effect of S alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	S ₀	S ₁	S ₂	S ₃	Mean
N ₀	1733	2379	2111	1972	2049
N ₁	1916	2480	2124	2023	2136
Mean	1824	2430	2118	1998	2092

C.D. for S marginal means = 277.5 Kg/ha.

62(50)

(i) 1373 Kg/ha. (ii) 132.1 Kg/ha. (iii) Main effects of N and S are highly significant. (iv) Av. yield of grain in Kg/ha.

	S ₀	S ₁	S ₂	S ₃	Mean
N ₀	875	1624	1209	1341	1262
N ₁	1079	1835	1549	1471	1484
Mean	977	1730	1379	1406	1373

C.D. for N marginal means = 97.1 Kg/ha.

C.D. for S marginal means = 137.4 Kg/ha.

Crop :- Paddy (Aman).

Ref :- W.B. 60(42).

Site :- State Agri. Farm, Nalhati.

Type :- 'M'.

Object :- To study the effect of A/S and A/C on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) *Khasani*—*Aman*. (b) *Khasani*. (c) N.A. (ii) Sandy clay loam. (iii) 30.7.60. (iv) (a) Ploughing and laddering. (b) Transplanting. (c) 30 Kg/ha. (d) 23 cm. × 23 cm. (e) 2. (v) Nil. (vi) *Patnai* (medium). (vii) Unirrigated. (viii) 2 to 3 hand weedings. (ix) N.A. (x) 23.12.60.

2. TREATMENTS:

Main-plot treatments :

2 types of rotation : $R_1 = \text{Aman} - \text{Khasani}$ and $R_2 = \text{Aman}$.

Sub-plot treatments :

3 sources of 33.6 Kg/ha. of N : $S_0 = \text{No N}$, $S_1 = \text{A/S}$ and $S_2 = \text{A/C}$.

N top dressed on 30.9.60.

3. DESIGN

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 10.4 m. × 5.8 m. (b) 9.8 m. × 5.2 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1956—60. (b) Yes. (c) N.A. (v) Majhian. (vi) N.A. (vii) Nil. Yield of *Khasani* N.A.

5. RESULTS :

(i) 3310 Kg/ha. (ii) (a) 221.6 Kg/ha. (b) 190.2 Kg/ha. (iii) Main effect of S alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	S_0	S_1	S_2	Mean
R_1	2746	3580	3426	3251
R_2	3078	3514	3516	3369
Mean	2912	3547	3471	3310

C.D. for S marginal means = 207.2 Kg/ha.

Crop :- Paddy. (Aman).

Ref :- W.B. 61(39)

Site :- State Agri. Farm, Nalhati.

Type 'M'.

Object :- To see the effect of phosphate manuring of legumes on the succeeding cereal crops receiving different doses of N.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy clay to clay loam. (iii) 22.7.61. (iv) (a) 2 to 3 ploughings and laddering (b) Transplanting. (c) and (d) N.A. (e) 2 to 3. (v) N.A. (vi) *Badkalamkati* (medium). (vii) Unirrigated. (viii) 2 to 3 hand weedings. (ix) 82 cm. (x) 27.11.61.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N as A/S : $N_0=0$, $N_1=28.0$, $N_2=33.6$ and $N_3=39.2$ Kg/ha.

(2) 2 levels of P_2O_5 as super : $P_0=0$ and $P_1=44.8$ Kg/ha.

Time and method of application N.A.

3. DESIGN :

(i) Fact in R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) 10.4 m. \times 5.8 m. (b) 9.8 m. \times 5.2 m. (v) 30 cm. 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) No. (b) and (c) Nil. (v) (a) Chinsurah (on gram) (vi) N.A. (vii) Nil.

5. RESULTS:

(i) 3216 Kg/ha. (ii) 81.2 Kg/ha. (iii) Main effects of N and P are significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	N_3	Mean
P_0	3105	3197	3208	3174	3171
P_1	3127	3305	3320	3293	3261
Mean	3116	3251	3264	3234	3216

C.D. for N marginal means = 100.6 Kg/ha.

C.D. for P marginal means = 71.1 Kg/ha.

Crop :- Paddy. (Kharif).

Ref. :- W.B. 62 (4)

Site :- State Agri. Farm, Nalhati.

Type :- 'M'.

Object :- To find out the response of Paddy to higher doses of N_2 .

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy clay loam. (iii) 20.7.62. (iv) (a) 2 to 3 ploughings and puddling and laddering. (b) Transplanting. (c) 22 Kg/ha. (d) 25 cm. \times 25 cm. (e) 2-3. (v) N.A. (vi) Bhasamanik (Medium). (vii) Irrigated. (viii) 2 hand weedings and thinning. (ix) N.A. (x) Middle of December '62.

2. TREATMENTS :

4 levels of N : $N_0=0$, $N_1=33.6$, $N_2=67.2$ and $N_3=100.9$ Kg/ha.

2/3rd of the total dose obtained from F.Y.M. and 1/3rd obtained from A/S. Manures applied at the time of tillering and preflowering stages.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 14.3 m. \times 9.1 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of grain. (iv) (a) 1960 to 62. (b) N.A. (c) Nil. (v) Burdwan and Susmia. (vi) N.A. (vii) Expts. for 1960 and 1961 are N.A.

5. RESULTS :

(i) 3826 Kg/ha. (ii) 287.8 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	N ₀	N ₁	N ₂	N ₃
Av. yield	2901	3607	4150	4644

C.D.=460.2 Kg/ha.

Crop :- Paddy. (Aman).

Site :- State Agri. Farm, Suri.

Ref. :- W.B. 60(62), 61(51), 62(61),

63(26), 64(6), 65(64).

Type : 'M'.

Object :—To study the effect of continuous application of A/S. B.M. and Lime alone and in combination on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) As per treatments. (ii) Laterite, sandy loam, Laterite and sandy loam, Laterite sandy loam, Sandy loam. (iii) 4.8.60, 29.7.61, 14.8.62, 24.7.62, 2.8.64, 11.8.65. (iv) (a) 2 to 3 ploughings and laddering. (b) Transplanting. (c) N.A. (d) 23 cm. × 23 cm. (e) 2 to 3, 2 to 3, 1 to 2, 1 to 2, 1 to 2, one. (v) N.A. (vi) *Bhasamnik* (medium). (vii) N.A. (viii) 2 to 3 hand weedings, N.A., 1 to 2 weedings and thinning, 2 weedings and thinning. 1 to 2 weedings and thinnings, 2 weedings and thinning. (ix) 35 cm., 58 cm., N.A.- 65 cm. 47 cm., N.A., (x) 21.11.63, 20/23.12.61, 24/25.12.62, 4/7.1.64, 8/10.1.65, 11.1.66.

2. TREATMENTS :

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

(1) 4 levels of N as A/S : N₀=0, N₁=33.6, N₂=57.2 and N₃=100.9 Kg/ha.

(2) 3 levels of P₂O₅ as B.M. : P₀=0, P₁=22.4 and P₂=44.8 Kg/ha.

(3) 3 levels of lime : L₀=0, L₁=125.5, and L₂=251.1 Kg/ha.

N as A/S top dressed on 5.9.60, 4 weeks after transplantations. P₂O₅ as B.M. ploughs on 26.6.60 during land preparation and Lime applied once in 4 years, this year it was applied on 14.6.60 nearly six weeks before transplantation for land preparation.

3. DESIGN :

(i) 4 × 3 × 3 Fact. Partially conf. (ii) (a) 12 plots/block : 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 10.4 m. × 5.8 m. (b) 9.8 m. × 5.2 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Slightly affected due to insufficient rains in 60. N.A. for others. (ii) Slight attack of Helminthosporium spraying of Poronox. ; N.A. Attack of yellowing and Blast disease and also attack of Rice Hispa. D.D.T. 50% sprayed. ; Slight attack of Helminthosporium. Spray of Fytolan and Biltax ; slight attack of Rice-Hispa B.H.C. 10% was dusted; N.A. (iii) Yield of grain. (iv) (a) 1948—contd. (b) Yes. (c) Nil. (v) Chinsura and Berhampore (Aus). (vi) N.A. (vii) Since the expt. contd. beyond 1955. Individual year results are presented under 5.

5. RESULTS :

60 (62) :

(i) 2252 Kg/ha. (ii) 301.2 Kg/ha. (iii) Main effect of P is highly significant and interaction N × P × L is significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	L ₀	L ₁	L ₂	Mean
N ₀	1958	2137	2474	2148	2150	2270	2190
N ₁	2191	2268	2638	2341	2352	2404	2366
N ₂	2103	2167	2423	2143	2322	2229	2231
N ₃	2294	2083	2289	2401	2109	2156	2222
Mean	2136	2164	2456	2258	2233	2265	2252
L ₀	2087	2244	2444				
L ₁	2166	2038	2496				
L ₂	2157	2210	2427				

C.D. of P marginal means=62.71 Kg/ha

61(51) :

(i) 2580 Kg/ha. (ii) 336.9 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	L ₀	L ₁	L ₂	Mean
N ₀	2614	2779	2872	2685	2872	2708	2755
N ₁	2345	2786	2835	2580	2884	2502	2655
N ₂	2360	2341	2367	2453	2315	2300	2356
N ₃	2588	2582	2487	2659	2332	2666	2552
Mean	2477	2622	2640	2594	2601	2544	2580
L ₀	2376	2600	2808				
L ₁	2491	2761	2550				
L ₂	2564	2506	2564				

C.D. of N marginal means=93.5 Kg/ha.

62(61) :

(i) 1788 Kg/ha. (ii) 336.3 Kg/ha. (iii) Main effect of P alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	L ₀	L ₁	L ₂	Mean
N ₀	1339	2037	1861	1843	1744	1650	1745
N ₁	1303	2058	2080	1747	1950	1743	1814
N ₂	1333	1820	2276	1566	1795	2068	1810
N ₃	1338	1938	2078	1780	1639	1936	1785
Mean	1328	1963	2074	1734	1782	1849	1788
L ₀	1380	1789	2033				
L ₁	1239	2111	1996				
L ₂	1366	1989	2192				

C.D. for P marginal means=321.9 Kg/ha.

63(26) :

(i) 2205 Kg/ha. (ii) 512.7 Kg/ha. (iii) Interaction P x L is significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	L ₀	L ₁	L ₂	Mean
N ₀	2018	2552	2436	2253	2301	2451	2335
N ₁	2313	2421	2268	2391	2421	2189	2334
N ₂	2118	2201	1670	2006	1853	2130	1996
N ₃	2342	2141	1976	2328	2070	2062	2153
Mean	2198	2329	2087	2245	2161	2208	2205
L ₀	2228	2469	2037				
L ₁	1984	2107	2393				
L ₂	2382	2410	1832				

C.D. of body of P x L table = 123.3 Kg/ha.

64(6) :

(i) 1722 Kg/ha. (ii) 207.6 Kg/ha. (iii) Main effects of N and P are highly significant. Interaction N x L and P x L are highly significant. N x P x L is significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	L ₀	L ₁	L ₂	Mean
N ₀	1319	1947	2123	1676	1769	1944	1796
N ₁	1290	1942	2343	1794	1899	1882	1858
N ₂	1016	1783	1950	1445	1711	1592	1583
N ₃	927	2072	1947	1693	1326	1927	1649
Mean	1138	1936	2091	1652	1676	1836	1722
L ₀	927	1921	2110				
L ₁	1075	1772	2182				
L ₂	1413	2115	1981				

C.D. of N marginal means = 75.1 Kg/ha.

C.D. of P marginal means = 56.3 Kg/ha.

C.D. of body of N x L table = 65.1 Kg/ha.

C.D. of body of P x L table = 65.1 Kg/ha.

65(64)

(i) 6223 Kg/ha. (ii) 790.8 Kg/ha. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	L ₀	L ₁	L ₂	Mean
N ₀	6059	5552	6055	4715	6033	6917	5889
N ₁	6532	6709	6431	5011	7293	7369	6557
N ₂	6262	6067	6160	5290	6270	6532	6163
N ₃	6506	5966	6372	5518	6794	6928	6281
Mean	6340	6074	6254	5133	6598	6937	6223
L ₀	5146	4931	5324				
L ₁	6775	6445	6572				
L ₂	7092	6845	6867				

C.D. for N marginal means = 757.0 Kg/ha.

Crop :- Paddy (*Aman*).

Ref :- W.B. 60(61), 61(50), 62(45), 63(25)

Site :- State Agri. Farm, Suri.

64(5), 65(63).

Type :- 'M'.

Object :- To study the effect of continuous application of A/S, B.M. and F.Y.M. on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Fallow-Paddy for 65(63); N for others. (b) Paddy for 60(61), 65(63): *Aman* Paddy for others. (c) As per treatments. (ii) Lateritic sandy loam. (iii) 3.8.60; 7.8.61; 17.8.62; 27.7.63; 27.7.63; 24.7.64; 18.8.65. (iv) (a) 2 to 3 ploughings and laddering. (b) Transplanting. (c) N.A. (d) 23 cm. x 23 cm. (e) 23 (v) Nil. (vi) *Bhasamanik*. (vii) Unirrigated. (viii) 2 to 3 hand weedings. (ix) 35 cm., 58 cm., N.A., 65 cm., 47 cm., N.A. (x) 19/21.11.60, 17/19.12.61, 21/24.12.62, 21/24.12.63, 4/7.1.65, 7.1.66.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N₀=0, N₁=33.6 and N₂=67.2 Kg/ha.

(2) 3 levels of P₂O₅ as B.M. : P₀=0, P₁=33.6 and P₂=67.2 Kg/ha.

(3) 2 levels of F.Y.M. : F₀=0 and F₁=92.3 Q/ha.

B.M. and F.Y.M. applied at the time of general preparation of land and A/S applied 4 weeks after transplantation.

3. DESIGN :

(i) 3 x 3 x 2 Fact. conf. (ii) 6 plots/block; 3 blocks/replication. (b) N.A. (iii) 4. (iv) (a) 10.4 m. x 5.8 m. (b) 9.8 m. x 5.2 m. (v) 30 cm x 30 cm. (vi) Yes.

4. GENERAL :

(i) Slightly effected due to insufficient rain at the flowering stage for 60; N.A. for other years. (ii) Slight attack of *Helminthosporium*—Spraying of Poronox. (iii) Yield of grain. (iv) (a) 1648 contd. (b) Yes. (c) Nil. (v) Chinsurah, Berhampore. (vi) N.A. (vii) Since the experiment is contd. beyond 65. Individual results are presented below.

5. RESULTS :

60(61)

(i) 2656 Kg/ha. (ii) 503.2 Kg/ha. (iii) Interaction N x F alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	F ₀	F ₁	Mean
N ₀	2505	2617	2944	2324	3053	2689
N ₁	2638	2712	2836	2659	2798	2729
N ₂	2581	2599	2473	2733	2368	2551
Mean	2575	2643	2751	2572	2740	2656
F ₀	2282	2682	2752			
F ₁	2867	2603	2750			

C.D. for body of N×F table=414.5 Kg/ha.

61(50)

(i) 2885 Kg/ha. (ii) 297.6 Kg/ha. (iii) Main effects of N and interactions N×F, N×P and N×P×F are highly significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	F ₀	F ₁	Mean
N ₀	2822	3021	3206	2794	3239	3016
N ₁	2968	2839	2895	3040	2760	2900
N ₂	2878	2690	2651	2934	2545	2740
Mean	2889	2850	2917	2923	2848	2885
F ₀	2878	2990	2900			
F ₁	2900	2710	2934			

C.D. for N marginal means=173.6 Kg/ha.

C.D. for body of N×F table=245.1 Kg/ha.

C.D. for body of N×P table=300.3 Kg/ha.

62(43)

(i) 5299 Kg/ha. (ii) 1321.0 Kg/ha. (iii) Main effect of F and N are highly significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	F ₀	F ₁	Mean
N ₀	3915	4113	4234	3497	4677	4007
N ₁	5351	5510	6332	5047	6415	5731
N ₂	5499	6525	6217	5775	6385	6080
Mean	4922	5383	5594	4773	5826	5299
F ₀	4457	4526	5336			
F ₁	5386	6239	5852			

C.D. for F marginal means=625.8 Kg/ha.

C.D. for N marginal means=766.5 Kg/ha.

63(25)

(i) 2453 Kg/ha. (ii) 419.2 Kg/ha. (iii) Interaction N×F is highly significant and interaction P×F and P×N are significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	F ₀	F ₁	Mean
N ₀	2166	2494	2314	2023	2627	2325
N ₁	2415	2584	2740	2528	2632	2580
N ₂	2754	2258	2354	2572	2339	2455
Mean	2445	2445	2469	2374	25 3	2453
F ₀	2462	2481	2180			
F ₁	2428	2410	2759			

C.D. for body of N×F or P×F table=345.3 Kg/ha.

C.D. for body of P×N table =423.0 Kg/ha.

64(5)

(i) 2311 Kg/ha. (ii) 389.2 Kg/ha. (iii) Main effect of N and F are highly significant. Interaction P×F is significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	F ₀	F ₁	Mean
N ₀	1997	2204	2064	1804	2372	2088
N ₁	2275	2509	2745	2252	2767	2510
N ₂	2254	2386	2367	2251	2420	2336
Mean	2175	2366	2392	2102	2520	2311
F ₀	1890	2324	2092			
F ₁	2460	2408	2692			

C.D. for N marginal means=226.7 Kg/ha.

C.D. for F marginal means=185.1 Kg/ha.

C.D. for body of P×F table =320.6 Kg/ha.

65(63)

(i) 1742 Kg/ha. (ii) 343.4 Kg/ha. (iii) Main effect of F and interaction N×F are significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	F ₀	F ₁	Mean
N ₀	1607	1769	1817	1533	1930	1731
N ₁	1665	1733	1866	1638	1872	1755
N ₂	1729	1930	1560	1804	1675	1740
Mean	1667	1811	1748	1658	1826	1742
F ₀	1686	1724	1564			
F ₁	1648	1897	1932			

C.D. for F marginal means=162.6 Kg/ha.

C.D. for body of N×F table=281.6 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- W.B. 62(3).

Site :- State Agri. Farm, Susunia.

Type :- 'M'.

Object :—To find out the effect of higher doses of N_2 on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Lateritic. (iii) 23.7.62 to 24.7.62. (iv) (a) 2 to 3 ploughings + puddling. (b) Transplanting. (c) 22 to 28 Kg/ha. (d) 25 cm. × 25 cm. (e) 2 to 3. (v) N.A. (vi) *Raghusail* (medium). (vii) Unirrigated. (viii) 2 to 3 hand weedings. (ix) N.A. (x) Middle of Dec. '62.

2. TREATMENTS :

4 levels of N : $N_0=0$, $N_1=33.6$, $N_2=67.2$ and $N_3=100.9$ Kg/ha.
2/3rd of the total dose obtained from F.Y.M. and 1/3rd obtained from A/S. Manures applied at the time of tillering and preflowering stages.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 14.3 m. × 9.1 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) and (iii) N.A. (iv) (a) 1960 to '62. (b) and (c) N.A. (v) Nalhati. (vi) N.A. (vii) Expts. for 1960 and 1961 are N.A.

5. RESULTS :

(i) 3329 Kg/ha. (ii) 236.1 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	N_0	N_1	N_2	N_3
Av. yield	2117	3108	3718	4373

C.D.=377.6 Kg/ha.

Crop :- Paddy. (Kharif).

Ref. :-W.B. 60(MAE)

Stei :- M.A.E. centre, Hiragachi.

Type :- 'M'.

Object :—Type II :—To study the effect of different levels of N,P, K and F.Y.M. on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Paddy. (b) Paddy. (c) As per treatments. (ii) Clay loam. (iii) N.A./4.8.1960. (iv) (a) 4 ploughings, 2 ploughings followed by *pata*. (b) Transplanting. 23 to 35 Kg/ha. (d) 25 cm. × 25 cm. (e) N.A. (v) As per treatments. (vi) Nagra. (vii) Unirrigated. (viii) Weeding and interculture. (ix) N.A. (x) 11.12.1960.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : $N_0=0$, $N_1=33.6$ and $N_2=67.2$ Kg/ha.

(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=33.6$ and $P_2=67.2$ Kg/ha.

(3) 3 levels of K as Mur. Pot. : $K_0=0$, $K_1=33.6$ and $K_2=67.2$ Kg/ha.

(4) 2 levels of F.Y.M. : $F_0=0$ and $F_1=5604$ Kg/ha.

N, P_2O_5 , K and F.Y.M. broadcasted. $\frac{1}{2}$ N applied at planting and $\frac{1}{2}$ N as top dressing on 21.8.60. P_2O_5 and K applied on 29.7.1960 and F Y.M. on 11.7 1960.

8. DESIGN :

(i) $3^3 \times 2$ confd. (ii) (a) 9 plots/block and 6 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 10.4 m. × 4.9 m. (b) 9.5 m. × 4.0 m. (v) and (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1957—contd. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3085 Kg/ha. (ii) 238.4 Kg/ha. (iii) Main effects of F, N and interaction $F \times N$ are significant. (iv) Av. yield of grain in Kg/ha.

	N ₀	N ₁	N ₂	P ₀	P ₁	P ₂	K ₀	K ₁	K ₂	Mean
F ₀	2896	3293	3320	3127	3191	3192	3191	3191	3128	3170
F ₁	2970	3025	3007	3099	3034	2870	3007	2951	3045	3001
Mean	2933	3159	3163	3113	3112	3031	3099	3071	3086	3005
K ₀	2997	3127	3173	3182	3043	3072				
K ₁	2785	3283	3145	2997	3219	2997				
K ₂	3017	3068	3172	3160	3074	3024				
P ₀	2905	3293	3140							
P ₁	3071	3044	3220							
P ₂	2823	3140	3130							

C.D. for N marginal means=164.0 Kg/ha.

C.D. for F marginal means=134.0 Kg/ha.

C.D. for body of $F \times N$ table =232.0 Kg/ha.

Crop :- Paddy (Kharif)

Ref. :- W.B. 60, 61, 62, 63, 64 (MAE)

Site :- M.A.E. Centre, Mankhanda.

Type :- 'M'.

Object :- Type II: —To study the effect of different levels of N, P, K and F.Y.M. on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay loam. (iii) 15. 8.1960 ; 8.9 8.61, 16.8.62, 7.8.1963, 13.8.64. (iv) (a) One ploughing and 2 puddlings followed by *pata*. (b) Transplanting. (c) 23 to 35 Kg/ha. (d) 30 cm. \times 30 cm. (e) N.A. (v) N.A. (vi) *Bausmati* (*Aman* Paddy) for 60, 61, 62, 64, and *Nazami* for 63. (vii) Unirrigated. (viii) 2 weedings. (ix) N.A. (x) 21, 22.11.60, 1,2,3.12.61, 29,30.11.62, 12.12.63, 28.12.64.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N₀=0 N₁=33.6 and N₂=67.2 Kg/ha.

(2) 3 levels of P₂O₅ as super : P₀=0, P₁=33.6 and P₂=67.2 Kg/ha.

(3) 3 levels of K₂O as Mur. Pot : K₀=0, K₁=33.6 and K₂=67.2 Kg/ha.

(4) 2 levels of FYM : F₀=0 and F₁=56.1 Q/ha.

N and K broadcast at planting and P₂O₅ broadcast before puddling.

3. DESIGN :

(i) 3³ \times 2 confd. (ii) (a) 9 plots/block and 6 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 9.1 m. \times 5.5 m. (b) 8.2 m. \times 4.6 m. (v) and (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1958—contd. (b) N.A. (c) Nil. (v) Hiragachi. (vi) and. (vii) Nil.

5. RESULTS :

60(M.A.E.)

(i) 2794 Kg/ha. (ii) 172.1 Kg/ha. (iii) Main effects of F and N are highly significant. (iv) Av. yield of grain in Kg/ha.

	N ₀	N ₁	N ₂	P ₀	P ₁	P ₂	K ₀	K ₁	K ₂	Mean
F ₀	2278	2693	2804	2518	2573	2685	2546	2638	2593	2592
F ₁	2822	3053	3117	2979	2951	3061	3062	2924	3005	2997
Mean	2550	2873	2960	2748	2762	2873	2803	2781	2799	2794
K ₀	2610	2905	2894	2758	2795	2856				
K ₁	2944	2878	3021	2739	2721	2883				
K ₂	2596	2836	2965	2747	2770	2880				
P ₀	2509	2878	2857							
P ₁	2555	2776	2955							
P ₂	2586	2965	3068							

C.D. for F marginal means= 96.6 Kg/ha.

C.D. for N marginal means=118.5 Kg/ha.

61.(M.A.E.)

(i) 2548 Kg/ha. (ii) 325.0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	N ₀	N ₁	N ₂	P ₀	P ₁	P ₂	K ₀	K ₁	K ₂	Mean
F ₀	2509	2684	2619	2527	2555	2730	2638	2656	2518	2604
F ₁	2331	2554	2589	2503	2481	2489	2416	2466	2591	2491
Mean	2420	2619	2604	2515	2518	2610	2527	2561	2555	2548
K ₀	2444	2601	2536	2444	2398	2739				
K ₁	2490	2573	2619	2499	2573	2610				
K ₂	2325	2684	2657	2602	2582	2487				
P ₀	2223	2610	2712							
P ₁	2361	2656	2536							
P ₂	2675	2592	2564							

62(M.A.E.).

(i) 2320 Kg/ha. (ii) 316.7 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	N ₀	N ₁	N ₂	P ₀	P ₁	P ₂	K ₀	K ₁	K ₂	Mean
F ₀	1770	2488	2363	1982	2286	2353	2142	2317	2162	2207
F ₁	2153	2551	2595	2357	2525	2419	2381	2535	2384	2433
Mean	1962	2520	2480	2169	2406	2386	2262	2426	2273	2320
K ₀	1992	2408	2386	2038	2390	2357				
K ₁	1879	2769	2631	2328	2465	2485				
K ₂	2014	2382	2423	2141	2362	2316				
P ₀	1721	2203	2584							
P ₁	1999	2731	2487							
P ₂	2165	2625	2368							

C.D. for N marginal means=217.8 Kg/ha.

63 (M.A.E.).

- (i) 2411 Kg/ha. (ii) 249.8 Kg/ha. (iii) Main effect of F is significant and that of N is highly significant.
 (iv) Av. yield of grain in Kg/ha.

	N ₀	N ₁	N ₂	P ₀	P ₁	P ₂	K ₀	K ₁	K ₂	Mean
F ₀	2134	2501	2324	2258	2374	2327	2391	2349	2219	2320
F ₁	2311	2541	2655	2425	2595	2487	2370	2628	2508	2502
Mean	2222	2521	2490	2341	2485	2407	2380	2489	2364	2411
K ₀	2086	2499	2556	2369	2379	2393				
K ₁	2297	2704	2465	2352	2562	2552				
K ₂	2283	2361	2448	2302	2514	2276				
P ₀	2040	2528	2455							
P ₁	2254	2706	2495							
P ₂	2372	2330	2519							

C.D. for F marginal means=140.4 Kg/ha.

C.D. for N marginal means=171.9 Kg/ha.

64 (M.A.E.).

- (i) 2250 Kg/ha. (ii) 239.6 Kg/ha. (iii) Main effect of N and interaction F×P are highly significant. Main effect of P and interaction F×N are significant. (iv) Av. yield of grain in Kg/ha.

	N ₀	N ₁	N ₂	P ₀	P ₁	P ₂	K ₀	K ₁	K ₂	Mean
F ₀	1845	2151	2384	1831	2273	2276	2129	2099	2153	2127
F ₁	2189	2529	2401	2383	2312	2424	2330	2433	2356	2373
Mean	2017	2340	2393	2107	2293	2350	2229	2266	2255	2250
K ₀	1953	2301	2434	1953	2318	2416				
K ₁	2084	2323	2392	2327	2184	2287				
K ₂	2015	2397	2352	2041	2377	2347				
P ₀	1853	2229	2239							
P ₁	2104	2396	2379							
P ₂	2095	2396	2560							

C.D. for N marginal means=164.9 Kg/ha.
 C.D. for body of F×P table=233.2 Kg/ha.
 C.D. for P marginal means=164.9 Kg/ha.
 C.D. for body of F×N table=232.2 Kg/ha.

Crop :- Paddy (Kharif).

Ref. :- W.B. 60(M.A.E.)

Site :- M.A.E. Centre, Hiragachi.

Type :- 'M'.

Object :-Type IV :—To study the effect of phosphatic manures on legumes and their residual effect on succeeding Paddy manured with N.

1. BASAL CONDITIONS :

(i) (a) Mung (legume)—Paddy. (b) N.A. (c) N.A. (ii) Clay loam. (iii) *Mung* on 7.3.60 and Paddy N.A./ 5.8.60. (iv) (a) 2 ploughings and cross-ploughings followed by laddering. (b) *Mung* broadcasted and Paddy transplanted. (c) 23 to 35 Kg/ha for Paddy. (d) 23 cm.×23 cm. (e) N.A. (v) Nil. (vi) *Nagra*. (vii) Unirrigated. (viii) Weeding and interculture. (ix) N.A. (x) Paddy on 6.12.60. and *Mung* on 20.6.1960.

2. TREATMENTS :

Main plot treatments :

3 levels of P_2O_5 as Super and a fallow (L_0P_0) : $P_0=0$, $P_1=44.8$ and $P_2=89.7$ Kg/ha.

Sub-plot treatments :

3 levels of N as A/S : $N_0=0$, $N_1=44.8$ and $N_2=89.7$ Kg/ha.

P_2O_5 applied to previous *Mung* crop and A/S applied to succeeding Paddy crop.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main plots/replication and 3 sub-plots/main plot. (b) N.A. (iii) 3. (iv) (a) 10.1 m.×5.0 m. (b) 9.3 m.×4.3 m. (v) 40 cm.×38 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1957-60 (N.A. for 59). (b) N.A. (c) Nil. (v) (a) N.A. (b) Nil. (vi) Nil. (vii) Only *Mung* (legume) was grown in this expt. So only 4 main-plot-treatments were used. Yield of *Mung* was not recorded due to poor pod information.

5. RESULTS :

(i) 3403 Kg/ha. (ii) (a) 171.5 Kg/ha. (b) 120.8 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	L_0P_0	L_1P_0	L_1P_1	L_1P_2	Mean
N_0	2988	3034	3145	3173	3085
N_1	3311	3394	3514	3394	3403
N	3698	3643	3707	3837	3721
Mean	3332	3357	3455	3468	3403

C.D. for N marginal means=104.5 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- W.B. 60(MAE).

Site :- M.A.E. Centre, Mankhanda.

Type :- 'M'.

Object :-Type V :-To study the effect of different times of application of N on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Paddy. (b) Paddy. (c) N.A. (ii) Clay soil. (iii) N.A./16.8.60. (iv) (a) One ploughing and 2 puddlings followed by *pata*. (b) Transplanting. (c) 23 to 35 Kg/ha. (d) 30 cm. × 30 cm. (e) N.A. (v) 22.4 Kg/ha. of P_2O_5 as Super. (vi) *Bhashakalam*. (vii) Unirrigated. (viii) One weeding. (ix) N.A. (x) 6.12.60.

2. TREATMENTS :

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

(1) 2 sources of 44.8 Kg/ha. of N : S_1 =Urea and S_2 =A/S.

(2) 7 times of application : T_1 =Full dose before planting, T_2 =Full dose at planting, T_3 =Full dose at tillering, T_4 = $\frac{1}{2}$ before planting + $\frac{1}{2}$ at tillering, T_5 = $\frac{1}{2}$ at planting + $\frac{1}{2}$ at tillering, T_6 = $\frac{1}{3}$ before planting + $\frac{1}{3}$ at tillering + $\frac{1}{3}$ at flowering and T_7 = $\frac{1}{3}$ at planting + $\frac{1}{3}$ at tillering + $\frac{1}{3}$ at flowering.

3. DESIGN :

(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 3. (iv) (a) 9.1 m. × 5.5 m. (b) 7.9 m. × 4.9 m. (v) 61 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good ; no lodging. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1958—1960. (b) N.A. (c) Nil. (v) (a) N.A. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 3030 Kg/ha. (ii) 278.5 Kg/ha. (iii) Control vs. others is highly significant. (iv) Av. yield of grain in Kg/ha.

Control=2499 Kg/ha.

	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Mean
S_1	2785	2896	3016	2905	2804	2961	3394	2966
S_2	3053	3154	3071	3191	3293	3357	3080	3171
Mean	2919	3025	3043	3048	3048	3159	3237	3068

C.D. for Control vs. others=340.9 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- W.B. 64 and 65 (MAE).

Site :- M.A.E. Centre, Hiragachi.

Type :- 'M'.

Object :-Type V (a) :-To study the effect of method of application of N on Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay loam. (iii) 12.8.64, N.A. (iv) (a) to (c) N.A. (v) 33.6 Kg/ha. of P_2O_5 as Super (vi) L. soil (160 days). (vii) Irrigated. (viii) and (ix) N.A. (x) 16.12.64, N.A.

2. TREATMENTS :

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

(1) 3 levels of N : $N_1=33.6$, $N_2=50.4$ and $N_3=67.2$ Kg/ha.

(2) 4 methods of application : M_1 =Broadcast just before last puddling and incorporated in the soil (sub-surface application), M_2 =Broadcast at planting, M_3 =Broadcast $\frac{1}{2}$ at planting + $\frac{1}{2}$ about one month after planting and M_4 =Application in the form of pellets about three weeks after planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 4. (vi) (a) and (b) N.A. (v) and (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964—1966. (b) N.A. (c) Nil. (v) (a) Mankhanda. (b) Nil. (vi) Nil. (vii) Table for 65 N.A.

5. RESULTS :

64(M.A.E.)

(i) 2606 Kg/ha. (ii) 249.7 Kg/ha. (iii) Main effect of M and control vs. others are highly significant. (iv) Av. yield of grain in Kg/ha.

Control=2168 Kg/ha.

	M_1	M_2	M_3	M_4	Mean
N_1	2588	2674	2532	3064	2715
N_2	2409	2563	2897	2909	2694
N_3	2329	2508	2477	2761	2519
Mean	2442	2582	2635	2911	2643

C.D. for M means=206.9 Kg/ha.

C.D. for Control vs. others=263.8 Kg/ha.

65(M.A.E.)

(i) 2796 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of grain in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	N_1	N_2	N_3
Av. yield	3042	2957	2815	2464	2878	2923	2657

Control=2505 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- W.B. 62 to 65 (MAE).

Site :- M.A.E. Centre, Mankhanda.

Type :- 'M'.

Object :—Type V(a) :—To study the effect of {method of application of N on Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Deltaic and saline. (iii) 12.8.62 ; 6.8.63 ; 12.8.64 ; N.A. (a) to (e) N.A. (v) 33.6 Kg/ha. of P_2O_5 as Super. (vi) *Bhashakalam* (4 to 5 months) ; *Nazami* (140 days) ; *Basmati* (135 days) ; N.A. (vii) Unirrigated. (viii) and (ix) N.A. (x) 11, 12.12.62 ; 13.12.63 ; 29.11.64, N.A.

2. TREATMENTS :

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

(1) 3 levels of N : $N_1=33.6$, $N_2=50.4$ and $N_3=67.2$ Kg/ha.

(2) 4 methods of application : M_1 =Broadcast just before last puddling and incorporated in the soil (sub-surface application), M_2 =Broadcast at planting, M_3 =Broadcast $\frac{1}{2}$ at planting + $\frac{1}{2}$ about one month after planting and M_4 =Application in the form of pellets about 3 weeks after planting.

3. DESIGN:

- (i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 4. (iv) (a) 10.1 m. × 5.0 m. (b) 9.1 m. × 4.1 m. (v) 46 cm. × 46 m.
(vi) Yes.

4. GENERAL:

- (i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1962–1966. (b) N.A. (c) (v) Hiragachi. (vi) Nil. (vii) Table for 65 N.A.

5. RESULTS:

62(M.A.E.)

- (i) 2416 Kg/ha. (ii) 265.0 Kg/ha. (iii) Main effect of N and control vs. others are highly significant.
(iv) Av. yield of grain in Kg/ha.

Control=1554 Kg/ha.

	M ₁	M ₂	M ₃	M ₄	Mean
N ₁	2269	2293	2418	2043	2256
N ₂	2548	2475	2365	2329	2429
N ₃	2791	2700	2810	2814	2779
Mean	2536	2489	2531	2395	2488

C.D. for N marginal means=190.2 Kg/ha.

C.D. for control vs. others=280.0 Kg/ha.

63(M.A.E.)

- (i) 2279 Kg/ha. (ii) 175.2 Kg/ha. (iii) Main effects of N, M and control vs. others are highly significant.
(iv) Av. yield of grain in Kg/ha.

Control=1989 Kg/ha.

	M ₁	M ₂	M ₃	M ₄	Mean
N ₁	2295	2118	2204	2366	2246
N ₂	2264	2043	2268	2320	2224
N ₃	2495	2124	2587	2553	2440
Mean	2351	2095	2353	2413	2303

C.D. for N marginal means=125.7 Kg/ha.

C.D. for M marginal means =145.2 Kg/ha.

C.D. for control vs. others =185.1 Kg/ha.

64(M.A.E.)

- (i) 2222 Kg/ha. (ii) 229.0 Kg/ha. (iii) Control vs. others is highly significant. (iv) Av. yield of grain in Kg/ha.

Control=1867 Kg/ha.

	M ₁	M ₂	M ₃	M ₄	Mean
N ₁	2049	2292	2279	2212	2208
N ₂	2235	2279	2504	2039	2264
N ₃	2312	2231	2172	2425	2285
Mean	2199	2267	2318	2225	2252

C.D. for control vs. others=241.9 Kg/ha.

65(M.A.E.)

(i) 2487 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of grain in Kg/ha.

Control=2106 Kg/ha.

Treatment	M ₁	M ₂	M ₃	M ₄	N ₁	N ₂	N ₃
Av. yield.	2464	2502	2584	2527	2525	2558	2475

Crop :- Paddy (Kharif).**Ref :- W.B. 60 (MAE).****Site :- M.A.E. Centre, Hiragachi.****Type :- 'M'.**

Object:—Type VI—To study the effect of different methods of application of different types of phosphates on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Paddy. (b) and (c) N.A. (ii) Clay loam. (iii) N.A./6.8.60. (iv) (a) 4 ploughings ; last 2 ploughings followed by laddering. (b) Transplanting. (c) 23 to 35 Kg/ha. (d) 25 cm. × 25 cm. (e) N.A. (v) Nil. (vi) *Nagra*. (vii) Unirrigated. (viii) Weeding and intercultivation on 6.9.60. (ix) N.A. (x) 13.12.60.

2. TREATMENTS :

All combinations of (1), (2) and (3)+a control

(1) 2 types of Phosphates : S₁=Super and S₂=Ammo. Phos.(2) 2 levels of Phosphates : P₁=22.4 and P₂=44.8 Kg/ha.(3) 3 methods of application : M₁=Broadcasting at puddling, M₂=Dipping the seedling in mud slush and M₃=In the forms of pallets.**3. DESIGN :**

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) (a) 10.1 m. × 5.0 m. (b) 9.1 m. × 4.1 m. (v) 46 cm. × 46 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1956—1960. (b) N.A. (c) Nil. (v) (a) Man-khanda. (b) Nil. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 3086 Kg/ha. (ii) 197.4 Kg/ha. (iii) Main effect of P and control vs. others are highly significant. Main effect of M and interaction M × S are significant. (iv) Av. yield of grain in Kg/ha.

Control=2601 Kg/ha.

	M ₁	M ₂	M ₃	S ₁	S ₂	Mean
P ₁	2914	3043	3133	3053	3007	3030
P ₂	3237	3025	3407	3237	3209	3223
Mean	3075	3034	3270	3145	3108	3126
S ₁	3228	3016	3191			
S ₂	2922	3052	3349			

C.D. for P marginal means = 135.7 Kg/ha.

C.D. for M marginal means = 166.3 Kg/ha.

C.D. for body of M × S table = 235.2 Kg/ha.

C.D. for control vs. others = 244.8 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- W.B. 60(M.A.E).

Site :- M.A.E. Centre, Mankhanda.

Type :- 'M'.

Object :-Type VI :—To study the effect of different methods of application of different types of phosphate on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Paddy. (b) Paddy. (c) N.A. (ii) Clay soil. (iii) 16.8.60/17.8.60. (iv) (a) 3 ploughings but 2 ploughings followed by *patta*. (b) Transplanting. (c) 23 to 35 Kg/ha. (d) 30 cm. × 30 cm. (e) N.A. (v) Nil. (vi) *Bhasakalam*. (vii) Unirrigated. (viii) 1 weeding. (ix) N.A. (x) 8.12.60.

2. TREATMENTS :

All combinations of (1), (2) and (3)+a control

(1) 2 types of phosphates : S_1 =Super and S_2 =Ammo. Phos.

(2) 2 levels of Phosphates : P_1 =22.4 and P_2 =44.8 Kg/ha

(3) 3 methods of application : M_1 =Broadcasting at puddling, M_2 =Dipping the seedlings in mud slush with fertilizers before transplanting and M_3 =In the form of pellets at the time of planting.

A/S at 33.6 Kg/ha. was added to Super phosphate to equalise the quantity of N in Ammo. Phos. Fertilizers were applied on 16, 17, 8 60.

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) (a) 10.1 m. × 5.0 m. (b) 8.8 m. × 4.4 m. (v) 61 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1960 only. (b) and (c) Nil. (v) (a) *Hiragachi*. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 3474 Kg/ha. (ii) 263.8 Kg/ha. (iii) (Control vs. others) alone is highly significant. (iv) Av. yield of grain in Kg/ha.

Control=2979 Kg/ha.

	M_1	M_2	M_3	S_1	S_2	Mean
P_1	3606	3348	3351	3357	3514	3435
P_2	3625	3486	3677	3532	3661	3596
Mean	3615	3417	3514	3444	3587	3515
S_1	3615	3283	3431			
S_2	3615	3551	3596			

C.D. for control vs. others=327.2 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- W.B. 61, 62(M.A.E).

Site :- M.A.E. Centre, Mankhanda.

Type :- 'M'.

Object :-Type IX :—To compare Nitrophosphate by ODDA and PEC processes at different levels and different methods of application on Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Deltaic and Saline. (iii) N.A.; 8.8.62. (iv) and (v) N.A. (vi) *Basmati*. (vii) to (ix) N.A. (x) N.A.; 1, 2.12.62.

2. TREATMENTS :

All combinations of (1), (2), (3)+4 additional treatments

(1) 3 types of phosphatic manures : P_2 =Single Super, P_3 =ODDA (20-20-0) and P_3 =PEC (16-14-0).

(2) 3 levels of manures : L_1 =13.4 N+11.8 P_2O_5 , L_2 =26.9 N+23.5 P_2O_5 and L_3 =53.8 N+47.1 P_2O_5 Kg/ha.

(3) 3 methods of application : M_1 =Broadcasting at puddling time, M_2 =Dipping the seeds in Mud slush mixed with fertilizers before transplanting and M_3 =In the form of pellets to be placed near the roots.

4 additional treatments :

4 levels of N as A/S : N_0 =0, N_1 =13.4, N_2 =26.9 and N_3 =53.8 Kg/ha.

3. DESIGN :

(i) 3^3+4 confd. factorial. (ii) (a) 13 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 10.1 m. \times 5.0 m. (b) 9.1 m. \times 4.1 m. (v) 46 cm. \times 46 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1961-62. (b) N.A. (c) Nil. (v) Nil. (vi) N.A. (vii) Nil.

5. RESULTS :

Direct response of rice to different sources of Phosphorus (Kg/ha.)

Year	Av. yield of plots without phosphorus	Response of rice to				
		Single superphos	ODDA	PEC	S.E. of response	C.D. at 5%
1961	1820	3	-68	-40	92	186
1962	1566	-152	-163	-134	58	117
Pooled	1693	-75	-115	-87	54	108

Direct response of rice to different methods of placement of fertilizer (Kg/ha.)

Year	Av. yield of plots without phosphorus	Response of rice to methods				
		M_1	M_2	M_3	S.E. of response	C.D. at 5%
1961	1820	12	-9	-108	92	186
1962	1566	-101	-212	-136	58	117
Pooled	1693	-45	-110	-122	54	108

Direct response of rice to Nitrogen at different levels of fertilizers (Kg/ha.)

Year	Av. yield of plots without Nitrogen	Response of rice to Nitrogen at							S.E. of response	C.D. at 5%
		N_1	N_2	N_3	13.4 Kg N/ha.	26.9 Kg N/ha.	53.8 Kg N/ha.			
1961	1780	1826	1762	1872	46	-18	-8	157	318	
1962	938	1408	1491	1800	470	553	862	100	202	
Pooled	1359	1617	1627	1836	258	268	427	129	260	

Response of rice to P_2O_5			S.E. of response	C.D. at 5%	S.E. of difference of two marginal means of L	C.D. for comparison of responses of L
11.8 P	23.5 P	47.1 P				
-49	-40	-15	130	263	92	186
-61	-125	-264	82	166	58	116
-55	-83	-140	106	215	75	151

Crop :- Paddy (Kharif).

Ref :- W.B. 62, 63(M.A.E).

Site :- M.A.E. Centre, Mankhanda.

Type :- 'M'.

Object :-Type IX (1st residual) :- To compare Nitrophosphate by ODDA and PEC processes at different levels and different methods of application on Paddy.

1. BASAL CONDITIONS :

(i) N.A. (ii) Deltaic and saline. (iii) 31.7.62 ; N.A. (iv) and (v) N.A. (vi) *Basmati*. (vii) to (ix) N.A. (x) 26, 27.11.62; N.A.

2. TREATMENTS :

Treatments applied to the previous crop.

3. DESIGN :

(i) 3³+4 fact. confd. (ii) (a) 13 plots/block; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 10.1 m. × 5.0 m. (b) 9.1 m. × 4.1 m. (v) 46 cm. × 46 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1961—62 (residual effects studied in 62 and 63). (b) N.A. (c) Nil. (v) Nil. (vi) N.A. (vii) Nil.

5. RESULTS :

First residual response of rice to different methods of placement (Kg/ha.)

Year	Av. yield of plots without P ₂ O ₅	Response to Methods				
		M ₁	M ₂	M ₃	S.E. of response	C.D. at 5%
1962	1443	27	-40	-36	64	129
1963	2290	-99	-199	-267	109	220
Pooled	1867	-36	-120	-152	63	125

First residual response of rice to different sources of Phosphorus (Kg/ha.)

Year	Av. yield of plots without P ₂ O ₅	Response to sources				
		Super	ODDA	PEC	S.E. of response	C.D. at 5%
1962	1443	-66	-23	40	64	129
1963	2290	-348	-144	-74	109	220
Pooled	1867	-207	-17	-17	63	125

First residual response of rice to Nitrogen and different levels of fertilizers (Kg/ha.)

Year	Av. yield of Nitrogen in Kg.				Response to N			S.E. of response	C.D. at 5%
	0 N	13.5 N	26.9 N	53.8 N	13.4 N	26.9 N	53.8 N		
1962	1460	1470	1360	1500	10	-100	40	111	224
1963	2190	2381	2186	2303	191	-4	113	189	382
Pooled	1825	1925	1773	1902	101	-52	77	110	

Response to P ₂ O ₅			S.E. of response	C.D.	S.E. of difference two marginal means	C.D. for comparison on two responses of L
11.8 P	23.5 P	47.1 P				
-130	107	-27	90	182	64	129
-293	-70	-202	154	311	109	220
-212	18	-14	89	176	63	126

Crop :- Paddy (Kharif).
Site :- M.A.E. Centre, Hiragachi.

Ref :- W.B. 64(M.A E).
Type :- 'M'.

Object :—Type XI :—To study the effect of method of application of micronutrients on Paddy.

1. BASAL CONDITIONS :

(i) N.A. (ii) Gangetic alluvium. (iii) to (x) N.A.

2. TREATMENTS :

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

(1) 6 sources of micronutrients: S_1 =Manganese Sulphate, S_2 =Zinc Sul. S_3 =Copper Sulphate, S_4 =Borax
 S_5 =Sodium Molybdate and $S_6=S_1+S_2+S_3+S_4+S_5$.

(2) 2 methods of application : M_1 =Soil application and M_2 =Foliar application.

Extra treatments : T_0 =Control, T_1 =35 Kg/ha. each of N, P_2O_5 and K_2O and T_2 =Spartun at 395 Kg/ha.

T_1 is also applied to 12 plots receiving micronutrients and to T plot. Optimum dose of each micronutrients for the two methods has been tried. T_1 and T_2 applied to soil.

3. DESIGN :

(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) and (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

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

5. RESULTS :

(i) 2331 Kg/ha. (ii) 219.7 Kg/ha. (iii) "Rest" alone is significant. (iv) Av. yield of grain in Kg/ha.

$T_0=2149$, $T_1=2421$, $T_2=2477$ Kg/ha.

	S_1	S_2	S_3	S_4	S_5	S_6	Mean
M_1	2353	2526	2149	2427	2483	2347	2381
M_2	2174	2211	2217	2131	2526	2366	2271
Mean	2264	2369	2183	2279	2505	2356	2326

C.D. for extra treatment means=313.7 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- W.B. 64, 65(M.A.E).

Site :- M.A.E. Centre, Mankhanda.

Type :- 'M'.

Object :—Type XI :—To study the effect of method of application of micronutrients on Paddy.

1. BASAL CONDITIONS:

(i) N.A. (ii) Deltaic and saline. (iii) 18.8.64. (iv) and (v) N.A. (vi) *Basmati*. (vii) Unirrigated. (viii) and (ix) N.A. (x) 24.11.64.

2. TREATMENTS :

Same as in expt. no. type XI conducted on Paddy at Hiragachi on page 62.

3. DESIGN :

(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) and (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1964—66. (b) N.A. (c) Nil. (v) (a) Hiragachi. (b) Nil. (vi) N.A. (vii) Nil.

5. RESULTS :

64(M.A.E.)

(i) 2404 Kg/ha. (ii) 298.2 Kg/ha. (iii) "T₀ vs. T₁" is highly significant. (iv) Av. yield of grain in Kg/ha.T₀=1896, T₁=2599, T₂=2277 Kg/ha.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	Mean
M ₁	2390	2640	2364	2364	2410	2490	2443
M ₂	2463	2510	2277	2563	2397	2420	2438
Mean	2427	2575	2321	2463	2404	2455	2441

C.D. for T₀ vs. T₁=426.6 Kg/ha.

65)M.A.E.)

(i) 1450 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of grain in Kg/ha..

T₀=837, T₁=1634 and T₂=1541 Kg/ha.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	Mean
M ₁	1508	1335	1349	1262	1485	1765	1451
M ₂	1362	1382	1555	1667	1561	1502	1505
Mean	1435	1358	1452	1464	1523	1634	1478

Crop :- Paddy (Aman).**Ref :- W.B. 60, 61(S.F.T).****Site :- (District) :- As per results.****Type :- 'M'.**Object :-Type A :-To study the response of Paddy to different levels of N, P₂O₅ and K₂O applied individually and in combination.

1. BASAL CONDITIONS :

(i) N.A. (ii) As under results. (iii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

O = Control (no manure)

N = 22.4 Kg/ha. of N.

P = 22.4 Kg/ha. of P₂O₅.K = 22.4 Kg/ha. K₂O.NP = 22.4 Kg/ha. of N+22.4 Kg/ha. of P₂O₅.NK = 22.4 Kg/ha. of N+22.4 Kg/ha. of K₂O.PK = 22.4 Kg/ha. of P₂O₅+22.4 Kg/ha. of K₂O.NPK=22.4 Kg/ha. of N+22.4 Kg/ha. of P₂O₅+22.4 Kg/ha. of K₂O.N applied as A/S. P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN :

(i) and (ii) The district has been divided into four agriculturally homogeneous zones and one field assistant posted in each zone. The field assistant conducts the trials in one revenue circle or thana in the zone and the circle/thana is changed once in two years within the same zone. Each field assistant is required to conduct 31 trials in a year, 8 on *kharif* cereal, 8 on a *rabi* cereal, 8 on cash crop, 4 on an oilseed crop and 3 on a leguminous crop. Half the number of trials conducted are of type A and the other half of type B on crops other than the legumes. The three trials on legumes are of type C. Residual effects of phosphate application are studied on Type C trials in two out of the four zones in each district every year. The experiments are laid out in randomly located fields in randomly selected villages in each of the 4 zones at the rate of one experiment per village. (iii) (a) 1/98.8 ha. (b) 1/197.7 ha. (iv) Yes.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

District	Year	Soil class	No. of trials	Control			Av. response of grain in Kg/ha.							S.E.
				mean	N	P	K	S.E.	NP	NK	PK	NPK		
Midnapore	(1960)	Red	11	2200	210	220	50	51.0	-70	-50	-60	110	24.0	
	(1961)	Red	12	2250	210	60	60	27.0	-10	-40	-10	30	25.0	
Howrah	(1960)	Alluvial	22	1910	560	470	110	45.0	50	-60	140	210	44.0	
Nadia	(1960)	Alluvial	12	1960	240	50	80	29.0	—	10	10	—	21.0	
	(1961)	Alluvial	2	2110	380	70	40	30.0	30	10	60	40	39.0	
24-Parganas	(1960)	Alluvial	10	1860	500	110	30	36.0	10	10	20	30	26.0	
	(1961)	Alluvial	6	1470	250	100	110	18.0	-10	-10	0	10	20.0	
Hooghly	(1960)	Alluvial	17	2300	260	130	110	14.0	-40	-20	-10	-10	15.0	
	(1961)	Alluvial	18	2060	350	150	120	20.0	50	-30	10	50	14.0	
Murshidabad	(1960)	Alluvial	8	1850	430	150	80	37.0	30	10	10	-20	15.0	
	(1961)	Alluvial	6	2480	210	150	-10	62.0	-20	10	-30	60	42.0	
Birbhum	(1960)	Laterite	23	2130	340	90	70	21.0	-10	20	—	30	15.0	
	(1961)	Laterite	36	1890	280	60	110	12.0	10	-10	10	80	9.0	
Burdwan	(1960)	Alluvial	14	2670	170	160	40	5.0	70	-40	-60	20	23.0	
	(1961)	Alluvial	21	2290	220	100	60	32.0	-110	-50	-40	-50	19.0	
W. Dinajpur	(1960)	Alluvial	8	1380	270	190	30	48.0	-170	10	-110	80	45.0	
	(1961)	Alluvial	7	1590	280	60	-20	57.0	20	-50	-20	-80	62.0	
Malda	(1960)	Alluvial	6	990	270	110	-10	47.0	30	20	—	20	67.0	
	(1961)	Alluvial	21	1350	290	230	100	60.0	-60	-10	-40	50	38.0	
Bankura	(1961)	Laterite	13	1720	290	280	100	34.0	-10	30	-20	60	18.0	

Crop :- Paddy (Aus).**Ref :- W.B. 60, 61(S.F.T).****Site :- (District) :- As per results.****Type :- 'M'.**

Object :- Type A :—To study the response of Paddy to different levels of N, P₂O₅ and K₂O applied individually and in combination.

1. BASAL CONDITIONS :

(i) N.A. (ii) As under results. (iii) to (x) N.A.

2. TREATMENTS :

Same as in Type A on page 63.

3. DESIGN :

Same as in Type A on page 63.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

District	Year	Soil class	No. of trials	Control			Av. response of grain in Kg/ha.							S.E.
				mean	N	P	K	S.E.	NP	NK	PK	NPK		
Midnapore	(1960)	Red	4	1500	280	210	80	70.0	40	50	40	30	38.0	
Howrah	(1960)	Alluvial	6	1480	630	410	320	174.0	110	50	50	120	63.0	
Nadia	(1960)	Alluvial	9	1960	240	60	40	56.0	-20	20	50	30	26.0	
	(1961)	Alluvial	10	2020	430	70	70	20.0	20	30	30	10	20.0	
24-Parganas	(1960)	Alluvial	10	1940	400	110	40	45.0	—	-20	60	—	14.0	
	(1961)	Alluvial	11	1340	290	90	60	28.0	—	—	—	30	18.0	
Hooghly	(1960)	Alluvial	1	1850	190	90	80	15.0	-50	—	-40	40	14.0	
	(1961)	Alluvial	4	1290	240	50	10	35.0	-60	10	-50	-20	22.0	
Murshidabad	(1960)	Alluvial	10	2010	300	90	40	33.0	20	20	80	-10	26.0	
	(1961)	Alluvial	13	1320	230	70	40	27.0	30	-10	0	30	15.0	
Birbhum	(1961)	Laterite	3	1380	350	220	170	25.0	110	90	50	-20	53.0	
Burdwan	(1960)	Alluvial	11	2270	200	180	160	30.0	-50	-90	-20	30	34.0	
	(1961)	Alluvial	12	1470	160	90	10	11.0	-40	-20	-10	-20	9.0	
W. Dinajpur	(1960)	Alluvial	5	1350	240	-150	180	177.0	-210	20	150	—	139.0	
Malda	(1961)	Alluvial	8	1320	160	20	20	18.0	10	-20	-20	—	22.0	
Bankura	(1961)	Laterite	3	1250	280	—	50	24.0	60	40	60	-10	15.0	

Crop :- Paddy (Aman).**Ref :- W.B. 60, 61(S.F.T.)****Site :- (District) : As per results.****Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

1. BASAL CONDITIONS :

(i) N.A. (ii) As per results. (iii) to (x) N.A.

2. TREATMENTS :

o =Control (no manure)

n₁ =22.4 Kg/ha. of N as A/S.n₂ =44.8 Kg/ha. of N as A/S.n₁' =22.4 Kg/ha. of N as Urea.n₂' =44.8 Kg/ha. of N as Urea.n₁'' =22.4 Kg/ha. of N as A/S/N.n₂'' =44.8 Kg/ha. of N as A/S/N.n₁''' =22.4 Kg/ha. of N as C/A/N.n₂''' =44.8 Kg/ha. of N as C/A/N.**3. DESIGN :**

Same as in type A on page 63.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

Distric	Year	Soil class	No. of trials	Control		Av. response of grain in Kg/ha.								S.E of response
				mean in Kg/ha.	n ₁	n ₁ '	n ₁ ''	n ₁ '''	n ₂	n ₂ '	n ₂ ''	n ₂ '''		
Nadia	1960	Alluvial	12	1980	220	150	—	220	280	230	—	300	44.0	
	1961	„	2	1700	330	230	—	290	510	560	—	560	103.0	
24-Parganas	1960	„	10	1910	520	350	—	440	680	600	—	530	101.0	
	1961	„	7	1740	290	200	—	190	280	300	—	280	42.0	
Midnapore	1960	Red	14	2230	340	370	—	270	570	420	—	340	86.0	
	1961	„	15	1900	440	380	—	240	430	480	—	180	87.0	
Howrah	1960	Alluvial	17	2210	790	740	—	530	960	880	—	760	116.0	
Hooghly	1960	„	17	2240	520	380	—	430	380	450	—	510	30.0	
	1961	„	20	2170	240	790	—	480	460	640	—	630	29.0	
Murshidabad	1960	„	8	1880	440	110	—	110	690	500	—	490	54.0	
	1961	„	8	2050	400	350	—	250	390	420	—	430	109.0	
Birbhum	1960	Laterite	26	2180	370	420	—	260	340	530	—	300	58.0	
	1961	„	20	1990	320	180	—	160	460	370	—	230	32.0	
Burdwan	1960	Alluvial	15	2580	10	390	—	320	370	410	—	390	62.0	
	1961	„	21	2290	290	350	—	180	400	380	—	340	52.0	
W. Dinajpur	1960	„	5	1530	520	570	—	510	520	310	—	500	177.0	
	1961	„	5	1270	400	360	—	270	470	520	—	620	156.0	
Malda	1960	„	5	1050	280	350	—	270	420	470	—	470	116.0	
	1961	„	21	1450	440	380	—	360	650	470	—	470	83.0	
Bankura	1961	Laterite	17	1720	360	280	—	270	530	540	—	440	46.0	

Crop :- Paddy (Aus).**Ref :- W.B. 60, 61 (S.F.T.).****Site :- District : As per results.****Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

1. BASAL CONDITIONS:

(i) N.A. (ii) As per results. (iii) to (x) N.A.

2. TREATMENTS :

Same as in Type B on page 65.

3. DESIGN :

Same as in type A on page 63.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

District	Year	Soil class	No. of trials	Control		Av. response of grain in Kg/ha.							S.E. of response
				mean in Kg/ha.	n_1	n_1'	n_1''	n_1'''	n_2	n_2''	n_2'''	n_2''''	
Nadia	1960	Alluvial	9	2080	-60	180	—	240	190	180	—	360	120.0
	1961	„	11	1670	360	300	—	440	420	510	—	570	54.0
24 Parganas	1960	„	31	2090	470	220	—	110	580	440	—	300	77.0
	1961	„	10	1680	210	170	—	200	480	290	—	460	63.0
Midnapore	1960	Red	6	1640	240	250	—	190	440	470	—	430	37.0
	1961	„	5	1930	560	230	—	290	510	30	—	340	137.0
Howrah	1960	Alluvial	3	790	310	530	—	320	410	710	—	490	229.0
	1961	„											
Hooghly	1960	„	1	1980	130	220	—	270	340	310	—	380	32.0
	1961	„	4	1170	200	180	—	430	230	310	—	330	109.0
Murshidabad	1960	„	10	2030	290	230	—	210	480	450	—	390	79.0
	1961	„	13	1130	200	150	—	190	360	320	—	360	56.0
Birbhum	1960	Laterite	9	1090	460	890	—	300	630	1230	—	430	114.0
	1961	„											
Burdwan	1960	Alluvial	11	2200	220	300	—	410	230	390	—	490	89.0
	1961	„	9	1750	180	240	—	230	230	240	—	280	19.0
W. Dinajpur	1960	„	6	1150	210	190	—	390	168	350	—	410	128.0
	1961	„	4	620	360	130	—	130	410	300	—	200	167.0
Malda	1960	„	11	1380	220	270	—	300	300	240	—	170	54.0
	1961	„	1	1680	490	-40	—	400	880	330	—	630	—
Bankura	1961	Laterite	3	1300	320	120	—	130	380	290	—	220	103.0

Crop :- Paddy (Aus).**Ref :- W.B. 62 63, 65(S.F.T.).****Site :- (District) : Bankura, Burdwan.****Type :- 'M'.**

Object :—Type A₁ — To study the response curves of important cereals, cash and oilseed crops to Nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Laterite for Bankura and Alluvial for Burdwan. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

O = Control (no manure)

N₁ = 35 Kg/ha. of NN₂ = 70 Kg/ha. of NP₁ = 35 Kg/ha. of P₂O₅N₁P₁ = 35 Kg/ha. of N+35 Kg/ha. of P₂O₅N₂P₁ = 70 Kg/ha. of N+35 Kg/ha. of P₂O₅N₂P₂ = 90 Kg/ha. of N+70 Kg/ha. of P₂O₅N₂P₂K₁ = 70 Kg/ha. of N+70 Kg/ha. of P₂O₅+35 Kg/ha of K₂ON applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN :

A selected district is divided into four agriculturally homogeneous zones based on climate, soil, cropping pattern etc. In each zone one block is selected at random. A block normally consists of a group of 50-100 villages. In each block 36 experiments are conducted in a year of which 11 are of type A₁, 11 of type A₂, 11 of type A₃ and 3 are of type—C. The eleven experiments under type A₁, A₂ and A₃ are distributed as 3 on a *Kharif* cereal, 3 on a *rabi* cereal, 3 on a cash crop and 2 on oilseed. All the three type—C experiments are conducted on a legume crop. For the purpose of conducting the A₁, A₂ and A₃ experiments 11 villages are randomly selected in each block and in each village 3 experiments one each of type A₁, A₂ and A₃ are laid out. For conducting the three type—C trials three villages are randomly selected in each block.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 66 (64 N.A.) for Bankura and 1962 to 66 (64 N.A.) for Burdwan. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Bankura

62(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	69	146	161	106	141	226	253	48.0

Control mean=378 Kg/ha. ; No. of trials=3.

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	345	568	395	494	691	667	593	120.8

Control mean=2915 Kg/ha. ; No. of trials=4.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	630	475	137	774	590	587	650	31.4

Control mean=2091 Kg/ha. ; No. of trials=6.

Burdwan

62(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	207	230	91	298	321	414	460	29.0

Control mean=1176 Kg/ha. ; No. of trials=2.

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	231	184	254	415	369	66	461	219.7

Control mean=1244 Kg/ha. ; No. of trials=2.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	325	325	225	515	615	640	635	68.3

Control mean=1975 Kg/ha. ; No. of trials=4.

Crop :- Paddy (Aus).

Ref :- W.B. 63, 64 (S.F.T.) for Bankura ; 63(S.F.T.) for Midnapore ; 63, 64, 65 (S.F.T.) for Malda ; Murshidabad ; Nadia ; 24-Parganas and W. Dinajpur ; 62, 63, 64 (S.F.T.) for Burdwan and 62, 63, 64, 65(S.F.T.) for Hooghly.

**Site :- (District) : Bankura, Midnapore, Type :- 'M'.
Malda ; Murshidabad ; Nadia,
24-Parganas ; W. Dinajpur,
Burdwan and Hooghly.**

Object :-Type A₁—To study the response curves of important cereal, cash and oilseed crops to nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Laterite for Bankura ; Red for Midnapore and Alluvial for others. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in type A₁ (irrigated) on page 67.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1963—64 for Bankura ; 1963 for Midnapore ; 1963—66 for Malda ; 63—66 for Murshidabad ; 63—65 for Nadia ; 63—66 for 24-Parganas ; 63—66 for W. Dinajpur ; 62—64 (65 N.A.) for Burdwan and 62—65 for Hooghly. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Bankura

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. yield of grain in Kg/ha.	784	405	144	346	689	725	673	69.7

Control mean=2475 Kg/ha. ; No. of trials=5.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	783	801	258	971	821	861	1027	107.5

Control mean=2274 Kg/ha. ; No. of trials=6.

Midnapore

63 (S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	142	208	46	243	262	308	348	27.4

Control mean=1113 Kg/ha. ; No. of trials=6.

Malda

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	248	245	-145	156	351	343	272	68.4

Control mean=1527 Kg/ha. ; No. of trials=8.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	171	237	-5	170	288	304	418	34.0

Control mean=1194 Kg/ha. ; No. of trials=4.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	225	343	3	221	353	393	443	53.1

Control mean=1276 Kg/ha. ; No. of trials=6.

Murshidabad

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	296	440	205	429	601	744	867	38.9

Control mean=1411 Kg/ha. ; No. of trials=16.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	250	319	100	297	450	576	656	42.1

Control mean=1565 Kg/ha. ; No. of trials=9.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	240	314	131	370	475	680	747	65.6

Control mean=1465 Kg/ha. ; No. of trials=5.

Nadia

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	510	762	30	495	737	872	821	59.5

Control mean=1518 Kg/ha. ; No. of trials=9.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	318	457	118	388	618	692	747	49.3

Control mean=1987 Kg/ha. ; No. of trials=9.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	292	469	30	368	605	690	776	42.7

Control mean=1700 Kg/ha. ; No. of trials=8.

24-Parganas

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	361	548	83	508	700	738	761	31.8

Control mean=1617 Kg/ha. ; No. of trials=5.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	399	451	84	528	540	603	721	61.8

Control mean=1520 Kg/ha. ; No. of trials=7.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	268	451	18	480	531	567	618	63.4

Control mean=1858 Kg/ha. ; No. of trials=9.

W. Dinajpur

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	181	334	-74	-44	261	24	421	276.0

Control mean=2413 Kg/ha. ; No. of trials=3.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	271	428	137	491	576	687	741	76.0

Control mean=1383 Kg/ha. ; No. of trials=5.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	134	262	85	300	408	506	501	33.3

Control mean=1009 Kg/ha. ; No. of trials=7.

Burdwan

62(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₁ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	202	127	249	444	398	330	202	66.7

Control mean=1440 Kg/ha. ; No. of trials=2.

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	662	599	218	537	420	737	830	208.7

Control mean=1844 Kg/ha. ; No. of trials=4.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	276	438	120	373	489	473	577	72.5

Control mean=2180 Kg/ha. ; No. of trials=8.

Hooghly

62(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	64	161	34	80	236	258	281	28.7

Control mean=1227 Kg/ha. ; No. of trials=2.

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₁ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	241	257	114	345	383	426	371	95.2

Control mean=1153 Kg/ha. ; No. of trials=3.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	119	149	77	209	257	279	365	59.9

Control mean=1332 Kg/ha. ; No. of trials=6.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	230	266	55	361	440	538	586	42.0

Control mean=1333 Kg/ha. ; No. of trials=6.

Crop :- Paddy (*Aman*).

**Ref :- W.B. 62, 63(S.F.T.) for Bankura ; 63, 64
65(S.F.T.) for Birbhum and 62, 63(S.F.T.)
for Burdwan.**

Site :- (District) : Bankura,

Type :- 'M'.

Birbhum and Burdwan.

Object :—Type A₁—To study the response curves of important cereal, cash and oilseed crops to nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Laterite for Bankura and Birbhum; Alluvial for Burdwan. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in type A₁ (irrigated) on page 67.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 62—63 for Bankura ; 63—65 for Birbhum ; and 62—66 for Burdwan (64 and 65 N.A). (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Bankura

62(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	164	368	65	287	408	392	446	84.3

Control mean=1885 Kg/ha. ; No. of trials=9.

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	617	864	444	741	948	1013	1025	82.4

Control mean=4027 Kg/ha. ; No. of trials=4.

Birbhum

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	486	371	154	593	461	417	465	63.8

Control mean=2066 Kg/ha. ; No. of trials=22.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	460	498	142	592	609	696	679	44.6

Control mean=2236 Kg/ha. ; No. of trials=25.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	487	669	181	629	783	875	860	27.0

Control mean=2131 Kg/ha. ; No. of trials=25.

Burdwan**62(S.F.T.)**

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	61	94	22	64	72	176	268	34.8

Control mean=545 Kg/ha. ; No. of trials=7.

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	490	448	473	649	639	706	807	38.1

Control mean=1921 Kg/ha. ; No. of trials=7.

Crop :- Paddy (Aman).

Ref :- W.B. 62, 63, 64, 65(S.F.T.) for Burdwan; Bankura ; Midnapore; Hooghly and 24-Parganas ; 62, 63(S.F.T) for Birbhum ; 65(S.F.T.) for Murshidabad and 63, 64, 65(S.F.T.) for Malda ; W. Dinajpur and Nadia.

Site :- (District) : Burdwan ; Bankura, Type :- 'M'.

Birbhum, Midnapore; Murshidabad, Malda, W. Dinajpur, Hooghly, Nadia and 24-Parganas.

Object :-Type A₁—To study the response curves of important cereal, cash and oilseed crops to nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Laterite for Bankura and Birbhum ; Red for Midnapore and Alluvial for others (iii) to (vi) Nil. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in type A₁ (irrigated) on page 67.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 62 to 65 for Burdwan ; 62—66 for Bankura ; 62—63 for Birbhum ; 62—65 for Midnapore ; 65 only for Murshidabad, 63—66 for Malda and W. Dinajpur ; 62—65 for Hooghly, 63—65 for Nadia ; 62—66 for 24-Parganas. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :**Burdwan****62(S.F.T.)**

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	138	153	57	187	229	291	352	18.7

Control mean=1160 Kg/ha. ; No. of trials=6.

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	954	783	824	938	997	1260	1144	203.8

Control mean=2087 Kg/ha. ; No. of trials=10.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	408	421	278	425	583	655	722	65.6

Control mean=2757 Kg/ha. ; No. of trials=13.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	550	403	125	540	510	600	780	155.7

Control mean=2016 Kg/ha. ; No. of trials=8.

Bankura**62(S.F.T.)**

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	143	308	146	177	369	385	471	44.6

Control mean=1516 Kg/ha. ; No. of trials=4.

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	717	425	101	717	512	464	531	41.7

Control mean=2529 Kg/ha. ; No. of trials=19.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	644	486	203	729	576	625	736	39.5

Control mean=2328 Kg/ha. ; No. of trials=20.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	520	387	103	629	476	494	566	21.4

Control mean=2100 Kg/ha. ; No. of trials=33.

Birbhum**62(S.F.T.)**

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	370	329	192	402	458	489	417	70.0

Control mean=2008 Kg/ha. ; No. of trials=17.

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	452	395	83	598	427	366	401	10.27

Control mean=2021 Kg/ha. ; No. of trials=7.

Midnapore

62(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	224	284	103	263	293	327	389	20.4

Control mean=1307 Kg/ha. ; No. of trials=30.

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	415	459	119	456	535	560	620	26.4

Control mean=1916 Kg/ha. ; No. of trials=30.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	337	465	170	375	449	569	561	29.2

Control mean=2273 Kg/ha. ; No. of trials=24.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	336	407	123	386	462	483	525	45.2

Control mean=2138 Kg/ha. ; No. of trials=34.

Murshidabad

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	311	453	125	375	601	758	883	35.7

Control mean=2015 Kg/ha. ; No. of trials=14.

Malda

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	-57	115	81	299	415	530	355	248.2

Control mean=1361 Kg/ha. ; No. of trials=2.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	285	348	338	289	317	337	459	70.0

Control mean=1879 Kg/ha. ; No. of trials=7.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	183	266	88	440	468	390	573	94.9

Control mean=1399 Kg/ha. ; No. of trials=5.

W. Dinajpur**63(S.F.T.)**

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	386	611	232	548	732	878	847	89.3

Control mean=1681 Kg/ha. ; No. of trials=10.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	209	366	87	388	469	552	609	61.9

Control mean=1720 Kg/ha. ; No. of trials=13.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	276	309	137	378	387	584	709	52.8

Control mean=1361 Kg/ha. ; No. of trials=14.

Hooghly**62(S.F.T.)**

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	310	359	187	442	319	309	447	63.3

Control mean=2225 Kg/ha. ; No. of trials=15.

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	395	546	280	461	583	597	651	65.9

Control mean=2353 Kg/ha. ; No. of trials=18.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	378	371	302	598	488	535	736	52.6

Control mean=2350 Kg/ha. ; No. of trials=14.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	336	385	154	384	516	615	702	35.4

Control mean=2157 Kg/ha. ; No. of trials=14.

Nadia**63(S.F.T.)**

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	223	392	51	252	498	573	643	61.2

Control mean=1499 Kg/ha. ; No. of trials=4.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	112	290	37	198	326	438	552	76.9

Control mean=1996 Kg/ha. ; No. of trials=3.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	258	405	-23	283	542	701	704	43.6

Control mean=2225 Kg/ha. ; No. of trials=4.

24-Parganas

62(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	123	205	-17	218	223	321	391	47.3

Control mean=1660 Kg/ha. ; No. of trials=9.

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	261	449	84	469	629	696	760	44.5

Control mean=1622 Kg/ha. ; No. of trials=19.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	476	663	115	731	743	753	1016	87.1

Control mean=1969 Kg/ha. ; No. of trials=14.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	500	720	73	652	823	817	1034	68.1

Control mean=1902 Kg/ha. ; No. of trials=12.

Crop :- Paddy (Boro).**Ref :- W.B. 62(S.F.T.) for Burdwan;
62, 63(S.F.T.) for Malda.****Site :- (District) : Burdwan and Malda.****Type :- 'M'.**Object :- Type A₁ :- To study the response curves of important cereal, cash and oilseed crops to nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in type A₁ (irrigated) on page 67.

4. GENERAL :

(i) to (iii) N A. (iv) (a) 62—66 (63, 64, 65 N.A.) for Burdwan and 62—66 (64, 65 N.A.) for Malda. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Burdwan**62(S.F.T.)**

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	156	205	141	206	270	328	301	59.4

Control mean=1222 Kg/ha. ; No. of trials=3.

Malda**62(S.F.T.)**

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	236	264	34	236	252	322	375	71.8

Control mean=1453 Kg/ha. ; No. of trials=9.

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	266	269	144	347	289	323	367	118.8

Control mean=1696 Kg/ha. ; No. of trials=3.

Crop :- Paddy (Aus).

Ref :- W.B. 62, 63, 65(S.F.T).

Site :- (District) : Burdwan and Bankura.

Object :- Type A₁—To study the response curve of important cereals, cash and oilseed crops to Phosphorus applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial for Burdwan and laterite for Bankura. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O =Control (no manure)

N₁ =35 Kg/ha. of N.

P₁ =35 Kg/ha. of P₂O₅.

P₂ =70 Kg/ha. of P₂O₅.

N₁P₁ =35 Kg/ha. of N+35 Kg/ha. of P₂O₅.

N₁P₂ =35 Kg/ha. of N+70 Kg/ha. of P₂O₅.

N₂P₂ =70 Kg/ha. of N+70 Kg/ha. of P₂O₅.

N₁P₂K₁=70 Kg/ha. of N+70 Kg/ha. of P₂O₅+70 Kg/ha. of K₂O.

N applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN :

Same as in type A₁ (irrigated) on page 67.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962—66 (64 N.A.) for Burdwan and 1962 to 65 (64 N.A.) for Bankura. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS:

Burdwan

62(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	161	92	161	195	242	310	367	28.6

Control mean=1129 Kg/ha. ; No. of trials=2.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	161	184	234	391	369	392	391	48.6

Control mean=1360 Kg/ha. ; No. of trials=2.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	465	110	220	430	600	710	690	100.8

Control mean=1950 Kg/ha. ; No. of trials=4.

Bankura

62(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	103	46	81	149	207	254	344	50.5

Control mean=392 Kg/ha. ; No. of trials=2.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	370	197	222	444	543	623	673	42.1

Control mean=2915 Kg/ha. ; No. of trials=4.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	553	175	236	728	725	575	652	28.1

Control mean=2121 Kg/ha. ; No. of trials=6.

Crop :- Paddy (Aus).

Ref :- W.B. 62, 63, 64(S.F.T.) for Burdwan ;
62, 63, 64, 65(S.F.T.) for Hooghly ;
63, 64(S.F.T.) for Bankura ; 63(S.F.T.)
for Midnapore and 63, 64, 65(S.F.T.)
for others.

Site :- (District) : Burdwan, Hooghly; Type :- 'M'.

W. Dinajpur ; Murshidabad,
Nadia, 24-Parganas ; Bankura,
Midnapore and Malda.

Object :- Type A₂—To study the response curves of important cereals, cash and oilseed crops to Phosphorus applied singly and in combination with other nutrients.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Red for Midnapore, Laterite for Bankura and Alluvial for others. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

Same as in type A₂ (irrigated) on page 78.

3. DESIGN :

Same as in type A₁ (irrigated) on page 67.

4. GENERAL:

(i) to (iii) N.A. (iv) (a) 1962—64 for Burdwan ; 62—65 for Hooghly; 63—66 for W. Dinajpur, Murshidabad, 24-Parganas, Malda, 63—65 Nadia ; 64—65 for Bankura and 63 for Midnapore. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Burdwan**62(S.F.T.)**

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	207	255	255	461	444	370	289	47.1

Control mean=1451 Kg/ha. ; No. of trials=2.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	299	68	207	254	484	761	715	70.6

Control mean=1844 Kg/ha. ; No. of trials=4.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	299	157	243	387	621	567	609	85.4

Control mean=1833 Kg/ha. ; No. of trials=8.

Hooghly**62(S.F.T.)**

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	113	56	149	189	229	298	328	48.1

Control mean=1222 Kg/ha.; No. of trials=2.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	437	121	109	345	311	172	403	253.6

Control mean=1025 Kg/ha. ; No. of trials=3.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	142	85	114	201	251	371	409	72.1

Control mean=1410 Kg/ha. ; No. of trials=5.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₁	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	236	125	200	353	405	490	545	39.2

Control mean=1246 Kg/ha. ; No. of trials=6.

W. Dinajpur

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	14	1	-64	63	-64	77	129	257.8

Control mean=2291 Kg/ha. ; No. of trials=3.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	345	172	158	401	531	506	701	85.6

Control mean=1437 Kg/ha. ; No. of trials=5.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	203	128	163	360	414	524	551	25.8

Control mean=894 Kg/ha. ; No. of trials=9.

Murshidabad

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	301	174	283	440	532	733	943	34.5

Control mean=1455 Kg/ha. ; No. of trials=16.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	284	67	152	338	448	554	728	30.3

Control mean=1510 Kg/ha.; No. of trials=10.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	215	80	141	296	413	583	737	34.2

Control mean=1373 Kg/ha.; No. of trials=6.

Nadia

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	321	99	252	492	571	716	763	61.7

Control mean=1521 Kg/ha.; No. of trials=9.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	254	207	287	486	562	665	766	87.6

Control mean=1828 Kg/ha. ; No. of trials=8.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	283	19	86	464	528	671	754	54.1

Control mean=1686 Kg/ha. ; No. of trials=8.

24-Parganas

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	327	126	183	438	537	791	903	48.4

Control mean=1525 Kg/ha. ; No. of trials=5.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	482	108	136	578	644	693	767	46.9

Control mean=1955 Kg/ha. ; No. of trials=8.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	273	40	89	405	465	552	710	40.5

Control mean=1873 Kg/ha. ; No. of trials=9.

Bankura

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	813	63	62	938	879	577	588	134.5

Control mean=2307 Kg/ha. ; No. of trials=4.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	754	109	217	898	858	788	860	111.6

Control mean=2297 Kg/ha. ; No. of trials=5.

Midnapore

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	153	58	96	226	211	226	331	19.0

Control mean=1084 Kg/ha. ; No. of trials=6.

Malda

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	157	192	102	339	382	368	432	68.9

Control mean=1385 Kg/ha. ; No. of trials=8.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	96	53	77	103	201	269	364	51.1

Control mean=1105 Kg/ha. ; No. of trials=4.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	177	117	77	215	257	385	425	37.0

Control mean=942 Kg/ha. ; No. of trials=6.

Crop :- Paddy (Aman).

Ref :- W.B. 62, 63, 64, 65 (SFT) for Birbhum

Site :- (District) :- Burdwan, Bankura, Birbhum and Midnapore.

62(SFT) for Midnapore, 62, 63 (SFT) for others.

Type :- 'M'.

Object :-Type A₂ :-To study the response curves of important cereal, cash and oilseeds crops to Phosphorus applied singly and in combinations with other nutrients.

1. BASAL CONDITIONS :

(i) N.A. (ii) Alluvial for Burdwan, Red for Midnapore and Laterite for Bankura and Birbhum. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

Same as in Type A₂ (Irrigated) on page 78.

3. DESIGN :

Same as in Typ A₁ (Irrigated) on page 67.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 62—63 for Burdwan and Bankura ; 52—65 for Birbhum and 62 for Midnapore. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Burdwan

62(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	610	436	486	824	783	676	655	81.2

Control mean=1938 Kg/ha. ; No. of trials=8.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₁	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	455	347	426	610	650	718	790	29.2

Control mean=1913 Kg/ha ; No. of trials=9.

Bankura

62(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	59	36	88	63	45	189	282	34.7

Control mean=555 Kg/ha ; No. of trials=6.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₁	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	617	197	370	642	815	976	929	106.5

Control mean=4077 Kg/ha ; No. of trials=4.

Birbhum

62(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	629	-157	276	756	859	685	463	224.1

Control mean=1983 Kg/ha ; No. of results=3.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	495	149	260	602	659	747	799	56.1

Control mean=1948 Kg/ha ; No. of trials=22.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/h...	474	115	198	553	624	702	711	39.1

Control mean=2263 Kg/ha ; No. of trials=24.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	449	93	172	573	636	839	869	26.4

Control mean=2204 Kg/ha ; No. of trials=25.

Midnapore

62(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	184	46	243	184	189	230	397	131.9

Control mean=1129 Kg/ha ; No. of trials=2.

Crop :- Paddy (*Aman*).

Ref :- W.B. 62,63(SFT) for Birbhum, 63, 64, 65(SFT) for Nadia, W. Dinajpur, 65(SFT) for Murshidabad and 62, 63, 64, 65(SFT) for others.

Site :- (District) :- Burdwan, Bankura, Birbhum, Midnapore, Hooghly, Nadia, Murshidabad, Malda, W. Dinajpur and 24-Parganas.

Type :- 'M'.

Object :-Type A₂ :-To study the response curves of important cereal, cash and oilseed crops to Phosphorus applied singly and in combination with other nutrient.

1. BASAL CONDITIONS :

(i) N.A. (ii) Laterite for Bankura and Birbhum and Alluvial for all others. (iii) to (vi) N.A. (vii) Un-irrigated. (viii) to (x) N.A.

2. TREATMENTS :

Same as in Type A₂ (Irrigated) on page 78.

3. DESIGN :

Same as in Type A₁ (Irrigated) on page 67.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 62—65 for Burdwan, Midnapore, Hooghly, Nadia, Malda ; 62—66 for Bankura, 24-Parganas ; 62—63 for Birbhum ; 65—66 for Murshidabad ; 63—66 for W. Dinajpur. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS:

Burdwan

62(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	375	319	292	673	694	590	659	47.4

Control mean=1640 Kg/ha ; No. of trials=7.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	249	182	274	295	752	714	684	77.3

Control mean=3061 Kg/ha ; No. of trials=8.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	435	247	321	563	627	614	677	49.7

Control mean=2783 Kg/ha ; No. of trials=13.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	453	60	226	533	646	546	530	81.7

Control mean=1979 Kg/ha ; No. of trials=8.

Bankura**62(S.F.T.)**

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₁	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	162	81	138	174	202	283	364	30.2

Control mean=1463 Kg/ha ; No. of trials=4.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	667	55	137	762	743	462	496	36.3

Control mean=2460 Kg/ha ; No. of trials=19.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	615	181	276	690	725	617	736	35.6

Control mean=2306 Kg/ha ; No. of trials.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	528	79	153	614	632	488	624	82.2

Control mean=2182 Kg/ha ; No. of trials=33.

Birbhum**62(S.F.T.)**

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	355	168	395	479	550	557	624	82.2

Control mean=1688 Kg/ha ; No. of trials=13.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	659	21	116	636	714	368	257	98.7

Control mean=1942 Kg/ha ; No. of trials=7.

Midnapore**62(S.F.T.)**

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	248	91	143	279	277	340	450	22.6

Control mean=1283 Kg/ha ; No. of trials=30.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	365	141	234	444	487	507	586	22.8

Control mean=1892 Kg/ha ; No. of trials=29.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	219	69	126	334	377	510	528	31.5

Control mean=2309 Kg/ha ; No. of trials=24.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	283	68	107	324	337	496	556	48.1

Control mean=2159 Kg/ha ; No. of trials=34.

Hooghly

62(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	289	214	286	366	301	400	549	59.8

Control mean=2133 Kg/ha ; No. of trials=14.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	333	183	241	488	422	474	631	46.9

Control mean=2182 Kg/ha ; No. of trials=18.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	436	284	389	455	567	670	859	59.9

Control mean=2359 Kg/ha ; No. of trials=14.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	282	141	208	413	421	538	595	38.4

Control mean=1939 Kg/ha ; No. of trials=14.

Nadia

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	251	45	120	338	347	445	519	52.4

Control mean=1548 Kg/ha ; No. of trials=4.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	185	63	150	289	436	537	724	140.6

Control mean=2010 Kg/ha ; No. of trials=3.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	401	20	100	482	546	650	756	40.3

Control mean=2228 Kg/ha ; No. of trials=4.

Murshidabad

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	369	87	141	416	561	733	879	39.3

Control mean=2062 Kg/ha ; No. of trials=14.

Malda

62(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	31	152	14	35	21	166	186	78.6

Control mean=656 Kg/ha ; No. of trial=4.

63 (S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	246	62	200	200	430	614	442	188.9

Control mean=1690 Kg/ha ; No. of trials=2.

64 (S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	278	273	285	307	275	384	456	65.3

Control mean=1918 Kg/ha ; No. of trials=8.

65 (S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	403	218	342	499	485	554	667	103.3

Control mean=1415 Kg/ha ; No. of trials=5.

W. Dinajpur

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	442	286	188	584	472	932	619	102.9

Control mean=1769 Kg/ha ; No. of trials=10.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response grain in Kg/ha.	334	181	247	381	547	690	760	42.

Control mean=1670 Kg/ha ; No. of trials=13.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	178	91	150	288	343	487	584	28.0

Control mean=1364 Kg/ha ; No. of trials=14.

24-Parganas

62 (S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	162	92	182	341	258	449	491	39.4

Control mean=1610 Kg/ha ; No. of trials=10.

63 (S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	344	102	155	520	442	614	816	66.7

Control mean=1407 Kg/ha ; No. of trials=19.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	386	101	184	667	710	626	824	57.6

Control mean=2149 Kg/ha ; No. of results=14.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	488	39	104	576	635	876	1030	68.2

Control mean=1878 Kg/ha ; No. of trials=12.

Crop :- Paddy (Boro).**Site :- (District) :- Burdwan and Malda.****Ref :- W.B. 62 (SFT) for Burdwan and 62, 63(SFT) for Malda.****Type :- 'M'.**Object :- Type A₂ :- To study the response curves of important cereal, cash and oil seed crops to phosphorus applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

Same as in Type A₂ (Irrigated) on page 78.

3. DESIGN :

Same as in Type A₁ (Irrigated) on page 67.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 62 for Burdwan and 62-66 (64 and 65 N.A.) for Malda. (b) N.A. (c) Nil. (v) to (vii) N.A.

Burdwan**62(S.F.T.)**

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	113	38	80	171	164	288	356	43.3

Control mean=1245 Kg/ha ; No. of trials=3.

Malda**62(S.F.T.)**

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	258	116	138	162	118	274	321	76.3

Control mean=1444 Kg/ha ; No. of trials=9.

63 (S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	490	288	401	520	443	428	500	90.6

Control mean=1854 Kg/ha ; No. of trials=3.

Crop :- Paddy**Ref :- 63, 65 (S.F.T.)****Site :- (District) : Burdwan and Bankura.****Type :- 'M'.**

Object :—Type A₁ :— To study the response curves of important cereals, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) N.A. (ii) Alluvial for Burdwan and Laterite for Bankura. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O =Control (no manure).

N₁ =35 Kg/ha. of N.K₁ =35 Kg/ha. of K₂O.K₂ =70 Kg/ha. of K₂O.N₁K₁ =35 Kg/ha. of N+35 Kg/ha. of K₂O.N₁K₂ =35 Kg/ha. of N+70 Kg/ha. of K₂O.N₂K₂ =70 Kg/ha. of N+70 Kg/ha. of P₂O₅.N₁P₁K₁ =35 Kg/ha. of N+35 Kg/ha. of P₂O₅+35 Kg/ha. of K₂O.N applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.**3. DESIGN :**Same as in Type A₁ (Irrigated) on page 67.**4. GENERAL :**

(i) to (iii) N.A. (iv) (a) 63-66 (64 N.A.) for Burdwan and Bankura. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :**Burdwan****63(S.F.T.)**

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	207	94	114	391	392	322	507	29.4

Control yield=1268 Kg/ha. ; No. of trials=2.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	390	290	590	510	715	765	540	175.2

Control mean=1895 Kg/ha. ; No. of trials=4.

Bankura

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	395	197	345	518	642	667	593	63.7

Control mean=2915 Kg/ha. ; No. of trials=4.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	608	—3	86	670	704	487	775	26.0

Control mean=2124 Kg/ha. ; No. of trials=6.

Crop :- Paddy (Aus)

Ref :- W.B. 62, 63, 64 (S.F.T.) for Burdwan ;
63, 64(S.F.T.) for Bankura ; 63(S.F.T.)
for Midnapore and 63, 64, 65 (S.F.T.)
for others.

Site :- (District) : Burdwan; Bankura, Hoogly, Midnapore, Malda, Murshidabad, 24-Paraganas, W. Dinajpur and Nadia.

Type :- 'M'.

Object :- Type A₃ : To study the response curves of important cereal, oilseed and cash crops to Nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) N.A. (ii) Laterite for Bankura ; Red for Midnapore and Alluvial for all others. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

Same as in Type A₃ (Irrigated) on page 90.

3. DESIGN:

Same as in Type A₁ (Mundakar) on page 67.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 62-64 for Burdwan ; 63-64 for Bankura ; 63-65 for Hoogly ; 63 for Midnapore; 63-66 for Malda, Murshidabad 24-Parganas & W.Dinajpur and 63-65 for Naida. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Burdwan

62(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	232	17	17	232	238	28	473	66.0

Control mean=1503 Kg/ha.; No. of trials=2.

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	466	132	224	429	460	612	653	111.8

Control mean=1804 Kg/ha. ; No. of trials=4.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	287	147	280	342	450	444	597	59.0

Control mean=1910 Kg/ha. ; No. of trials=8.

Bankura**63(S.F.T.)**

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	830	141	184	885	919	653	1103	48.5

Control mean=2301 Kg/ha. ; No. of trials=4.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	714	154	236	683	829	623	1051	84.2

Control mean=2310 Kg/ha.; No. of trials=6.

Hooghly**63(S.F.T.)**

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	167	95	256	304	223	223	265	154.9

Control mean=1129 Kg/ha. ; No. of trials=3.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	153	49	113	195	239	347	311	47.4

Control mean=1430 Kg/ha. ; No. of trials=7.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	251	93	128	326	341	420	488	15.4

Control mean=1218 Kg/ha. ; No. of trials=6.

Midnapore**63(S.F.T.)**

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	157	45	140	191	210	271	320	22.3

Control mean=1064 Kg/ha.; No. of trials=6.

Malda**63(S.F.T.)**

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	161	72	72	412	264	486	496	78.0

Control mean=1386 Kg/ha.; No. of trials=8.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	135	91	134	241	244	314	290	29.7

Control mean=1135 Kg/ha. ; No. of trials=4.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	130	10	65	242	272	257	265	40.4

Control mean=860 Kg/ha.; No. of trials=6.

Murshidabad**63(S.F.T.)**

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	323	144	234	376	477	806	686	38.6

Control mean=1333 Kg/ha.; No. of trials=16.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	328	146	260	334	628	682	610	30.5

Control mean=1388 Kg/ha. ; No. of trials=9.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	265	122	233	382	468	676	566	47.2

Control mean=1231 Kg/ha. ; No. of trials=6.

Nadia**63(S.F.T.)**

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	377	25	196	419	505	647	626	67.0

Control mean=1370 Kg/ha. ; No. of trials=9.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	243	-22	39	298	397	489	396	81.1

Control mean=1805 Kg/ha ; No. of trials=9.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	247	20	76	331	353	525	432	26.4

Control mean=1583Kg/ha. ; No. of trials=8.

24-Parganas

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	388	152	221	584	690	948	731	59.6

Control mean=1655 Kg/ha. ; No. of trials=5.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	404	37	158	581	576	682	710	51.5

Control mean=1823 Kg/ha. ; No. of trials=8.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	311	78	126	481	527	526	631	79.1

Control mean=1679 Kg/ha. ; No. of trials=9.

W. Dinajpur

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	123	676	418	511	174	537	426	320.2

Control mean=1334 Kg/ha. ; No. of trials=3.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	296	137	137	354	401	527	575	56.3

Control mean=1334 Kg/ha. ; No. of trials=5.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	213	155	184	329	395	449	559	30.4

Control mean=922Kg/ha. ; No. of trials=7.

Crop :- Paddy (Aman).

Ref. :- W.B. 62, 63 (SFT) for Bankura ; 62, 63, 64, 65, (SFT) for Birbhum, 62 (SFT) for Midnapore, 65 (SFT) for 24 Paraganas and 62, 63, 65 (SFT) for Burdwan.

Site :- Bankura, Birbhum, Midnapore, 24 Paraganas and Burdwan, Type 'M'.

Object :-Type A₂ :-To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) N.A. (ii) Laterite for Bankura and Birbhum ; Red for Midnapore and Alluvial for all others. (ii) to (vi) N.A. (vi) Irrigated. (viii) to (v) N.A.

2. TREATMENTS :

(i) Same as in type A₂ (Irrigated) on page 90.

3. DESIGN :

Same as in type A₁ (Irrigated) on page 67.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 62-63 for Bankura ; 62-65 for Birbhum ; 62 only for Midnapore ; 65 for 24-Paragnas, 62-66 (64 N.A.) for Burdwan. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS:

Bankura

62 (S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response grain in Kg/ha.	75	25	67	70	152	158	246	27.2

Control mean=544 Kg/ha, No of trials=9.

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. respons of grain in Kg/ha.	568	222	321	562	642	704	768	68.6

Control mean=4126 Kg/ha ; No of trials=4.

Birbhum

62 (S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. rcsponse of grain in Kg/ha.	384	232	200	352	359	303	119	175.9

Control mean=2458 Kg/ha ; No of trials=4.

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	558	105	158	537	553	759	651	38.5

Control mean=2017 Kg/ha ; No of trials=7

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	493	63	92	546	539	671	630	39.2

Control mean=2174 Kg/ha No of trials=25.

63(S.F.T.)

Treatments	N ₁	K ₁	K ₂	N ₁ K ₁	N ₂ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	513	135	185	563	605	800	695	27.2

Control mean=2071 Kg/ha ; No of trials=25.

Midnapore (S.F.T)

62(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	108	92	184	121	138	255	369	108.6

Control mean=1152 Kg/ha ; No of trials=2.

24-Paragnas

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	391	62	126	518	578	126	789	37.4

Control mean=1815 Kg/ha ; No of trials=12.

Burdwan

62(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	599	317	397	759	673	558	722	100.9

Control mean=1979 Kg/ha ; No of trials=9.

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	457	341	350	585	611	699	748	67.8

Control mean=1986 Kg/ha ; No of trials=9.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	330	26	143	373	423	686	556	83.5

Control mean=1906 Kg/ha ; No of trials=8.

Crop :- Paddy (Aman).

Ref. :- W,B. 62, 63, 64(SFT) for Burdwan ; 62, 63, 64 (SFT) for Bankura, Midnapore, Hooghly, and 24-Paragnas ; 62, 63, 65 (SFT) for Birbhum ; 63, 64, 65 (SFT) for Nadia ; Malda and W. Dinajpore and 65, (SFT) for Murshidabad.

**Site :- (District) : Burdwan, Bankura, Type :- 'M'.
Birbhum, Midnapore, Hooghly
Nadia, Malda, W. Dinajpur,
24-Parganas and Murshidabad:**

Object :- Type A₂ :-To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nurients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Laterite for Bankura and Birbhum ; Red for Midnapore and Alluvial for all others.
 (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

Same as in type A₃ (Irrigated) on page 90.

3. DESIGN :

Same as in type A₁ (Irrigated) on page 67.

4. GENERAL :

(i) to (iii) N.A. (iv) 1962-64 for Burdwan ; 1962-66 for Bankura ; 24-Parganas ; 1962-63 for Birbhum ;
 1962-65 for Midnapore, Hooghly ; 1963-65 for Nadia ; Malda ; 1963-66 for W. Dinajpur ; 1965-66 for
 Murshidabad. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Burdwan

62(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	107	19	73	156	218	272	302	13.6

Control mean=1149 Kg/ha ; No. of trials=6.

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	307	96	171	405	517	581	450	104.0

Control mean=2908 Kg/ha ; No. of trials=8.

64 (S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	459	200	322	533	632	734	836	62.7

Control mean=2657 Kg/ha ; No. of trials=13.

Bankura

62(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	177	22	45	189	200	241	304	25.3

Control mean=1274 Kg/ha ; No. of trials=4.

63 (S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	650	59	84	653	667	427	767	31.9

Control mean=2421 Kg/ha ; No. of trials=19.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	666	160	254	683	726	609	850	38.7

Control mean=2298 Kg/ha ; No. of trials=18.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	518	48	90	567	601	457	737	22.7

Control mean=2104 Kg/ha ; No. of trials=32.

Birbhum

62 (S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	449	128	250	607	603	555	600	85.4

Control mean=1793 Kg/ha ; No. of trials=4.

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	516	3	36	553	568	302	674	59.1

Control mean=1963 Kg/ha ; No. of trials=6.

Midnapore

62 (S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	236	126	188	282	305	325	376	23.0

Control mean=1312 Kg/ha ; No. of trials=28.

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	405	120	208	444	461	554	573	27.4

Control mean=1873 Kg/ha ; No. of trials=31.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	382	110	180	372	394	532	483	38.1

Control mean=2174 Kg/ha ; No. of trials=24.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	281	72	88	345	372	487	507	41.2

Control mean=2149 Kg/ha ; No. of trials=33.

Hooghly

62(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	254	211	260	361	455	352	428	48.7

Control mean=2107 Kg/ha ; No. of trials=13

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	306	145	217	440	509	445	579	50.3

Control mean=2168 Kg/ha ; No. of trials=18.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	263	68	236	436	547	586	640	83.3

Control mean=2258 Kg/ha ; No. of trials=13.

65(S.F.T.)

Treatment]	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	264	130	179	371	412	520	514	28.8

Control mean=1776 Kg/ha ; No. of trials=14.

Nadia

62 (S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	186	45	108	341	346	641	494	96.0

Control mean=1528 Kg/ha ; No. of trials=4.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	473	-74	-138	-28	471	416	200	163.9

Control mean=2295 Kg/ha ; No. of trials=3.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	286	113	199	368	339	452	314	70.1

Control mean=2019 Kg/ha ; No. of trials=4.

Malda

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response grain in Kg/ha.	139	11	-34	92	296	460	416	265.9

Control mean=1844 Kg/ha ; No. of trials=2.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	215	440	414	249	368	367	353	78.6

Control mean=1816 Kg/ha ; No. of trials=8.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	155	293	469	485	793	636	661	166.1

Control mean=1564 Kg/ha. ; No. of trials=5.

W. Dinajpore

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	454	245	341	525	463	517	741	83.9

Control mean=1528 Kg/ha. ; No. of trials=10.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	209	48	172	260	343	503	486	47.1

Control mean=1530 Kg/ha. ; No. of trials=13.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	171	78	149	264	309	426	464	24.0

Control mean=1266 Kg/ha. ; No. of trials=14.

24-Parganas

62(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	246	76	154	283	269	470	459	52.6

Control mean=1598 Kg/ha. ; No. of trials=10.

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	346	60	146	416	492	594	650	34.3

Control mean=1630 Kg/ha. ; No. of trials=19.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	478	110	152	507	668	595	779	56.2

Control mean=1972 Kg/ha. ; No. of trials=14.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	391	62	126	518	578	726	789	37.4

Control mean=1815 Kg/ha.; No. of trials=12.

Murshidabad

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	344	115	203	420	536	669	578	24.9

Control mean=1960 Kg/ha.; No. of trials=14.

Crop:- Paddy (Boro)

Ref :- W.B. 62 (S.F.T.) for Burdwan, 62, 63 (S.F.T.) for Malda.

Site :- (District) : Burdwan & Malda.

Type :. 'M'.

Object :-Type A₃—To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

Same as in type A₃ (irrigated) on page 90.

3. DESIGN :

Same as in type A₁ (irrigated) on page 67.

4. GENERAL:

(i) to (iii) N.A. (iv) (a) 1962-66 (63-65 N.A.) for Burdwan, (b) 1962-66 (64, 65 N.A.) for Malda. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS:

Burdwan

62(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	114	-22	30	172	165	183	268	38.8

Control mean=1298 Kg/ha.; No. of trials=3.

Malda

62(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	246	125	52	102	209	489	324	87.8

Control mean=5883 Kg/ha.; No. of trials=8.

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	530	263	335	394	398	474	503	110.1

Control mean = 1713 Kg/ha. ; No. of trials = 5.

Crop :- Paddy (Aman).**Ref :- W.B. 63(46), 64(30), 65(3).****Site :- State Agri. Farm, Burdwan.****Type :- 'MV'.**

Object.—To see the effect of pre-soaking of different varieties seed with KH_2PO_4 , K_2HPO_4 and K_3PO_4 solution on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay loam. (iii) 20.7.63 and 21.7.63 ; 26.7.64 ; 16.8.65. (iv) (a) 2 to 3 ploughings and laddering. (b) Transplanting. (c) N.A. (d) 23 cm. × 23 cm. (e) 1 to 2. (v) N.A. (vi) As per treatments. (vii) N.A.; Unirrigated ; Irrigated. (viii) N.A. for 63(46) ; 2 weedings and thinning for others. (ix) N.A.; N.A. ; 39 cm. (x) 13.12.63 ; 15.12.64 ; 16.12.65.

2. TREATMENTS :**Main-plot treatments :**2 varieties of Paddy : $V_1 = \text{Raghusail}$ and $V_2 = \text{Patnai-23}$.**Sub-plot treatments:**

4 soaking treatments : $T_1 = \text{Control}$, $T_2 = \text{K}_3\text{PO}_4$ (Pre soaking for 16 hrs. with 20% solution) ; $T_3 = \text{K}_2\text{HPO}_4$ (Pre soaking for 16 hrs. with 20% solution) and $T_4 = \text{KH}_2\text{PO}_4$ (Pre soaking for 16 hrs. with 20% solution).

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 4.6 m. × 6.7 m. (b) 4.0 m. × 6.1 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL .

(i) and (ii) N.A. (iii) Yield of grain. (iv) 1963—contd. (b) Yes. (c) N.A. (v) and (vi) Nil. (vii) The experiment is continued beyond 1965. Hence individual results are given.

5. RESULTS :

63(46)

(i) 3522 Kg/ha. (ii) (a) 526.2 Kg/ha. (b) 253.0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T ₁	T ₂	T ₃	T ₄	Mean
V ₁	3654	3628	3648	3871	3700
V ₂	3405	3353	3405	3209	3343
Mean	3530	3490	3526	3540	3522

64(30)

(i) 3406 Kg/ha. (ii) (a) 310.5 Kg/ha. (b) 372.6 Kg/ha. (iii) Main effect of V alone is significant. (iv) Av. yield of grain in Kg/ha.

	T ₁	T ₂	T ₃	T ₄	Mean
V ₁	3540	3892	3498	3519	3612
V ₂	3281	3115	3084	3322	3200
Mean	3410	3504	3291	3420	3406

C.D. for V marginal means = 349.4 Kg/ha.

65(3)

(i) 3963 Kg/ha. (ii) (a) 517.5 Kg/ha. (b) 393.3 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T ₁	T ₂	T ₃	T ₄	Mean
V ₁	3892	3664	3974	3622	3788
V ₂	3912	4441	4441	3757	4138
Mean	3902	4052	4208	3690	3963

Crop :- Paddy (Aman).

Ref :- W.B. 63(8).

Site :- State Agri. Farm, Burdwan,

Type :- 'MV'.

Object :- To see whether lodging can be checked or minimised even in high N₂—fertilization with alterations of soil moisture condition at specific growth stages and timing of N₂ application.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay loam. (iii) 25.7.63 to 30.7.63. (iv) (a) 2 to 3 ploughings and land preparation. (b) Transplanting. (c) and (d) N.A. (e) 2 to 3. (v) N.A. (vi) As per treatments. (vii) N.A. (viii) 2 to 3 weedings and thinning. (ix) N.A. (x) 25.12.63.

2. TREATMENTS:

Main-plot treatments :

4 levels of N : N₀=0, N₁=33.6, N₂=67.2 and N₃=100.9 Kg/ha.

Sub-plot treatments :

3 varieties of Paddy : V₁=Raghusail. V₂=Bhasamanik and V₃=Patnai—23.

Total dose was splitted up in organic and inorganic forms and was in the ratio 1 : 2. Organic N was applied 3 weeks before puddling. Inorganic N as A/S was applied in 2 equal splits—one at the time of puddling and other at the time of initiation. Source of organic N—N.A.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 4.6 m. × 9.1 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Crops considerably affected due to lodging. (ii) N.A. (iii) Yield of grain. (iv) (a) No. (b) and (c) Nil. (v) Nathati and Susunia. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 2549 Kg/ha. (ii) (a) 564.9 Kg/ha. (b) 554.0 Kg/ha. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in Kg/ha.

	N ₀	N ₁	N ₂	N ₃	Mean
V ₁	3058	2898	2780	1722	2614
V ₂	3175	2720	2744	2506	2786
V ₃	2681	2520	1722	2063	2246
Mean	2971	2713	2415	2097	2549

C.D. for N marginal means=521.6 Kg/ha.

Crop :- Paddy (Aus).

Ref :- W.B. 61(25).

Site :- State Agri. Farm, Chinsurah.

Type :- 'MV'.

Object :—To study the effect of different levels for N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Gaaga low land clay. (iii) 12.7.61. (iv) (a) 2 to 3 ploughings and 4 laddering. (b) Transplanting. (c) to (e) N.A. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) 1 to 2 hand weedings. (ix) 133 cm. (x) 20.10.61.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 varieties of Aus : V₁=NC-918, V₂=NC-1626 and V₃=OC-52.

(2) 3 levels of N as A/S : N₀=0, N₁=33.6 and N₂=67.2 Kg/ha.

Fertilizer applied on 27.8.61.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 5.8 m. × 2.1 m. (v) N.A. (vi) Yes.

4. GENERAL :

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

5. RESULTS :

(i) 2999 Kg/ha. (ii) 768.1 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	Mean
N ₀	2251	2470	3238	2653
N ₁	3502	3373	3067	3314
N ₂	2482	3308	3296	3029
Mean	2745	3050	3200	2999

Crop :- Paddy (Aman).**Ref :- W.B. 63(7).****Site :- State Agri. Farm, Nalhati.****Type :- 'MV'.**

Object :—To see whether lodging can be checked or minimised even in high N fertilizer with alterations of soil moisture condition at specific growth stages and timing of N_2 —application.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy clay loam. (iii) Last week of July 1963. (iv) (a) 2 to 3 ploughings, spading and land preparation. (b) Transplanting. (c) and (d) N.A. (e) 2 to 3. (v) N.A. (vi) As per treatments. (vii) N.A. (viii) 2 to 3 hand weeding. (ix) N.A. (x) Last week of December 63.

2. TREATMENTS :**Main-plot treatments :**

4 levels of N as A/S : $N_0=0$, $N_1=33.6$, $N_2=67.2$ and $N_3=100.9$ Kg/ha.

Sub-plot treatments :

3 varieties : $V_1=Roghusail$, $V_2=Bkasamanik$ and $V_3=Patnai-23$.

Total dose was splitted up in both organic and inorganic forms. Organic and inorganic N was in the ratio of 1 : 2. Organic N was applied 3 weeks before puddling. Inorganic N as A/S was applied in 2 equal splits—one at the time of puddling and other at the time of initiation.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 4.6 m. \times 9.1 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Crop slightly affected due to lodging. (ii) N.A. (iii) Yield of grain. (iv) (a) No. (b) and (c) Nil. (v) Burdwan and Susunia. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 3325 Kg/ha. (ii) (a) 486.6 Kg/ha. (b) 334.8 Kg/ha. (iii) Main effect of N alone is highly significant (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	N_3	Mean
V_1	2469	3320	4310	3780	3470
V_2	2203	3278	3682	4031	3298
V_3	2441	3152	3529	3710	3208
Mean	2371	3250	3840	3840	3325

C.D. for N marginal means=449.2 Kg/ha.

Crop :- Paddy (Aman).**Ref :- W.B. 63(9)****Site :- State Agri. Farm, Susunia.****Type :- 'MV'.**

Object :—To see whether lodging can be checked or minimised even in high N_2 —fertilization with alteration of soil moisture condition at specific growth stages and timing of N_2 —application.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy clay loam and clay loam with concentration. (iii) Last week of July 1963. (iv) (a) N.A. (b) Transplanting. (c) and (d) N.A. (e) 2 to 3. (v) N.A. (vi) As per treatments. (vii) N.A. (viii) 2 to 3 weeding. (ix) N.A. (x) Last week of December 1963.

2. TREATMENTS:

Main-plot treatments :

4 levels of N : $N_0=0$, $N_1=33.6$, $N_2=67.2$ and $N_3=100.9$ Kg/ha.

Sub-plot treatments :

3 varieties : $V_1=Rughusail$, $V_2=Bhasamanik$ and $V_3=Patnai-23$.

Total dose of N was splitted up in organic and inorganic forms and was in the ratio of 1 : 2. Organic N was applied 3 weeks before puddling. Inorganic N as A/S was applied in 2 equal splits—one at the time of puddling and other at the time of initiation. Source of organic N—N.A.

3. DESIGN:

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 4.6 m. × 9.1 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (no lodging). (ii) N.A. (iii) Yield of grain. (iv) (a) to (c) N.A. (v) (a) Burdwan and Nalhati. (b) Nil. (vi) N.A. (vii) Nil.

5. RESULTS:

(i) 1883 Kg/ha. (ii) (a) 571.5 Kg/ha. (b) 273.1 Kg/ha. (iii) Main effects of N and V are highly significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	N_3	Mean
V_1	1169	1939	2503	3040	2163
V_2	974	1788	2714	2645	2030
V_3	738	1212	1626	2243	1455
Mean	960	1646	2281	2643	1883

C.D. for N marginal means=527.7 Kg/ha.

C.D. for V marginal means=199.4 Kg/ha.

Crop :- Paddy (Aman).

Ref :- W.B. 60(68).

Site :- State Agri. Farm, Chinsurah.

Type :- 'CM'.

Object :—To compare different methods of Paddy cultivation.

1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) N.A. (ii) Clay. (iii) 7.8.60. (iv) (a) 2 to 3 ploughings, spading and laddering. (b) Transplanting. (c) to (e) As per treatments. (v) Nil. (vi) Latisail (medium). (vii) and (viii) As per treatments. (ix) 80 cm. (x) 10.12.60.

2. TREATMENTS :

3 cultural manurial treatments : T_1 =Chinese method, T_2 =Japanese method and T_3 =Improved local method.

T_1	T_2	T_3
1. Seed treated with Sodabarbonate.	1. Seed bed raised.	1. Seed bed raised.
2. Seedlings 25 days old seed rate 78 Kg/ha.	2. Seed rate 22 Kg/ha.	2. Seed rate 22 Kg/ha.
3. Digging soil 91 cm. with 15 cm. layers.	3. Transplanting 4 seedlings per hole.	3. Transplanting 15th to 31st July 3 seedlings per hole.
4. Refilling layers after manuring with F.Y.M. at 502.1 Q/ha.	4. Spacing : 25 cm. × 25 cm.	4. Spacing 23 cm. × 23 cm.

5. Transplanting 15 cm. × 15 cm. with 2 seedlings/hole. 5. Interculture : 3 to 5 times at an interval of 15 days. 5. Interculture : Hand weeding after every 15 days.
6. Manuring : 44.8 Kg/ha. of P_2O_5 + 44.8 Kg/ha. of K_2O + 22.4 Kg/ha. of N. 6. Manuring : G.M. as practiced + 14.8 C.L./ha. of F.Y.M. 6. G.M. as usual.
7. Irrigation : Changing water daily. 7. 22.4 Kg/ha. of N as A/S + 17.9 Kg/ha. of P_2O_5 as Super applied at the time of transplanting and one month after transplanting. 7. 44.8 Kg/ha. of N as A/S + 44.8 Kg/ha. of P_2O_5 as Super.
8. Interculture : Hoeing and topping if necessary. 8. Irrigation as and when necessary.
9. Propping with bambo sticks.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 9.1 m. × 9.1 (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Crop affected by yellow diseases and attack of insects. No control measures were taken. (iii) Yield of grain. (vi) (a) 1959 to 1960. (b) No. (c) Nil. (v) and (vi) N.A. (vii) Expt. failed in 1959.

5. RESULTS :

(i) 3177 Kg/ha. (ii) 259.9 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T ₁	T ₂	T ₃
Av. yield	3720	2926	2884

C.D. = 334.3 Kg/ha.

Crop :- Paddy (Aman).

Site :- State Agri. Farm, Chinsurah.

Ref :- W.B. 65(55).

Type :- 'CM'.

Object :- To find out the suitable spacing for the crop under different fertility levels.

1. BASAL CONDITIONS :

(i) (a) *Boro-Aman*. (b) *Boro*. (c) As per treatments. (ii) Clay. (iii) 5.11.65 to 10.11.65. (iv) (a) 2 to 3 ploughings and 1 laddering. (b) Line sowing. (c) 37 Kg/ha. (d) As per treatments. (e) One. (v) 92.2 Q/ha. of cowdung. (vi) *Laisail*. (vii) Unirrigated. (viii) 2 weeding and 1 thinning. (ix) 6 cm. (x) 1st week of May 1966.

2. TREATMENTS :

All combinations of (1) and (2)

7 spacings between rows and plants : $S_1 = 10.2 \text{ cm.} \times 10.2 \text{ cm.}$, $S_2 = 20.3 \text{ cm.} \times 10.2 \text{ cm.}$, $S_3 = 15.2 \text{ cm.} \times 15.2 \text{ cm.}$, $S_4 = 22.9 \text{ cm.} \times 15.2 \text{ cm.}$, $S_5 = 30.5 \text{ cm.} \times 15.2 \text{ cm.}$, $S_6 = 22.9 \text{ cm.} \times 22.9 \text{ cm.}$ and $S_7 = 30.5 \text{ cm.} \times 20.3 \text{ cm.}$

(2) 3 levels of N : $N_0 = 0$, $N_1 = 33.6$ and $N_2 = 67.3 \text{ Kg/ha.}$

'N' as A/S were applied broadcasting at the time of land preparation.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 21. (b) 78.6 m. × 9.8 m. (iii) 3. (iv) (a) 4.3 m. × 9.8 m. (b) 3.7 m. × 9.1 m. (v) 61 cm. kept as border. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1963 to 1965. (b) Yes. (c) N.A. (v) No. (vi) N.A. (vii) Expt. for 1963 and 1964 N.A.

5. RESULTS :

(i) 2606 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of grain in Kg/ha.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	Mean
N ₀	2171	1961	2242	2183	2311	1902	1773	2078
N ₁	3157	2521	2978	2939	2691	2610	2542	2777
N ₂	2918	3208	3110	3128	3140	2521	2709	2962
Mean	2749	2563	2777	2750	2714	2344	2341	2606

Crop :- Paddy (Boro).**Ref :- W.B. 65(56).****Site :- State Agri. Farm, Chinsurah.****Type :- 'CM'.**

Object :—To find out the suitable spacings for the crop under different fertility level.

1. BASAL CONDITIONS :

(i) (a) No. (b) Boro Paddy. (c) As per treatments. (ii) Clay. (iii) 6.11.65. (iv) (a) 2 ploughings and laddering. (b) Line sowing. (c) 30 to 35 Kg/ha. (d) As per treatments. (e) One. (v) 92.2 Q/ha. of cowdung. (vi) Boro I. (vii) Unirrigated. (viii) 2 weeding+thinning. (ix) 6 cm. (x) 1st week of May 1966.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 7 spacings between rows and plants : S₁=10.2 cm. × 10.2 cm., S₂=20.3 cm × 10.2 cm., S₃=15.2cm. × 15.2 cm., S₄=22.9 cm. × 15.2 cm., S₅=30.5 cm. × 15.2 cm., S₆=22.9 cm. × 22.9 cm. and S₇=30.5cm. × 20.3 cm.(2) 3 levels of N as A/S : N₀=0, N₁=33.6 and N₂=67.3 Kg/ha.

N as A/S were applied by broadcasting at the time of land preparation.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 2l. (b) N.A. (iii) 3. (iv) (a) 4.3 m. × 9.8 m. (b) 3.7 m. × 9.1 m. (v) 6l cm. kept as border. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1953 to 1965. (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 2226 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of grain in Kg/ha.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	Mean
N ₀	1944	1794	2063	2021	1932	1624	1585	1852
N ₁	2751	2201	2410	2042	2272	2251	2213	2306
N ₂	2571	2308	2888	2512	2589	2311	2461	2520
Mean	2422	2101	2454	2192	2264	2062	2086	2226

Crop :- Paddy (Aman)**Ref. :- W.B. 64(62)****Site :- State Agri. Farm, Chinsurah.****Type :- 'CM'.**

Object :—To find out the effect of different doses of N as A/S and different dates of transplanting under Chinsurah soil condition.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay. (iii) As per treatments. [(iv) (a) 2 to 3 ploughings and laddering. (b) Transplanting. (c) N.A. (d) 23 cm. × 23 cm. (e) 1 to 2. (v) N.A. (vi) *Patnai*—23 (medium). (vii) Unirrigated. (viii) 2 to 3 weedings and thinning. (ix) and (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N as A/S : $N_0=0$, $N_1=33.6$, $N_2=67.2$ and $N_3=100.9$ Kg/ha.

(2) 4 dates of transplanting : $D_1=20.7.64$, $D_2=5.8.64$, $D_3=20.8.64$ and $D_4=5.9.64$.

'N' as A/S was applied by broadcasting on 29.7.64, 13.8.64, 29.8.64 and 8.9.64, after transplant \varnothing tion.

3. DESIGN :

(i) Fact in R.B.D. (ii) (a) 16. (b) 33.9m. × 34.1 m. (iii) 4. [(iv) (a) 8.5 m. × 8.5 m. (v) 7.9 m. × 7.9 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

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

5. RESULTS :

(i) 2359 Kg/ha. (ii) 309.3 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	D_4	Mean
N_0	2176	2163	2156	1848	2086
N_1	2860	2529	2559	2318	2566
N_2	2754	2487	2740	2506	2622
N_3	2229	1745	2169	2507	2162
Mean	2505	2231	2406	2295	2359

C.D. for N marginal means = 218.7 Kg/ha.

Crop :- Paddy (Aman).**Ref. :- W.B. 64(53).****Site :- State Agri. Farm, Chinsurah.****Type :- 'CM'.**

Object :—To find out the best spacing for Paddy under different fertility level.

1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) As per treatments. (ii) Clayey. (iii) Last week of July 1964. (iv) (a) 2 to 3 ploughings and laddering. (b) Transplanting. (c) 35 Kg/ha. (d) As per treatments. (e) 2. (v) Nil. (vi) Latisail (medium). (vii) Irrigated. (viii) 2 hand weedings and thinning. (ix) 90 cm. (x) Last week of Dec. 1964.

2. TREATMENTS and 3 DESIGN :

Same as in expt. no 63(60) on page 110.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1963 and 64. (b) Yes. (c) N.A. (v) No. (vi) N.A. (vii) Expt. failed in 1963.

5. RESULTS :

(i) 929 Kg/ha. (ii) 564.8 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	Mean
N ₀	1445	1485	1146	997	867	718	688	1049
N ₁	977	678	1276	638	718	658	748	813
N ₂	1555	1076	1246	518	708	608	767	925
Mean	1326	1030	1223	718	764	661	734	929

Crop :- Paddy (Boro).

Ref. :- W.B. 63(60), 64(52).

Site :- State Agri. Farm, Chinsurah.

Type :- CM².

Object :—To find out the best spacing for Boro Paddy under different fertility level.

1. BASAL CONDITIONS :

(i) (a) N.A. ; No. (b) N.A. ; Paddy. (c) N-A. ; as per treatments. (ii) Clay. (iii) 1st week of November 1963 ; 2.11.64 ; 3.11.64. (iv) (a) 2 to 3 ploughings and laddering. (b) Transplanting. (c) 30 to 35 Kg/ha. (d) As per treatments. (e) one. (v) 33.6 Kg/ha. of P₂O₅ as Super ; Nil. (vi) C.B.I. (medium). (vii) Irrigated. (viii) 2 to 3 weedings and thinning. (ix) 7 cm. ; 10 cm. (x) 1st week of April 1964 ; 13.4.65.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N : N₀=0, N₁=33.6 Kg/ha. and N₂=67.2 Kg/ha.

(2) 7 spacings : S₁=10 cm. × 10 cm., S₂=20 cm. × 10 cm., S₃=15 cm. × 15 cm., S₄=23 cm. × 15 cm., S₅=30 cm. × 15 cm., S₆=23 cm. × 23 cm. and S₇=30 cm. × 20 cm.

N applied as A/S and T.C. in 1:1 ratio $\frac{1}{2}$ of N was applied as basal and $\frac{1}{2}$ one month after transplantation by broadcasting.

3. DESIGN :

(i) Fact in R.B.D. (ii) (a) 21. (b) N.A. (iii) 3 (iv) (a) 3.8 m. × 3.3 m. (b) 3.7 m. × 9.1 m. (v) 8 cm. × 8 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1963 and 64. (b) Yes. (c) Results of combined analysis given under. 5. (v) No. (vi) N.A. (vii) Error variances are homogenous and Treatments × years interaction is absent.

5. RESULTS :

(i) 2158 Kg/ha. (ii) 382.3 Kg/ha. [based on 103 d.f. made up of pooled error and Treatments × years interaction]. (iii) Main effects of S and N are significant. (iv) Av. yield of grain in Kg/ha.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	Mean
N ₀	2242	1988	1939	2028	1655	1600	1999	1922
N ₁	2297	2248	2372	2093	2108	2218	2073	2201
N ₂	2542	2322	2427	2427	2282	2248	2213	2352
Mean	2360	2186	2246	2183	2015	2022	2095	2158

C.D. for N marginal means = 163.8 Kg/ha.

C.D. for S marginal means = 249.8 Kg/ha.

Treatment Year	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	Sig.
1963	2249	1767	1884	1830	1767	1715	1841	N.S.
1964	2472	2605	2608	2535	2262	2329	2349	N.S.
Pooled	2360	2186	2246	2183	2015	2022	2095	*

N ₀	N ₁	N ₂	Sig.	S.E /plot	G.M.
1724	1858	2012	N.S.	402.2	1865
2119	2544	2691	*	378.2	2451
1922	2201	2352	*	382.3	2158

Crop :- Paddy (Kharif).

Ref. :- W.B. 60(M.A.E.).

Site :- M.A.E. Centre, Hiragachi.

Type : 'CM'.

Object :- Type VII:—To study the effect of different spacings, no. of seedlings/hole and date of sowing along with different levels of N and P on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Paddy. (b) and (c) N.A. (ii) Clay loam. (iii) 18.6.60 ; 3,20.7.60/As per treatments. (iv) (a) 2 ploughings and 2 ploughings followed by *pata*. (c) 23 to 35 Kg/ha. (d) and (e) As per treatments. (v) 5604 Kg/ha of cowdung. (vi) *Nagra*. (vii) Unirrigated. (viii) 3 weedings. (ix) N.A. (x) 15,18, 22.12.60.

2. TREATMENTS :

Main-plot treatments.

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

- (1) 3 dates of sowing : D₁=15 days before transplanting, D₂=Normal transplanting and D₃=15 days after normal transplanting.
- (2) 3 spacings : S₁=15 cm. × 15 cm., S₂=20 cm. × 20 cm. and S₃=25 cm. × 25 cm.
- (3) No. of seedlings/hole : R₁=2, R₂=4 and R₃=6 seedlings/hole.

Sub-plot treatments :

All combinations of (1) and (2)

- (i) 2 levels of N as A/S : N₀=0 and N₁=44.8 Kg/ha.
- (2) 2 levels of P₂O₅ as Super : P₀=0 and P₁=44.8 Kg/ha.

3. DESIGN :

(i) Split-plot confd. (ii) (a) 9 main-plots/block ; 3 blocks/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 1. (iv) (a) 12.6 m. × 4.0 m. (b) 12.0 m. × 3.3 m. ; 11.8 m. × 3.1 m. and 11.4 m. × 2.8 m. for S₁, S₂ and S₃ respectively. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Partial lodging in D₁ block in nitrogen treated plots on 10.10.60. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1956—contd. (v) to (vii) Nil.

5. RESULTS :

(i) 3100 Kg/ha. (ii) (a) 274.8 Kg/ha. (b) 290.5 Kg/ha. (iii) Main effects of D, S and interaction D × N are highly significant. Main effect of P and interaction D × S are significant. (iv) Av. yield of grain in Kg/ha.

	D ₁	D ₂	D ₃	R ₁	R ₂	R ₃	S ₁	S ₂	S ₃	P ₀	P ₁	Mean
N ₀	2937	3073	3140	2921	3136	3093	2596	3124	3430	2997	3103	3050
N ₁	2880	3051	3518	3191	3115	3144	2668	3184	3598	3085	3215	3150
Mean	2908	3062	3329	3056	3126	3118	2632	3154	3514	3041	3159	3100
P ₀	28.5	2965	3303	3013	3038	3072	2537	3097	3489			
P ₁	2962	3159	3356	3099	3214	3164	2727	3211	3539			
S ₁	2182	2734	2980	2574	2604	2718						
S ₂	3094	3091	3277	3204	3250	3008						
S ₃	3448	3362	3731	3390	3524	3628						
R ₁	2954	3019	3195									
R ₂	2887	3118	3373									
R ₃	2883	3050	3420									

C.D. for D or S marginal means =158.6 Kg/ha.
 C.D. for P marginal means =113.5 Kg/ha.
 C.D. for N means at the same level of D=196.5 Kg/ha.
 C.D. for D means at the same level of N=209.8 Kg/ha.
 C.D. for body of D×S table =274.4 Kg/ha.

Crop :- Paddy (Aman).

Ref. :- W.B. 64(3), 65(9).

Site :- State Agri. Farm, Chinsurah.

Type :- 'D'.

Object :- To find the efficiency of *Bacillus thuringensis* for the control of stem borer.

1. BASAL CONDITIONS :

(i) (a) N.A., No. (b) N.A., Paddy. (c) N.A. (ii) Ganga clay. (iii) 29.6.64; 30.6.64; 29.6.65; 1.8.65. (iv) (a) 2 to 3 ploughings and 2 laddering. (b) Line sowing, Transplanting. (c) N.A. (d) 25 cm.×25 cm. (e) One. (v) 92.2 /ha. of cowdung. (vi) *Kataribhog* (medium). (vii) Irrigated. (viii) 2 weedings and thinning. (ix) 90 cm.×60 cm. (x) 27.11.64, 28.11.65.

2. TREATMENTS :

Bacillus thuringensis 10 gm/litre sprayed at different intervals as follows :

4 spraying treatments : T₀=Control (No spray), T₁=Spraying at an interval of 30 days. T₂=spraying at an interval of 15 days. T₃=Spraying at an interval of 10 days.

1st spraying on 28.8.64 and 1.10.65 respectively.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 3. (iv) 7.5 m.×7.5 m., 8.0 m.×8.0 m. (b) 0.0026 ha., 7.5 m.×7.5 m. (v) N.A., 25 cm. around each plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of stem borer. (iii) Count of dead heart, white earhead and yield in Kg/ha. (iv) (a) 1964—contd. (b) Yes. (c) N.A. (v) and (vi) N.A. (vii) The experiment is continued beyond 1965. Hence, individual results are presented.

5. RESULTS :

64(3)

(i) 3128 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of grain in Kg/ha.

Treatment	T ₀	T ₁	T ₂	T ₃
Av. yield	3379	3143	3036	2952

65(9)

(i) 3981 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of grain in Kg/ha.

Treatment	T ₀	T ₁	T ₂	T ₃
Av. yield	4076	3924	4000	3924

Crop :- Paddy (Aman).**Ref :- W.B. 64(4), 65(8).****Site :- State Agri. Farm, Chinsurah.****Type :- 'D'.**

Object :—To study the effect of spraying of Endrin, Trithionus and Malathion for controlling the attack of stemborer.

1. BASAL CONDITIONS :

(i) (a) Nil, No. (b) *Aman* Paddy (c) N.A., 92.2, Q/ha of cowdung. (ii) Clayey. (iii) 29.6.64/30.7.64 ; 29.6.65/1.8.65. (iv) 3 ploughings and one laddering. (b) Line sowing, Transplanting. (c) N.A. (d) 25 cm. × 25 cm. (e) One. (v) N.A., 92.2, Q/ha of cowdung. (vi) *Kataribhog* (medium). (vii) Irrigated (viii) 2 weedings and thinning. (ix) 90 cm., 65 cm. (x) 27.11.64, 28.11.65.

2. TREATMENTS :

Main-plot treatments :

Spraying of 3 insecticides : I₁=Endrin, I₂=Trithionus and I₃=Malathion.

Sub-plot treatments :

4 concentrations of each insecticide : C₀=0%, C₁= 0.05%, C₂=0.03% and C₃=0.01%.

6 sprayings were done on 29.8.64, 4.9.64, 15.9.64, 21.9.64, 3.10.64 and 9.10.64 respectively.

5 sprayings on 4.9.65, 10.9.65, 25.9.65, 1.10.65, and 8.10.65 respectively.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block, 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 7.5 m. × 7.5 m. (b) 8.0 m. × 8.0m. (v) N.A., 0.5 m. kept as border around each plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of stemborer. (iii) Count of white ear head, Dead heart and yield of grain. (iv) (a) 1964—contd. (b) Yes. (c) N.A. (v) and (vi) Nil. (vii) The experiment is continued after 1965 Hence individual results are presented.

5. RESULTS :

64(4)

(i) 4440 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of grain in Kg/ha.

	C ₀	C ₁	C ₂	C ₃	Mean
I ₁	3752	4286	3905	4095	4010
I ₂	9665	3905	3951	4095	5404
I ₃	3772	4274	3760	3814	3905
Mean	5730	4155	3872	4001	4440

65(8)

(i) 4559 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of grain in Kg/ha.

	C ₀	C ₁	C ₂	C ₃	Mean
I ₁	4526	3954	5105	4572	4539
I ₂	4488	4831	3397	4667	4471
I ₃	4591	4831	4640	4610	4668
Mean	4535	4539	4547	4616	4559

Crop :- Paddy (Boro).**Ref :- W.B. 61(43), 62(21), 63(18).****Site :- State Agri. Farm, Chinsurah.****Type :- 'D'.**Object :—To study the effect of spraying of insecticides for controlling *schoenobius incertulas*.**2. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) Clay loam. (iii) 21.11.61 / 21.1.62 ; 7.11.62 / 28.12.62 ; 11.11.63 / 28.12.63. (iv) (a) 3 ploughings and laddering and land preparation ; 2 to 3 ploughings and land preparation ; ploughing and laddering. (b) Transplanting. (c) N.A. (d) 25 cm. × 25 cm. (e) One. (v) N.A. (vi) CB₁ (medium) for 61(43) and 62(21), CB₁ (N.A.) for 63(18). (vii) Irrigated. (viii) 2 weedings and thinning for 61(43), 2 to 3 weedings for 62(21), hand weeding and lining for 63(18). (ix) 17 cm. : N.A. ; 18 cm. (x) 18.5.62 ; 3.5.63 ; 20.4.64.

2. TREATMENTS :

9 Insecticidal treatments : T₀=Control (no spraying) T₁=Endrex shell 0.05% Endrin, T₂=Endrex shell 0.04% Endrin., T₃=Endrex shell 0.03% Endrin., T₄=Endrex shell 0.2% Endrin, T₅=Folidol E 605—0.10% (Parathion), T₆=Folidol E 605—0.075% (Parathion), T₇=Folidol E 605—0.5% (Parathion). T₈=Folidol E 605—0.025% (Parathion).

Spraying done in 4 times : 14.9.60, 20.9.60, 6.10.60 and 12.10.60.

3. DESIGN

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) 7.5 m. × 7.5 m. (b) N.A. (v) 75 cm. spacing between plots. (vi) Yes.

4. GENERAL :

(i) Good for 61(43), Normal for 62(61), N.A. for 63(18). (ii) Attack of *schoenobius incertulas*, (iii) White earhead, dead hearts and yield of grain. (iv) (a) Yes, 1961-63. (b) Yes. (c) Nil. (v) No. (vi) N.A. (vii) Nil.

5. RESULTS :**61(43)**

(i) 1.89% (ii) and (iii) N.A. (iv) Av. percentage of dead heart at harvest.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. percentage	2.37	1.04	2.09	1.69	2.13	2.66	1.91	1.41	1.69

(i) 0.42% (ii) 0.56% (iii) Treatment differences are not significant. (iv) Av. percentage of white earhead at harvest.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. percentage	0.66	0.27	0.56	0.69	0.19	0.78	0.19	0.17	0.25

C.D. = 0.6%

(i) 874 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of grain in Kg/ha.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	941	837	994	810	810	967	889	758	863

62(21)

(i) 0.70% (ii) and (iii) N.A. (iv) Av. percentage of dead heart at harvest.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. percentage	1.35	0.42	0.45	0.61	0.63	0.65	0.67	0.69	0.88

(i) 0.23% (ii) 0.08% (iii) Control. vs. insecticides is highly significant. Between parathion is significant.
(iv) Av. percentage of white earhead.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. percentage	0.54	0.15	0.13	0.20	0.22	0.17	0.18	0.19	0.30

C.D.=0.09%

(i) 3061 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of grain in Kg/ha.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	2545	2926	3276	3314	3364	2652	2983	3151	3334

63(18)

(i) 3.01% (ii) 2.00% (iii) Control vs. insecticides and Parathion vs. Endrin are highly significant. (iv) Av. percentage of dead heart at harvest.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. percentage	6.62	0.93	1.32	1.85	2.26	2.96	3.25	4.21	3.70

C.D.=2.18%

(i) 1850 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of grain in Kg/ha.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	1619	1848	1745	1920	1916	2023	1878	1775	1924

Crop :- Paddy (Aus).

Ref :- W.B. 61(41), 62(19), 63(16)

Site :- State Agri. Farm, Chinsurah.

Type :- 'D'.

Object :- To study the effect of spraying of insecticides for controlling *schoenobius incertulas*.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A.; N.A.; Aus. (c) N.A. (ii) Clay loam. (iii) 19.5.61/13.7.61; 23.5.62/23.6.62; 15.5.63/21.6.63. (iv) (a) 2 to 3 ploughings and laddering for 61(41); 2 to 3 ploughings, spading and land preparation for 62(19) and 63(16). (b) Transplanting. (c) N.A. (d) 25 cm. x 25 cm. (e) One. (v) N.A. (vi) Charak. (vii) Unirrigated. (viii) 2 weedings and thinning for 61(41), 62(19), 2 to 3 weedings and thinning for 63(16). (ix) 123 cm. for 61(41), N.A. for 62(19) and 63(16). (x) 25.10.61; 15.10.62 and 14.9.63.

2. TREATMENTS:

9 insecticidal treatments : T_0 =Control (no spraying), T_1 =Endrex shell—0.05% (Endrin), T_2 =Endrex shell—0.04% (Endrin), T_3 =Endrex shell—0.03% (Endrin) T_4 =Endrex shell—0.02% (Endrin), T_5 =Folidol E—605—0.10% (Parathion), T_6 =Folidol E 605—0.08% (Parathion), T_7 =Folidol E 605 0.05% (Parathion) and T_8 =Folidol E—605—0.025% (Parathion).
Sprayings done on 26.8.61 and 1.9.61.

3. DESIGN:

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) 7.5 m. × 7.5 m. (b) N.A. (v) 75 cm. space between plots. (vi) Yes.

4. GENERAL :

(i) Good ; Normal, N.A. (ii) Attack of schoeno. (iii) White earhead, dead heart and yield of grain. (iv) (a) 1961—63. (b) Yes. (c) Results of combined analysis are given under 5 results. (v) No. (vi) N.A. (vii) Nil.

5. RESULTS :

61(41)

(i) 0.94% (ii) and (iii) N.A. (iv) Av. percentage of dead heart at harvest.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. percentage	1.14	1.00	0.62	0.40	0.53	0.96	1.48	0.95	1.36

(i) 0.59% (ii) 0.59% (iii) Control vs. insecticide is highly significant. (iv) Av. percentage of white earhead at harvest.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. percentage	0.80	0.78	0.49	0.22	0.29	0.47	0.80	0.59	0.83

C.D.=0.52%.

(i) 1017 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	889	1020	1072	1281	1203	1124	915	863	784

62(19)

(i) 0.95% (ii) and (iii) N.A. (iv) Av. percentage of dead heart at harvest.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. percentage	1.82	0.70	0.71	0.75	1.25	0.79	0.80	0.92	0.82

(i) 0.85% (ii) 0.46% (iii) Control vs. insecticides is highly significant. (iv) Av. percentage of white earhead.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. percentage	1.47	0.62	0.58	0.71	1.02	0.74	0.77	1.04	0.66

C.D.=0.40%

(i) 2172 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	2122	2392	2050	2191	2145	2095	2202	2255	2095

63(16)

(i) 1.04% (ii) 0.38% (iii) Endrex vs. others are highly significant and control vs. insecticides is significant. (iv) Av. percentage of dead heart at harvest.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. percentage	1.31	1.16	0.85	0.73	0.82	0.73	1.07	1.03	1.62

C.D. Endrex vs. others=0.21%

C.D. Control vs. others=0.33%

(i) 2661 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of grain in Kg/ha.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	2381	2667	2724	2545	2754	2648	2766	2724	2743

Crop :- Paddy (Aman).

Ref :- W.B. 61(42), 62(20), 63(17).

Site :- State Agri. Farm, Chinsurah.

Type :- 'D'.

Object :- To study the effect of spraying of insecticides for controlling *schoenobius incertulas*.

1. BASAL CONDITIONS:

(i) (a) N.A. (b) N.A. ; N.A. ; *Aman*. (c) N.A. (ii) Clay loam. (iii) 26.6.61/14.8.61 ; 19.6.62/30.7.62 ; 26.6.63/1.8.63. (iv) (a) 3 to 4 ploughings and one laddering ; 3 ploughings and laddering ; 2 ploughings and laddering. (b) Transplanting. (c) N.A. (d) 25 cm. × 25 cm. (e) One. (v) N.A. (vi) *Raghu soil* (medium). (vii) Unirrigated. (viii) 2 weedings and thinning ; 1 to 2 weedings and thinning, N.A., (ix) 112 cm. ; 112 cm., 96 cm. (x) 16.12.61 ; 10.12.62 ; 14.12.63.

2. TREATMENTS :

9 Insecticidal treatments : T₀=Control (no spraying). T₁=Endrex shell—0.05% (Endrin), T₂=Endrex shell—0.04% (Endrin), T₃=Endrex shell—0.03% (Endrin), T₄=Endrex shell—0.02% (Endrin), T₅=Folidol E 605—0.1% (Parathion), T₆=Folidol E 605—0.075% (Parathion), T₇=Folidol E605—0.05% (Parathion), T₈=Folidol E 605—0.025% (Parathion).

Spraying done in 4 times : 14.9.60 ; 20.9.60 ; 6.10.60 and 12.10.60.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) 7.5 m. × 7.5 m. (b) N.A. (v) 75 cm. between plots. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Attack of *schoenobius incertulas*. (iii) White earhead, dead heart and yield of grain. (iv) (a) 1961-63. (b) Yes. (c) Results of combined analysis are given under 5 results. (v) No. (vi) N.A. (vii) Nil.

5. RESULTS :

61(42)

(i) 1.0% (ii) and (iii) N.A. (iv) Av. percentage of dead heart at harvest.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. percentage	1.38	1.05	0.74	0.95	0.73	0.83	0.92	0.90	1.44

(i) 0.58% (ii) 0.37% (iii) Endrex vs. others are significant. (iv) Av. percentage of white earhead at harvest.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. percentage	0.74	0.51	0.32	0.57	0.36	0.57	0.57	0.48	1.09

C.D.=0.20%

(i) 2258 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of grain in Kg/ha.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	2144	2353	2379	2301	2222	2353	2170	2065	2327

62(20)

(i) 0.6% (ii) and (iii) N.A. (iv) Percentage of dead heart at harvest.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. percentage	1.32	0.24	0.40	0.63	0.95	0.26	0.42	0.59	0.86

(i) 0.31% (ii) 0.20% (iii) Control vs. insecticides is highly significant. (iv) Av. percentage of white earhead at harvest.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. percentage	0.69	0.19	0.26	0.30	0.52	0.17	0.19	0.25	0.26

C.D.=0.17%

(i) 5103 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of grain in Kg/ha.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	5707	4907	4716	5303	5364	4808	5094	4850	5181

63(17)

(i) 0.46% (ii) 0.32% (iii) Treatment differences are not significant. (iv) Av. percentage of dead heart at harvest.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. percentage	0.47	0.30	0.51	0.46	0.20	0.50	0.56	0.51	0.64

(i) 5133 Kg/ha. (ii) and (iii) N.A. (iv) yield of grain in Kg/ha.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	4994	5307	4983	4945	5341	5219	5402	5010	4994

Crop :- Paddy (Boro.)

Ref :- W.B. 62(17), 63(15).

Site :- State Agri. Farm, Chinsurah.

Type :- 'D'.

Object :- To study the effect of removal of egg masses of rice stem borer, *Schoenobius incertulas* by mechanical methods.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay loam. (iii) 7.11.62/17.12.62 ; 11.11.63/21.12.63. (iv) (a) 2 to 3 ploughings and land preparation. (b) Transplanting. (c) N.A. (d) 25 cm. x 25 cm. (e) One. (v) N.A. (vi) CBI (N.A.) (vii) Irrigated. (viii) N.A. (ix) N.A. ; 18 cm. (x) 1.5.63 ; 20.4.64.

2. TREATMENTS :

Two seed treatments : T_0 =Control and T_1 =Hand picking of egg masses.

Seeds were sown in two separate seed beds of 12×1.25 meters for treatments (T_0) and (T_1). Collection of egg masses from the seed bed T_1 was made on every six days to keep it free from borer attack and the other seed bed T_0 was kept under normal infestation. Seedling from these two seed beds were transplanted separately in the plots.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) $7.5 \text{ m.} \times 7.5 \text{ m.}$ (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of stem borer as under treatment. (iii) Yield of grain and count of damaged earhead. (iv) (a) 1961-63 (1961 is N.A.) (b) Yes. (c) N.A. (v) No. (vi) N.A. (vii) Error variances are homogeneous and Treatments \times years interaction is absent.

5. RESULTS :

(i) 2265 Kg/ha. (ii) 105.5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1
Av. yield	2328	2202

Years	T_0	T_1	Sig	S.E./plot	G.M.
1962	2393	2274	*	114.3	2334
1963	2263	2130	**	100.8	2196
Pooled	2328	2202	N.S.	105.5	2265

Crop : Paddy (*Aman*).

Ref :- W.B. 61(53), 62(16).

Site :- State Agri. Farm, Chinsurah.

Type :- 'D'.

Object :- To study the effect of mechanical removal of egg masses of stem borer for the control of incidence of attack by the Borer.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay loam. (iii) 17.6.61/6.8.61 ; 19.6.62/25.7.62. (iv) (a) 2 to 3 ploughings and laddering ; 2 ploughings and land preparation. (b) Transplanting. (c) N.A. (d) $25 \text{ cm.} \times 25 \text{ cm.}$ (e) 1. (v) N.A. (vi) *Raghusail* (medium). (vii) Unirrigated. (viii) 2 to 3 weedings and thinning. (ix) 112 cm. ; N.A. (x) 9.12.61, 10.12.62.

2. TREATMENTS :

Two seed treatments : T_0 =Control and T_1 =Hand picking of egg masses.

Seeds were sown in two separate seed beds of 12×1.25 meters for treatments (T_0) and (T_1). Collection of egg masses for seed beds T_1 was made on every 6 days to keep it free from borer attack and the other seed bed T_0 was kept under normal infestation. Seedling for two seed beds were transplanted separately in the plot.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) and (b) $7.5 \text{ m.} \times 7.5 \text{ m.}$ (v) N.A. (vi) Yes.

4. GENERAL ;

(i) N.A. (ii) Attack of stem borer as under treatment. (iii) Yield of grain and count of damaged earheads. (iv) (a) 1961-62. (b) Yes. (c) N.A. (v) No. (vi) N.A. (vii) Error variances are heterogeneous and Treatments \times years interaction is present.

5. RESULTS :

(i) 3469 Kg/ha. (ii) 637.4 Kg/ha. (based on 23 d.f. made up of Treatments \times years interaction and pooled error). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T ₀	T ₁			
Av. yield	3511	3427			
Years	T ₀	T ₁	Sig	S.E./plot	G.M.
1961	2405	2505	N.S.	169.7	2455
1962	4617	4349	N.S.	495.3	4483
Pooled	3511	3427	N.S.	637.4	3469

Crop :- Paddy (Aus).

Ref :- W.B. 61(52), 62(15).

Site :- State Agri. Farm, Chinsurah.

Type :- 'D'.

Object :- To study the effect of removal of egg masses of rice stem borer *Tryporyza (schseustrus) incertulas* by mechanical methods.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay loam. (iii) 17.5 61/22.6.61 ; 19.5.62/19.6.62. (vi) (a) 2 to 3 ploughings, laddering and land preparation. (b) Transplanting. (c) N.A. (d) 25 cm. \times 25 cm. (e) One. (v) N.A. (vi) *Charnek* (medium). (vii) Unirrigated. (viii) 2 weedings and thinning. (ix) 122 cm. ; N.A. (x) 10.10.61 ; 1.10.62.

2. TREATMENTS :

2 seed treatments : T₀ = Control and T₁ = Hand picking of egg masses.

Seeds were sown in two separate seed beds of 12 \times 1.25 metres for treatments (T₀) and (T₁). Collection of egg masses from seed bed T₁ was made on every 6 days to keep it free from borer attack and the other seed bed T₀ was kept under normal infestation. Seedling for these two seed beds were transplanted separately in the plots.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 7.5 m. \times 7.5 m. (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of stem borer as under treatment. (iii) Yield of grain and count of damaged earhead. (iv) (a) 1961—1963. (b) Yes. (c) Results of combined analysis are given under 5. Results. (v) No. (vi) N.A. (vii) Error variances are homogeneous and Treatments \times years interaction is absent.

5. RESULTS :

(i) 1461 Kg/ha. (ii) 243.5 Kg/ha. (based on 23 d.f. made up of Treatments \times years interaction and pooled error). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T ₀	T ₁			
Av. yield	1431	1492			
Years	T ₀	T ₁	Sig.	S.E./plot	G.M.
1961	892	907	N.S.	246.0	899
1962	1970	2076	N.S.	247.6	2023
Pooled	1431	1495	N.S.	243.5	1461

Crop :- Paddy (Aus).

Ref :- W.B. 61(49), 62(18), 63(14).

Site :- State Agri. Farm, Chinsurah.

Type :- 'DC'.

Object :- To study the relation between the incidence of rice stem borer attack and the sowing time of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. ; N.A. Aus. (c) N.A. (ii) Clay loam. (iii) April/May '61 ; April, May, June 1962 ; March/April/May 1963. (iv) (a) 2 to 3 ploughings and laddering. (b) Transplanting. (c) N.A. (d) 25 cm. x 25 cm. (e) One. (v) N.A. (vi) *Charank* (N.A.) (vii) Unirrigated. (viii) 2 to 3 weeding for 61 (49), 2 to 3 hand weeding and thinning for 62(18), 63(14). (ix) 123 cm. ; N.A. ; N.A. (x) 28.8.61 to 13.10.61, N.A., N.A.

2. TREATMENTS :

Four dates of sowing : $D_1=15.4.61$, $D_2=30.4.61$, $D_3=15.5.61$ and $D_4=30.5.61$.

Six dates of sowing : $D_1=31.3.62$, $D_2=15.4.62$, $D_3=30.4.62$, $D_4=15.5.62$, $D_5=30.5.62$ and $D_6=14.6.62$.

Six dates of sowing : $D_1=16.3.63$, $D_2=31.3.63$, $D_3=15.5.64$, $D_4=30.4.63$, $D_5=15.5.63$ and $D_6=30.5.63$.

Seedlings were transplanted after 30 days from the date of sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 4/6/6. (b) N.A. (iii) 4. (iv) (a) 7.5 m x 7.5 m. (b) N.A., N.A., 0.0018 ha. (v) 80 cm. around each plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of stem borer—No control measure taken except those stated in the treatments. (iii) Yield of grain, quantity of white earhead and dead heart. (iv) (a) 1961—1963 (treatments modified in 1962 and 1963). (b) Yes. (c) Results of combined analysis are given under 5. Results. (v) No. (vi) Yield was greatly affected due to bird menace. (vii) Nil, Expt. for *Aman* not conducted this year, Nil.

5. RESULTS :

61(49)

(i) 1473 Kg/ha. (ii) 442.1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	D_1	D_2	D_3	D_4
Av. yield	1021	1600	1760	1512

(i) 1.10%. (ii) 0.53%. (iii) Treatment differences are significant. (iv) Av. percentage of dead heart at harvest.

Treatment	D_1	D_2	D_3	D_4
Av. percentage	1.81	1.32	1.19	1.08

C.D. = 0.96%

(i) 0.75%. (ii) 0.51%. (iii) Treatment differences are not significant. (iv) Av. percentage of white earhead due to borer.

Treatment	D_1	D_2	D_3	D_4
Av. percentage	1.01	0.32	0.67	1.01

(i) 4.34%. (ii) 2.29%. (iii) Treatment differences are not significant. (iv) Av. percentage of dead heart.

Treatment	D_1	D_2	D_3	D_4	D_5	D_6
Av. percentage	6.95	4.15	3.72	2.74	5.60	2.87

(i) 0.71%. (ii) 0.87%. (iii) Treatment differences are not significant. (iv) Av. percentage of white earhead.

Treatment	D_1	D_2	D_3	D_4	D_5	D_6
Av. percentage	1.22	0.39	1.56	0.35	0.65	0.11

62(18)

(i) 2969 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of grain in Kg/ha.

Treatment	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆
Av. yield	4756	1397	1425	4959	3770	1507

(i) 0.50%. (ii) 0.39%. (iii) Treatment differences are not significant. (iv) Av. percentage of white earhead.

Treatment	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆
Av. percentage	0.57	0.33	0.56	0.31	0.40	0.85

(i) 0.93%. (ii) 0.44%. (iii) Treatment differences are highly significant. (iv) Av. percentage of dead heart at harvest.

Treatment	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆
Av. percentage	0.86	1.81	1.09	0.39	0.66	0.84

C.D.=0.77%

63(14)

(i) 2128 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of grain in Kg/ha.

Treatment	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆
Av. yield	729	893	1562	2948	3368	3250

Crop :- Wheat (Rabi).**Ref :- W.B. 63(41)****Site :- State Agri. Farm, Burdwan.****Type :- 'M'.**Object :- To see the effect of pre-soaking of seeds with KH_2PO_4 , K_2HPO_4 and K_3PO_4 solutions on the yield of Wheat.**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) Clay loam. (iii) 11.12.63. (iv) 2 ploughings and laddering. (b) Broadcasting. (c) to (e) N.A. (v) N.A. (vi) NP-798. (vii) Unirrigated. (viii) 2 to 3 weedings. (ix) N.A. (x) 3.4.64.

2. TREATMENTS : M_0 = Control (Normal seeds), M_1 = Pre soaking of seeds for 16 hrs with 20% solution of KH_2PO_4 , M_2 = Pre-soaking of seeds for 16 hrs with 20% sol. of K_2HPO_4 and M_3 = Pre soaking of seeds for 16 hrs with 20% solution of K_3PO_4 .**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) 9.1 m. × 4.3 m. (b) 8.5 m. × 3.7 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1963 only. (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 400 Kg/ha. (ii) 80.1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_0	M_1	M_2	M_3
Av. yield	416	384	392	406

Crop :- Wheat (Rabi).

Ref :- W.B. 60(44).

Site :- State Agri. Farm, Burdwan.

Type :- 'M'.

Object :- To study the effect of N on the yield of Wheat.

2. BASAL CONDITIONS :

(i) (a) *Aus.*—Wheat. (b) *Aus.* (c) N.A. (ii) (a) Loam and clay loam. (iii) 22.11.60. (iv) (a) 1 to 2 ploughings and laddering. (b) Broadcasting. (c) to (e) N.A. (v) N.A. (vi) N.P.—710 (medium). (vii) N.A. (viii) 2 to 3 weedings by hand. (ix) 100.7 cm. (x) 5.4.61.

2. TREATMENTS :

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

(1) 2 sources of N : $S_1=A/S$ and $S_2=A/C$.

(2) 2 levels of N : $N_1=44.8$ and $N_2=67.2$ Kg/ha.

N applied on 2.1.61 by broadcasting.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 10.4 m. × 7.9 m. (b) 9.8 m. × 7.3 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1956—60. (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 1183 Kg/ha. (ii) 269.4 Kg/ha. (iii) 'Control vs. Others' effect alone is highly significant. (iv) Av. yield of grain in Kg/ha.

Control=717 Kg/ha.

	S_1	S_2	Mean
N_1	1314	1275	1294
N_2	1311	1298	1304
Mean	1312	1286	1299

C.D. for control vs. others=285.5 Kg/ha.

Crop :- Wheat (Rabi).

Ref. :- W.B. 60(48), 61(31), 62(39), 63(34), 64(41).

Site :- State Agri. Farm, Burdwan.

Type :- 'M'.

Object :- To study the effect of N, P and K alone and in combination on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay loam. (iii) 22.11.60 to 25.11.60; 25.10.61 and 26.10.61; 15.10.62; 29.11.63 and 30.11.63; 18.11.64 to 20.11.64. (iv) (a) 2 to 3 ploughings for 63(34); 2 to 3 ploughings and laddering for others. (b) Broadcasting. (c) 91 to 94 Kg/ha for 60(48); N.A. for others. (d) and (e) N.A. (v) N.A. (vi) N.P.—798 (medium). (vii) N.A. for 60(48); Unirrigated for others. (viii) 1 weeding for 60(48); hand weeding and thinning for 61(3) and 1 to 2 hand weedings for others. (ix) 4 cm. for 63(34); 8 cm. for 64(41); N.A. for others. (x) 1.4.61 to 4.4.61; 18.3.62 to 20.3.62; 24.3.63; 6.4.64 to 8.4.64; 20.3.65 to 22.3.65.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : $N_0=0$, $N_1=44.8$ and $N_2=67.2$ Kg/ha.

(2) 3 levels of P_2O_5 as Super: $P_0=0$, $P_1=22.4$ and $P_2=44.8$ Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : $K_0=0$, $K_1=22.4$ and $K_2=44.8$ Kg/ha.

Super applied on 22.11.60 ; 25.10.61 ; 17.11.62 ; 29.11.63 and 18.11.64 respectively and Urea and Mur. Pot. applied as top dressing on 27.1.61 ; 25.11.61 ; 17.11.62 ; 7.1.64 and 9.12.64 respectively.

3. DESIGN :

(i) 3^3 Fact. confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 10.1 m. \times 10.1 m. (b) 9.5 m. \times 9.5 m. (v) 30 cm. \times 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1959 to 1964. (b) Yes. (c) Combined results are presented under 5. Results (v) *Malda, Kalyani*. (vi) N.A. (vii) The variances are heterogeneous, and Treatments \times years interaction is present.

5. RESULTS :

(i) 1031 Kg/ha. (ii) 235.5 Kg/ha. (made up of 72 d.f.). (iii) Main effect of N is significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	699	639	699	696	700	641	679
N_1	1094	1172	1180	1135	1139	1172	1149
N_2	1240	1263	1289	1306	1229	1257	1264
Mean	1011	1025	1056	1046	1023	1023	1031
K_0	1037	1058	1043				
K_1	966	1031	1071				
K_2	1030	986	1053				

C.D. for N marginal means = 153.9 Kg/ha.

Years	N_0	N_1	N_2	Sig.	P_0	P_1	P_2	Sig.
1960	494	942	1084	*	807	828	885	N.S.
1961	764	1410	1539	*	1219	1258	1236	N.S.
1962	968	1314	1353	*	1242	1180	1213	N.S.
1963	700	1066	1111	**	910	954	1014	*
1964	468	1008	1234	*	876	904	930	N.S.
Pooled	679	1149	1264	*	1011	1025	1056	N.S.

Years	K_0	K_1	K_2	Sig.	G.M.	S.E./plot
1960	898	790	832	N.S.	840	260.2
1961	1272	1197	1244	N.S.	1238	137.8
1962	1191	1236	1208	N.S.	1212	170.9
1963	965	984	929	N.S.	959	94.2
1964	902	905	903	N.S.	903	229.8
Pooled	1046	1023	1023	N.S.	1031	235.5

Crop :- Wheat (Rabi).**Ref :- W.B. 65(7).****Site :- State Agri. Farm, Burdwan.****Type :- 'M'.**

Object :- To see the effect of N, P and K at different levels alone and in combination on the yield of Wheat.

1. BASAL CONDITIONS:

(i) (a) No. (b) Wheat. (c) As per treatments. (ii) Clay loam. (iii) 1.11.65. (iv) (a) 2 to 3 ploughings and laddering. (b) Broadcasting. (c) 86 Kg/ha. (d) and (e) N.A. (v) N.A. (vi) N.P.—798 (medium). (vii) Unirrigated. (viii) 2 to 3 weedings and thinning, (ix) 9 cm. (x) 11.3.66

2. TREATMENTS :

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

(1) 3 levels of N : $N_0=0$, $N_1=33.6$ and $N_2=67.3$ Kg/ha.

(2) 3 levels of P_2O_5 : $P_0=0$, $P_1=22.4$ and $P_2=44.8$ Kg/ha.

(3) 3 levels of K_2O : $K_0=0$, $K_1=22.4$ and $K_2=44.8$ Kg/ha.

$\frac{1}{3}$ of the dose applied on 30.10.65 and $\frac{1}{3}$ top-dressed on 2.12.65.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) 90.8 m. \times 10.1 m. (iii) 2. (iv) 10.1 m. \times 10.1 m. (v) 9.4 m. \times 9.4 m. (vi) 60 cm. \times 60 cm. (vii) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of grain. (iv) (a) 1959 to 1965. (b) Yes. (c) N.A. (v) No. (vi) N.A. (vii) 1960 to 1964 N.A.

5. RESULTS :

(i) 619 Kg/ha. (ii) 81.9 Kg/ha. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	300	324	361	333	333	320	328
N_1	680	702	665	662	659	725	682
N_2	865	861	813	791	843	905	846
Mean	615	629	613	595	612	650	619
K_0	595	583	607				
K_1	553	677	603				
K_2	694	624	629				

C.D. for N marginal means = 56.6 Kg/ha.

Crop :- Wheat (Rabi).**Ref :- W.B. 60(22).****Site :- State Agri. Farm, Cooch Bihar.****Type :- 'M'.**

Object :- To study the effect of N on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Wheat—Jute. (b) Jute. (c) 92.2 Q/ha. of cowdung. (ii) Buxariverine. (iii) 1.11.60. (iv) (a) 2 to 3 ploughings and laddering. (b) Broadcasting. (c) to (e) N.A. (v) 92.2 Q/ha. of cowdung applied on 29.10.60. (vi) N.P.—710. (vii) Unirrigated, (viii) Hand weeding and thinning. (ix) N.A. (x) 31.3.60.

2. TREATMENTS and 3 DESIGN :

Same as in expt. no. 60(44) on page 123.

N applied on 30.12.60.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1957—1960. (b) Yes. (c) N.A. (v) Fulia (vi) and (vii) Nil

5. RESULTS :

(i) 1368 Kg/ha. (ii) 82.4 Kg/ha. (iii) Main effect of N and control vs. others are highly significant. S effect is significant. (iv) Av. yield of grain in Kg/ha.

Control=1059 Kg/ha.

	S ₁	S ₂	Mean
N ₁	1226	1375	1300
N ₂	1580	1599	1590
Mean	1403	1487	1445

C.D. for N or S marginal means=77.6 Kg/ha.

C.D. for Control vs. others=87.3 Kg/ha.

Crop :- Wheat (Rabi).

Ref :- W.B. 61(19).

Site :- State Agri. Farm, Cooch Bihar.

Type :- 'M'.

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

1. BASAL CONDITIONS :

(i) (a) Jute—Wheat. (b) Jute. (c) As per treatments. (ii) Buxa riverine. (iii) 13.11.61.
(iv) (a) 2 ploughings and laddering. (b) Broadcasting. (c) to (e) N.A. (v) N.A. (vi) NP—710 (medium)
(vii) Unirrigated. (viii) 2 weedings by hand. (ix) 271.7 cm. (x) 9.4.62.

2. TREATMENTS :

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

(1) 2 sources of N : S₁=C/A/N and S₂=Urea.

(2) 3 levels of N : N₁=33.6, N₂=44.8 and N₃=56.0 Kg/ha.

N applied on 20.12.61 by broadcasting.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 10.4 m. × 7.9 m. (b) 9.8 m. × 7.3 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1961 only. (b) No. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 972 Kg/ha. (ii) 90.2 Kg/ha. (iii) Main effect of S, "control vs. others" and interaction N × S are highly significant. (iv) Av. yield of grain in Kg/ha.

Control=327 Kg/ha.

	N ₁	N ₂	N ₃	Mean
S ₁	1079	907	924	970
S ₂	1014	1243	1308	1188
Mean	1046	1075	1116	1079

C.D. for S marginal means = 78.0 Kg/ha.
 C.D. for "control vs. others" = 102.3 Kg/ha.
 C.D. for body of N×S table = 134.0 Kg/ha.

Crop :- Wheat (Rabi).

Ref :- W.B. 60(30).

Site :- State Agri. Farm, Fulia.

Type :- 'M'.

Object :- To study the effect of N on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Jute-Wheat. (b) Jute. (c) As per treatments. (ii) Sandy clay loam. (iii) 19.11.60. (iv) (a) 2 to 3 ploughings and laddering. (b) Broadcasting. (c) to (e) N.A. (v) N.A. (vi) NP - 798. (vii) NA. (viii) 2 to 3 weedings. (ix) N.A. (x) 26.3.61.

2. TREATMENTS :

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

(1) 2 sources of N : S₁=A/S and S₂=A/C.(2) 2 levels of N : N₁=44.8 and N₂=67.2 Kg/ha.

N broadcasted on 6.1.1961.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 10.4 m.×7.9 m. (b) 9.8 m.×7.3 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grain. (iv) 1958-1960. (b) Yes. (c) N.A. (v) Cooch Bihar (vi) and (vii) Nil.

5. RESULTS :

(i) 1746 Kg/ha. (ii) 176.6 Kg/ha. (iii) Main effect of N is significant and "control vs. others" effect is highly significant. (iv) Av. yield of grain in Kg/ha.

Control=1439 Kg/ha.

	S ₁	S ₂	Mean
N ₁	1870	1589	1730
N ₂	1936	1896	1916
Mean	1903	1742	1823

C.D. for N marginal means = 167.3 Kg/ha.
 C.D. for "control vs. others" = 205.1 Kg/ha.

Crop :- Wheat (Rabi).**Ref :- W.B. 61(17).****Site :- State Agri. Farm, Fulia.****Type :- 'M'.**

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

1. BASAL CONDITIONS :

(i) (a) Jute—Wheat. (b) Jute. (c) As per treatments. (ii) Clay loam. (iii) 9.11.61. (iv) (a) 2 to 3 ploughings and spading. (b) Broadcasting. (c) to (e) N.A. (v) N.A. (vi) NP—798 (medium). (vii) N.A. (viii) Weeding and thinning. (ix) N.A. (x) 21.3.62.

2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure)

(1) 2 sources of N : $S_1=C/A/N$ and $S_2=Urea$.(2) 3 levels of N : $N_0=0$, $N_1=44.8$ and $N_2=56.0$ Kg/ha.

N applied on 9.12.61 and top dressed on 23.12.61.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) 12.3 m. x 6.7 m. (b) 11.6 m. x 6.1 m. (v) 30 cm. x 30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of grain. (iv) (a) 1961—1963 (Treatments modified in 62 and 63). (b) No. (c) N.A. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 1662 Kg/ha. (ii) 223.4 Kg/ha. (iii) Main effects of N, S and control vs. others are highly significant. (iv) Av. yield of grain in Kg/ha.

Control=1123 Kg/ha.

	N_1	N_2	N_3	Mean
S_1	1784	1702	1289	1592
S_2	2066	1876	1793	1912
Mean	1925	1789	1541	1752

C.D. for N marginal means = 234.7 Kg/ha.

C.D. for S marginal means = 191.6 Kg/ha.

C.D. for Control vs. others = 253.4 Kg/ha.

Crop :- Wheat (Rabi).**Ref :- W.B. 62(54), 63(44)****Site :- State Agri. Farm, Fulia.****Type :- 'M'.**

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

1. BASAL CONDITIONS :

(i) (a) Jute—Wheat. (b) Jute. (c) As per treatments. (ii) Clay loam, loam and sandy loam in 1962, 63. (iii) 24.11.62; 2.12.63. (iv) (a) 2 ploughings and laddering. (b) Line sowing in 61 and 63. (c) to (e). N.A. (v) N.A. (vi) NP—798 (medium). (vii) N.A.; Unirrigated. (viii) 2 weeding and thinning. (ix) 12 cm.; N.A. (x) 6.4.63, 6.3.64.

2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure).

(1) 3 levels of N : $N_1=33.6$, $N_2=44.8$ and $N_3=56.0$ Kg/ha.(2) 2 sources of N : $S_1=C/A/N$ and $S_2=Urea$.

Fertilizer applied by broadcasting in 62 and as top dressing in 63.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 12.2 m. × 6.7 m. (b) 11.6 m. × 6.1 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of grain. (iv) (a) 1961—63 (Treatments modified in 62 and 63). (b) Yes. (c) Results of combined analysis are given under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments × years interaction is absent.

5. RESULTS :

(i) 810 Kg/ha. (ii) 145.0 Kg/ha. (based on 42 d.f. made up of pooled error and Treatments × years interaction). (iii) 'Control vs. others' alone is significant. (iv) Av. yield of grain in Kg/ha.

Control = 675 Kg/ha.

	N ₁	N ₂	N ₃	Mean
S ₁	824	810	870	835
S ₂	910	872	708	830
Mean	867	841	789	832

C.D. for control vs. others = 112.8 Kg/ha.

Years	N ₁	N ₂	N ₃	Sig.	S ₁	S ₂	Sig.	Control	Sig.	G.M.	S.E./plot
1962	1164	1089	1016	N.S.	1075	1104	N.S.	804	**	1090	135.0
1963	571	593	562	N.S.	594	556	N.S.	545	N.S.	575	141.6
Pooled	867	841	789	N.S.	835	830	N.S.	675	*	832	146.0

Crop :- Wheat (Rabi).

Site :- State Agri. Farm, Kalyani.

Ref :- W.B. 61(28).

Type :- 'M'.

Object :- To find out the effect of N, P and K alone and in combination on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam and Sandy loam. (iii) 15.11.61. (iv) (a) 2 to 3 ploughings and laddering. (b) Broadcasting. (c) to (e) N.A. (v) N.A. (vi) N.P.—710 (medium). (vii) N.A. (viii) 2 weedings and thinning. (ix) and (x) N.A.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N₀=0, N₁=44.8 and N₂=67.2 Kg/ha.

(2) 3 levels of P₂O₅ as B.M. : P₀=0, P₁=22.4 and P₂=44.8 Kg/ha.

(3) 3 levels of K₂O as Mur. Pot. : K₀=0, K₁=22.4 and K₂=44.8 Kg/ha.

A/S and Mur. Pot. applied on 27.12.61 as top-dressing and B.M. applied on 14.11.61 as broadcasting.

3. DESIGN :

(i) 3³ confd. (ii) (a) 3 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 9.1 m. × 11.0 m. (b) 8.5 m. × 10.4 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—contd. (Treatments modified in 1962.) (b) Yes. (c) N.A. (v) *Burdwan*, Malda. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 1337 Kg/ha. (ii) 148.0 Kg/ha. (iii) Main effects of N, P, K and interaction $P \times K$, $N \times P$ and KN^2P^2 are highly significant. Interaction $N \times K$ and KNP are significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	K ₀	K ₁	K ₂	Mean
N ₀	1065	1027	918	965	1138	908	1004
N ₁	1797	1378	1262	1253	1640	1545	1479
N ₂	1460	1574	1550	1379	1555	1639	1528
Mean	1441	1326	1243	1199	1448	1364	1337
K ₀	1271	1273	1053				
K ₁	1693	1413	1236				
K ₂	1358	1292	1441				

C.D. for N or P or K marginal means = 102.3 Kg/ha.

C.D. for body of $N \times K$ or $P \times K$ or $N \times P$ table = 177.4 Kg/ha.

Crop :- *Wheat (Rabi)*.

Ref :- *W.B. 62(40), 63(35), 64(60)*.

Site :- *State Agri. Farm, Kalyani*.

Type :- 'M'.

Object :- To find out the effect of N, P and K alone and in combination on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Jute-Wheat for 64(60); N.A. for others. (b) Jute for 64(60); N.A. for others. (c) As per treatments for 64(60); N.A. for others. (ii) Loam and Sandy loam. (iii) 28.11.62 to 30.11.62; 20.11.63 to 22.11.63; 17.11.64 to 19.11.64. (iv) (a) 2 to 3 ploughings and laddering. (b) Broadcasting. (c) to (e) N.A. (v) 36.9 Q/ha for 64(60); N.A. for others. (vi) N.P.—710 (medium). (vii) Unirrigated; Unirrigated; Irrigated. (viii) 1 to 2 weedings and thinning. (ix) N.A. (x) 17.4.63 to 21.4.63; 26.3.64 and 27.3.64; 29.3.65 to 31.3.65.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N₀=0, N₁=22.4 and N₂=44.8 Kg/ha.

(2) 3 levels of P₂O₅ as Super : P₀=0, P₁=22.4 and P₂=44.8 Kg/ha.

(3) 3 levels of K₂O as Mur. Pot. : K₀=0, K₁=22.4 and K₂=44.8 Kg/ha.

P₂O₅ as super applied on 27.11.62 and 28.11.62. 'N' as Urea applied on 19.12.64 and 20.12.62 as top dressing. K₂O as Mur. plot. applied on 20.12.62 for 62(40); Super and Pot. applied at the time of sowing and Urea applied as top-dressing on 20.12.63 and 20.1.64 for 63(35) and 'N' as Urea, P₂O₅ as Super and K₂O as Mur. Pot. were applied by broadcasting; Urea applied one month after planting for 64(60).

3. DESIGN :

(i) 3³ confd. fact. (ii) (a) 9 plots/block; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 9.1 m. × 11.0 m. (b) 8.5 m. × 10.4 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grain. (iv) (a) 1959--contd. (modified in 1952). (b) Yes. (v) Burdwan. (vi) N.A. (vii) Expt. for 1965 is N.A. Experiment is continued after 1965. Hence individual results and presented.

5. RESULTS:

62(40)

(i) 1580 Kg/ha. (ii) 67.1 Kg/ha. (iii) Main effect of N and interaction KN^2P^2 are highly significant. Main effect of K and interaction $P \times K$ are significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	K ₀	K ₁	K ₂	Mean
N ₀	341	473	368	359	455	368	394
N ₁	614	604	631	569	632	648	616
N ₂	718	727	744	692	709	788	730
Mean	558	601	581	540	599	601	580
K ₀	499	552	569				
K ₁	535	622	639				
K ₂	640	630	534				

C.D. for N or K marginal means=46.4Kg/ha.

C.D. for body of $P \times K$ table=80.3 Kg/ha.

63(35)

(i) 89.8Kg/ha. (ii) 79.0Kg/ha. (iii) Main effect of N, K and interaction $N \times K$ and $P \times K$ are highly significant. Main effect of P and interaction $N \times P$ are significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	K ₀	K ₁	K ₂	Mean
N ₀	448	465	497	466	488	456	470
N ₁	944	1114	1003	921	1095	1045	1020
N ₂	1222	1253	1139	1072	1185	1357	1205
Mean	872	944	880	820	923	953	898
K ₀	765	845	849				
K ₁	963	895	910				
K ₂	887	1091	880				

C.D. for N or P or K marginal means =54.6 Kg/ha.

C.D. for body of $N \times P$ or $P \times K$ or $K \times N$ table=94.6 Kg/ha.

64(60)

(i) 931 Kg/ha. (ii) 62.3 Kg/ha. (iii) Main effect of N, P, K and interaction $P \times K$ and $N \times K$ are highly significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	K ₀	K ₁	K ₂	Mean
N ₀	486	519	530	497	544	495	512
N ₁	963	1084	1004	929	1085	1036	1017
N ₂	1214	1309	1268	1134	1209	1447	1264
Mean	888	970	934	853	946	993	931
K ₀	787	900	874				
K ₁	980	976	882				
K ₂	896	1035	1047				

C.D. for N or P or K marginal means=43.1 Kg/ha.

C.D. for body of P×K or N×K table=74.6 Kg/ha.

Crop :- Wheat (*Rabi*).

Ref. :- W.B. 63(56), 64(29), 65(20).

Site :- State Agri. Farm, Malda.

Type :- 'M'.

Object :- To study the effect of N and P with or without F.Y.M. on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) N.A., Aus—Wheat during 1964, 1965. (b) N.A.; Aus during 1964-1965. (c) N.A.; As per treatments during 1964 and 1965. (ii) Loam to clay loam. (iii) 23.11.63; 24.10.64; 31.10.65. (iv) (a) 2 to 3 ploughings and laddering during 1963, 1964 and 4 to 5 ploughings with land preparation and laddering. (b) Broadcasting. (c) N.A. during 1963, 1964 and 1965. (d) and (e) Nil. (v) N.A. (vi) NP—710 (medium) (vii) Un-irrigated during 1963, 1964 and irrigated during 1965. (viii) 2 to 3 weedings and thinning. (ix) N.A. (x) 10 to 13.4.64; 20.3.65; and 16 to 18.3.66.

2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M. : F₀=0 and F₁=100.4 Q/ha.

Sub-plot treatments :

All combinations of (1) and (2)+Control (N₀P₀)

(1) N₁=33.6 Kg/ha. and N₂=67.2 Kg/ha.

(2) P₀=0 and P₁=33.6 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 9.1 m. × 6.1 m. (b) 8.5 m. × 5.5 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1963 to 1965. (b) Yes. (c) N.A. (v) No. (vi) N.A. (vii) Sub-plot Error variances are heterogeneous. Hence individual results are presented.

5. RESULTS :

63(56)

(i) 1789 Kg/ha. (ii) (a) 217.8 Kg/ha. (b) 288.3 Kg/ha. (iii) Main effects of N and P are significant. 'Control vs others' is significant. (iv) Av. yield of grain in Kg/ha.

Control=980 Kg/ha.

	P ₀	P ₁	N ₁	N ₂	Mean
F ₀	1785	1836	1625	1996	1810
F ₁	1789	1748	1700	1837	1768
Mean	1787	1792	1663	1917	1789
N ₁	1630	1694			
N ₂	1944	1889			

C.D. for N or P marginal means = 209.3 Kg/ha.

C.D. for 'Control vs. others' = 361.2 Kg/ha.

64(29)

(i) 1124 Kg/ha. (ii) (a) 94.0 Kg/ha. (b) 60.2 Kg/ha. (iii) Main effects of N, P and interaction N×P are highly significant and interaction F×M is significant. (iv) Av. yield of grain in Kg/ha.

	M ₀	M ₁	M ₂	M ₃	M ₄	Mean
F ₀	423	1053	1677	1100	1278	1106
F ₁	526	851	1696	1046	1591	1142
Mean	474	952	1686	1073	1434	1124

Control = 474 Kg/ha.

	P ₀	P ₁	N ₁	N ₂	Mean
F ₀	1365	1189	1077	1478	1278
F ₁	1274	1319	949	1644	1297
Mean	1320	1254	1013	1561	1287
N ₁	952	1073			
N ₂	1686	1434			

C.D. for N or P marginal means = 43.9 Kg/ha.

C.D. for N or P means at the same level of F = 87.8 Kg/ha.

C.D. for F means at the same level of N or P = 120.3 Kg/ha.

65(20)

(i) 863 Kg/ha. (ii) (a) 162.3 Kg/ha. (b) 181.5 Kg/ha. (iii) 'Control vs. others' effect alone is significant.

Control = 657 Kg/ha.

	N ₁	N ₂	P ₀	P ₁	Mean
F ₀	840	963	882	922	902
F ₁	942	920	944	918	931
Mean	891	942	913	920	916
P ₀	882	944			
P ₁	900	939			

C.D. for 'Control vs. others' = 145.1 Kg/ha.

Crop :- Wheat (Rabi).**Ref. :- W.B. 61(30), 62(52).****Site :- State Agri. Farm, Malda.****Type :- 'M'.****Object :-** To study the effect of different levels and sources of N on the yield of wheat.**1. BASAL CONDITIONS :**

(i) (a) Aus—Wheat. (b) Aus. (c) As per treatments. (ii) Loam and Silty clay loam. (iii) 26.10.61 ; 1.12.62 (v) (a) 2 to 3 ploughings and laddering. (b) Broadcasting ; Line sowing. (c) to (e) N.A. (v) N.A. (vi) N.P.—710 (medium). (vii) Unirrigated. (viii) 2 weedings by hand for 61(30) ; 1 to 2 weedings and thinning for 62(52). (ix) N.A. ; 6 cm. (x) 14.12.61 : 16.4.63 to 18.4.63.

2. TREATMENTS :

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

(1) 5 sources of N : S_1 =Nitrophos (odda) ; S_2 =C/A/N ; S_3 =Nitrophos (PEC) ; S_4 =A/S/N and S_5 =Urea.(2) 2 levels of N : N_1 =33.6 and N_2 =44.8 Kg/ha.

N applied on 26.11.61 ; 15.1.63 and 30.1.63 by broadcasting.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 11. (b) N.A. (iii) 4. (iv) (a) 9.1 m. x 6.1 m. (b) 8.5 m. x 5.5 m. (v) 30 cm. x 30 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grain. (iv) (a) 1959 to 63 (Treatments modified in 61, 62 and 1963 N.A.) (b) Yes. (c) Combined analysis is given under 5. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments x years interaction is absent.

5. RESULTS :

(i) 1049 Kg/ha. (ii) 137.0 Kg/ha. (Based on 70 d.f. made up of pooled error and Treatments x years interaction). (iii) Main effects of S, N and Control vs. others are highly significant. (iv) Av yield of grain in Kg/ha.

Control=745 Kg/ha.

	S_1	S_2	S_3	S_4	S_5	Mean
N_1	945	1229	844	822	1100	988
N_2	1246	1414	1000	1027	1168	1171
Mean	1095	1321	922	924	1134	1079

C.D. for S marginal means=96.7 Kg/ha.

C.D. for N marginal means=61.0 Kg/ha.

C.D. for Control vs. others=101.0 Kg/ha.

Year	N_1	N_2	Sig.	S_1	S_2	S_3	S_4	S_5	Sig.
1961	1168	1335	**	1258	1537	1101	1091	1270	**
1962	808	1007	**	933	1106	744	759	996	**
Pooled	988	1171	**	1095	1321	922	924	1134	**

Control	Sig.	G.M.	S.E./plot
856	**	1215	153.0
635	**	883	117.5
745	**	1049	137.0

Crop :- Wheat (Rabi).**Ref :- W.B. 60(52).****Site :- State Agri. Farm, Malda.****Type :- 'M'.**

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

1. BASAL CONDITIONS :

(i) (a) *Aus*-Wheat. (b) *Aus*. (c) As per treatments. (ii) Loam and silty clay loam. (iii) 28.10.60. (iv) (a) 2 to 3 ploughings, spading and laddering. (b) Broadcasting. (c) to (e) N.A. (v) N.A. (vi) N.P.—710 (medium). (vii) Unirrigated. (viii) 2 weedings by hand. (ix) N.A. (x) 23.4.61.

2. TREATMENTS :

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

(1) 5 sources of N : $S_1=A/S$, $S_2=C/N$, $S_3=A/C$, $S_4=A/S/N$ and $S_5=Urea$.(2) 2 levels of N : $N_1=44.8$ and $N_2=67.2$ Kg/ha.

N top dressed on 29.12.60.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 11. (b) N.A. (iii) 4. (iv) (a) 9.1 m. × 6.1 m. (b) 8.5 m. × 5.5 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—53. Treatments modified in 61, 62 and 1963 N.A.) (b) Yes. (c) N.A. (v) Nil. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 1411 Kg/ha. (ii) 280.3 Kg/ha. (iii) Main effect of S is significant and 'Control vs. others' effect is highly significant. (iv) Av. yield of grain in Kg/ha.

Control=674 Kg/ha.

	S_1	S_2	S_3	S_4	S_5	Mean
T_1	1571	1542	1290	1446	1239	1418
T_2	1705	1788	1180	1508	1579	1552
Mean	1638	1665	1235	1477	1409	1485

C.D. for S marginal means =286.2 Kg/ha.

C.D. for 'Control vs. others' =303.3 Kg/ha.

Crop :- Wheat (Rabi).**Ref :- W.B. 60(54), 61(20).****Site :- State Agri. Farm, Malda.****Type :- 'M'.**

Object :- To study the effect of N, P and K alone and in combination on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Loam and silty clay loam ; loam and clay loam. (iii) 12.10.60, 15.11.61. (iv) (a) 2 to 3 ploughings, spading and laddering, 1 to 2 ploughings and harrowing. (b) Broadcasting. (c) to (e) N.A. (v) N.A. (vi) N.P.—799 ; N.P.—798 (medium). (vii) N.A. (viii) 1 to 2 hand weedings and thinning. (ix) N.A. (x) 3.4.61 ; N.A.

2 TREATMENTS :

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

(1) 3 levels of N as A/S : $N_0=0$, $N_1=44.8$ and $N_2=67.2$ Kg/ha.

(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=22.4$ and $P_2=44.8$ Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : $K_0=0$, $K_1=22.4$ and $K_2=44.8$ Kg/ha.

A/S applied on 11.11.60 ; 15.12.61 and Super and Mur. Pot. applied by broadcasting on 30.12.60 and 30.12.61 respectively.

3. DESIGN :

(i) 3^3 partially confd. (ii) (a) 3 blocks/replication ; 9 plots/block. (b) N.A. (iii) 2. (iv) (a) 9.1 m. \times 11.0 m. (b) 8.5 m. \times 10.4 m. (v) 30 cm. \times 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—61. (b) Yes. (c) N.A. (v) Burdwan, Kalimpong and Kalyani. (vi) N.A. (vii) Error variances are heterogeneous and Treatments \times years interaction is absent. Individual years results are presented.

5. RESULTS :

60(54)

(i) 1331 Kg/ha. (ii) 261.0 Kg/ha. (iii) Main effect of N and interaction $N \times P \times K$ are highly significant and interaction $N \times K$ is significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	1009	957	1075	1093	1191	756	1013
N_1	1321	1548	1412	1318	1407	1556	1427
N_2	1637	1478	1560	1507	1476	1672	1552
Mean	1322	1328	1342	1306	1358	1328	1331
K_0	1357	1266	1295				
K_1	1434	1301	1339				
K_2	1175	1416	1393				

C.D. for N marginal means = 180.4 Kg/ha.

C.D. for body of $N \times K$ table = 312.6 Kg/ha.

61(20)

(i) 1238 Kg/ha. (ii) 114.0 Kg/ha. (iii) Main effects of N and P are highly significant. Interaction $N \times P$ is significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	861	920	997	903	900	975	926
N_1	1195	1458	1532	1354	1405	1427	1395
N_2	1316	1568	1749	1519	1580	1534	1544
Mean	1124	1315	1426	1259	1295	1312	1288
K_0	1106	1344	1326				
K_1	1121	1276	1488				
K_2	1146	1326	1464				

C.D. for N or P marginal means = 78.8 Kg/ha.

C.D. for body of $N \times P$ table = 136.5 Kg/ha.

Crop :- Wheat.**Ref :- W.B. 60, 61 (S.F.T.)****Site :- (District) : As per results.****Type :- 'M'.**

Object :- Type A : To study the response of Wheat to different levels of N, P₂O₅ and K₂O applied individually and in combination.

1. BASAL CONDITIONS :

(i) N.A. (ii) As per results. (iii) to (vi) N A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O = Control (no manure).

N = 22.4 Kg/ha. of N.

P = 22.4 Kg/ha. of P₂O₅.K = 22.4 Kg/ha. of K₂O.NP = 22.4 Kg/ha. of N + 22.4 Kg/ha. of P₂O₅.NK = 22.4 Kg/ha. of N + 22.4 Kg/ha. of K₂O.PK = 22.4 Kg/ha. of P₂O₅ + 22.4 Kg/ha. of K₂O.NPK = 22.4 Kg/ha. of N + 22.4 Kg/ha. of P₂O₅ + 22.4 Kg/ha. of K₂O.N applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.**3. DESIGN :**

(i) and (ii) The district has been divided into four agriculturally homogeneous zones and one field assistant posted in each zone. The field assistant conducts the trials in one revenue circle or thana in the zone and the circle/thana is changed once in two years within the same zone. Each field assistant is required to conduct 31 trials in a year, 8 on *khari* cereal, 8 on a *rabi* cereal, 8 on cash crop, 4 on an oilseed crop and 3 on a leguminous crop. Half the number of trials conducted are of type A and the other half of type B on crops other than the legumes. The three trials on legumes are of type C. Residual effects of phosphate application are studied on Type C trials in two out of the four zones in each district every year. The experiments are laid out in randomly located fields in randomly selected villages in each of the 4 zones at the rate of one experiment per village. (iii) (a) 1/98.8 ha. (b) 1/197.7 ha. (iv) Yes.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

District	Year	Soil class	No. of trials	Av. response of grain in Kg/ha.									
				Control mean Kg/ha.	N	P	K	S.E.	NP	NK	PK	NPK	S.E.
Nadia	1960	Alluvial	3	1090	260	60	40	24.0	50	-10	10	-10	29.0
	1961	Alluvial	2	640	250	80	50	22.0	10	20	30	10	36.0
24-Parganas	1960	Alluvial	4	590	140	70	50	57.0	10	-	-10	10	24.0
Murshidabad	1960	Alluvial	6	1050	220	70	20	18.0-40	-30	20	-10	8.0	
	1961	Alluvial	1	1150	280	-10	40	-	260	-20	60	-190	-
Birbhum	1960	Laterite	11	740	190	60	30	15.0	10	-10	0	30	13.0
Burdwan	1960	Alluvial	7	790	170	50	140	35.0-30	-50	40	-20	14.0	
Bankura	1961	Laterite	5	1330	270	110	70	17.0-70	-10	10	-	5.0	

Crop :- Wheat.**Ref :- W. B. 61 (S.F.T.)****Site :- (District) : Nadia and Murshidabad.****Type :- 'M'.**

Object :- Type A —To study the response of Wheat to different levels of N, P₂O₅ and K₂O applied individually and in combination.

1. BASAL CONDITIONS :

(i) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

Same as in type A (irrigated) on page 137.

3. DESIGN :

Same as in type A on page 137.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

District	Year	Soil class	No. of trials	Control mean		Av. response of grain in Kg/ha.							
				N	P	K	S.E.	NP	NK	PK	NPK	S.E.	
Nadia	1961	Alluvial	3	1240	190	40	60	27.0	10	50	20	10	16.0
Murshidabad	1961	Alluvial	6	460	140	50	10	17.0	30	20	10	20	10.0

Crop :- Wheat.**Ref :- W.B. 60, 61 (S.F.T.)****Site :- (District) : As per results.****Type :- 'M'.**

Object :- Type B—To investigate the relative efficiency of different fertilizers at different doses.

1. BASAL CONDITIONS :

(i) N.A. (ii) As per results. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

- o = Control (no manure)
- n₁ = 22.4 Kg/ha. of N as A/S.
- n₂ = 44.8 Kg/ha. of N as A/S.
- n₁' = 22.4 Kg/ha. of N as Urea.
- n₂' = 44.8 Kg/ha. of N as Urea.
- n₁" = 22.4 Kg/ha. of N as A/S/N.
- n₂" = 44.8 Kg/ha. of N as A/S/N.
- n₁''' = 22.4 Kg/ha. of N as C/A/N.
- n₂''' = 44.8 Kg/ha. of N as C/A/N.

3. DESIGN :

Same as in type A on page 137.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

District	Year	Soil class	No. of trials	Control mean		Av. response of grain in Kg/ha.							S.E. of response
				(Kg/ha.)	n ₁	n ₁ '	n ₁ "	n ₁ '''	n ₂	n ₂ '	n ₂ "	n ₂ '''	
Howrah	1960	Alluvial	2	2260	1110	690	—	460	1520	1340	—	690	21.6
Midnapore	1960	Red	1	920	230	50	—	230	—	370	—	90	—
Nadia	1960	Alluvial	4	1160	70	—200	—	260	250	300	—	290	6.5
Burdwan	1960	Alluvial	7	800	200	210	—	270	190	210	—	320	14.0
	1961	Alluvial	4	1680	140	170	—	150	120	140	—	170	20.0
Birbhum	1960	Late rite	8	630	190	180	—	160	220	210	—	200	42.0
	1961	Laterite	9	990	210	60	—	60	360	170	—	—150	38.0
Murshidabad	1960	Alluvial	6	1140	240	90	—	110	330	180	—	120	17.0
Bankura	1961	Laterite	1	1430	80	10	—	20	150	160	—	70	—

Crop :- Wheat.**Ref :- W.B. 60, 61 (S.F.T.)****Site :- (District) : As per results.****Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different fertilizers at different doses.

1. BASAL CONDITIONS :

(i) N.A. (ii) As per results. (iii) to (vi) N.A., (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

- 0 =Control (no manure).
 n_1 =22.4 Kg/ha. N of A/S
 n_2 =44.8 Kg/ha. of N of as A/S
 n_1' =22.4 Kg/ha. of N as Urea
 n_2' =44.8 Kg/ha. of N as Urea
 n_1'' =22.4 Kg/ha. of N as A/S/N
 n_2'' =44.8 Kg/ha. of N as A/S/N
 n_1''' =22.4 Kg/ha. of N as C/A/N
 n_2''' =44.8 Kg/ha. of N as C/A/N

3. DESIGN :

Same as in type A on page 137.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

District	Year	Soil class	No. of Control trials	Control mean in Kg/ha.	Av. response of grain in Kg/ha.								S.E. of response
					n_1	n_1'	n_1''	n_1'''	n_2	n_2'	n_2''	n_2'''	
Hooghly	1960	Alluvial	5	800	110	150	—	260	180	160	—	270	34.0
24-Parganas	1960	Alluvial	3	740	180	150	—	100	410	250	—	230	65.0
	1961	Alluvial	2	320	120	100	—	60	200	160	—	110	12.0
Nadia	1960	Alluvial	2	610	110	40	—	90	210	—10	—	170	88.0
	1961	Alluvial	4	1210	90	130	—	20	130	40	—	10	58.0
Murshidabad	1960	Alluvial	3	1210	220	90	—	50	390	350	—	60	82.0
	1961	Alluvial	7	340	140	140	—	90	200	210	—	180	24.0
Malda	1960	Alluvial	6	1040	140	230	—	310	390	380	—	320	123.0

Crop :- Wheat (Rabi).

**Ref :- W.B. 62, 63 (S.F.T) for Burdwan ;
 62, 63, 64 (S.F.T.) for Bankura ;
 62, 63,64, 65(S.F.T.) for Birbhum ;
 62, 64 (S.F.T.) Midnapore ; 62, 65
 (S.F.T.) for Murshidabad ; 64
 (S.F.T.) for Nadia and 65 (S.F.T.)
 for 24-Parganas.**

**Site :- (District) : Burdwan, Bankura, Type :- 'M'.
 Birbhum, Midnapore, Murshidabad
 and 24-Parganas.**

Object :—Type A₁—To study the response curves of important cereal, cash and oilseed crops to nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) Laterite for Bankura and Birbhum, Red for Midnapore and Alluvial for others.
 (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O = Control (no manure).

N₁ = 35 Kg/ha. of N

N₂ = 70 Kg/ha. of N

P₁ = 35 Kg/ha. of P₂O₅

N₁P₁ = 35 Kg/ha. of N + 35 Kg/ha. of P₂O₅

N₂P₁ = 70 Kg/ha. of N + 35 Kg/ha. of P₂O₅

N₂P₂ = 70 Kg/ha. of N + 70 Kg/ha. of P₂O₅

N₂P₂K₁ = 70 Kg/ha. of N + 70 Kg/ha. of P₂O₅ + 35 Kg/ha. of K₂O

N applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN :

A selected district is divided into four agriculturally homogeneous zones based on climate, soil, cropping pattern etc. In each zone one block is selected at random. A block normally consists of a group of 50-100 villages. In each block 36 experiments are conducted in a year of which 11 are of type A₁, 11 of type A₂, 11 of type A₃ and 3 are of type C. The eleven experiments under type A₁, A₂ and A₃ are distributed as 3 on a *Kharif* cereal, 3 on a *rabi* cereal, 3 on a cash crop and 2 on oil seed. All the three type-C experiments are conducted on a legume crop. For the purpose of conducting the A₁, A₂ and A₃ experiments 11 villages are randomly selected in each block and in each village 3 experiments one each of type A₁, A₂ and A₃ are laid out. For conducting the three type-C trials three villages are randomly selected in each block.

4. GENERAL :

- (i) to (iii) N.A. (iv) (a) 1962-66 (64-65 N.A. for Burdwan ; 62-66 (65 N.A.) for Bankura, Nadia ; 62-66 for Birbhum ; 62-64 (63 N.A.) for Midnapore ; 62-66 (63-64 N.A.) for Murshidabad and 62-66 (64 N.A.) for 24-Parganas. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Burdwan

62(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	311	619	211	469	833	813	893	34.2

Control mean=601 Kg/ha. ; No. of trials=4.

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	116	246	39	263	332	378	449	17.5

Control mean=612 Kg/ha. ; No. of trials=3.

Bankura

62(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	157	345	88	258	323	446	494	62.2

Control mean=856 Kg/ha. ; No. of trials=7.

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	194	290	57	221	307	364	354	19.0

Control mean=937 Kg/ha. ; No. of trials=15.

64 (S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	362	602	149	408	616	639	650	17.3

Control mean=1532 Kg/ha. ; No. of trials=5.

Birbhum

62(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	302	473	86	492	563	644	632	75.7

Control mean=705 Kg/ha. ; No. of trials=16.

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	205	278	33	228	297	389	387	32.0

Control mean=888 Kg/ha. ; No. of trials=14.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	226	364	47	342	475	542	572	37.0

Control mean=1083 Kg/ha. ; No. of trials=11.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	224	338	70	311	437	502	533	41.1

Control mean=1046 Kg/ha. ; No. of trials=12.

Midnapore

62(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	56	120	000	68	125	85	143	24.2

Control mean=732 Kg/ha. ; No. of trials=2.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	254	87	131	231	234	269	266	55.0

Control mean=620 Kg/ha. ; No. of trials=6.

Murshidabad

62(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	230	328	183	206	328	345	460	45.6

Control mean=738 Kg/ha. ; No. of trials=2.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.
Av. response of grain in Kg/ha.	312	353	151	317	428	521	612	24.2

Control mean=1002 Kg/ha.; No. of trials=12.

Nadia**64(S.F.T.)**

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	171	351	49	293	409	470	459	63.5

Control mean=906 Kg/ha.; No. of trials=8.

24-Parganas**65(S.F.T.)**

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	485	625	7	500	662	682	841	132.1

Control mean=1057 Kg/ha.; No. of trials=5.

Crop :- Wheat (Rabi)

Ref :- W.B. 62, 63, 64, 65(S.F.T.) for Malda
62 (S.F.T.) for Murshidabad 62, 63,
65 (S.F.T.) for Nadia ; 64(S.F.T.) for
24-Parganas and 63 (S.F.T.) for W.
Dinajpur.

Site :- (District) : Malda, Murshidabad, Nadia, 24-Parganas and
W. Dinajpur. Type :- 'M'.

Object :- Type A₁—To study the response curves of important cereal, cash and oilseed crops to nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS:

(i) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :Same as in type A₁ (irrigated) on page 140.**3. DESIGN :**Same as in type A₁ (irrigated) on page 140.**4. GENERAL:**

(i) to (iii) N.A. (iv) (a) 1962—66 for Burdwan; 62—66 (65 N.A.) for Murshidabad, 62—66 (64 N.A.) for Nadia ; 62—64 (63 N.A.) for 24-Parganas and 63 for W. Dinajpur, (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :**Malda****62(S.F.T.)**

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	42	118	3	65	145	169	173	14.5

Control mean=633 Kg/ha.; No. of trials=3.

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	112	190	64	147	221	261	320	34.4

Control mean=763 Kg/ha. ; No. of trials=4.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	37	71	71	83	60	71	94	34.1

Control mean=251 Kg/ha. ; No. of trials=2.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	110	160	20	115	170	235	240	27.6

Control mean=490 Kg/ha. ; No. of trials=4.

Murshidabad

62(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	37	83	12	72	85	120	175	22.3

Control mean=563 Kg/ha. ; No. of trials=9.

Nadia

62(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	155	227	3	155	185	213	226	57.4

Control mean=801 Kg/ha. ; No. of trials=4.

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	110	125	23	145	193	210	259	32.2

Control mean=808 Kg/ha. ; No. of trials=2.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	190	325	85	340	450	530	580	28.1

Control mean=715 Kg/ha. ; No. of trials=4.

24 Parganas

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	474	593	000	573	731	681	622	65.4

Control mean=810 Kg/ha. ; No. of trials=2.

W. Dinajpur

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	23	26	26	53	141	142	147	12.6

Control mean=227 Kg/ha. ; No. of trials=2.

Crop :- Wheat (*Rabi*)

Ref :- W.B. 62, 63 (S.F.T) for Burdwan ;
62, 63, 64 (S.E.T.) for Bankura ; 62,
63, 64, 65 (S.F.T.) for Birbhum ;
62 (S.F.T.) for Midnapore ; 62, 65
(S.F.T.) for Murshidabad ; 63, 65
(S.F.T.) for Nadia and 65 (S.F.T.) for
24-Parganas.

Site :- (District) : Burdwan, Bankura, Type :- 'M'.
Birbhum, Midnapore, Murshidabad,
Nadia and 24-Parganas.

Object :-Type A₂—To study the response curve of important cereals, cash and oilseed crops to Phosphorus applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Laterite for Bankura and Birbhum ; Red for Midnapore and Alluvial for others.
(iii) to (vi) N.A. (vii) Irrigated (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O = Control (no manure)
N₁ = 35 Kg/ha. of N.
P₁ = 35 Kg/ha. of P₂O₅.
P₂ = 70 Kg/ha. of P₂O₅.
N₁P₁ = 35 Kg/ha. of N + 35 Kg/ha. of P₂O₅.
N₁P₂ = 35 Kg/ha. of N + 70 Kg/ha. of P₂O₅.
N₂P₂ = 70 Kg/ha. of N + 70 Kg/ha. of P₂O₅.
N₁P₁K₁ = 70 Kg/ha. of N + 70 Kg/ha. of P₂O₅ + 70 Kg/ha. of K₂O.
N applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN :

Same as in type A₁ (irrigated) on page 140.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962-66 (64-65 N.A.) for Burdwan, 62-66 (65 N.A.) for Bankura, 62-66
Birbhum, 62 for Midnapore 62-66 (63-64 N.A.) for Murshidabad, 62-66 (64 N.A.) of Nadia, 62-66
(63-64 N.A.) for 24-Parganas. (v) to (vii) N.A.

Burdwan

62(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	363	228	326	462	508	851	871	126.5

Control mean=610 Kg/ha. ; No. of trials=4.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	157	21	20	178	206	329	375	17.7

Control mean=654 Kg/ha. ; No. of trials=3.

Bankura**62(S.F.T.)**

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	251	3	142	383	397	537	593	50.7

Control mean=819 Kg/ha. ; No. of trials=5.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	188	37	63	219	247	328	348	16.7

Control mean=961 Kg/ha.; No. of trials=15.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	365	144	186	395	403	630	642	21.5

Control mean=1535 Kg/ha. ; No. of trials=5.

Birbhum**62(S.F.T.)**

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	349	54	92	314	331	547	506	59.3

Control mean=879 Kg/ha. ; No. of trials=14.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	237	19	68	252	300	435	432	31.4

Control mean=888 Kg/ha. ; No. of trials=13.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	181	60	113	307	354	466	488	24.9

Control mean=997 Kg/ha. ; No. of trials=11.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	217	56	86	268	314	451	478	23.3

Control mean=1067 Kg/ha. ; No. of trials=11.

Midnapore**62(S.F.T.)**

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	86	-1	31	120	121	157	674	251.2

Control mean=731 Kg/ha. ; No. of trials=2.

Murshidabad**62(S.F.T.)**

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	324	115	208	324	416	392	490	48.4

Control mean=737 Kg/ha. ; No. of trials=2.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	308	109	141	345	419	532	628	21.5

Control mean=939 Kg/ha. ; No. of trials=12.

Nadia**63(S.F.T.)**

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	339	143	229	556	602	740	1016	88.1

Control mean=1006 Kg/ha. ; No. of trials=2.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	235	85	110	345	440	600	655	53.1

Control mean=675 Kg/ha. ; No. of trials=4.

24-Parganas**65(S.F.T.)**

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	180	115	130	230	240	380	445	35.8

Control mean=1415 Kg/ha. ; No. of trials=4.

Crop .- Wheat (Rabi)

**Ref :- W. B. 62, 63, 64, 65 for Malda ;
62, 63, 64 (S.F.T.) for Murshid-
dabad 62, 63 (S.F.T.) for Nadia ;
64 (S.F.T.) for 24-Parganas, Midna-
pore and 63(S.F.T.) for W. Dinajpur**

**Site :- (District) : Malda, Murshid-
abad, Nadia, 24-Parganas, W.
Dinajpur and Midnapore. Type : 'M'.**

Object :-Type A₂—To study the response curves of important cereal, cash and oilseed crops to Nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Red for Midnapore and Alluvial for others. (iii) to (vi) Nil. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

Same as in type A₂ (irrigated) on page 144.

3. DESIGN :

Same as in Type A₁—(Irrigated) on page 67.

4. GENERAL :

(i) to (iii) N.A. (iv)(a)62—66 for Malda, 62—66 (65 N.A.) for Murshidabad, 62—66, 64—65 N.A. for Nadia, 62—64 (63 N.A.) for 24-Parganas. 63 for W. Dinajpur, 64 for Midnapore. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS:

Malda

62(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	69	3	26	127	131	189	199	28.4

Control mean=568 Kg/ha. ; No. of trials=3.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	168	41	98	167	205	250	260	30.6

Control mean=746 Kg/ha.; No. of trials=4.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	73	49	142	49	95	49	95	33.5

Control mean=272 Kg/ha.; No. of trials=2.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	135	000	30	165	165	225	210	36.8

Control mean=395 Kg/ha. ; No. of trials=4.

Murshidabad

62(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	56	26	38	99	128	190	252	123.0

Control mean=776 Kg/ha. ; No. of trials=8.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	206	64	109	241	324	374	447	29.9

Control mean=831 Kg/ha. ; No. of trials=7.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	221	-42	82	245	288	393	457	13.5

Control mean=1009 Kg/ha. ; No. of trials=9.

Nadia**62(S.F.T.)**

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	130	40	112	244	218	236	190	58.6

Control mean=789 Kg/ha ; No. of trials=6.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	136	74	61	156	158	257	238	44.4

Control mean=777 Kg/ha ; No. of trials=6.

24-Parganas**64(S.F.T.)**

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	439	14	24	696	716	845	934	170.4

Control mean=963 Kg/ha ; No. of trials=2.

W. Dinajpur**63(S.F.T.)**

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	118	56	21	12	68	57	150	22.2

Control mean=218 Kg/ha ; No. of trials=2.

Midnapore**64(S.F.T.)**

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	154	97	65	135	179	193	209	58.0

Control mean=666 Kg/ha. ; No. of trials=5.

Crop :- Wheat (Rabi).**Ref. :- W.B. 62, 63(SFT) for Burdwan ; 62, 63,64(SFT) for Bankura; 62,63, 64, 65(SFT) for Birbhum ; 64 (SFT) for Midnapore; 62, 65 (SFT) for Murshidabad ; 63 (SFT) for Nadia and 65(SFT) for 24-Parganas.****Site :- (District) : Burdwan, Bankura, Type :- 'M'.
Birbhum, Midnapore, Murshidabad, Nadia, 24-Parganas.**Object :-Type A₂ :-To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.**1. BASAL CONDITIONS :**

- (i) (a) to (c) N.A. (ii) Laterite for Bankura and Birbhum, Red for Murshidabad and Alluvial for others. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 Manurial Treatments

N_0 = Control (No Mannure)

N_1 = 35 Kg/ha. of N

K_1 = 35 Kg/ha. of K_2O

K_2 = 70 kg/ha. of K_2O

N_1K_1 = 35 Kg/ha. of N+35 Kg/ha. of K_2O

N_1K_2 = 35 Kg/ha. of N+70 Kg/ha. of K_2O

N_2K_2 = 70 Kg/ha. of N+70 Kg/ha. of K_2O

$N_1P_1K_1$ = 35 Kg/ha. of N+35 Kg/ha. of P_2O_5 +35 Kg/ha. of K_2O

N applied as A/S, P_2O_5 as Super, K_2O as Mur. Pot.

3. DESIGN :

Same as in type A_1 (irrigated) on page 67.

4. GENERAL :

(i) to (iii) N.A. 62—66 (64—65 N.A.) for Burdwan, Nadia ; 62—66 (65 N.A.) for Bankura, 62—66 for Birbhum, 62—64. (63 N.A.) for Midnapore ; 62—66 (63—64 N.A.) for Murshidabad ; 63—66 (64 N.A.) for 24-Parganas. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Burdwan

62(S.F.T.)

Treatments	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	262	19	2	273	288	443	351	86.4

Control mean=518 Kg/ha ; No of trials=4.

63(S.F.T.)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	134	14	33	150	171	285	235	12.2

Control mean=637 Kg/ha ; No of trials=3.

Bankura

62(S.F.T.)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	115	000	69	138	208	277	278	57.0

Control mean=737 Kg/ha ; No of trials=2.

63(S.F.T.)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	202	44	84	213	244	315	327	15.2

Control mean=943 Kg/ha ; No of trials=15.

64(S.F.T.)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	373	36	64	382	398	616	428	17.7

Control mean=1532 Kg/ha ; No of trials=5.

Birbhum**62(S.F.T.)**

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	324	13	44	315	339	507	393	36.2

Control mean=712 Kg/ha ; No of trials=17.

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	222	30	45	246	239	364	264	29.9

Control mean=873 Kg/ha. ; No. of trials=13.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	248	15	45	275	287	506	388	28.0

Control mean=973 Kg/ha. ; No. of trials=11.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	231	28	50	247	278	460	351	21.6

Control mean=1023 Kg/ha. ; No. of trials=12.

Midnapore**64(S.F.T.)**

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	225	88	107	219	254	348	320	52.7

Control mean=627 Kg/ha. ; No. of trials=5.

Murshidabad**62(S.F.T.)**

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	369	161	288	422	467	461	485	579.0

Control mean=645 Kg/ha. ; No. of trials=2.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	281	108	133	361	406	527	500	21.6

Control mean=835 Kg/ha. ; No. of trials=11.

Nadia**63(S.F.T.)**

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	229	92	183	391	482	551	552	57.0

Control mean=827 Kg/ha. ; No. of trials=2.

24-Parganas

65(S.F.T)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	288	-86	-62	288	298	583	525	83.8

Control yield=923 Kg/ha. ; No. of trials=5.

Crop :- Wheat (Rabi)

Ref. :- W.B. 62, 63, 64, 65 for Malda and Nadia ; 62, 63, 64 (S.F.T.) for Murshidabad ; 64 (S.F.T.) for Parganas ; 63 (S.F.T.) for W. Dinajpur.

Site :- (District) : Malda, Murshidabad, Nadia, 24-Parganas and W. Dinajpur.

Type :- 'M'.

Object :- Type A₃—To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

Same as in type A₁ (Irrigated) on page 67.

3. DESIGN :

Same as in Type A₁ (Irrigated) on page 140.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962-66 for Malda and Nadia ; 62-66, 65 N.A. for Murshidabad; 62-64 (63 N.A.) for 24-Parganas and 63 for W. Dinajpur. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS:

Malda

62(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	111	19	27	146	150	192	146	35.4

Control mean=526 Kg/ha. ; No. of trials=3.

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	90	33	67	125	159	222	174	30.5

Control mean=702 Kg/ha. ; No. of trials=4.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	89	54	67	100	135	89	67	61.9

Control mean=279 Kg/ha. ; No. of trials=2.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	180	25	30	180	185	255	145	30.5

Control mean=365 Kg/ha.; No. of trials=4.

Murshidabad

62(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	75	28	44	87	113	199	197	17.3

Control mean=443 Kg/ha. ; No. of trials=10.

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	178	83	118	218	361	338	299	15.7

Control mean=740 Kg/ha. ; No. of trials=7.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	215	59	87	252	303	396	355	20.3

Control mean=897 Kg/ha. ; No. of trials=9.

Nadia

62(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	365	34	66	53	149	235	254	128.2

Control mean=637 Kg/ha.; No. of trials=4.

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	127	28	37	141	195	245	286	35.1

Control mean=687 Kg/ha.; No. of trials=6.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	183	39	90	190	266	323	326	25.6

Control mean=719 Kg/ha. ; No. of trials=8.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	204	55	105	350	314	519	480	64.3

Control mean=590 Kg/ha. ; No. of trials=4.

24-Parganas

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	583	-39	-19	573	-563	681	810	232.3

Control mean=879 Kg/ha. ; No. of trials=2.

W. Dinajpur

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₁	N ₁ P ₁ K ₁	S.E.
Av. response of grain in Kg/ha.	-24	6	60	000	35	42	97	35.3

Control mean=276 Kg/ha. ; No. of trials=2.

Crop :- Wheat (Rabi).

Ref :- W.B. 64(65).

Site :- State Agri. Farm, Kalyani.

Type :- 'MV'.

Object :- To see the effect on yield of different varieties of Wheat under high fertility condition.

1. BASAL CONDITIONS :

(i) (a) Jute—Wheat. (b) Jute. (c) N.A. (ii) Sandy loam. (iii) 21.11.64. (iv) (a) 2 to 3 ploughings and laddering. (b) Line sowing (hand). (c) 86 to 91 Kg/ha. (d) 5.1 cm. between plants and 22.9 cm. between rows. (e) 1. (v) 92.2 Q/ha. of cowdung. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings and thinning. (ix) 165 cm. (x) 23.3.65.

2. TREATMENTS :

Main-plot treatments :

2 fertility levels : M₁=44.8 Kg/ha. of N+67.2 Kg/ha. of P₂O₅+44.8 Kg/ha. of K₂O and M₂=89.7 Kg/ha. of N+67.2 Kg/ha. of P₂O₅+44.8 Kg/ha. of K₂O.

N as A/S, P₂O₅ as Super and K₂O as Mur. Pot. applied by broadcasting.

Sub-plot treatments :

16 varieties of Wheat : V₁=Sonara—63, V₂=Sonara—64, V₃=N.P.—872, V₄=N.P.—887, V₅=R.S.—31-1, V₆=Hyb.—65, V₇=Lerma Rajo, V₈=N.P.—852, V₉=C—303, V₁₀=C—306, V₁₁=N.P.—835, V₁₂=K—68, V₁₃=N.P.—876, V₁₄=N.P.—802, V₁₅=N.P.—884 and V₁₆=N.P.—839.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 16 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 7.9 m. × 1.8 m. (b) 7.5 m. × 1.4 m. (v) 46 cm. kept as border around each plot. (vi) Yes.

4. GENERAL :

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

5. RESULTS :

(i) 1664 Kg/ha. (ii) (a) 966.6 Kg/ha. (b) 471.4 Kg/ha. (iii) Main effect of V alone is significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈
M ₁	1648	1733	1391	1526	1257	1428	1550	1257
M ₂	2001	2404	1623	2075	989	1709	2038	2221
Mean	1825	2069	1507	1801	1123	1568	1794	1739

	V ₉	V ₁₀	V ₁₁	V ₁₂	V ₁₃	V ₁₄	V ₁₅	V ₁₆	Mean
M ₁	2258	1416	1648	1578	1562	1257	1611	1379	1531
M ₂	1660	1965	1782	1626	1342	1538	1892	1892	1797
Mean	1959	1691	1715	1602	1452	1398	1752	1636	1664

C.D. for V marginal means=466.7 Kg/ha.

Crop :- Wheat (Rabi).

Ref :- W.B. 64(64).

Site :- State Agri. Farm, Kalyani.

Type :- 'MV'.

Object:—To see the effect of different levels of 'N' on the yield of different varieties of Wheat.

1. BASAL CONDITIONS :

(i) (a) Jute—Wheat. (b) Jute. (c) 92.2 Q/ha. of F.Y.M. (ii) Sandy loam. (iii) 20.11.64. (iv) (a) 2 to 3 ploughings and 1 laddering. (b) Line sowing (hand). (c) 89 Kg/ha. (d) Between plant 6 cm. and between rows 23 cm. (e) 1. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings and thinning. (ix) 180.5 cm. (x) 22.3.65.

2. TREATMENTS :

Main-plot treatments :

4 levels of N : N₀=0, N₁=44.8, N₂=89.7 and N₃=134.4 Kg/ha.
67.3 Kg/ha. of P₂O₅ and 44.8 Kg/ha. of K₂O were applied with or without N.

Sub-plot treatments :

6 varieties of Wheat : V₁=N.P.—876, V₂=N.P.—887, V₃=Sonara—63, V₄=Sonara—64, V₅=Larma Rajo and V₆=C—306.

N as A/S. were applied by broadcasting at the time of planting and P₂O₅ as Super and K₂O as Mur. Pot. were applied by broadcasting at the time of land preparation.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block ; 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 9.1 m. × 3.7 m. (b) 8.7 m. × 3.2 m. (v) 46 cm. kept as border around each plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of helminthosporium measure etc.—N.A. (iii) Yield of grain. (iv) to (vii) Nil.

5. RESULTS :

(i) 2003 Kg/ha. (ii) (a) 419.5 Kg/ha. (b) 264.4 Kg/ha. (iii) Main effect of N and V and interaction N × V are highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	Mean
N ₀	1596	1706	1612	1782	1380	1531	1601
N ₁	2172	2102	2405	2215	2053	1299	2041
N ₂	2260	1950	2828	2444	1965	1475	2154
N ₃	2313	1880	2829	2999	2146	1127	2216
Mean	2085	1910	2419	2360	1886	1358	2003

C.D. for N marginal means = 274.3 Kg/hha.

C.D. for V marginal means = 186.9 Kg/ha.

C.D. for V means at the same level of N = 373.9 Kg/ha.

C.D. for N means at the same level of V = 436.2 Kg/ha.

Crop :- Wheat (Rabi).

Ref :- W.B. 65(27).

Site :- State Agri. Farm, Kalyani.

Type :- 'MV'.

Object :- To see the effect of N, P and K for different varieties of Wheat.

1. **BASAL CONDITIONS :**

(i) (a) Jute—Wheat. (b) Jute. (c) N.A. (ii) Sandy loam. (iii) 11.11.65. (iv) (a) 2 to 3 ploughings and 1 laddering. (b) Line sowing (hand). (c) 35 to 37 Kg/ha. (d) 5 cm. between plants and 22.5 cm. between rows. (e) 1 to 2. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings and 1 thinning. (ix) 8.5 cm. (x) 20.3.66 and 28.2.66.

2. **TREATMENTS :**

Main-plot treatments :

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

(1) 4 levels of N : N₀ = 0, N₁ = 44.8, N₂ = 89.7 and N₃ = 134.4 Kg/ha.

(2) 2 levels of P₂O₅ : P₁ = 33.6 and P₂ = 67.3 Kg/ha.

(3) 2 levels of K₂O : K₁ = 22.4 and K₂ = 44.8 Kg/ha.

Sub-plot treatments :

2 varieties of Wheat : V₁ = Sonara-64 (Maxican) and V₂ = N.P.-835 (Indian).

N as A/S, P₂O₅ as Super and K₂O as Mur. Potash were applied by broadcasting.

3. **DESIGN :**

(i) Split-plot. (ii) (a) 16 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 7.6 m. × 1.8 m. (b) 7.2 m. × 1.4 m. (v) 45.7 cm. kept as border. (vi) Yes.

4. **GENERAL :**

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

5. **RESULTS :**

(i) 2690 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of grain in Kg/ha.

	P ₁	P ₂	K ₁	K ₂	Mean
N ₀	1730	1230	1210	1750	1480
N ₁	2400	2350	2500	2250	2380
N ₂	3200	3080	2980	3300	3140
N ₃	3690	3830	3270	4250	3760
Mean	2760	2620	2490	2890	2690
K ₁	2660	2320			
K ₂	2850	2920			

Crop :- Wheat (Rabi).**Ref :- W.B. 63(64).****Site :- State Agri. Farm, Kalyani.****Type :: 'MV'.**

Object :—To see the effect of fertilizers combinations on the yield of the different varieties of Wheat.

1. BASAL CONDITIONS :

(i) (a) Jute—Wheat. (b) Jute. (c) N.A. (ii) Sandy loam. (iii) 14.11.63. (iv) (a) 2 to 3 ploughings, spading and laddering. (b) Line sowing (hand). (c) 86 to 99 Kg/ha. (d) 23 cm. × 5 cm. (e) 1. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 2 hand weedings and 1 thinning. (ix) 6 cm. (x) 19.3.64.

2. TREATMENTS :**Main-plot treatments :**

4 types of fertilizers combination : $M_1=N_{40} P_{20} K_{20}$, $M_2=N_{80} P_{40} K_{40}$ and $M_3=N_{120} P_{60} K_{60}$.

Sub-plot treatments :

14 varieties of Wheat : $V_1=N.P.-839$, $V_2=N.P.-885$, $V_3=C-302$, $V_4=N.P.-887$, $V_5=NYb-65$, $V_6=N.P.-872$, $V_7=N.P.-852$, $V_8=N.P.-886$, $V_9=N.P.-862$, $V_{10}=N.P.-835$, $V_{11}=C-313$, $V_{12}=N.P.-876$. $V_{13}=Ht. 44-6-5$ and $V_{14}=R.S.-31-1$. N as A/S, P_2O_5 as Super and K_2O as Mur. Potash were applied. N as 44.8, 89.7 and 134.4 Kg/ha., P as 44.8 and 67.3 Kg/ha., K as 44.8 and 67.3 Kg/ha. Fertilizers applied by broadcasting at the time of land preparation.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 14 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 13.1 m. × 3.0 m. (b) 12.6 m. × 2.6 m. (v) 45.7 cm. kept as border around each plot. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of Wheat. (iv) to (vii) Nil.

5. RESULTS :

(i) 1597 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7
M_1	1894	1835	1719	1643	1618	1527	1502
M_2	2511	2052	1860	1819	1726	1652	1610
M_3	2394	2035	1869	1860	1826	1810	1660
Mean	2266	1974	1816	1774	1723	1663	1591

	V_8	V_9	V_{10}	V_{11}	V_{12}	V_{13}	V_{14}	Mean
M_1	1493	1468	1393	1193	1176	1068	1034	1469
M_2	1593	1476	1476	1401	1393	1235	1135	1638
M_3	1602	1568	1534	1502	1310	1293	1293	1683
Mean	1563	1504	1468	1365	1293	1199	1154	1597

Crop :- Wheat (Rabi).**Ref :- W.B. 65(26).****Site :- State Agri. Farm, Kalyani.****Type :- CV**

Object :— To see at which depth, seedling of different varieties of wheat gave better yield.

1. BASAL CONDITIONS :

(i) (a) Jute-Wheat. (b) Jute. (c) 22.4 Kg/ha. of N, P and K as A/S, Super and Mur. Pot. were applied. (ii) Sandy loam. (iii) 3.12.65. (iv) (a) 2 ploughings, 1 Laddering and spading. (b) Line sowing (hand). (c) 86 Kg/ha. (d) 5.1 cm. bet. plants and 22.9 cm. bet. rows. (e) One. (v) N as A/S, P₂O₅ as Super and K₂O as Mur. Pot. were applied @ 22.4 Kg/ha. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings and 1 thinning. (ix) 9 cm. (x) 22.3.66.

2. TREATMENTS :**Main-plot treatments :**

4 depths of sowing : D₁=2.5 cm. depth from surface, D₂=5.1 cm. depth from surface, D₃=7.6 cm. depth from surface and D₄=Control (sowing behind the plough).

Sub-plot treatments :

5 varieties of wheat : V₁=Sonara--64, V₂=Sonara --63, V₃=Lerma Rajo, V₄=C--306 and V₅=N.P. 852.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 4.9 m. × 1.4 m. (b) 4.4 m. × 0.9 m. (v) 45.7 cm. kept as border around each plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grain. (iv) (a) 1965-contd. (b) Yes (c) N.A. (v) No. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 1862 Kg/ha. (ii) (a) 207.9 Kg/ha. (b) 410.8 Kg/ha. (iii) Main effect of V and interaction V × D are highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
M ₁	2103	2196	1546	1547	2289	1936
M ₂	2072	2010	1701	1639	1887	1862
M ₃	1949	2103	1577	1330	2165	1825
M ₄	1949	2165	1547	1299	2165	1825
Mean	2018	2119	1593	1454	2127	1862

C.D. for V marginal means = 290.3 Kg/ha.

C.D. for V means at the same level of D = 580.9 Kg/ha.

C.D. for D means at the same level of V = 540.0 Kg/ha.

Crop :- Wheat (Rabi)**Ref :- W.B. 65(25).****Site :- State Agri. Farm, Kalyani.****Type :- 'MV'.**

Object :— To Screen different varieties of wheat at different levels of N.

1. BASAL CONDITIONS :

(i) (a) Paddy-wheat. (b) Paddy. (c) 22.4 Kg/ha. of N, P₂O₅ and K₂O as A/S Super and Mur. Pot. (ii) Sandy loam. (iii) 10.12.65. (iv) (a) 2-3 ploughings, spading and 1 laddering. (b) Line sowing. (c) 86 Kg/ha. (d) 5.1 cm. between plants. (e) 2-3. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings and thinning. (ix) 9 cm. (x) 5.4.66.

2. TREATMENTS :

Main-plot treatments :

3 levels of N : $N_0=0$, $N_1=89.7$ and $N_2=134.4$ Kg/ha. P_2O_5 @ 67.3 Kg/ha. as Super and K_2O @ 44.8 Kg/ha. as Mur. of Pot. were applied in all the time of puddling. N as A/S top-dressed after 3 to 4 weeks sowing.

Sub-plot treatments :

14 varieties of wheat : $V_1=C-306$, $V_2=PV-18$, $V_3=$ Lerma Rajo. $V_4=$ Nadadore-63, $V_5=$ Panjamo-62, $V_6=$ Sonara-63, $V_7=$ Sonara-64, $V_8=S-227$, $V_9=S-305$, $V_{10}=S-307$, $V_{11}=S-308$, $V_{12}=S-326$, $V_{13}=S-331$ and $V_{14}=S-503$.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots block, 14 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 4.9 m. \times 2.3 m. (c) 4.4 m. \times 1.8 m. (v) 45.7 cm. kept as border around each plot. (vi) Yes.

4. GENERAL :

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

5. RESULTS :

(i) 1574 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7
N_0	1420	1440	820	490	1360	1540	1310
N_1	1970	2140	1710	760	1710	1710	1980
N_2	2080	1930	1570	570	1690	1750	2550
Mean	1823	1837	1366	607	1587	1667	1947

	V_8	V_9	V_{10}	V_{11}	V_{12}	V_{13}	V_{14}	Mean
N_0	1670	1480	1110	1340	1010	900	1500	1242
N_1	2120	2180	1250	2080	1690	920	2120	1739
N_2	2040	2020	1500	1750	1590	1190	2160	1742
Mean	1943	1893	1287	1723	1430	1003	1927	1574

Crop :- Barley

Ref :- W.B. 60(S.F.T).

Site :- (District) :- W. Dinajpur and Malda.

Type :- 'M'.

Object :- Type A :- To study the response of Barley to different levels of N, P_2O_5 and K_2O applied individually and in combination.

1. BASAL CONDITIONS :

(i) N.A. (ii) Alluvial. (iii) to (x) N A.

2. TREATMENTS :

8 manurial treatments

O = Control (no manure)

N = 22.4 Kg/ha. of N.

P = 22.4 Kg/ha. of P_2O_5 .

K = 22.4 Kg/ha. K_2O .

NP = 22.4 Kg/ha. of N + 22.4 Kg/ha. of P_2O_5 .

NK = 22.4 Kg/ha. of N + 22.4 Kg/ha. of K_2O .

PK = 22.4 Kg/ha. of P_2O_5 + 22.4 Kg/ha. of K_2O .

NPK = 22.4 Kg/ha. of N + 22.4 Kg/ha. of P_2O_5 + 22.4 Kg/ha. of K_2O .

N applied as A S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

(i) and (ii) The district has been divided into four agriculturally homogeneous zones and one field assistant posted in each zone. The field assistant conducts the trials in one revenue circle or thana in the zone and the circle/thana is changed once in two years within the same zone. Each field assistant is required to conduct 31 trials in a year, 8 on *kharif* cereal, 8 on a *rabi* cereal, 8 on cash crop, 4 on an oilseed crop and 3 on a leguminous crop. Half the number of trials conducted are of type A and the other half of type B on crops other than the legumes. The three trials on legumes are of type C. Residual effects of phosphate application are studied on Type C trials in two out of the four zones in each district every year. The experiments are laid out in randomly located fields in randomly selected villages in each of the 4 zones at the rate of one experiment per village. (iii) (a) 1/98.8 ha. (b) 1/197.7 ha. (iv) Yes.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

District	Year	Soil class	No. of trials	Control mean Kg/ha.	Av. response of grain in Kg/ha.								
					N	P	K	S.E.	NP	NK	PK	NPK	S.E.
W. Dinajpur	1960	Alluvial	2	480	220	320	80	94.0	10	30	20	70	83.0
Malda	1960	Alluvial	5	1020	130	140	10	30.0	-130	20	-	10	610.0

Crop :- Barley.

Ref :- W.B. 60(S.F.T.)

Site :- (District) : As per results.

Type :- 'M'.

Object :-Type B—To investigate the relative efficiency of different fertilizers at different doses.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) As per results. (iii) to (x) N.A.

TREATMENTS :

- o == Control (no manure)
- n₁ == 22.4 Kg/ha. of N as A/S.
- n₂ == 44.8 Kg/ha. of N as A/S.
- n₁' == 22.4 Kg/ha. of N as Urea.
- n₂' == 44.8 Kg/ha. of N as Urea.
- n₁'' == 22.4 Kg/ha. of N as A/S/N.
- n₂'' == 44.8 Kg/ha. of N as A/S/N.
- n₁''' == 22.4 Kg/ha. of N as C/A/N.
- n₂''' == 44.8 Kg/ha. of N as C/A/N.

3. DESIGN :

Same as in type A on page 158.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

District	Year	Soil class	No. of trials	Control mean in Kg/ha.	Av. response of grain in Kg/ha.								
					n ₁	n ₁ '	n ₁ ''	n ₁ '''	n ₂	n ₂ '	n ₂ ''	n ₂ '''	S.E. of response
Malda	1960	Alluvial	4	800	300	250	—	250	380	430	—	450	121.00

Crop :- Barley (*Rabi*).

Ref. :- W.B. 62, 63, 64 (S.F.T.)

Site :- (District) : Malda and Murshidabad. Type :- 'M'.

Object :- Type A₁—To study the response curves of important cereal, cash and oilseed crops to Nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

O =Control (no manure)

N₁ =35 Kg/ha. of N

N₂ =70 Kg/ha. of N

P₁ =35 Kg/ha. of P₂O₅

N₁P₁ =35 Kg/ha. of N+35 Kg/ha. of P₂O₅

N₂P₁ =70 Kg/ha. of N+35 Kg/ha. of P₂O₅

N₂P₂ =70 Kg/ha. of N+70 Kg/ha. of P₂O₅

N₂P₂K₁ =70 Kg/ha. of N+70 Kg/ha. of P₂O₅+35 Kg/ha of K₂O

N applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN :

A selected district is divided into four agriculturally homogeneous zones based on climate, soil, cropping pattern etc. In each zone one block is selected at random. A block normally consists of a group of 50-100 villages. In each block 36 experiments are conducted in a year of which 11 are of type A₁, 11 of type A₂, 11 of type A₃ and 3 are of type—C. The eleven experiments under type A₁, A₂ and A₃ are distributed as 3 on a *Kharif* cereal, 3 on a *rabi* cereal, 3 on a cash crop and 2 on oilseed. All the three type—C experiments are conducted on a legume crop. For the purpose of conducting the A₁, A₂ and A₃ experiments 11 villages are randomly selected in each block and in each village 3 experiments one each of type A₁, A₂ and A₃ are laid out. For conducting the three type—C trials three villages are randomly selected in each block.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962—64. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Malda

62(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	63	63	46	85	68	134	105	27.0

Control mean=676 Kg/ha. ; No. of trials=4.

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	228	210	55	156	258	230	306	33.0

Control mean=794 Kg/ha. ; No. of trials=7.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	184	220	26	164	220	224	395	31.0

Control mean=856 Kg/ha. ; No. of trials=3.

Murshidabad

62(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	229	296	163	267	298	363	411	60.0

Control mean=448 Kg/ha. ; No. of trials=5.

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	144	195	75	211	297	353	412	56.0

Control mean=552 Kg/ha. ; No. of trials=3.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	227	373	52	237	413	414	500	36.3

Control mean=876 Kg/ha. ; No. of trials=5.

Crop :- Barley (Rabi).

Ref :- W.B.62, 63, 64(S.F.T.)

Site :- (District) : Malda and Murshidabad.

Type :- 'M'.

Object :-Type A₂ :-To study the response curves of important cereal, cash and oilseed crops to Phosphorus applied singly and in combination with other nutrients.

1. BASAL CONDITIONS:

(i) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

g Manurial Treatments :

- O = Control (no Manure)
 - N₁ = 35 Kg/ha. of N
 - P₁ = 35 Kg/ha. of P₂O₅
 - P₂ = 70 Kg/ha. of P₂O₅
 - N₁P₁ = 35 Kg/ha. of N+35 Kg/ha. of P₂O₅
 - N₁P₂ = 35 Kg/ha. of N+70 Kg/ha. of P₂O₅
 - N₂P₂ = 70 Kg/ha. of N+70 Kg/ha. of P₂O₅
 - N₂P₂K₂ = 70 Kg/ha. of N+70 Kg/ha. P₂O₅+70 Kg/ha. of K₂O
- N applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN:

Same as in type A₁ (Unirrigated) on page 160.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962-64 for Malda and Murshidabad. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS:

Malda**62(S.F.T.)**

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	93	3	48	125	78	161	64	95.7

Control mean=765 Kg/ha ; No. of trials=4.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	223	58	72	272	231	253	298	43.0

Control mean=821 Kg/ha ; No. of trials=7.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	174	-3	52	187	230	289	392	38.5

Control mean=843 Kg/ha ; No. of trials=3.

Murshidabad**62(S.F.T.)**

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	155	88	140	155	195	224	299	35.3

Control mean=617 Kg/ha ; No. of trials=4.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	165	38	92	176	220	241	285	28.0

Control mean=568 Kg/ha : No. of trials=3.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	256	126	176	296	350	455	526	25.4

Control mean=815 Kg/ha ; No. of trials=5.

Crop :- Barley**Ref :- W.B. 62, 63, 64 (S.F.T.)****Site :- (District) : Malda and Murshidabad****Type :- 'M'.**

Object :-Type A₃ :-To study the response curves of important cereals, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O =Control (no manure).

 N_1 =35 Kg/ha. of N. K_1 =35 Kg/ha. of K_2O . K_2 =70 Kg/ha. of K_2O . N_1K_1 =35 Kg/ha. of N+35 Kg/ha. of K_2O . N_1K_2 =35 Kg/ha. of N+70 Kg/ha. of K_2O . N_2K_2 =70 Kg/ha. of N+70 Kg/ha. of P_2O_5 . $N_1P_1K_1$ =35 Kg/ha. of N+35 Kg/ha. of P_2O_5 +35 Kg/ha. of K_2O .N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

Same as in type A_1 (Unirrigated) on page 160.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962-64 for Malda : 1962-64 for Murshidabad. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Malda

62(S.F.T.)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	72	—7	29	94	117	188	101	32.1

Control mean=638 Kg/ha ; No. of trials=4.

63(S.F.T.)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	144	71	105	215	282	281	285	25.0

Control mean=820 Kg/ha ; No. of trials=7.

64(S.F.T.)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	158	29	125	191	220	260	349	30.5

Control mean=863 Kg/ha ; No. of trials=3.

Murshidabad

62(S.F.T.)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	184	110	190	245	262	284	327	49.3

Control mean=681 Kg/ha ; No. of trials=5.

63(S.F.T.)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	129	17	26	156	173	282	156	31.0

Control mean=603 Kg/ha ; No. of trials=3.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of gingelly in Kg/ha.	239	112	172	361	396	493	443	30.1

Control mean=769 Kg/ha. ; No. of trials=5.

Crop :- Maize (Kharif).**Ref :- W.B. 60(20).****Site :- State Agri. Farm, Kalimpong.****Type :- 'MP'.**

Object :- To study the effect of N, P and K on the yield of Maize.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) 11.5.60. (iv) (a) 2 to 3 ploughings and spading. (b) Broadcast (c) 12.3 to 14.8 Kg/ha. (d) and (e) N.A. (v) 92.2 Q/ha. of cowdung. (vi) Amarillo-De-Cuba (medium). (vii) Unirrigated. (viii) Weeding (by wheel hoe). (ix) N.A. (x) 19.9.60.

2. TREATMENTS :

5 manurial treatments : M₀=Control, M₁=67.2 Kg/ha. of N as A/S, M₂=M₁+33.6 Kg/ha. of P as Super, M₃=M₁+67.2 Kg/ha. of K as Mur. Pot. and M₄=M₃+33.6 Kg/ha. of P as Super. P applied on 11.5.60 and N, K applied on 20.6.60.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 4.6 m. × 2.4 m. (b) 4.0 m. × 1.8 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1960.--only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3760 Kg/ha. (ii) 463.6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄
Av. yield	3419	4024	3899	3802	3657

Crop :- Maize (Kharif).**Ref :- W.B. 64(9).****Site :- State Agri. Farm, Kalimpong.****Type :- 'CV'.**

Object :- To find out the optimum dates of sowing for different varieties of Maize.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Brown forest soil. (iii) As per treatments. (iv) (a) 2 to 3 ploughings and one harrowing. (b) Line sowing. (c) N.A. (d) 75 cm. × 25 cm. (e) 1. (v) 92.2 Q/ha. of cowdung+56.0 Kg/ha. of each of N, P and K as Urea, Super and Mur. Pot. respectively. (vi) As per treatments. (vii) Unirrigated. (viii) 1 to 2 weedings, thinning and earthing up. (ix) N.A. (x) 21.7.64 to 29.8.64.

2. TREATMENTS :**Main-plot treatments :**

5 dates of sowing : D₁=10.4.64, D₂=20.4.64, D₃=30.4.64, D₄=10.5.64 and D₅=20.5.64.

Sub-plot treatments :

7 varieties ; V₁=Pusa culture LPL 2×Basi, V₂=Maxican June Composite, V₃=S.S. III, V₄=Amarillo-de Cuba, V₅=Dorado×Auarillo, V₆=Recommended Hybrid and V₇=Local.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 7 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 11.3 sq. m. (b) 7.5 sq. m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of Maize. (iv) (a) 1964—contd. (b) Yes. (c) N.A. (v) (a) and (b) No. (vi) and (vii) 1965 N.A.

5. RESULTS :

(i) 451.6 Q/ha. (ii) (a) 21.7 Q/ha. (b) 19.2 Q/ha. (iii) Main effects of 'V' and 'D' are highly significant and interaction $V \times D$ is significant. (iv) Av. yield of Maize in Q/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	Mean
D ₁	414.7	656.0	494.7	209.3	660.0	864.0	494.7	541.9
D ₂	330.7	617.3	390.7	640.0	662.7	724.0	492.0	551.1
D ₃	229.3	488.0	289.3	586.7	573.3	746.7	442.7	479.4
D ₄	148.0	418.7	246.7	492.0	538.7	749.3	342.7	419.4
D ₅	11.73	237.3	142.7	353.3	444.4	370.7	197.3	266.1
Mean	248.0	483.5	312.8	456.3	575.7	690.9	393.8	451.6

C.D. for D marginal means = 12.6 Q/ha.

C.D. for V marginal means = 13.4 Q/ha.

C.D. for D at the same level of V = 20.4 Q/ha.

C.D. for V at the same level of D = 26.6 Q/ha.

Crop :- Maize (Kharif).

Ref :- W.B. 63(24).

Site :- State Agri. Farm, Kalimpong.

Type :- 'CMV'.

Object :- To find out the effect of different levels of N with different row spacing on the yield of different varieties of Maize.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Brown forest soil. (iii) 17.5.63. (iv) (a) 2 to 3 ploughings and laddering. (b) Line sowing. (c) 29.7 Kg/ha. (d) N.A. (e) 1. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) 1 to 2 weedings. (ix) N.A. (x) 23.9.63.

2. TREATMENTS :

Main-plot treatments :

2 varieties : V₁=Local and V₂=Recommended Hybrid.

Sub-plot treatments :

3 spacings between rows : S₁=61 cm., S₂=76 cm. and S₃=91 cm.

Sub-sub-plot treatments :

3 levels of N as Urea : N₁=67.2, N₂=134.5 and N₃=201.8 Kg/ha.

89.7 Kg/ha. of each of P₂O₅ as Super and K₂O as Mur. Pot. were broadcasted.

3. DESIGN :

(i) Split split-plot. (ii) (a) 2 main-plots/block; 3 sub-plots/main-plot; 3 sub-sub-plots/sub-plot. (b) N.A. (iii) 4. (iv) (a) 11.5 sq. m. (b) 7.5 sq. m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of Maize. (iv) (a) 1961 to 63. 1961 N.A. and Experiment failed in 1962. (b) Yes. (c) N.A. (v) (a) and (b) No. (vi) No. (vii) Nil.

5. RESULTS :

(i) 370.5 Q/ha. (ii) (a) 28.1 Q/ha. (b) 7.1 Q/ha. (c) 11.9 Q/ha. (iii) N.A. (iv) Av. yield of Maize in Q/ha.

	N ₁	N ₂	N ₃	S ₁	S ₂	S ₃	Mean
V ₁	279.2	317.4	351.1	333.8	322.7	291.2	315.9
V ₂	375.5	430.1	469.7	440.8	425.7	408.8	425.1
Mean	327.4	373.8	410.4	387.3	374.2	350.0	370.5
S ₁	341.6	385.4	435.1				
S ₂	330.2	385.4	407.0				
S ₃	310.4	350.5	389.1				

Crop :- Lentil (Rabi).

Ref :- W.B. 63(63), 64(51), 65(47).

Site :- State Agri. Farm, Berhampore.

Type :- 'M'.

Object :- To find out the effect of N and P alone and in combination on the yield of Lentil.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) Last week of November 63 ; middle of November 64 & 65 (iv) (a) 2 ploughings and laddering. (b) Broadcasting. (c) 30 to 35 Kg/ha. (d) and (e) N.A. (v) 92.2 Q/ha. of F.Y.M. ; N.A. for 64, 65 (vi) B-77 (medium). (vii) Unirrigated. (viii) 2 weedings and 1 thinning by hand. (ix) 12.8 cm. ; 30.1 cm. ; 3.8 cm. (x) 1st week of March 64 ; 2nd week of March 65.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of N as A/S: N₀=0 and N₁=22.4 Kg/ha.

(2) 5 levels of P₂O₅ as Super : P₀=0, P₁=22.4, P₂=44.8, P₃=67.2 and P₄=89.7 Kg/ha.

Fertilizers were applied by broadcasting at the time of sowing.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. in 63, 64 and 9.1 m. × 31.5 m. for 65. (iii) 4. (iv) (a) 10.7 m. × 4.6 m. in 63, 64 ; 9.1 m. × 3.0 m. in 65. (b) 10.1 m. × 4.0 m. in 63, 64, 8.5 m. × 2.4 m. in 65. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1963—65. (b) Yes. (c) Nil. (v) Malda and Kalyani. (vi) N.A. (vii) Error variances are heterogeneous and interaction of Treatments × year is absent. Hence individual years results are presented.

5. RESULTS :

63(63)

(i) 1242 Kg/ha. (ii) 170.6 Kg/ha. (iii) Main effect of N alone is significant. (iv) Av. yield of grain is Kg/ha.

	P ₀	P ₁	P ₂	P ₃	P ₄	Mean
N ₀	1259	1187	1120	1177	1142	1177
N ₁	1305	1287	1491	1201	1255	1308
Mean	1282	1237	1306	1189	1198	1242

C.D. for N marginal means = 110.6 Kg/ha.

64(51)

(i) 1468 Kg/ha. (ii) 311.1 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	P ₃	P ₄	Mean
N ₀	1547	1592	1367	1252	1357	1423
N ₁	1404	1510	1576	1510	1567	1513
Mean	1476	1551	1472	1381	1462	1468

65(47)

(i) 467 Kg/ha. (ii) 112.0 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	P ₃	P ₄	Mean
N ₀	382	395	461	486	353	415
N ₁	466	497	602	520	507	518
Mean	424	446	532	503	430	467

C.D. for N marginal means = 72.6 Kg/ha.

Crop :- Lentil (Rabi).

Ref :- W.B. 64(44), 65(52).

Site :- State Agri. Farm, Kalyani.

Type :- 'M'.

Object :- To find out the effect of N and P₂O₅ alone and in combination on the yield of Lentil.

1. BASAL CONDITIONS :

(i) N.A. ; Wheat-Lentil. (b) N.A. ; Wheat. (c) N.A. ; 9323 Kg/ha. of Cowdung. (ii) Loam and Sandy loam. (iii) 10.11.64 ; 27.10.65. (iv) (a) 2-3 ploughings and laddering. (b) Broadcasting. (c) 35 Kg/ha., 30Kg/ha. (d) and (e) N.A. (v) N.A., 110.7 Q/ha. (vi) B-77 (medium), (vii) Irrigated. (viii) 2 weedings and thinning. (ix) N.A., 6.6 cm. (x) 10.3.65 ; 17.2.66 and 18.2.66.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 2 levels of N : N₀=0, N₁=22.4 Kg/ha.

(2) 5 levels of P₂O₅ : P₀=0, P₁=22.4 Kg/ha., P₂=44.8 Kg/ha., P₃=99.6 Kg/ha. and P₄=99.6 Kg/ha. N as A/S, P₂O₅ as Super were applied by broadcasting at the time of land preparation.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A., 49.6 m. × 6.1 m. (iii) 4. (iv) (a) 6.1 m. × 4.6 m. (c) 5.5 m. × 4.0 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1963-66 (failed in 1963). (b) Yes. (c) N.A. (v) Malda and Berhampore. (vi) N.A. (vii) Experiment failed in 1963.

5. RESULTS :

64(44)

(i) 1312 Kg/ha. (ii) 69.0 Kg/ha. (iii) Main effect of N, P and N × P effects are highly significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	P ₃	P ₄	Mean
N ₀	1311	1150	1219	1254	1138	1214
N ₁	1414	1495	1552	1300	1288	1410
Mean	1362	1322	1386	1277	1213	1312

C.D. for N marginal means=44.8 Kg/ha.

C.D. for P marginal means=70.8 Kg/ha.

C.D. for body of N×P table=100.1 Kg/ha.

65(22)

- (i) 1307 Kg/ha. (ii) 23.5 Kg/ha. (iii) Main effects of N, P and interaction. N×P are highly significant.
 (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	P ₃	P ₄	Mean
N ₀	1141	1446	1072	1153	1631	1289
N ₁	1507	1098	1803	1091	1122	1324
Mean	1324	1272	1438	1122	1377	1307

C.D. for N marginal means=15.2 Kg/ha.

C.D. for P marginal means=24.0 Kg/ha.

C.D. for body of N×P table=34.1 Kg/ha.

Crop :- Lentil (Rabi).

Ref :- W.B. 62(64), 63(58), 64(49), 65(51).

Site :- State Agri. Farm, Malda.

Type :- 'M'.

Object :—To find out the effect of N and P₂O₅ alone and in combination on the yield of Lentil.

1. BASAL CONDITIONS :

- (i) (a) N.A. for 62(44) ; Aus-Lentil. for others. (b) N.A. for 62(44) ; Aus for others. (c) N.A. for 62(44), As per treatments for others. (ii) Clay loam and sandy loam in 1965. (iii) 18.11.1962, 28.11.1963 ; 7.12.1964. 29.10.1965. (iv) (a) 2 to 3 ploughings and laddering in 1962 and 1965, 3 ploughings and laddering in 1964, 3 to 4 ploughings and laddering. (b) Broadcasting. (c) 30 to 35 Kg/ha. (d) and (e) N.A. (v) 92.2 Q/ha. of F.Y.M. during 196.6 1964 and 110.6 Q/ha. of Cowdung during 1965. (vi) B-77 (medium). (vii) Unirrigated, (viii) 2 weedings and thinning by hand. (ix) N.A. during 1962 to 1964; 15.3 cm. during 1965. (x) 8.3. 1963 to 13.3.63 ; 17 to 19.3.64, 14 to 22.3.65.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 2 levels of N as A/S : N₀=0, and N₁=22.4 Kg/ha.

(2) 5 levels of P₂O₅ as Super : P₀=0, P₁=22.4, P₂=44.8, P₃=67.3 and P₄=89.7 Kg/ha.

3. DESIGN:

- (i) Fact in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 10.7 m.×4.6 m. (b) 10.1 m.×4.0 m. (v) 30 cm. ×30 cm. (vi) Yes.

4. GENERAL :

- (i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1962 to 65. (b) Yes. (v) Kalayani and Berhampore. (vi) N.A. (vii) Error Variances are heterogeneous and Treatments×years interaction in present.

5. RESULTS:

(i) 978 Kg/ha. (ii) 292.0 Kg/ha. (based on 27 d. f. made up of years \times Treatments interaction). (iii) N \times P interaction is significant. (iv) Av. yield of grain in Kg/ha:

	P ₀	P ₁	P ₂	P ₃	P ₄	Mean
N ₀	1091	923	955	913	957	968
N ₁	881	924	1189	1128	819	988
Mean	986	923	1072	1020	888	978

C.D. for the body of table = 211.7 Kg/ha.

Years	P ₀	P ₁	P ₂	P ₃	P ₄	Sig.	N ₁	N ₂	Sig.	G. M.	S.E./plot
1962	353	376	433	458	360	—	357	434	*	396	100.4
1963	1078	1014	1080	1193	1040	—	1062	1100	N.S.	1081	150.5
1964	1201	1277	1529	1571	1106	**	1308	1308	**	1308	220.8
1965	1313	1027	1246	1006	1048	—	1145	1111	—	1128	302.1
Pooled	986	923	1072	1020	888	—	968	988	—	978	292.0

Crop :- Lentil (*Rabi*).

Ref :- W.B. 60(33).

Site :- State Agri. Farm, Berhampore.

Type :- 'C'

Object :- To study the effect of different seed-rates and methods of sowing on the yield of Lentil.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Ganga rivine clay loam. (iii) Last week of Oct. (iv) (a) 2 to 3 ploughings and laddering. (b) Line sowing and broadcast. (c) and (d) As per treatments. (e) N.A. (v) N.A. (vi) B-77 (medium). (vii) Unirrigated. (viii) 2 to 3 weedings and thinning. (ix) N.A. (x) Last week of February to 1st week of March, 61.

2. TREATMENTS:

8 cultural treatments : C₁=13.8, C₂=20.7, C₃=27.7 and C₄=34.6 Kg/ha. and C₅=15 cm., C₆=23 cm., C₇=30 cm. and C₈=38 cm. spacings between rows.

3. DESIGN:

(i) R.B.D. (ii) (a) 8. (b) 22.9 m. \times 21.0 m. (iii) 4. (iv) (a) 11.6 m. \times 5.2 m. (b) 11.0 m. \times 4.6 m. (v) 30 cm. \times 30 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1960 only. (b) Yes. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS:

(i) 738 Kg/ha. (ii) 107.0 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	C ₁	C ₂	C ₃	C ₄	C ₅	C ₆	C ₇	C ₈
Av. yield	622	691	653	772	895	815	804	656

C.D. = 157.5 Kg/ha.

Crop :- Lentil (Rabi).

Ref :- W.B. 60(63), 61(54), 62(12).

Site :- State Agri. Farm, Berhampore,

Type :- 'C'

Object :- To see the effect of different seed rate and method of sowing on the yield of Lentil.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) Last week of Oct. 1950 ; Last week of Oct. to 1st week of Nov., 1951 ; N.A. for 62 as per treatments. (iv) (a) to (d) As per treatments. (e) N.A. (v) N.A. (vi) B-77 (medium). (vii) Unirrigated during 1950, 1952 ; N.A. during 1951. (viii) N.A. ; 2 weeding by hand ; 2 weeding and thinning in 1962. (ix) N.A. (x) Last week of February 1961 ; N.A. for crops sown in 1961 and 1962.

2. TREATMENTS :

8 cultural treatments : C_1 =Sowing in rows 15cm apart, C_2 =Seed broadcast at 27.7 Kg/ha. C_3 =Seed broadcast at 34.6 Kg/ha., C_4 =Sowing in rows 23 cm. apart with normal seed rate, C_5 =Row sowing 30 cm. apart with normal seed rate, C_6 =Seed broadcast at 20.7 Kg/ha, C_7 =Sowing in rows 38 cm. apart with normal seed rate and C_8 =Seed broadcast at 13.8 Kg/ha.

Normal seed rate N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 11.6 m. x 5.2 m. (b) 11.0 m. x 4.6 m. (v) 30 cm. x 30 cm. (vi) Yes.

4. GENERAL:

(i) Not good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1960 to 1963 (1963 N.A.), (b) Yes. (c) Results of combined analysis given under 5 Results. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments x years interaction is present.

5. RESULTS :

(i) 1525 Kg/ha. (ii) 401.6 Kg/ha. (based on 14d.f. made up of Treatment x years interaction.) (iii) Treatment differences are not significant. (vi) Av. yield of grain in Kg/ha.

Treatment	C_1	C_2	C_3	C_4	C_5	C_6	C_7	C_8
Av. yield	1693	1693	1688	1584	1482	1396	1392	1275

Years	C_1	C_2	C_3	C_4	C_5	C_6	C_7	C_8	Sig.	G.M.	S.E./plot
1960	911	654	773	817	806	620	657	623	*	733	111.6
1961	2514	2650	2915	2211	2117	2176	2031	2030	**	2331	129.3
1962	1653	1774	1376	1728	1524	1321	1487	1173	N.S.	1504	227.3
Pooled	1693	1693	1688	1584	1482	1396	1392	1275	N.S.	1525	400.6

Crop :- Lentil (Rabi).

Ref :- W.B. 63(59).

Site :- State Agri. Farm, Berhampore.

Type :- 'C'.

Object :- To find out the most suitable time for sowing of Lentil.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) As per treatments. (iv) (a) 2 to 3 ploughings and laddering. (b) Broadcasting. (c) 35 Kg/ha. (d) and (e) N.A. (v) N.A. (vi) B-77 (medium). (vii) Unirrigated (viii) Weeding and thinning. (ix) 111.3 cm. (x) N.A.

2. TREATMENTS :

6 dates of sowing : D_1 =21.10.63, D_2 =31.10.63, D_3 =10.11.63, D_4 =20.11.63, D_5 =30.11.63, and D_6 =10.12.63.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 11'6 m. × 4'9 m. (b) 11'0 m. × 4'3 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1962—contd. (modified). (b) Yes. (c) N.A. (v) and (vi) Nil. (vii) Expt. failed in 64.

5. RESULTS :

(i) 664 Kg/ha. (ii) 251.3 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆
Av. yield	1111	949	726	400	400	395

C.D. = 378.7 Kg/ha.

Crop :- Lentil (Rabi).

Ref :- W.B. 65(32).

Site :- State Agri. Farm, Berhampore.

Type :- 'C'.

Object :- To find out the optimum time for sowing the crop.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay loam. (iii) As under treatment. (iv) (a) 2 ploughings and 1 laddering. (b) Broadcasting. (c) 35 Kg/ha. (d) and (e) Nil. (v) 92.2 Q/ha. of cowdung. (vi) B-77 (medium). (vii) Irrigated. (viii) 1 weeding and 1 thinning. (ix) 10.5 cm. (x) January to March '66.

2. TREATMENTS :

9 dates of sowing : D₁ = 11.10.65, D₂ = 21.10.65, D₃ = 31.10.65, D₄ = 10.11.65, D₅ = 20.11.65, D₆ = 30.11.65, D₇ = 10.12.65, D₈ = 20.12.65 and D₉ = 30.12.65.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) 35.7 m. × 13.1 m. (iii) 4. (iv) (a) 13.1 m. × 4.0 m. (b) 12.5 m. × 3.4 m. (v) 61 cm. kept as border. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of blight diseases, measure etc—N.A. (iii) Yield of grain. (iv) (a) 1962—contd. (modified in 1965). (b) No. (c) N.A. (v) (a) S.A.F. Malda. (b) Nil. (vi) N.A. (vii) Experiment failed in 1964.

5. RESULTS :

(i) 162.6 Kg/ha. (ii) 118.9 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈	D ₉
Av. yield	241.4	172.4	364.4	183.8	182.6	138.4	91.4	45.7	43.2

C.D. = 173.5 Kg/ha.

Corp :- Lentil (Rabi).**Ref :- W.B. 61(55), 62(13), 63(3).****Site :- State Agri. Farm, Kalyani.****Type :- 'C'.****Object :-**To study the effect of different dates of sowing on the yield of Lentil.**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) Loam and sandy loam. (iii) As per treatments. (iv) (a) 2 to 3 ploughing, laddering and land preparation. (b) Broadcasting. (c) 35 to 37 Kg/ha. (d) and (e) N.A. (v) N.A. (vi) B-77 (medium). (vii) N.A. for 61,62, Irrigated for 1963. (viii) 2 to 3 weedings. (ix) N.A. (x) Last week of Feb. 62, N.A. Last week of Feb, 64 to last week of March 64.

2. TREATMENTS :

6 dates of sowing : $D_1=21.10.61$, $D_2=31.10.61$, $D_3=10.11.61$, $D_4=20.11.61$, $D_5=30.11.61$ and $D_6=10.12.61$.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 11.6 m. \times 4.9 m. for 61, 63 ; 10.4 m. \times 3.7 m. for 1962. (b) 11.0 m. \times 4.3 m. for 61,63 ; 9.8 m. \times 3.1 m. for 1962. (v) 30 cm. \times 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (vi) (a) 1961-1963. (b) No. (c) N.A. (v) No. (vi) N.A. (vii) Error variances are heterogeneous and Treatments \times years interaction is present.

5. RESULTS :

(i) 1378 Kg/ha. (ii) 658.1 Kg/ha. (based on 10 d.f. made up of Treatments \times years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	D_1	D_2	D_3	D_4	D_5	D_6
Mean yield	1446	1690	1631	1293	1186	1024

Years	D_1	D_2	D_3	D_4	D_5	D_6	Sig.	G.M.	S.E./plot
1961	893	815	774	685	550	537	**	709	64.1
1962	2138	2034	2030	1190	1160	1017	**	1595	97.6
1963	1308	2221	2089	2004	1848	1517	**	1831	24.2
Pooled	1446	1690	1631	1293	1186	1024	N.S.	1378	658.1

Crop :- Lentil (Rabi).**Ref :- W.B. 64(46).****Type :- State Agri. Farm, Kalyani.****Type :- 'C'.****Object :-**To find out the suitable time of sowing for the Lentil crop.**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) Loam and sandy loam. (iii) As per treatments. (iv) (a) 2 to 3 ploughings and laddering. (b) Broadcasting. (c) 35 Kg/ha. (d) and (e) N.A. (v) N.A. (vi) B-77 (medium). (vii) Un-irrigated. (viii) 2 weedings and thinning. (ix) and (x) N.A.

2. TREATMENTS :

12 dates of sowing : $D_1=20.9.64$, $D_2=1.10.64$, $D_3=11.10.64$, $D_4=21.10.64$, $D_5=31.10.64$, $D_6=10.11.64$, $D_7=20.11.64$, $D_8=0.11.64$, $D_9=10.12.64$, $D_{10}=20.12.64$, $D_{11}=30.12.64$ and $D_{12}=9.1.65$.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 6.1 m. \times 3.7 m. (b) 5.5 m. \times 3.1 m. (v) 30 cm. \times 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of Lentil. (iv) (a) 1961—1964, (1964 modified) (b) No. (c) N.A. (v) (a) Malda and Berhampore (b) N.A. (vi) Nil. (vii) Pooled experiments from 1961 to 1963 with 6 treatments (dates of sowing).

5. RESULTS :

(i) 1126 Kg/ha. (ii) 84.6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆
Av. yield	1300	1644	1524	1465	1435	1091
	D ₇	D ₈	D ₉	D ₁₀	D ₁₁	D ₁₂
	1136	971	1001	777	643	523

C.D. = 122.1 Kg/ha.

Crop :- Lentil (Rabi).

Ref :- W.B. 64(47), 65(29).

Site :- State Agri. Farm, Malda.

Type :- 'C'.

Object :- To find out the suitable time of sowing for Lentil.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay loam. (iii) As per treatments, (iv) (a) Ploughing and laddering. (b) Broadcasting. (c) 35 Kg/ha. (d) and (e) N.A. (v) 92.2 Q/ha. of cowdung. (vi) B-77 (medium). (vii) Un-irrigated. (viii) 2 weedings and thinning. (ix) N.A. (x) N.A., Jany. to March 66.

2. TREATMENTS :

Nine dates of sowing: D₁=18.10.64, D₂=21.10.64, D₃=30.10.64, D₄=10.11.64, D₅=20.11.64, D₆=30.11.64, D₇=10.12.64, D₈=20.12.64 and D₉=30.12.64.

3. DESIGN:

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 9.1 m. × 4.3 m. (b) 8.5 m. × 3.7 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL:

(i) and (ii) N.A. (iii) Yield of Lentil. (iv) (a) 1964—contd. (b) Yes. (c) N.A. (v) Kalyani and Berhampore. (vi) N.A. (vii) Since the experiment is continued after 1965. Hence individual years results are given.

5. RESULTS:

64(47)

(i) 852 Kg/ha. (ii) 388.1 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈	D ₉
Av. yield	1119	993	1141	1418	1217	1182	447	138	114

C.D. = 566.3 Kg/ha.

65(29)

(i) 548.2 Kg/ha. (ii) 105.4 Kg/ha. (iii) Treatments differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatments	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈	D ₉
Av. yield	793.2	768.4	869.4	762.4	945.4	346.9	295.0	57.2	23.7

C.D. = 153.8 Kg/ha.

Crop :- Lentil (Rabi).**Ref :- W.B. 60(37).****Site :- State Agri. Farm, Kalyani.****Type :- 'CV'.**

Object :—To find out the suitable time of sowing of different varieties of Lentil.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Loam and sandy loam. (iii) As per treatments. (iv) (a) Ploughing and ladderings. (b) Broadcasting. (c) 20.7 to 23.0 Kg/ha. (d) and (e) N.A. (v) 92.2 Q/ha. of cowdung. (vi) As per treatments. (vii) Unirrigated. (viii) 2 to 3 weedings. (ix) N.A. (x) 15.2.61 to 25.3.61.

2. TREATMENTS :**Main-plot treatments :**4 dates of sowing : $S_1=1.11.60$, $S_2=6.11.60$, $S_3=1.12.60$ and $S_4=16.12.60$.**Sub-plot treatments:**3 varieties : $V_1=C-31$, $V_2=S-77$ and $V_3=S-81$.**3. DESIGN:**

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 8.2 m. \times 3.7 m. (b) 7.6 m. \times 3.1 m. (v) 30 cm. \times 30 cm. (vi) Yes.

4. GENERAL :

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

5. RESULTS:

(i) 762 Kg/ha. (ii) (a) 115.4 Kg/ha. (b) 181.8 Kg/ha. (iii) Main effect of S alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	S_3	S_4	Mean
V_1	1552	1154	508	266	870
V_2	1435	849	219	442	736
V_3	1474	1075	90	86	681
Mean	1487	1026	272	265	762

C.D. for S marginal means = 106.5 Kg/ha.

Crop :- Arhar (Rabi).**Ref :- W.B. 60(32), 61(66), 62(22).****Site :- State Agri. Farm, Berhampore.****Type :- 'C'.**

Object :—To find out the suitable spacing for Arhar.

1. BASAL CONDITIONS :

(i) (a) No ; N.A. (b) Arhar ; N.A. (c) 138.3 Q/ha. of F.Y.M. ; N.A. (ii) Sandy loam. (iii) 1st week of July 61 ; 8.7.62. (iv) (a) 2 to 3 ploughings and ladderings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) 1. (v) 138.3 Q/ha. of F.Y.M. (vi) B -7 (medium). (vii) Unirrigated. (viii) 2 weedings and earthing up ; 1 to 2 weedings and thinning. (ix) N.A. ; 53.1 cm. (x) Middle of Feb. 62 ; 10.2.63.

2. TREATMENTS:

6 spacings : S_0 =Control $S_1=30$ cm. \times 30 cm., $S_2=30$ cm. \times 61 cm., $S_3=30$ cm. \times 91 $\frac{1}{2}$ cm., $S_4=30$ cm. \times 122 cm. and $S_5=61$ cm. \times 61 cm.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 7.9 m. \times 4.3 m. (b) 7.3 m. \times 3.7 m. (v) 30 cm. \times 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1960—62. (b) Yes. (c) Results of combined analysis given under 5. Results. (v) Kalyani. (vi) Nil. (vii) Error variances are heterogeneous and interaction of Treatments \times years is absent. Hence individual results are given.

5. RESULTS :

60(32)

(i) 1096 Kg/ha. (ii) 549.7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatments	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅
Av. yield	749	1305	1139	1096	1306	979

61(66)

(i) 1903 Kg/ha. (ii) 259.9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatments	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅
Av. yield	1777	2014	1938	1889	1903	1899

62(22)

(i) 2611 Kg/ha. (ii) 362.6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatments	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅
Av. yield	2290	2977	2784	2565	2607	2444

Crop :- Arhar (Kharif).

Ref :- W.B. 60(31), 61(65), 62(23).

Site :- State Agri. Farm, Kalyani.

Type :- 'C'.

Object :—To study the effect of spacing on the yield of Arhar.

1. BASAL CONDITIONS :

(i) (a) N.A. ; No. ; N.A. (b) N.A. ; Arhar ; N.A. (c) N.A. ; 138.3 Q/ha. of F.Y.M. ; N.A. (ii) Loam to sandy loam ; clay loam, loamy. (iii) Last week of June, 1960 ; last week of July, 1961 ; middle of July 1962. (iv) (a) 2 to 3 ploughings and laddering in 1960 and 1962 and 3 ploughings and 1 laddering in 1961. (b) Dibbling. (c) 12 to 14 Kg/ha. ; N.A. ; N.A. (d) As per treatments. (e) N.A. 1 ; 1 : (v) N.A. for 60(31) ; 138.3 Q/ha. of F.Y.M. for others. (vi) B-7 (medium). (viii) Unirrigated. (viii) 2 to 3 weedings in 1960, 1 to 2 weedings and earthing up in 1961, 1 to 2 weedings and thinning in 1962. (ix) N.A. (x) Middle of March 1961, last week of Feb. 1962 and last week of Feb. 1963.

2. TREATMENTS :

6 spacings : S₀=Broadcasting (control) ; S₁=30 cm. \times 30 cm. ; S₂=30 cm. \times 61 cm. ; S₃=30 cm. \times 91 cm. ; S₄=30 cm. \times 122 cm. and S₅=61 cm. \times 61 cm.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 7.9 m. \times 4.3 m. (b) 7.3 m. \times 3.7 m. (v) 30 cm. \times 30 cm. (vi) Yes.

4. GENERAL :

(i) Good, N.A. ; N.A. (ii) N.A. (iii) Yield of grain. (iv) (a) 1960—62. (b) Yes. (c) N.A. (v) Echanpore. (vi) N.A. (vii) Error variances are homogeneous and interaction is absent.

5. RESULTS :

(i) 1841 Kg/ha. (ii) 216.9 Kg/ha. (based on 55 d.f.). (iii) Treatments are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅
Av. yield	1806	1857	1729	2045	1964	1645

C.D. = 177.6 Kg/ha.

	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	Sig.	Mean	S.E./plot
1960	1477	1710	1689	1794	1763	1400	*	1639	180.0
1961	2097	2127	1923	2347	2193	1753	*	2073	224.9
1962	1845	1733	1575	1994	1935	1783	—	1811	231.8
Pooled	1806	1857	1729	2045	1964	1645	**	1841	216.9

Crop :- Arhar (Rabi).**Ref :- W.B. 63(66), 64(70), 65(48).****Site :- State Agri. Farm, Berhampore.****Type :- 'IM'.**Object :- To see the effect of irrigation and different levels of P₂O₅ on the yield of Arhar.**1. BASAL CONDITIONS :**

(i) (a) N.A. ; No ; No. (b) N.A. ; Arhar ; Arhar. (c) N.A. ; As per treatments ; As per treatments + 92.2 Q/ha. of cowpea. (ii) Sandy loam. (iii) June 1963 ; June-July 1964 ; June 1965. (iv) (a) 2 ploughings and 1 laddering. (b) Line sowing. (c) 25 to 30 Kg/ha. ; 25 Kg/ha. ; 25 to 30 Kg/ha. (d) 61 cm. × 61 cm. (e) one. (v) 110.7 Q/ha. of compost, N.A, 92.2 Q/ha. of compost in 1965. (vi) B-7. (vii) As per treatments. (viii) 2 weeding and one thinning. (ix) N.A. (x) March 64, last week of March 65 ; March 1966.

2. TREATMENTS :**Main-plot treatments :**2 levels of irrigations : I₀=No irrigation and I₁=Two irrigations.**Sub-plot treatments :**3 levels of P₂O₅ as Super : P₀=0, P₁=22.4 and P₂=44.8 Kg/ha.1st irrigation after 2 weeks of sowing and 2nd irrigation after 3 weeks of 1st irrigation. P₂O₅ as Super applied by broadcasting as basal at the time of land preparation.**3. DESIGN :**

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 7.9 m. × 6.7 m. (b) 6.7 m. × 5.5 m. (v) 61 cm. kept as border between plots. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1963 to 1965. (b) Yes. (c) N.A. (v) and (vi) Nil. (vii) Sub-plots errors are heterogeneous, hence individual years results are presented below.

5. RESULTS :

63(66)

(i) 808 Kg/ha. (ii) (a) 190.3 Kg/ha. (b) 121.0 Kg/ha. (iii) Interaction effect I × P alone is significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	Mean
I ₀	941	769	727	812
I ₁	720	966	726	804
Mean	830	868	726	808

C.D. for P means at the same level of I = 186.4 Kg/ha.

C.D. for I means at the same level of P = 285.5 Kg/ha.

64(70)

(i) 805 Kg/ha. (ii) (a) 108.7 Kg/ha. (b) 64.2 Kg/ha. (iii) Main effect of P and interaction P×I are highly significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	Mean
I ₀	938	843	661	814
I ₁	719	938	733	797
Mean	828	890	697	805

C.D. for P marginal means = 69.9 Kg/ha.

C.D. for P means at the same level of I = 98.9 Kg/ha.

C.D. for I means at the same level of P = 160.3 Kg/ha.

65(48)

(i) 672 Kg/ha. (ii) (a) 158.7 Kg/ha. (b) 274.5 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	Mean
I ₀	881	601	568	683
I ₁	688	739	555	661
Mean	785	670	561	672

Crop :- Gram (Rabi).

Ref :- W. B. 61(37).

Site :- State Agri. Farm, Chinsurah.

Type :- 'M'.

Object :- To study the effect of different levels of N and P on the yield of Gram.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay. (iii) 24.10.61. (iv) (a) 2 to 3 ploughings and laddering. (b) Broadcasting. (c) to (e) N.A. (v) N.A. (vi) S-75. (vii) to (ix) N.A. (x) 5.4.62.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N as A/S : N₀=0, N₁=28.0, N₂=33.6 and N₃=39.2 Kg/ha.

(2) 2 levels of P₂O₅ as Super : P₀=0 and P₁=44.8 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) 10.4 m. × 5.8 m. (b) 9.8 m. × 5.2 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Crop effected by pests, control measure—N.A. (iii) Yield of grain. (iv) (a) 1961—63. (b) Yes. (c) N.A. (v) Nalhati. (vi) N.A. (vii) Experiment failed during 1962 and 1963.

5. RESULTS :

(i) 210 Kg/ha. (ii) 173.4 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	N ₀	N ₁	N ₂	N ₃	Mean
P ₀	60	273	404	275	253
P ₁	217	228	101	120	166
Mean	138	250	252	198	210

Crop :- Gram (Rabi).

Ref:- W.B. 61(40).

Site :- State Agri. Farm, Nalhati.

Type :- 'M'

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

1. BASAL CONDITIONS :

(i) (a) *Aman*-Gram. (b) *Aman*. (c) As per treatments. (ii) Sandy clay to clay loam. (iii) 2.12.61. (iv) (a) 2 ploughings and spading. (b) Broadcasting. (c) to (e) N.A. (v) N.A. (vi) S—75. (vii) to (ix) N.A. (x) 17.4.62.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 61(37) on page 177.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) No. (b) N.A. (c) Nil. (v) Chinsurah. (vi) and (vii) N.A.

5. RESULTS :

(i) 327 Kg/ha. (ii) 17.8 Kg/ha. (iii) Main effect of P is highly significant and main effect of N and interaction N×P are significant. (iv) Av. yield of grain in Kg/ha.

	N ₀	N ₁	N ₂	N ₃	Mean
P ₀	254	235	281	242	253
P ₁	385	427	412	377	400
Mean	320	331	346	310	327

C.D. for P marginal means =15.6 Kg/ha.

C.D. for N marginal means =22.0 Kg/ha.

C.D. for the body of N×P table=31.0 Kg/ha.

Crop :- Gram (Rabi).

Ref :- W.B. 61(70), 62(24), 63(61).

Site :- State Agri. Farm, Berhampo

Type :- 'CV'.

Object :—To study the effect of suitable dates of sowing for different varieties of Gram.

1. BASAL CONDITIONS :

(i) (a) No., N.A., N.A. (b) *Sesbaria*, N.A. ; N.A. (c) 138.3 Q/ha. of F.Y.M., N.A. ; N.A. (ii) Sandy loam. (iii) As per treatments. (iv)(a) 2 to 3 ploughings, spading and laddering, N.A.(b) Line sowing, broadcasting (c) N.A. ; N.A. ; 44.5 Kg/ha. (d) 23 cm. × 25 cm. (e) N.A. (v) 138.3 Q/ha. of F.Y.M. ; N.A. ; 92.2 Q/ha. of F.Y.M. (vi) As per treatments. (vii) Unirrigated. (viii) 2 weedings and 1 thinning. (ix) N.A., N.A. ; 12.8 cm (x) Middle of March 1962 ; N.A. ; 1st week of April, 64.

2. TREATMENTS :

Main-plot treatments :

6 dates of sowing : $D_1=13$ th October, $D_2=28$ th October, $D_3=12$ th November, $D_4=27$ th November, $D_5=12$ th December and $D_6=27$ th December.

Sub-plot treatments :

6 varieties : $V_1=NP-58$, $V_2=B-75$, $V_3=Pb.-7$, $V_4=Chaffa$, $V_5=T-87$ and $V_6=B-98$.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 4, 3, 4. (iv) (a) 4.3 m. \times 1.8 m. (b) 3.7 m. \times 1.2 m. (v) 30 cm. \times 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1961 to 1963. (b) Yes. (c) N.A. (v) and (vi) N.A. (vii) Sub-plot errors are heterogeneous and Treatments \times years interaction is absent. Hence individual years results are presented.

5. RESULTS :

61(70)

(i) 2370 Kg/ha. (ii) (a) 857.8 Kg/ha. (b) 481.2 Kg/ha. (iii) Only V effect is highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	V_1	V_2	V_3	V_4	V_5	V_6
Av. yield	2585	2499	2319	2297	2285	2238
	D_1	D_2	D_3	D_4	D_5	D_6
	3724	3697	3108	1796	1304	594

C.D. for V marginal means = 277.8 Kg/ha.

62(24)

(i) 1954 Kg/ha. (ii) (a) 1932.1 Kg/ha. (b) 800.4 Kg/ha. (iii) Main effect of V is highly significant, and that of D is significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	Mean
D_1	2706	3127	2057	1655	2231	2578	2392
D_2	1801	3858	3035	1655	4325	3035	2951
D_3	1262	3858	2130	1289	1975	1380	1982
D_4	2295	2761	2469	3127	2112	2761	5287
D_5	1563	1381	1507	731	1125	1655	1327
D_6	942	686	54	274	622	347	487
Mean	1761	2612	1875	1455	2065	1959	1954

C.D. for D marginal means = 1434.8 Kg/ha.

C.D. for V marginal means = 533.6 Kg/ha.

63(61)

(i) 1076 Kg/ha. (ii) (a) 906.5 Kg/ha. (b) 496.3 Kg/ha. (iii) Main effect of D is highly significant and that of V is significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	Mean
D ₁	1464	1604	1778	903	1358	2211	1555
D ₂	2255	2019	1514	1346	1671	1862	1778
D ₃	1739	1940	1329	1010	1520	1492	1505
D ₄	858	1155	1167	785	1329	1217	1085
D ₅	269	365	241	308	258	208	275
D ₆	353	90	28	95	953	39	260
Mean	1156	1196	1009	741	1183	1171	1076

C.D. for D marginal means = 557.7 Kg/ha.

C.D. for V marginal means = 286.6 Kg/ha.

Crop :- Onion (Rabi).

Ref :- W.B. 64(77), 65(70).

Site :- State Agri. Farm, Krishnagar.

Type :- 'M'.

Object :- To determine the optimum fertilizers requirement for the crop.

1. BASAL CONDITIONS :

(i) (a) No. (b) Onion. (c) N.A. ; Cowdung @ 92.2 Q/ha. (ii) Sandy loam. (iii) Last week of Nov. 1964 ; 1.11.65. (iv) (a) 2 to 3 ploughings and spading. (b) Line sowing. (c) 4 to 5 Kg/ha. (d) 24 cm. x 5 cm. (e) One. (v) 56 Kg/ha. of N as compost. (vi) Red globe. (vii) N.A. ; Irrigated. (viii) 2 to 3 weedings, earthing up done once. (ix) N.A. (x) March 1965, 19.4.66.

2. TREATMENTS :

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

(1) 3 levels of N : N₀=0, N₁=56 Kg/ha. and N₂=112 Kg/ha.

(2) 3 levels of P₂O₅ : P₀=0, P₁=56 Kg/ha. and P₂=112 Kg/ha.

(3) 3 levels of K₂O : K₀=0, K₁=56 Kg/ha. and K₂=112 Kg/ha.

N as A/S, P₂O₅ as Super and K₂O as Potash were applied by broadcasting one month after planting.

3. DESIGN :

(i) 3³ fact. (ii) 27. (b) N.A. (iii) 3. (iv) (a) 4.1 m. x 3.9 m. (b) 3.7 m. x 3.7 m. (v) and (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of Onion. (iv) (a) 1964 to 66. (b) Yes. (c) Nil. (v) No. (vi) N.A. (vii) The experiment is continued after 1965. Hence individual years results are given.

5. RESULTS :

64(77)

(i) 6913 Kg/ha. (ii) 636.1 Kg/ha. (iii) Main effect of P, interaction N x P and N x K are highly significant. (iv) Av. yield of Onion in Kg/ha.

	P ₀	P ₁	P ₂	K ₀	K ₁	K ₂	Mean
N ₀	6764	6345	6885	6711	6536	6747	6664
N ₁	6054	7275	7815	7043	7674	6428	7048
N ₂	6827	7018	7234	6819	7035	7225	7026
Mean	6548	6879	7311	6857	7082	6800	6913
K ₀	6362	6818	7392				
K ₁	6852	6905	7408				
K ₂	6431	6835	7134				

C.D. for P marginal means

= 346.2 Kg/ha.

C.D. for means in the body of N x P or N x K table = 599.7 Kg/ha.

65(70)

(i) 9677 Kg/ha. (ii) 1443.2 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of Onion in Kg/ha.

	P ₀	P ₁	P ₂	K ₀	K ₁	K ₂	Mean
N ₀	8389	8289	8463	8173	8372	8596	8380
N ₁	9784	9493	10440	9028	10282	10407	9906
N ₂	10789	10174	11271	10739	10498	10996	10745
Mean	9654	9319	10058	9313	9717	10000	9677
K ₀	10216	8845	8879				
K ₁	9053	9560	10740				
K ₂	9692	9551	10756				

C.D. for N marginal means = 785.6 Kg/ha.

Crop :- Onion (Rabi).

Ref :- W.B. 64,65(SFT) for Burdwan, 62, 64, 65(SFT) for Hooghly and 64(SFT) for others.

**Site :- (District) : Burdwan, Hooghly, Type :- 'M'.
Nadia and 24-Parganas.**

Object :- Type A₁ - To study the response curves of important cereal, cash and oilseed crops to nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O = Control (no manure)

N₁ = 84 Kg/ha. of N

N₂ = 168 Kg/ha. of N

P₁ = 28 Kg/ha. of P₂O₅

N₁P₁ = 84 Kg/ha. of N + 28 Kg/ha. of P₂O₅

N₂P₁ = 168 Kg/ha. of N + 28 Kg/ha. of P₂O₅

N₂P₂ = 168 Kg/ha. of N + 56 Kg/ha. of P₂O₅

N₂P₂K₁ = 168 Kg/ha. of N + 56 Kg/ha. of P₂O₅ + 56 Kg/ha of K₂O

N applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN :

A selected district is divided into four agriculturally homogeneous zones based on climate, soil, cropping pattern etc. In each zone one block is selected at random. A block normally consists of a group of 50-100 villages. In each block 35 experiments are conducted in a year of which 11 are of type A₁, 11 of type A₂, 11 of type A₃ and 3 are of type C. The eleven experiments under type A₁, A₂ and A₃ are distributed as 3 on kharif cereal, 3 on a rabi cereal, 3 on a cash crop and 2 on oil seed. All the three type-C experiments are conducted on a legume crop. For the purpose of conducting the A₁, A₂ and A₃ experiments 11 villages are randomly selected in each block and in each village 3 experiments one each of type A₁, A₂ and A₃ are laid out. For conducting the three type-C trials three villages are randomly selected in each block.

4. GENERAL ;

(i) to (iii) N.A. (iv) (a) 1952-66 (62, 63 N.A.) for Burdwan, Hooghly and 1964 for Nadia and 24-Parganas. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Burdwan**64(S.F.T.)**

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of onion in Kg/ha.	1219	1798	513	1877	2306	2339	2701	261.7

Control mean=5897 Kg/ha. ; No. of trials=6.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of onion in Kg/ha.	1400	1566	633	1533	2066	2533	2966	316.7

Control mean=5299 Kg/ha. ; No. of trials=6.

Hooghly**62(S.F.T.)**

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of onion in Kg/ha.	55	100	55	91	157	183	183	24.4

Control mean=1254 Kg/ha. ; No. of trials=2.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of onion in Kg/ha.	-631	-321	-1013	-147	74	332	610	699.5

Control mean=7867 Kg/ha. ; No. of trials=10.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of onion in Kg/ha.	554	829	134	760	1172	1552	1723	136.8

Control mean=5012 Kg/ha. ; No. of trials=10.

Nadia**64(S.F.T.)**

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of onion in Kg/ha.	1010	2194	248	1452	2235	104	2411	187.1

Control mean=1573 Kg/ha. ; No. of trials=2.

24-Parganas**64(S.F.T.)**

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of onion in Kg/ha.	902	1446	303	1423	1861	2187	2711	N.A.

Control mean=5521 Kg/ha. ; No. of trials=3.

Crop : Onion (Rabi).

**Ref :- W.B. 64, 65 (S.F.T.) for Burdwan,
62, 64, 65 (S.F.T.) for Hooghly and
64 (S.F.T.) for Nadia and 24-
Parganas.**

**Site :- (District): Burdwan; Hooghly Type :- 'M'.
Nadia and 24-Parganas.**

Object :-Type A₂—To study the response curves of important cereal, cash and oilseed crops to Phosphorus applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O = Control (no manure).

N₁ = 84 Kg/ha. of N.

P₁ = 28 Kg/ha. of P₂O₅.

P₂ = 56 Kg/ha. of P₂O₅.

N₁P₁ = 84 Kg/ha. of N + 28 Kg/ha. of P₂O₅.

N₁P₂ = 84 Kg/ha. of N + 56 Kg/ha. of P₂O₅.

N₂P₂ = 168 Kg/ha. of N + 56 Kg/ha. of P₂O₅.

N₂P₂K₂ = 168 Kg/ha. of N + 56 Kg/ha. of P₂O₅ + 112 Kg/ha. of K₂O.

N applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN

Same as in type A₁ (irrigated) on page 181.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1964—66 for Burdwan, 1962—66 (63 N.A.) for Hooghly, 1964 only for Nadia and 24-Parganas. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Burdwan

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of onion in Kg/ha.	1765	705	955	1482	2009	2550	3103	189.2

Control mean = 7149 Kg/ha.; No. of trials = 6.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of onion in Kg/ha.	126	33	63	140	163	223	286	33.3

Control mean = 503 Kg/ha.; No. of trials = 6.

Hooghly

62 (S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of onion in Kg/ha.	38	28	38	75	65	111	130	16.2

Control mean = 1022 Kg/ha.; No. of trials = 2.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of onion in Kg/ha.	896	420	615	1171	1381	1784	2154	163.8

Control mean=6876 Kg/ha. ; No. of trials=10.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of onion in Kg/ha.	72	41	54	103	119	163	193	10.4

Control mean=490 Kg/ha. ; No. of trials=10.

Nadia

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of onion in Kg/ha.	1104	192	339	1682	1482	1891	2275	313.5

Control mean=7131 Kg/ha. ; No. of trials=2.

24-Parganas

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of onion in Kg/ha.	902	164	451	1255	1242	2036	2406	N.A.

Control mean=5367 Kg/ha ; No. of trials=3.

Crop :- Onion (Rabi).**Ref :- W.B. 62, 64, 65 (S.F.T.) for Burdwan and Hooghly ; 65 (S.F.T.) for Nadia ; 64 (S.F.T.) for 24-Parganas.****Site :- (District) : Burdwan, Hooghly, Nadia and 24-Parganas.****Type :- 'M'.**Object :—Type A₂ —To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O =Control (no manure).

N₁ =84 Kg/ha. of N.K₁ =56 Kg/ha. of K₂O.K₂ =112 Kg/ha. of K₂O.N₁K₁ =84 Kg/ha. of N+56 Kg/ha. of K₂O.N₁K₂ =84 Kg/ha. of N+112 Kg/ha. of K₂O.N₂K₂ =168 Kg/ha. of N+112 Kg/ha. of K₂O.N₁P₁K₁ =84 Kg/ha. of N+28 Kg/ha. of P₂O₅+56 Kg/ha. of K₂O.N applied as A/S, P as P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN :

Same as in type A₁ (irrigated) on page 181.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962-66 (63 N.A.) for Burdwan, Hooghly and 1965 for Nadia and 64 for 24-Parganas.
(b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS:

Burdwan**62 (S.F.T.)**

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of onion in Kg/ha.	349	81	100	426	449	606	514	202.8

Control mean=945 Kg/ha. ; No of trials=2.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of onion in Kg/ha.	1719	738	1008	1759	2016	2391	2009	216.7

Control mean=7399 Kg/ha. : No of trials=6.

65 (S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of onion in Kg/ha.	142	27	62	120	162	235	225	20.9

Control mean=535 Kg/ha. ; No of trials=6.

Hooghly**62(S.F.T.)**

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of onion in Kg/ha.	69	60	105	74	101	152	143	26.1

Control mean=1562 Kg/ha. ; No of trials=2.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of onion in Kg/ha.	679	437	761	1074	1294	1616	1519	173.4

Control mean=6056 Kg/ha. ; No of trials=10.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of onion in Kg/ha.	67	166	54	94	115	144	142	46.8

Control mean=491 Kg/ha. ; No. of trials=10.

Nadia**65(S.F.T.)**

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of onion in Kg/ha.	974	73	293	1161	1184	1678	1385	228.7

Control mean=7434 Kg/ha. ; No. of trials=2.

24 Parganas

64, S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of onion in Kg/ha.	1242	263	596	1709	1805	2503	2487	N.A.

Control mean=5123 Kg/ha. ; No. of trials=3.

Crop :- Onion (Rabi).**Ref :- W.B. 64(71), 65(61).****Site :- State Agri. Farm, Krishnanagar.****Type :- 'C'.**

Object :- To determine the optimum spacing for the Crop.

1. BASAL CONDITIONS :

(i) (a) N.A.; No. (b) N.A.; Onion. (c) N.A.; 56.0 Kg/ha. of N as F.Y.M. (ii) Sandy loam. (iii) 27.11.64 ; 16.12.65 (iv) (a) 2-3 ploughings, spading and laddering. (b) Transplanting. (c) N.A. (d) As per treatments. (e) One. (v) 56 Kg/ha. of N as F.Y.M. (vi) Red Globe (Satton). (vii) Irrigated ; N.A. (viii) 1-2 weedings and 1 earthing-up. (ix) 4.5 cm., 4 cm. (x) 27.4.65 ; 22.4.66.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 3 spacings between rows : R₁=15 cm., R₂=23 cm. and R₃=30 cm.(2) 3 spacing within rows (bet. plants.) : S₁=7.6 cm, S₂=10.0 cm. and S₃=15 cm.**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 9. (b) 4.3 m. × 42.7 m. (iii) 6. (iv) (a) 4.3 m. × 4.3 m. (b) 3.7 m. × 3.7 m. (v) 60 cm. kept as border. (vi) Yes.

4. GENERAL :

(i) N.A. ; Normal. (ii) N.A. (iii) Yield of Onion. (iv) (a) 1964-contd. (b) Yes. (c) N.A. (v) No. (vi) N.A. (vii) Since the expt. contd. beyond 1965, individual years results are given.

5. RESULTS :

64(71)

(i) 113.4 Q/ha. (ii) and (iii) N.A. (iv) Av. yield of bulbs in Q/ha.

	S ₁	S ₂	S ₃	Mean
R ₁	123.9	128.9	102.4	118.4
R ₂	123.0	119.6	108.4	117.0
R ₃	102.5	101.7	110.2	104.8
Mean	116.5	116.7	107.0	113.4

65(61)

(i) 110.8 Q/ha. (ii) 15.0 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of bulbs in Q/ha.

	S ₁	S ₂	S ₃	Mean
R ₁	117.4	101.5	126.9	115.3
R ₂	118.7	116.8	111.8	115.8
R ₃	105.0	109.4	89.7	101.4
Mean	113.7	109.2	109.5	110.8

Crop :- Potato (Rabi).

Ref :- W.B. 60(14).

Site :- State Agri. Farm, Berhampore.

Type :- 'M'.

Object :- To study the effect of different levels of P₂O₅ on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) Last week of Oct. to 1st. week of Nov., 1960. (iv) (a) 6 ploughings and 2-3 harrowings. (b) Planting. (c) 13.8 Q/ha. (d) 61 cm. x 23 cm. (e) 1. (v) 92.2 Q/ha. to 138.3 Q/ha. of Cowdung + 89.7 Kg/ha. of N + 89.7 Kg/ha. of K₂O. (vi) Royal kidney (medium). (vii) Irrigated. (viii) 2 to 3 weedings and earthing up twice. (ix) 14 cm. (x) Last week of March, 1961.

2. TREATMENTS :

5 levels of P₂O₅: P₀=0, P₁=44.8, P₂=89.7, P₃=134.5 and P₄=179.3 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 9.1 m. x 6.7 m. (b) 40.5 Sq. m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of tuber. (iv) (a) 1960. (b) Yes. (c) N.A. (v) No. (vi) Heavy rains effected the crop. (vii) Nil.

5. RESULTS :

(i) 221.6 Q/ha. (ii) 24.9 Q/ha. (iii) Treatment differences are not significant. (i) Av. yield of tuber in Q/ha.

Treatment	P ₀	P ₁	P ₂	P ₃	P ₄
Av. yield	227.0	208.6	214.8	224.0	233.5

Crop :- Potato (Rabi).

Ref :- W.B. 60(10), 61(7).

Site :- State Agri. Farm, Bhanjang.

Type :- 'M'.

Object :- To study the effect of different levels of K₂O on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Structure loam. (iii) Last week of Dec. and 1st. week of January. (iv) (a) 6 to 8 ploughings and harrowing. (b) Planting. (c) 13.8 Q/ha. to 16.6 Q/ha. (d) 61 cm. x 23 cm. (e) 1. (v) 92.2 to 138.3 Q/ha. of F.Y.M. + 89.7 Kg/ha. of N + 179.3 Kg/ha. of P. (vi) B-65. (vii) Unirrigated. (viii) 2 weedings and 2 earthings. (ix) 171.3 cm. ; N.A. (x) Last week of July 1961 ; Middle of August 1962.

2. TREATMENTS :

5 levels of K₂O as Mur. Pot. : K₀=0, K₁=22.4, K₂=44.8, K₃=89.7 and K₄=179.3 Kg/ha.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 9.1×6.7 m. (b) $1/247$ ha. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of tuber. (iv) (a) 1960-61. (b) Yes. (c) N.A. (v) and (vi) N.A. (vii) Error variances are heterogeneous and Treatments \times years interaction is absent. Hence individual years result are given below.

5. RESULTS :

60(10)

(i) 48.0 Q/ha. (ii) 5.5 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of tubers in Q/ha.

Treatment	K ₀	K ₁	K ₂	K ₃	K ₄
Av. yield	41.3	42.2	47.7	50.7	58.1

C.D. = 8.2 Q/ha.

61(7)

(i) 148.8 Q/ha. (ii) 29.8 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of tuber in Q/ha.

Treatment	K ₀	K ₁	K ₂	K ₃	K ₄
Av. yield	113.4	135.3	148.0	163.4	184.1

C.D. = 44.9 Q/ha.

Crop :- Potato (Rabi)

Ref :- W.B. 64(13), 65(41).

Site :- State Agri. Farm, Bhanjang.

Type :- 'M'.

Object:—To study the effect of application of Urea in soil and foliar spray on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) No. (b) Potato. (c) As per treatments. (ii) Sancy loam. (iii) 1st week of January, 1964, 12.1.65. (iv) (a) 2-3 ploughings+laddering. (b) Line sowing. (c) 5 to 6 Q/ha. (d) 61 cm. \times 23 cm. (e) One. (v) N.A., Cowdung at 185 Kg/ha. (vi) Voram (late). (vii) Unirrigated. (viii) 2-3 weedings and 1 earthing up (ix) 459 cm., 360 cm. (x) 1st week of Sept. 1964, 4.9.65 to 9.9.65.

2. TREATMENTS :

T₁ = 112 Kg/ha. of N soil application as urea, T₂ = 90 Kg/ha. of N soil application as urea + 22 Kg/ha. of N as foliar spray, T₃ = 67 Kg/ha. of N soil application as urea + 45 Kg/ha. of N as foliar spray, T₄ = 45 Kg/ha. of N soil application as urea + 67 Kg/ha. of N as foliar spray and T₅ = 22 Kg/ha. of N soil application as urea + 90 Kg/ha. of N as foliar spray.

N applied in soil and as foliar spray from urea and spraying done 4-5 months after sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 9.8 m. \times 6.7 m., 9.1 m. \times 6.7 m.; (b) 8.2 m. \times 6.2 m.; 8.5 m. \times 6.4 m. (v) and (vi) Yes.

4. GENERAL ;

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) 1964-66. (b) Yes. (c) N.A. (v) and (vi) Nil. (vii) The experiment is continued beyond 1965. Hence individual years result are presented.

5. RESULTS :

64(13)

(i) 214.7 Q/ha. (ii) 20.1 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in Q/ha.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅
Av. yield	208.8	218.1	235.9	213.4	197.5

65(41)

(i) 109.6 Q/ha. (ii) 17.9 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of tuber in Q/ha.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅
Av. yield	109.3	116.6	125.8	106.2	90.1

C.D.=26.8 Q/ha.

Crop :- Potato (Rabi).

Ref :- W.B. 65(40).

Site :- State Agri. Farm, Bhanjang.

Type :- 'M'.

Object :—To see the effect of fertilizer mixture on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) No. (b) Potato. (c) 184.5 Q/ha. of cowdung. (ii) Sandy loam. (iii) 14.1.65. (iv) (a) 1 ploughing and 1 laddering. (b) Lime sowing in treatments 10 cm. deep. (c) 5 to 6 Q/ha. (d) 46 cm. × 23 cm. (e) One. (v) Nil. (vi) Bhanjang 65 (late). (vii) Unirrigated. (viii) 1 Weeding (by hand) and earthing up. (ix) 395 cm. (x) 15.9.65.

2. TREATMENTS:

T₁=Cowdung @ 277 Q/ha., T₂=Cowdung @ 184 Q/ha. ; T₃=Cowdung @ 138 Q/ha.+6.5 Q/ha. of fertilizer mixture, T₄=Cowdung @ 69 Q/ha.+9.7 Q/ha. of fertilizer mixture, and T₅=Fertilizer mixture @ 13 Q/ha. Cowdung applied at the time of land preparation and fertilizer mixture after planting by broadcasting.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 19.5 m. × 4.9 m. (iii) 4. (iv) (a) 4.9 m. × 4.9 m. (b) 3.7 m. × 4.4 m. (v) 20 cm. × 30 cm. (vi) Yes.

4. GENERAL :

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

5. RESULTS :

(i) 101.2 Q/ha. (ii) 6.9 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of tuber in Q/ha.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅
Av. yield	104.8	95.5	123.7	107.6 ^A	74.6

C.D.=9.2 Q/ha.

Crop :- Potato (Rabi).

Ref :- W.B. 65(39).

Site :- State Agri. Farm, Bhanjang.

Type :- 'M'.

Object :—To study the effect of Spartin on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) No. (b) Potato. (c) 184.5 Q/ha of cowdung+as per treatments (ii) Sandy loam. (iii) 14.1.65
 (iv) (a) 2 ploughings+1 laddering. (b) Line sowing in trenches 10 cm. deep. (c) 5 Q/ha. (d) 46 cm.×23 cm.
 (e) One. (v) 184.5 Q/ha. of cowdung. (vi) Asoka (early). (vii) Unirrigated. (viii) 1 weeding +1 earthing
 up. (ix) 395 cm. (x) 14.9.65

2. TREATMENTS :

4 manurial treatments : T_1 =No Spartina+90 Kg/ha. of N+135 Kg/ha. of P_2O_5 +135 Kg/ha. of K_2O ; T_2 =
 371 Kg/ha. of Spartina+90 Kg/ha. of N+135 Kg/ha. of P_2O_5 +135 Kg/ha. of K_2O ;
 T_3 =185 Kg/ha. of Spartina+90 Kg/ha. of N+135 Kg/ha. of P_2O_5 +135 Kg/ha. of
 K_2O and T_4 =93 Kg/ha. of Spartina+90 Kg/ha. of N+135 Kg/ha. of P_2O_5 +135
 Kg/ha. of K_2O .

N as A.S, P_2O_5 as Super and K_2O as Mur. Pot. were applied in each treatment 2 months after planting

3. DESIGN :

(i) R.E.D. (ii) (a) 4. (b) 4.9 m.×30.5 m. (iii) 5. (iv) (a) 6.1 m.×4.9 m. (b) 4.9 m.×4.4 m. (v) 20 cm.×
 30 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of late Blight disease. Blitox at 6.2 to 7.4 Kg/ha were applied by spraying as control
 measure. (iii) Yield of tuber. (iv) (a) 1965—contd. (b) No. (c) N.A. (v) Fulla. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 10.4 Q/ha. (ii) 5.5 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in Q/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	88.0	105.6	108.0	103.8

Crop :- Potato (Rabi)

Ref :- W.B. 60(11), 61(4), 62(27), 63(30).

Site :- State Agri. Farm, Bhanjang.

Type :- 'M'.

Object :-To study the effect of foliar application of N in the form of Urea on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Structure loamy. (iii) Last week of Dec. to 1st week of Jan. (iv) (a) 8 to 10 plough-
 ings and harrowing. (b) Sprouts placed in furrows 5 cm. deep for 1960 ; planting for 1961. (c) 13.8 Q/ha. to
 16.6 Q/ha. (d) 61 cm.×23 cm. (e) N.A. for 60 and 62. (v) 92.2 Q/ha. of F.Y.M.+179.3 Kg/ha. of P_2O_5
 +89.7 Kg/ha. of K_2O at planting. (vi) B—1965 (late). (vii) Unirrigated. (viii) 3 weedings, 2 to 3 earthing
 up. (ix) N.A. (x) 1st week of Aug. 1961 to last week of Aug. 1961.

2. TREATMENTS :

7 nitrogenous treatments : M_1 =179.3 Kg/ha. of N as side band application ; M_2 =44.8 Kg/ha. of N as
 side band application+44.8 Kg/ha. of N as Urea spray ; M_3 =89.7 Kg/ha. of
 N as Urea spray ; M_4 =89.7 Kg/ha. of N as side band application+44.8 Kg/ha.
 of N as Urea spray ; M_5 =179.3 Kg/ha. of N as Urea spray ; M_6 =134.5 Kg/ha.
 of N as side band application+44.8 Kg/ha. of N as Urea spray and M_7 =89.7
 Kg/ha. of N as side band application.
 N applied at planting.

3. DESIGN :

(i) R.E.D. (ii) (a) 7. (b) N.A. (iii) 3 for 60(11), 61(4) and 4 for 62 (27) and 63 (30) (iv) (a) 9.8 m.×7.3 m.
 for 62 (27); 9.1 m.×6.7 m. for others. (b) 9.1 m.×6.7 m. for 62(27); 40.5 sq. m. for others. (v) 61 cm.
 ×61 cm. for 61(4); 30 cm.×30 cm for 62, N.A. for others. (vi) Yes.

4. GENERAL :

(i) N.A. for 62(27); and Normal for others. (ii) N.A. (iii) Yield of tuber. (iv) (a) 1960—63. (b) N.A. for 60
 and yes for others. (c) Nil for 60(11) and N.A. for others. (v) No. (vi) Crop was effected due to severe
 drought in 60(11). Nil for others. (vii) Error variances are homogeneous and Treatments×years inter-
 action is absent.

5. RESULTS :

Pooled results :

- (i) 93.5 Q/ha. (ii) 15.0 Q/ha. (based on 78 d.f. made up of pooled error and Treatments \times years interaction)
 (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in Q/ha.

Treatment	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇
Av. yield	105.8	88.8	71.3	119.4	87.5	100.4	81.3

Individual results :

Av. yield of tuber in Q/ha.

	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	Sig.	G.M.	S.E./plot
1960	61.5	60.5	25.8	75.0	42.1	57.8	65.8	**	55.5	12.0
1961	107.9	97.7	90.4	134.6	90.4	98.6	95.9	**	102.2	13.2
1962	97.9	73.6	60.3	106.5	78.3	94.0	52.5	**	80.4	18.0
1963	145.4	118.7	102.1	154.2	128.7	140.1	110.6	**	128.5	11.3
Pooled	105.8	88.8	71.3	119.4	87.5	100.4	81.3	**	93.5	

Crop :- Potato (*Rabi*).

Ref :- W.B. 61(1), 63(31).

Site :- State Agri. Farm, Bhanjang.

Type :- 'M'.

Object :- To study the effect of G.M. and manures on the yield of Potato.

1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) Structure loam for 61 ; Sandy loam for 63. (iii) 1st week of January 1961 ; Middle of December 1963. (iv) (a) 6 to 8 ploughings for 61 ; 2 to 3 ploughings and hoeing for 63. (b) planting for 61 ; line sowing for 63. (c) 13.8 Q/ha. ; N.A. (d) 61 cm. \times 23 cm. (e) 1. (v) 27.7 Q/ha. of oil cake ; N.A. (vi) B-1965 (early). (vii) Unirrigated. (viii) 1 to 3 weedings and 2-3 earthing up. (ix) N.A. (x) Last week of August.

2. TREATMENTS :

7 manurial treatments : M₁=27.7 Q/ha. of mustard cake, M₂=Normal G.M., M₃=G.M. 4 weeks old, M₄=G.M. 6 weeks old, M₅=M₃+44.8 Kg/ha. of N+89.7 Kg/ha. of P+89.7 Kg/ha. of K, M₆=M₄+44.8 Kg/ha. of N+89.7 Kg/ha. of P+89.7 Kg/ha. of P and M₇=92.2 Q/ha. of F.Y.M.+89.7 Kg/ha. of N+89.7 Kg/ha. of P+89.7 Kg/ha. of K.

3. DESIGN :

- (i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 4.9 m. \times 4.6 m. (b) 3.7 m. \times 4.1 m. (v) N.A. (vi) Yes.

4. GENERAL :

- (i) Good ; N.A. (b) N.A. (iii) Yield of tuber. (iv) (a) 1961-63 (1962 results N.A.). (b) Yes. (c) N.A. (v) Krishnanagar and Malda. (vi) N.A. (vii) Error variances are heterogeneous and Treatments \times years interaction is present.

5. RESULTS :

Pooled results :

- (i) 62.2 Q/ha. (ii) 19.0 Q/ha. (based on 6 d.f. made up of Treatments \times years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in Q/ha.

Treatment	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇
Av. yield	37.7	33.0	39.0	53.6	75.1	72.7	123.9

C.D.=23.2 Q/ha.

Individual results :

Av. yield of tuber in Q/ha.

Years	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	Sig.	G.M.	S.E./plot
1961	48.3	37.2	49.0	64.4	91.7	86.8	149.4	**	75.3	13.6
1963	27.1	28.8	29.9	42.9	58.5	58.5	98.5	**	49.2	7.5
Pooled	37.7	33.0	39.0	53.6	75.1	72.7	123.9	**	62.2	19.0

Crop :- Potato (*Rabi*).

Ref :- W.B. 60(49).

Site :- State Agri. Farm, Burdwan.

Type :- 'M'.

Object :- To study the effect of N, P and K alone and in combination on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay loam. (iii) 1st week of December 1960. (iv) (a) 5 to 6 ploughings+laddering. (b) N.A. (c) 13.8 to 18.4 Q/ha. (d) 61 cm. between rows and 23 cm. from tuber to tuber. (e) 1 tuber/hole. (v) to (vii) N.A. (viii) 3 earthings up followed by top-dressing. (ix) N.A. (x) Last week of March 1961

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N₁=44.8 Kg/ha., N₂=89.7 Kg/ha. and N₃=134.5 Kg/ha.(2) 3 levels of P₂O₅ as Super : P₁=44.8 Kg/ha., P₂=89.7 Kg/ha. and P₃=134.5 Kg/ha.(3) 3 levels of K₂O as Mur. Pot. : K₁=44.8 Kg/ha., K₂=89.7 Kg/ha. and K₃=134.5 Kg/ha.

Date of application etc. N.A. : A/S and Mur. Pot. applied as top-dressing.

3. DESIGN :

(i) 3³ confd. fact. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 10.4 m. × 6.7 m. (b) 9.8 m. × 6.1 m. (v) 61 cm. kept as border around each plot. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of Potato. (iv) (a) Yes, 1956 to 60 (expt. failed in 1956.) (b) and (c) N.A. (v) to (vii) N.A.

5. RESULTS:

(i) 60.7 Q/ha. (ii) 8.5 Q/ha. (iii) Main effect of K and interaction N×P is significant. (iv) Av. yield of tuber in Q/ha.

	P ₁	P ₂	P ₃	K ₁	K ₂	K ₃	Mean
N ₁	65.0	61.3	54.6	57.0	62.4	61.2	60.2
N ₂	53.9	58.4	65.5	60.0	66.6	51.6	59.4
N ₃	65.9	57.9	63.8	59.4	66.6	61.2	62.4
Mean	61.6	59.2	61.3	58.8	65.2	58.0	60.7
K ₁	55.8	60.0	60.6				
K ₂	66.0	64.2	64.8				
K ₃	62.4	53.4	58.2				

C.D. for K marginal means=5.9 Q/ha.

C.D. for the body of N×P table=10.2 Q/ha.

Crop :- Potato (Rabi).**Ref :- W.B. 65(23).****Site :- State Agri. Farm, Burdwan.****Type :- 'M'.**

Object :—To see the effect of N, P and K alone and in combination on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) Wheat-Potato. (b) Wheat. (c) As per treatments. (ii) Clay loam. (iii) 19.11.65. (iv) (a) 2-3 ploughings+1 laddering. (b) N.A. (c) 14.8 Q/ha. (d) Between rows 61 cm. and between plants 22.9 cm. (e) N.A. (v) N.A. (vi) Royal kidney. (vii) Irrigated. (viii) 2-3 weedings+2 earthing up done. (ix) 23.9 cm. (x) 2.3.66.

2. TREATMENTS :

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

(1) 4 levels of N : $N_0=0$, $N_1=90$, $N_2=134$, and $N_3=179$ Kg/ha.(2) 3 levels of P_2O_5 : $P_0=0$, $P_1=134$ and $P_2=179$ Kg/ha.(3) 3 levels of K_2O : $K_0=0$, $K_1=67$ and $K_2=134$ Kg/ha.N as A/S, P_2O_5 as Super and K_2O as Mur. Pot. were applied by broadcasting.**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 36. (b) N.A. (iii) 2. (iv) (a) 6.1 m. \times 4.7 m. (b) 5.5 m. \times 4.1 m. (v) 30 cm. kept as border around each plot. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) to (c) No. (v) (a) Fulia. (b) N.A. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 154.9 Q/ha. (ii) 22.1 Q/ha. (iii) Main effect of N is highly significant. (iv) Av. yield of tuber in Q/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	87.8	93.2	98.8	99.1	98.5	82.3	93.3
N_1	169.8	180.1	186.5	177.0	173.6	185.8	178.8
N_2	183.0	156.7	164.0	173.4	165.6	164.8	167.9
N_3	165.6	180.8	192.3	173.6	165.9	199.2	179.6
Mean	151.5	152.7	160.4	155.8	150.9	158.0	154.9
K_0	163.0	148.4	156.0				
K_1	139.5	158.5	154.6				
K_2	152.0	151.2	170.6				

C.D. for N marginal means = 15.0 Q/ha.

Crop :- Potato (Rabi).**Ref :- W.B. 65(18).****Site :- State Agri. Farm, Fulia.****Type :- 'M'.**

Object :—To study the effect of Phosphate manuring in single and split doses on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) No. (b) Potato. (c) As per treatments. (iii) Sandy loam. (iii) 20.2.65 to 21.2.65. (iv) (a) 2-3 ploughing+laddering. (b) One sprout plant in farrow 5.1 cm. deep. (c) 1475.7 Kg/ha. to 1660.1 Kg/ha. (d) 61 cm. \times 23 cm. (e) One sprout/hole. (v) 92.2 to 138.3 Q/ha. of cowdung. (vi) Royal kidney (medium). (vii) Irrigated from deep tube well as and when required, 2-3 irrigations. (viii) weeding 2-3 and earthing up thrice. (ix) N.A. (x) 25.3.66.

2. TREATMENTS :

T₁. 112 Kg/ha. of P₂O₅ in one application, T₂. 112 Kg/ha. of P₂O₅ in two application, T₃. 112 Kg/ha. of P₂O₅ in three application and T₄. 112 Kg/ha. of P₂O₅ in four application.
P₂O₅ were applied by broadcasting as Super.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 9.3 m. × 6.1 m. (b) 8.7 m. × 5.5 m. (v) 0.6 cm. kept as border around each plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of tuber. (iv) (a) Contd. (b) and (c) Nil. (v) No. (vi) Nil. (vii) Nil.

5. RESULTS :

(i) 123.5 Q/ha. (ii) 10.5 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in Q/ha.

Treatment	T ₁	T ₂	T ₃	T ₄
Av. yield	113.4	130.2	131.5	119.0

Crop :- Potato (Rabi).

Ref :- W.B. 62(29).

Site :- State Agri. Farm, Fulia.

Type :- 'M'.

Object:—To study the effect of 'Urea' as soil application and foliar spray on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) No. (b) Potato. (c) N.A. (ii) Sandy loam. (iii) 9.11.62. (iv) (a) 3 ploughings+laddering. (b) 1 sprout placed in furrows 5 cm. deep. (c) 16.6 Q/ha. (d) 61 cm. × 23 cm. (e) One. (v) 92.2 Q/ha. of cowdung. (vi) Royal kidney. (vii) N.A. (viii) 2-3 weednig and earthing up. (ix) N.A. (x) 10.3.63.

2. TREATMENTS :

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

(1) 3 levels of N applied as soil application : N₀=0, N₁=44.8 and N₂=89.6 Kg/ha.

(2) 3 levels of N applied as foliar spray : F₁=44.8, F₂=89.6 and F₃=134.4 Kg/ha.

3 extra treatments applied as soil application : E₁=44.8, E₂=89.6 and E₃=224.0 Kg/ha.

N as urea was applied in soil as well as foliar spray.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 4.7 m. × 4.3 m. (b) 4.1 m. × 3.7 m. (v) 61 cm. kept as border. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) No. (b) and (c) N.A. (v) Bhanjang. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 118.2 Q/ha. (ii) 11.4 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in Q/ha.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆
Av. yield	62.9	65.8	99.4	118.7	105.4	157.7
Treatment	T ₇	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂
Av. yield	146.8	169.6	154.3	75.3	137.9	124.0

C.D. = 19.3 Q/ha.

Crop :- Potato (Rabi).**Ref :- W.B. 61(6), 62(31), 63(20).****Site :- State Agri. Farm, Fulia.****Type :- 'M'.**

Object :—To study the effect of different organic manures and G.M. on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) Nil ; N.A. ; *Aus Paddy*—Potato. (b) Nil ; N.A. ; *Aus Paddy*. (c) Nil ; N.A. ; N.A. (ii) Loam and sandy loam ; Ganga rivine, Ganga. (iii) 3rd week of Oct. 1961 ; 23.11.62 and 7. to 10.11.63. (iv) (a) 6 to 8 ploughings and spading in 1961 ; 2 to 3 ploughings and laddering in 1962, 63. (b) Planting in 1961 and 1 sprout placed in furrows 5 cm. deep in 1962 and 1963. (c) 13.8 Q/ha. ; N.A. ; 13.8 to 16.6 Q/ha. in 1963. (d) 61 cm. × 23 cm. (e) 1. (v) 92.2 Q/ha. of cowdung. (vi) Royal kidney (late). (vii) Irrigated. (viii) 2 to 3 weeding and earthing up thrice. (ix) 105 cm. ; and N.A. during 1962 and 1963. (x) 1st week of April 62 ; 13.3.63 and 15 to 18.3.64.

2. TREATMENTS :

6 manurial treatments : M_1 = *Dhaincha* ploughed down at flowering stage, M_2 = *Sannhemp* ploughed down at flowering stage, M_3 = 46 Q/ha. of compost, M_4 = 922 Q/ha. of compost, M_5 = 27.7 Q/ha. of oilcake and M_6 = 89.7 Kg/ha. of N as A/S + 179.3 Kg/ha. of P_2O_5 + 89.7 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i) L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 4.9 m. × 4.6 m. (b) 14.9 sq.m. (v) N.A. (vi) Yes.

4. GENERAL ;

(i) Fair. (ii) Nil. (iii) Yield of tuber. (iv) (a) 1961 to 1963. (b) No. (c) Results of combined analysis given under 5. Result. (v) *Malda*. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × years interaction is present.

5. RESULTS :

(i) 105.3 Q/ha. (ii) 58.5 Q/ha. (based on 10 d.f. made up of Treatments × years interaction). (iii) Treatments differences are significant. (iv) Av. yield of tuber in Q/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	92.2	93.6	68.2	90.4	138.3	148.9

C.D. = 43.4 Q/ha.

Years	M_1	M_2	M_3	M_4	M_5	M_6	Sig.	G.M.	S.E./plot
1961	117.5	124.6	56.1	63.1	168.6	176.8	**	117.7	29.9
1962	112.4	100.8	97.0	151.0	151.7	159.5	**	128.7	12.5
1963	48.6	55.3	51.4	57.2	94.7	111.0	**	69.4	13.1
Pooled	92.2	93.6	68.2	90.4	138.3	149.1	*	105.3	58.5

Crop :- Potato (Rabi).**Ref :- W.B. 65(17).****Site :- State Agri. Farm, Fulia.****Type :- 'M'.**

Object :—To see the effect of spartan on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) No. (b) Potato. (c) As per treatments. (ii) Sandy loam. (iii) 22.3.65. (iv) (a) 3 to 4 ploughings + spading + laddering. (b) Sprout placed in furrows 5 cm. deep. (c) 14.8 Q/ha. (d) 61 cm. × 23 cm. (e) One/ho. (v) N.A. (vi) Royal kidney (medium). (vii) Irrigated. (viii) 2 to 3 weeding + 3 earthing up. (ix) N.A. (x) 25.11.65.

2. TREATMENTS :

$T_1 = N\ 198, P\ 198, K\ 198/\text{ha.} + \text{No spartin. } T_2 = T_1 + 247\ \text{Kg spartin/ha.}, T_3 = T_1 + 371\ \text{Kg spartin/ha.}, T_4 = 247\ \text{Kg spartin/ha.}, T_5 = 371\ \text{Kg spartin/ha.}$

N as A/S, P_2O_5 as super and K_2O as Mur. of Potash were applied by broadcasting.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 34 m. \times 22 m. (b) 32 m. \times 20 m. (v) 61 cm. kept as border around each plot. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of Potato. (iv) (a) 1964—contd. (64 N.A.) (b) Yes. (c) N.A. (v) Bhanganj. (b) Nil. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 138.3 Q/ha. (ii) 12.4 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of tuber in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	175.2	146.6	140.4	114.3	115.0

C.D. = 19.1 Q/ha.

Crop :- Potato (Rabi).

Ref :- W.B. 64(32).

Site :- State Agri. Farm, Fulia.

Type :- 'M'.

Object :- To study the effect of different levels of N applied as soil application and spray on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) 1st to 2nd week of Nov., 64. (iv) (a) 3 to 4 ploughings, laddering and harrowing. (b) and (c) N.A. (d) 61 cm. \times 23 cm. (e) 1. (v) N.A. (vi) Royal Kidney (medium). (vii) N.A. (viii) 2 weedings and earthing up 2 to 3 times. (ix) N.A. (x) 1st week of March, 65.

2. TREATMENTS :

5 manurial treatments: $M_1 = 67.2\ \text{Kg/ha. of N in soil as Urea} + 44.8\ \text{Kg/ha. of N as Urea spraying, } M_2 = 89.7\ \text{Kg/ha. of N in soil as Urea} + 22.4\ \text{Kg/ha. of N as Urea spraying, } M_3 = 44.8\ \text{Kg/ha. of N in soil as Urea} + 67.2\ \text{Kg/ha. of N as Urea spraying, } M_4 = 112.1\ \text{Kg/ha. of N in soil as Urea and } M_5 = 22.4\ \text{Kg/ha. of N in soil as urea} + 89.7\ \text{Kg/ha. of N as Urea spray.}$

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 5.2 m. \times 4.3 m. (b) 4.6 m. \times 3.7 m. (v) 30 cm. \times 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) 1964 to 1966 (65-N.A.). (b) Yes. (c) N.A. (v) Nil. (vi) No. (vii) N.A. (viii) Raw data is N.A.

5. RESULTS :

(i) 88.3 Q/ha. (ii) and (iii) N.A. (iv) Av. yield of tuber in Q/ha.

Treatment	M_1	M_2	M_3	M_4	M_5
Av. yield	98.3	93.7	88.5	85.2	75.6

Crop :- Potato (Rabi).**Ref :- W.B. 65(24).****Site :- State Agri. Farm, Fulia.****Type :- 'M'.**

Object :—To see the effect of N, P and K alone and in combination on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) 16.11.65. (iv) (a) 3-4 ploughings+laddering. (b) Sprouts placed in furrows 5 cm. deep. (c) 13.8 Q/ha. (d) 61 cm. × 23 cm. (e) One. (v) 92.2 Q/ha. of cowdung. (vi) Royal kidney. (vii) Irrigated. (viii) 2 weedings+earthing up done thrice. (ix) N.A. (x) 12.3.66.

2. TREATMENTS :

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

(1) 4 levels of N as A/S : $N_0=0$, $N_1=90$, $N_2=135$ and $N_3=179$ Kg/ha.(2) 3 levels of P_2O_5 : $P_0=0$, $P_1=135$ and $P_2=179$ Kg/ha.(3) 3 levels of K_2O : $K_0=0$, $K_1=67$ and $K_2=135$ Kg/ha.N as A S, P_2O_5 as Super and K_2O as Mur. Pot. were applied by broadcasting.**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 36. (b) N.A. (iii) 2. (iv) (a) 6.1 m. × 4.7 m. (b) 5.5 m. × 4.1 m. (v) 61 cm. kept as border around each plot. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of Potato. (iv) (a) Contd. (b) and (c) —. (v) S.A.F., Burdwan. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 109.5 Q/ha. (ii) 21.9 Q/ha. (iii) Main effect of N is highly significant. (iv) Av. yield of tuber in Q/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	84.9	81.5	84.6	88.8	82.5	79.6	83.6
N_1	118.0	103.1	126.2	105.8	123.9	117.3	115.7
N_2	116.9	122.2	118.7	118.5	120.0	119.2	119.2
N_3	122.6	119.7	115.6	118.5	109.7	129.8	119.3
Mean	110.6	106.6	111.3	107.9	109.0	111.5	109.5
K_0	110.2	103.5	110.1				
K_1	114.2	101.7	111.2				
K_2	107.3	114.6	112.5				

C.D. for N marginal means=14.8 Q/ha.

Crop :- Potato (Rabi).**Ref :- W.B. 65(16).****Site :- State Agri. Farm, Fulia.****Type :- 'M'.**

Object :—To see the effect of Foliar spray of urea on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) No. (b) Potato. (c) As per treatments. (ii) Sandy loam. (iii) 17.11.65 to 20.11.65. (iv) (a) 3-4 ploughings+laddering. (b) Sprout placed in furrows 5.1 cm. deep. (c) 13.8 to 15.7 Q/ha. (d) 61 cm. × 23 cm. (e) One. (v) 92.2 Q/ha. of Cowdung. (vi) Royal kidney (medium). (vii) Irrigated. (viii) Weeding and 3 times earthing up done. (ix) N.A. (x) 23rd to 25th March, 66.

2. TREATMENTS :

5 manurial treatments : $T_1=112$ Kg/ha. of N in soil application only, $T_2=90$ Kg/ha. of N in soil application +22 Kg/ha. of N as spray, $T_3=67$ Kg/ha. of N in soil application +45 Kg/ha. of N as spray, $T_4=45$ Kg/ha. of N in soil application +67 Kg/ha. of N as spray and $T_5=22$ Kg/ha. of N in soil application +90 Kg/ha. of N as spray.

N applied as urea.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 9.3 m. x 6.1 m. (b) 8.7 m. x 5.5 m. (v) 61 cm. kept as border around each plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of tuber. (iv) (a) to (c) No. (v) Bhanjaj. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 113.0 Q/ha. (ii) 8.8 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	104.1	95.8	117.7	121.7	125.6

Crop :- Potato.

Ref :- W.B. 60(13).

Site :- State Agri. Farm, Krishnagar.

Type :- 'M'.

Object :—To study the effect of G.M. and manures on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Sandy (iii) 1st week of Nov., 60. (iv) (a) 6 to 8 ploughings and 2 harrowings. (b) Planting. (c) 13.8 to 16.6 Q/ha. (d) 46 to 61 cm. x 23 cm. (e) 1. (v) 92.2 Q/ha. of F.Y.M. (vi) Royal kidney. (vii) Irrigated. (viii) 2 to 3 weedings and earthing up twice. (ix) 14.2 cm. (x) Between 3rd and 4th week of March, 61.

2. TREATMENTS :

7 manurial treatments : M_0 =Control, M_1 =Normal (G.M.), M_2 =G.M. 4 weeks old, M_3 =G.M. 6 weeks old, $M_4=M_2+44.8$ Kg/ha. of N+89.7 Kg/ha. of P+89.7 Kg/ha. of K, $M_5=M_3+44.8$ Kg/ha. +89.7 Kg/ha. of P+89.7 Kg/ha. of K, $M_6=92.2$ Q/ha. of F.Y.M.+44.8 Kg/ha. of N+89.7 Kg/ha. of P+89.7 Kg/ha. of K.

Dhanicha sown in the mid of July @ 27.7 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 9.1 m. x 6.7 m. (b) 40.5 sq m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of Potato. (iv) (a) No. (b) Yes. (c) N.A. (v) Malda. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 422.7 Q/ha. (ii) 20.3 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in Q/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	364.2	467.4	392.7	456.3	425.0	451.7	401.9

C.D. = 29.8 Q/ha.

Crop :- Potato (Rabi).**Ref :- W.B. 60(12).****Site :- State Agri. Farm, Malda.****Type :- 'M'.**

Object :—To study the effect of G.M. and manures on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) Last week of Oct., 60. (iv) (a) 6 to 7 ploughings and thinning. (b) Planting. (c) 13.8 Q/ha. (d) 61 cm. × 23 cm. (e) 1. (v) 92.2 Q/ha. of F.Y.M. + 27.7 Q/ha. of oil cake. (vi) Royal kidney. (medium). (vii) Irrigated. (viii) 2 weedings and earthing up thrice. (ix) N.A. (x) 3rd week of March, 61.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 60(13) on page 198.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of tuber. (iv) (a) No. (b) Yes. (c) N.A. (v) Krishnagar. (vi) Crop effected due to severe rain during the season. (vii) Nil.

5. RESULTS :

(i) 119.8 Q/ha. (ii) 35.0 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of tuber in Q/ha.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆
Av. yield	130.0	83.0	90.3	86.7	141.1	161.3	146.6

C.D. = 52.0 Q/ha.

Crop :- Potato (Rabi).**Ref :- W.B. 61(5), 63(22).****Site :- State Agri. Farm, Malda.****Type :- 'M'.**

Object :—To study the effect of different organic manures and G.M. on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Loam to clay loam. (iii) Middle of Oct., 61; 1st. to 2nd. week of Nov., 63. (iv) (a) 3 to 6 ploughings. (b) Planting. (c) 13.8 to 16.6 Q/ha. (d) 61 cm. × 23 cm. (e) 1. (v) 92.2 Q/ha. of F.Y.M. (vi) Royal kidney (late); Royal kidney (medium). (vii) Irrigated; N.A. (viii) 1 to 4 weedings and 2 to 3 times earthing up. (ix) N.A. (x) Last week of March.

2. TREATMENTS :

6 manurial treatments : M₁ = Dhaincha ploughed down at flowering stage, M₂ = Sun hemp ploughed down at flowering stage, M₃ = Compost at 461.1 Q/ha., M₄ = Compost at 922.3 Q/ha., M₅ = Oil cake at 27.7 Q/ha. and M₆ = 89.7 Kg/ha. of N as A/S + 179.3 Kg/ha. of P₂O₅ as Super + 89.7 Kg/ha. of K₂O as Mur. Pot.

3. DESIGN :

(i) L. sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 4.9 m. × 4.6 m.; 4.7 m. × 4.3 m. (b) 10.9 sq.m. 4.11 m. × 3.7 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of Potato. (iv) (a) 1961—63 [in 1962 expt. was not conducted]. (b) Yes. (c) The results of combined analysis are given under 5 Results. (v) Fulla. (vi) N.A. (vii) Error variances are homogeneous and Treatments × years interaction is present.

5. RESULTS :

(i) 150.6 Q/ha. (ii) 37.1 Q/ha. (based on 5 d. f. made up of Treatments × years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of tuber in Q/ha.

Treatments	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆			
Av. yield	82.5	83.4	90.2	111.9	110.2	124.2			
Years	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	Sig.	G.M.	S.E./plot
1961	98.4	100.1	96.4	143.7	132.5	159.0	**	121.7	20.40
1963	66.7	66.7	84.1	80.2	80.2	88.0	**	79.2	17.24
Pooled	82.5	83.4	90.2	111.9	110.2	124.2	N.S.	150.6	37.10

Crop :- Potato (Rabi).

Ref :- W.B. 64(34), 65(14).

Site :- State Agri. Farm, Sirgur.

Type 'M'.

Object :-To study the effect of different levels of N on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) 1st. week of Nov. 64, 20—23 Nov. 65. (iv) (a) 3 to 4 ploughing and laddering. (b) N.A., sprout placed in furrows. (c) N.A., 15 to 17 Q./ha. (d) 61 cm. × 23 cm. (e) 1. (v) 134.5 Kg/ha. of K₂O as Mur. Pot. + 134.5 Kg/ha. of P₂O₅. (vi) Royal kidney (medium). (vii) Irrigated. (viii) 2-3 weedings + 1 earthing up twice. (ix) N.A. (x) Last week of March 65, 28 to 29th March, 66.

2. TREATMENTS :

5 levels of N as A/S : N₁=89.7, N₂=100.9, N₃=112.1, N₄=123.3 and N₅=134.5 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 9.1 m. × 6.1 m. (b) 8.7 m. × 5.5 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of potato. (iv) (a) 1964—contd. (b) and (c) N.A. (v) and (vi) Nil. (vii) The experiment is continued beyond 1965. Hence individual results are presented.

5. RESULTS :

64(34)

(i) 126.5 Q./ha. (ii) and (iii) N.A. (iv) Av. yield of tuber in Q/ha.

Treatment	N ₁	N ₂	N ₃	N ₄	N ₅
Av. yield	124.8	121.0	131.9	127.7	127.0

65(14)

(i) 185.7 Q./ha. (ii) 10.9 Q./ha. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in Q/ha.

Treatments	N ₁	N ₂	N ₃	N ₄	N ₅
Av. yield	180.4	191.9	187.2	176.7	192.4

Crop :- Potato (Rabi).

Ref :- W.B. 64(37).

Site :- State Agri. Farm, Sirgur.

Type :- 'M'.

Object :-To see the effect of spartin on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) November, 1964. (iv) (a) 3 to 4 ploughings and laddering. (b) and (c) N.A. (d) 61 cm. × 23 cm. (e) 1. (v) N.A. (vi) Royal kidney (medium). (vii) N.A. (viii) 2 weedings and 2 earthing up. (ix) N.A. (x) Last week of March, 65.

2. TREATMENTS :

5 manurial treatments : $M_1=247$ Kg/ha. of Spartin, $M_2=371$ Kg/ha. of spartin, $M_3=90$ Kg/ha. of N+90 Kg/ha. of P_2O_5 +90 Kg/ha. of K_2O , $M_4=M_3+M_1$ and $M_5=M_3+M_2$.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 9.1 m. × 6.1 m. (b) 8.7 m × 5.5 m. (v) 20 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) 1964 only. (b) and (c) N.A. (v) and (vi) N.A. (vii) Raw data is N.A.

5. RESULTS :

(i) 105.5 Q/ha. (ii) and (iii) N.A. (iv) Av. yield of tuber in Q/ha.

Treatment	M_1	M_2	M_3	M_4	M_5
Av. yield	106.4	89.2	109.9	113.1	108.9

Crop :- Potato (Rabi).

Ref :- W.B. 64(38).

Site :- State Agri. Farm, Sirgur.

Type :- 'M'.

Object :- To study the response of P_2O_5 in single and split doses on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) 2nd week of Nov., 64. (iv) (a) 3 ploughings + laddering. (b) One sprout placed in furrows 5 cm. deep. (c) N.A. (d) 61 cm. × 23 cm. (e) 1. (v) N.A. (vi) Royal kidney (medium). (vii) to (ix) N.A. (x) 1st week of March, 65.

2. TREATMENTS :

4 manurial treatments : $M_1=P_2O_5$ as super @ 125.5 Q/ha. in 3 doses, $M_2=P_2O_5$ as super @ 125.5 Q/ha. in single dose, $M_3=P_2O_5$ as super @ 125.5 Q/ha. in 2 doses and $M_4=P_2O_5$ as super @ 125.5 Q/ha. in 4 doses.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 9.1 m. × 6.7 m. (b) 8.7 m. × 5.5 m. (v) 20 cm. × 61 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of Potato. (iv) (a) 1964 only. (b) and (c) N.A. (v) (a) No. (b) —. (vi) N.A. (vii) Raw data is N.A.

5. RESULTS :

(i) 125.4 Q/ha. (ii) and (iii) N.A. (iv) Av. yield of tuber in Q/ha.

Treatment	M_1	M_2	M_3	M_4
Av. yield	141.4	134.3	117.0	109.1

Crop :- Potato.**Ref :- W.B. 60, 61 (S.F.T.)****Site :- (District) : As per results.****Type :- 'M'.**

Object :—Type A—To study the response of Potato to different levels of N, P₂O₅ and K₂O applied individually and in combination.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) As per results. (iii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O =Control (no manure).

N =56.9 Kg/ha. of N as A/S.

P =28.0 Kg/ha. of P₂O₅ as Super.K =56.9 Kg/ha. of K₂O as Mur. Pot.NP =56.9 Kg/ha. of N as A/S+28.0 Kg/ha. of P₂O₅ as Super.NK =56.9 Kg/ha. of N as A/S+56.9 Kg/ha. of K₂O as Mur. Pot.PK =28.0 Kg/ha. of P₂O₅ as Super+56.9 Kg/ha. of K₂O as Mur. Pot.NPK=56.9 Kg/ha. of N+28.0 Kg/ha. of P₂O₅+56.9 Kg/ha. of K₂O as Mur. Pot.N applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.**3. DESIGN :**

(i) and (ii) The district has been divided into four agriculturally homogeneous zones and one field assistant posted in each zone. The field assistant conducts the trials in one revenue circle or thana in the zone and the circle/thana is changed once in two years within the same zone. Each field assistant is required to conduct 31 trials in a year, 8 on *Kharif* cereal, 8 on a *rabi* cereal, 8 on cash crop, 4 on an oilseed crop and 3 on a leguminous crop. Half the number of trials conducted are of type A and the other half of type B on crops other than the legumes. The three trials on legumes are of Type C. Residual effects of Phosphate application are studied on Type C trials in two out of the four zones in each district every year. The experiments are laid out in randomly located fields in randomly selected villages in each of the 4 zones at the rate of one experiment per village. (iii) (a) 1/98.8 ha. (b) 1/197.7 ha. (iv) Yes.

4. GENERAL :

(i) to (vi) N.A.

5. RESULTS :

District	Year	Soil class	No. of trials	Control mean in Kg/ha.			Av. response of tubers in Q/ha.						
				N	P	K	S.E.	NP	NK	PK	NPK	S.E.	
Nadia	1960	Alluvial	5	84.9	18.5	9.3	10.2	2.97	2.9	-1.8	-2.5	1.7	2.30
Midnapore	1960	Red	6	82.8	7.3	2.7	0.6	2.77	-2.1	-5.1	-1.8	2.7	3.14
24 Parganas	1960	Alluvial	9	67.3	13.6	4.3	3.0	1.48	0.7	0.3	-0.6	0.6	1.62
W. Dinajpur	1960	„	1	15.5	5.7	6.9	4.6	—	1.8	7.1	0.4	6.0	—
Malda	1960	„	6	75.0	14.1	4.4	0.5	1.71	3.8	-7.8	4.0	2.0	3.30
Hooghly	1960	„	16	90.1	17.6	—	14.4	2.54	-0.8	-7.9	0.6	4.2	2.01
	1961	„	10	145.9	24.0	12.4	19.6	4.06	-3.6	-3.9	-2.9	0.7	2.07
Burdwan	1960	„	17	99.6	18.9	6.5	6.1	1.96	-2.8	1.8	-0.9	-1.1	1.38
	1961	„	6	131.6	35.5	-3.1	6.3	8.48	-10.6	-6.4	1.4	0.9	2.88

—=—

Crop :- Potato**Ref :- W.B. 60, 61 (S.F.T.).****Site :- District : As per results.****Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) As per results. (iii) to (x) N.A.

2. TREATMENTS :

- o = Control (no manure)
 n_1 = 56 Kg/ha. of N as A/S
 n_2 = 112 Kg/ha. of N as A/S
 n_1' = 56 Kg/ha. of N as Urea
 n_2' = 112 Kg/ha. of N as Urea
 n_1'' = 56 Kg/ha. of N as A/S/N
 n_2'' = 112 Kg/ha. of N as A/S/N
 n_1''' = 56 Kg/ha. of N as C/A/N
 n_2''' = 112 Kg/ha. of N as C/A/N

3. DESIGN :

Same as in type A on page 202.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

District	Years	Soil class	No. of trials	Control mean in Q/ha.	n_1	n_1'	n_1''	n_1'''	n_2	n_2'	n_2''	n_2'''	S.E. of response
Birbhum	1960	Laterite	7	113.4	16.9	19.7	—	5.8	13.1	15.4	—	8.5	1.96
	1961	„	6	97.1	16.8	11.1	—	10.1	28.1	22.1	—	20.7	1.55
Murshidabad	1960	Alluvial	7	79.2	11.7	17.9	—	8.9	20.8	26.1	—	19.1	6.97
	1961	„	1	73.8	22.1	12.9	—	23.0	46.1	9.2	—	4.6	—
Midnapore	1960	Red	9	76.5	14.1	13.2	—	12.5	21.0	12.1	—	14.1	3.86
	1961	„	4	126.8	16.1	8.8	—	1.8	19.8	7.8	—	0.8	5.92
Howrah	1960	Alluvial	18	67.8	21.9	20.2	—	17.4	43.2	29.1	—	28.0	4.48
Nadia	1960	„	5	86.0	17.2	11.5	—	21.6	33.5	22.0	—	29.9	4.89
24-Parganas	1960	„	8	70.9	21.5	17.5	—	18.5	34.3	29.6	—	26.8	4.78
	1961	„	5	77.3	21.2	19.9	—	16.6	34.4	27.5	—	29.6	4.61
Hooghly	1960	„	16	93.5	13.3	16.0	—	16.4	30.4	30.4	—	33.6	3.43
	1961	„	10	119.2	18.2	14.2	—	19.4	16.9	17.7	—	22.2	5.83
Bankura	1961	Laterite	4	108.4	-15.7	-17.1	—	-15.7	5.5	-15.2	—	-7.4	12.03
Burdwan	1960	Alluvial	17	97.5	26.2	24.5	—	30.4	28.2	34.5	—	35.4	2.82
	1961	„	6	143.6	31.0	34.2	—	28.7	28.0	37.1	—	32.0	9.50
Bankura	1961	Laterite	1	59.0	33.2	29.5	—	1.9	42.4	36.9	—	12.9	—

Crop :- Potato.

Ref :- W.B. 62, 63, 64, 65 (S.F.T.) for Burdwan, Hooghly; 63, 65 (S.F.T.) for 24-Parganas; 63 (S.F.T.) for W. Dinajpur; 65 (S.F.T.) for Nadia and 62 (S.F.T.) for Midnapore, Murshidabad and Bankura.

Site :- (District): Burdwan, Hooghly, Type :- 'M'.
 24-Parganas, W. Dinajpur;
 Nadia, Midnapore, Murshidabad and Bankura.

Object :- Type A₁—To study the response curves of important cereal, cash and oilseed crops to nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red for Midnapore, Laterite for Bankura and Alluvial for others. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O = Control (no manure)

N_1 = 90 Kg/ha. of N

N_2 = 180 Kg/ha. of N

P_1 = 35 Kg/ha. of P_2O_5

N_1P_1 = 90 Kg/ha. of N + 35 Kg/ha. of P_2O_5

N_2P_1 = 180 Kg/ha. of N + 35 Kg/ha. of P_2O_5

N_2P_2 = 180 Kg/ha. of N + 70 Kg/ha. of P_2O_5

$N_2P_2K_1$ = 180 Kg/ha. of N + 70 Kg/ha. of P_2O_5 + 60 Kg/ha. of K_2O .

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

A selected district is divided into four agriculturally homogeneous zones based on climate, soil, cropping pattern etc. In each zone one block is selected at random. A block normally consists of a group of 50—100 villages. In each block 36 experiments are conducted in a year of which 11 are of type A_1 , 11 of type A_2 , 11 of type A_3 , and 3 are of type C. The eleven experiments under type A_1 , A_2 and A_3 are distributed as 3 on a kharif cereal, 3 on a rabi cereal, 3 on a cash crop and 2 on oil seed. All the three type-C experiments are conducted on a legume crop. For the purpose of conducting the A_1 , A_2 and A_3 experiments, 11 villages are randomly selected in each block and in each village 3 experiments one each of type A_1 , A_2 and A_3 are laid out. For conducting the three type-C trials three villages are randomly selected in each block.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962-66 for Burdwan ; 1962 for Midnapore, Murshidabad ; 1962-65 for Hooghly, 1963-65 (64-N.A.) for 24-Parganas ; 1965-66 for Nadia, 1962-63 for Bankura 63 N.A. and W. Dinajpur. 62 N.A. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Burdwan**62(S.F.T.)**

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	288	3365	498	3502	3805	4157	4516	532.9

Control mean = 12378 Kg/ha. ; No. of trials = 14.

63(S.F.T.)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	2052	2975	1566	4281	3727	3965	4383	1471.0

Control mean = 10866 Kg/ha. ; No. of trials = 6.

64(S.F.T.)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	1354	1864	1337	2652	2500	3024	2872	700.6

Control mean = 11234 Kg/ha. ; No. of trials = 6.

65(S.F.T.)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	2425	1725	475	3125	4500	4550	3550	535.6

Control mean = 9950 Kg/ha. ; No. of trials = 4.

Hooghly

62(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of tuber in Kg/ha.	3495	5173	2207	4683	5434	6164	6604	537.4

Control mean=14684 Kg/ha. ; No. of trials=19.

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of tuber in Kg/ha.	1805	2060	1656	2584	2742	3451	129	434.0

Control mean=12686 Kg/ha. ; No. of trials=15.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of tuber in Kg/ha.	1592	1727	1153	2546	3104	3706	4281	274.4

Control mean=11241 Kg/ha. ; No. of trials=6.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of tuber in Kg/ha.	1746	2395	1126	2262	3275	3862	4115	247.8

Control mean=12044 Kg/ha. ; No. of trials=9.

24-Parganas

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of tuber in Kg/ha.	1538	2263	741	2517	3037	4131	4767	300.0

Control mean=10140 Kg/ha. ; No. of trials=6.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of tuber in Kg/ha.	1365	1800	-255	2260	2455	3855	3465	693.8

Control mean=10025 Kg/ha. ; No. of trials=4.

W. Dinajpur

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of tuber in Kg/ha.	766	746	222	-202	558	1077	1235	912.0

Control mean=6365 Kg/ha. ; No. of trials=4.

Nadia

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of tuber in Kg/ha.	2150	1730	650	2450	3200	4150	5450	1012.3

Control mean=7650 Kg/ha. ; No. of trials=2.

Midnapore

62(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of tuber in Kg/ha.	870	2006	356	1295	1690	1769	2293	2015.5

Control mean=8767 Kg/ha. ; No. of trials=2.

Murshidabad

62(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of tuber in Kg/ha.	2652	2874	832	2787	3270	4382	4547	636.1

Control mean=11307 Kg/ha. ; No. of trials=7.

Bankura

62(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of tuber in Kg/ha.	1756	5023	1102	-333	3664	4145	4558	1029.5

Control mean=12292 Kg/ha. ; No. of trials=8.

Crop :- Potato (Early).**Ref :- W.B. 64(S.F.T.).****Site :- (District) : 24-Parganas and Midnapore.****Type :- 'M'.**

Object:—Type A₁—To study the response curves of important cereals, cash and oil seed crops to nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red for Midnapore and Alluvial for 24-Parganas. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O =Control (no manure).

N₁ =60 Kg/ha. of N.N₂ =120 Kg/ha. of N.P₁ =35 Kg/ha. of P₂O₅.N₁P₁ =60 Kg/ha. of N+35 Kg/ha. of P₂O₅.N₂P₁ =120 Kg/ha. N+35 Kg/ha. of P₂O₅.N₂P₂ =120 Kg/ha. of N+ 70 Kg/ha. of P₂O₅.N₂P₂K₁=120 Kg/ha. of N+70 Kg/ha. of P₂O₅ + 60 Kg/ha. of K₂ON applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.**3. DESIGN :**Same as in type A₁ (Irrigated) on page 204.**4. GENERAL :**

(i) to (iii) N.A. (iv) (a) 1964 only. (b) and (c) N.A. (v) to (vii) N.A.

5. RESULTS :**24-Parganas**

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of tuber in Kg/ha.	1764	3227	617	2757	3839	4615	5584	423.1

Control mean=10136 Kg/ha. ; No. of trials=4.

Midnapore

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of tuber in Kg/ha.	1897	2498	284	2085	3357	3898	3681	104.9

Control mean=9867 Kg/ha. ; No. of trials=6.

Crop :- Potato.

Ref :- W. B. 62, 63, 64, 65 (S.F.T.) for Burdwan and Hooghly ; 65(S.F.T.) for Nadia ; 63 (S.F.T.) for W. Dinajpur, 62, 63, 65 (S.F.T.) for 24-Parganas and 62, 63 (S.F.T.) for Bankura.

Site :- (District) : Burdwan, Nadia, W. Dinajpur, Hooghly, 24-Parganas and Bankura.

Type :- 'M'.

Object :- Type A₂ —To study the response curves of important cereal, cash and oilseed crops to nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Laterite for Bankura and Alluvial for all others. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O =Control (no manure)

N₁ =90 Kg/ha. of N.P₁ =35 Kg/ha of P₂O₅.P₂ =70 Kg/ha. of P₂O₅.N₁P₁ =90 Kg/ha. of N+35 Kg/ha. of P₂O₅.N₁P₂ =90 Kg/ha. of N+70 Kg/ha. of P₂O₅.N₂P₂ =180 Kg/ha. of N+70 Kg/ha. of P₂O₅.N₂P₂K₂=180 Kg/ha. of N+70 Kg/ha. of P₂O₅+120 Kg/ha. of K₂O.N applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN:

Same as in type A₁ (irrigated) on page 204.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962—66 for Burdwan, 1965—66 for Nadia, 1963—66 (64, 65 N.A.) for W. Dinajpur 1962—65 for Hooghly, 1962—65 (64 N.A.) for 24-Parganas and 1962—63 for Bankura. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Burdwan

62(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of tuber in Kg/ha.	3104	1005	1067	4497	5019	4475	4962	553.7

Control mean=12609 Kg/ha. ; No. of trials=14.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of tuber in Kg/ha.	2313	652	1798	3080	3826	4096	5474	1356.0

Control mean=11411 Kg/ha. ; No. of trials=6.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of tuber in Kg/ha.	1410	2401	2863	2968	3255	3591	3739	461.6

Control mean=10318 Kg/ha. ; No. of trials=6.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of tuber in Kg/ha.	3300	1875	2325	3975	3650	3750	5700	566.4

Control mean=11175 Kg/ha. ; No. of trials=4.

Nadia

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of tuber in Kg/ha.	2000	510	6400	2630	3880	4280	5130	2332.6

Control mean=6570 Kg/ha. ; No. of trials=2.

W. Dinajpur

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of tuber in Kg/ha.	548	266	780	929	459	2075	810	477.0

Control mean=4996 Kg/ha. ; No. of trials=4.

Hooghly

62(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of tuber in Kg/ha.	3809	2326	2291	3990	3958	5466	6826	369.3

Control mean=15272 Kg/ha. ; No. of trials=20.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of tuber in Kg/ha.	1451	1020	1135	2412	2517	2926	4473	309.0

Control mean=12742 Kg/ha. ; No. of trials=15.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of tuber in Kg/ha.	1298	954	1136	2010	2390	3058	3760	265.1

Control mean=12758 Kg/ha ; No. of trials=7.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of tuber in Kg/ha.	1473	1046	1340	2275	2673	3626	4157	195.9

Control mean=11144 Kg/ha ; No. of trials=9.

24-Parganas

62(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of tuber in Kg/ha.	3006	548	1342	2985	3235	4420	4574	479.2

Control mean=10670 Kg/ha ; No. of trials=7.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of tuber in Kg/ha.	1858	797	1756	3271	3713	4787	5969	284.0

Control mean=9597 Kg/ha ; No. of trials=6.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of tuber in Kg/ha.	1620	330	690	2140	2870	3650	4595	248.2

Control mean=6780 Kg/ha ; No. of trials=4.

Bankura

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of tuber in Kg/ha.	2733	2797	10754	10739	11495	12182	12528	541.0

Control mean=8293 Kg/ha ; No. of trials=3.

Crop :- Potato (Early)

Ref :- W.B. 64 (S.F.T.)

**Site :- (District) : Birbhum ; Midnapore and
24-Parganas.**

Type :- 'M'.

Object :- Type A₂ :-To study the response curves of important cereal, cash and oil seed crops to phosphorus applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) N.A. (ii) Laterite for Birbhum ; Red for Midnapore and Alluvial for 24-Parganas. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

- 8 manurial treatments
 O=Control (no manure)
 $N_1=60$ Kg/ha or N
 $P_1=35$ Kg/ha of P_2O_5
 $P_2=70$ Kg/ha of P_2O_5
 $N_1P_1=60$ Kg/ha of N+35 Kg/ha of P_2O_5
 $N_1P_2=60$ Kg/ha of N+70 Kg/ha of P_2O_5
 $N_2P_2=120$ Kg/ha of N+70 Kg/ha of P_2O_5
 $N_2P_2K_2=120$ Kg/ha of N+70 Kg/ha of P_2O_5 +120 Kg/ha of K_2O .
 N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

(i) Same as in type A_1 (Irrigated) on page 204.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1964 only for Birbhum, Midnapore and 24—Parganas. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Birbhum

64(S.F.T.)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	4813	177	1779	5119	5129	6167	6533	344.0

Control mean=14321 Kg/ha ; No. of trials=2.

Midnapore

64(S.F.T.)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	1499	817	1436	1834	1916	3454	3255	144.3

Control mean=10906 Kg/ha ; No. of trials=7.

24-Parganas

64 (S.F.T.)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	1784	380	766	2209	2905	3721	4551	101.4

Control mean=9221 Kg/ha ; No. of trials=4.

Crop :- Potato

Ref :- W.B. 62,63,64, 65(S.F.T.) for Burdwan Hooghly ; 62(S.F.T.) for Bankura ; 63, 65(S.F.T.) for 24-Parganas 63 (S.F.T.) for W. Dinajpur.

Site :- (District) : Burdwan, Bankura, Hooghly, 24-Parganas, and W. Dinajpur. Type :- 'M'.

Object :- Type A_3 —To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) N.A. (ii) Laterite for Bankura and Alluvial for others. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

O=Control (no manures)

 $N_1=90$ Kg/ha of N $K_1=60$ Kg/ha of K_2O $K_2=120$ Kg/ha of K_2O $N_1K_1=90$ Kg/ha of N+60 Kg/ha of K_2O $N_1K_2=90$ Kg/ha of N+120 Kg/ha of K_2O $N_2K_2=180$ Kg/ha of N+120 Kg/ha of K_2O $N_1P_1K_1=90$ Kg/ha of N+35 Kg/ha of P_2O_5 +60 Kg/ha of K_2O N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

Same as in type A_1 (Irrigated) on page 204.

4. GENERAL :

(i) to (iii) N.A. (iv) 1962-66 for Burdwan ; 1962-65 for Hooghly ; 1962 for Bankura ; 1963-65 (64 N.A.) for 24-Parganas ; 1963-66 (64-65 N.A.) for W. Dinajpur ; (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Burdwan

62(S.F.T.)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	3295	1310	1129	4056	4151	4046	4629	637.1

Control mean=12970 Kg/ha. ; No. of trials=14.

63(S.F.T.)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	1321	774	1650	2253	3260	2637	3534	1131.0

Control mean=10087 Kg/ha. ; No. of trials=6.

64(S.F.T.)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	2606	807	2418	4398	5185	3818	3848	401.5

Control mean=11653 Kg/ha. ; No. of trials=6.

65(S.F.T.)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	5550	3575	2450	4225	4525	4075	5750	1176.5

Control mean=9375 Kg/ha. ; No. of trials=4.

Bankura

62(S.F.T.)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	1562	484	578	1562	1749	2412	2817	609.8

Control mean=11273 Kg/ha. ; No. of trials=3.

Hooghly

62(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of tuber in Kg/ha.	3077	2545	3658	4338	4862	6332	5706	487.6

Control mean=17761 Kg/ha. ; No. of trials=20.

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of tuber in Kg/ha.	2027	1414	2117	2659	3186	3156	3967	365.0

Control mean=12724 Kg/ha. ; No. of trials=15.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of tuber in Kg/ha.	1795	813	1195	2277	2575	3213	3031	284.0

Control mean=10899 Kg/ha ; No. of trials=8.

65 (S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of tuber in Kg/ha.	1293	651	817	1777	2664	3064	2800	159.4

Control mean=10395 Kg/ha ; No. of trials=9.

24-Parganas

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of tuber in Kg/ha.	1676	728	1120	2329	2619	3726	3426	124.0

Control mean=8865 Kg/ha ; No. of trials=6.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of tuber in Kg/ha.	1760	560	865	2110	2540	3825	3930	208.8

Control mean=6950 Kg/ha. ; No. of trials=4.

W. Dinajpore

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of tuber in Kg/ha.	291	434	390	499	879	1279	662	171.0

Control mean=5253 Kg/ha. ; No. of trials=4.

Crop :- Potato (Kharif)**Ref :- W.B. 64 (S.F.T.)****Site :- (District) : Birbhum, Midnapore
and 24-Parganas.****Type :- 'M'.**

Object :- Type A₃—To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITION :

(i) (a) to (c) N.A. (ii) Laterite for Birbhum ; Red for Midnapore and Alluvial for 24-Parganas. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

0=Control (no manure)

N₁=60 Kg/ha of NK₁=60 Kg/ha of K₂OK₂=120 Kg/ha of K₂ON₁K₁=60 Kg/ha of N+60 Kg/ha of K₂ON₁K₂=60 Kg/ha of N+120 Kg/ha of K₂ON₂K₂=120 Kg/ha of N+120 Kg/ha of K₂ON₂P₁K₁=60 Kg/ha of N+35 Kg/ha of P₂O₅ + 60 Kg/ha of K₂ON applied as A/S ; P₂O₅ as Super and K₂O as Mur. Pot.**3. DESIGN :**Same as in type A₃ (Irrigated) on page 211.**4. GENERAL :**

(i) to (iii) N.A. (iii) Yield of tubers. (iv) (a) 1964 for all. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS:**Birbhum**

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of tuber in Kg/ha.	4111	998	1324	5189	5564	6345	5179	785.0

Control mean=14569 Kg/ha ; No. of trials=2.

Midnapore

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of tuber in Kg/ha.	1331	364	718	1428	1868	2309	1975	81.3

Control mean=11065 Kg/ha ; No. of trials=6.

24-Parganas

64 (S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of tuber in Kg/ha.	1902	479	938	2362	2826	4027	3825	252.2

Control mean=8945 Kg/ha ; No. of trials=4.

Crop :- Potato (Rabi).**Ref :- W.B. 62(48), 63(33), 64(10).****Site :- State Agri. Farm, Bhanjang.****Type :- 'C'.**

Object :—To see the effect of black polythylene film for mulching of Potato.

1. BASAL CONDITIONS :

(i) (a) No. (b) Potato. (c) N.A. (ii) Sandy loam. (iii) 8.1.1962 ; 1st week of December 1963 and Dec. 1964. (iv) (a) 2 ploughings and 1 hoeing in 1962, 2 to 3 ploughings and hoeing in 1963 2 to 3 hoeings and harrowing in 1964. (b) Line sowing. (c) N.A., 12.4 Q/ha. ; 12.3 to 14.8 Q/ha. (d) 61 cm.×23 cm. (e) N.A. (v) N.A. (vi) Voran (medium). (vii) Unirrigated. (viii) 1 to 2 weedings and earthings up. (ix) 377 cm ; 232 cm. ; N.A. (x) 2.9.1962 ; Middle of August 1960 ; 1st week of August 1965.

2. TREATMENTS :

4 cultural treatments : T₁=Planting on flat bed, ridged immediately with polythene mulching, T₂=Ploughing on ridge with polythene mulching, T₃=Planting on flat-bed, ridged after two weeks polythene mulch and T₄=Normal method of planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 4.3 m.×2.4 m. (b) 3.7 m.×1.8 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) 1962-1964. (b) N.A. (c) Results of combined analysis given under 5 Results. (v) N.A. (vi) Nil. (vii) Error variances are homogeneous and Treatments×years interaction is absent.

5. RESULTS :

(i) 140.7 Q/ha. (ii) 20.5 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in Q/ha.

Treatment	T ₁	T ₂	T ₃	T ₄
Av. yield	173.9	147.0	131.7	110.2

C.D. = 25.3 Q/ha.

Years	T ₁	T ₂	T ₃	T ₄	Sig.	G.M.	S.E./plot
1962	148.2	122.0	100.0	83.7	**	113.5	22.9
1963	162.9	128.3	127.5	104.3	**	130.8	20.8
1964	210.7	190.7	167.6	142.7	**	177.8	17.8
Pooled	173.9	147.0	131.7	110.2	**	140.7	20.5

Crop :- Potato (Rabi).**Ref :- W.B. 61(3), 62(28).****Site :- State Agri. Farm, Fulia.****Type :- 'C'.**

Object :—To study the effect of black polythylene film as mulch on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Loam and sandy loam, Ganga rivine. (iii) 3rd week of Oct. 61, 15.11.62. (iv) (a) 5 to 6 ploughings ; 3 to 4 ploughings+laddering. (b) Planting (c) 14 Q/ha. (d) 61 cm.×23 cm. (e) N.A. (v) 92.2 Q/ha. of F.Y.M., N.A. (vi) Royal kidney (medium). (vii) Irrigated in 61 and Unirrigated in 62. (viii) 2 weedings and earthing up thrice. (ix) 105 cm. ; N.A. (x) Last month of March 62, 11.3.63.

2. TREATMENTS :

Same as in expt. no. 62 (48) on page 214.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 9.3 m. × 6.7 m. (b) 8.7 m. × 5.5 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of tuber. (iv) (a) 1961-62. (b) Yes. (c) Nil. (v) and (vi) N.A. (vii) Error variances are heterogeneous. Treatments × years interaction is absent. Hence individual results are given.

5. RESULTS :

61(3)

169.3 Q/ha. (ii) 24.0 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber tuber in Q/ha.

Treatment	T ₁	T ₂	T ₃	T ₄
Av. yield	201.7	171.7	167.4	136.4

C.D. = 33.1 Q/ha.

62(28)

(i) 119.6 Q/ha. (ii) 5.5 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber tuber in Q/ha.

Treatment	T ₁	T ₂	T ₃	T ₄
Av. yield	138.0	124.7	113.9	101.6

C.D. = 7.6 Q/ha.

Crop :- Potato (Rabi).

Ref :- W.B. 60(9), 61(2), 62(26).

Site :- State Agri. Farm, Kalyani.

Type :- 'IM'.

Object :- To study the effect of irrigation and fertilizers on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Loam and sandy loam. (iii) Last week of Oct. 60; 2nd to 3rd week of Oct. 61 and 9.11.62. (iv) (a) 6 to 8 ploughings and spading in 1960, 1961; 4 to 5 ploughings and 'laddering' in 1962. (b) Planting. (c) 13.8 Q/ha. to 16.8 Q/ha. (d) 61 cm. × 23 cm. (e) 1. (v) 92.2 Q/ha. of F.Y.M. in 1960, 92.2 to 138.3 Q/ha. of F.Y.M. in 1961. (vi) Royal kidney (medium). (vii) Irrigated. (viii) 3 weedings and earthing up twice in 1960, 2 to 3 weedings and 2 intercultural operations in 1961 and 1 to 2 weedings and thrice earthing up in 1962. (ix) N.A. (x) 3rd week of March 1961; 3rd to 4th week of March 1962; 2.3.63.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 3 levels of irrigations: I₁ = 4 irrigations, I₂ = 8 irrigations and I₃ = 12 irrigations at 5 cm. each.

(2) 2 levels of fertilizers: M₁ = 89.7 Kg/ha. of N + 179.3 Kg/ha. of P + 89.7 Kg/ha. of K and M₂ = 179.3 Kg/ha. of N + 179.3 Kg/ha. of P + 89.7 Kg/ha. of K.

N as A/S, P₂O₅ as super and K₂O as Mur. Pot. applied.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 12.3 m. × 13.9 m. (b) 1/68.7 ha. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of tuber. (iv) (a) 1960 to 62. (b) Yes. (c) N.A. (v) Nil. (vi) Heavy rains during the growth of crop in 1960. (vii) Error variances are homogeneous and Treatments × years interaction is absent.

5. RESULTS :

(i) 153.4 Q/ha. (ii) 26.5 Q/ha. (based on 55 d.f. made up of pooled error and Treatments×years interaction). (iii) Main effect of M interaction I×M is significant. (iv) Av. yield of tuber in Q/ha.

	I ₁	I ₂	I ₃	Mean
M ₁	154.0	167.3	158.1	159.8
M ₂	143.0	135.2	162.8	147.0
Mean	148.5	151.2	160.4	153.4

C.D. for M marginal means=26.5 Q/ha.

C.D. for the body of table =23.1 Q/ha.

	I ₁	I ₂	I ₃	Sig.	M ₁	M ₂	Sig.	G.M.	S.E./plot
1960	121.4	129.6	106.4	N.S.	126.1	98.7	*	112.4	22.6
1961	191.6	204.9	221.6	N.S.	210.4	201.6	N.S.	210.4	24.1
1962	132.1	139.4	153.2	N.S.	142.8	140.4	N.S.	141.6	25.6
Pooled	148.5	151.2	160.4	N.S.	159.8	147.0	*	153.4	26.5

Crop :- Potato (Rabi).

Ref :- W.B, 61(62).

Site :- State Agri Farm, Bhanjang.

Type :- 'D'.

Object :-To study the effects of weedicides in controlling weeds in Potato.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) December, 61. (iv) (a) 2 to 3 ploughings and hoeing. (b) Sprouts placed in furrows 5 cm. deep. (c) 12.4 to 14.8 Q/ha. (d) 61 cm.×23 cm. (e) 1. (v) N.A. (vi) Bhanjang 65. (vii) Unirrigated. (viii) One weeding and earthing up twice. (ix) N.A. (x) August, 62.

2. TREATMENTS :

7 weedicidal treatments : W₀=Hand weeding, W₁=Pre sowing application with 2, 4-D at 1.1 Kg/ha., W₂=Pre sowing application with M.C.P.A. at 1.1 Kg/ha., W₃=Pre emergence application with 2, 4-D at 0.6 Kg/ha., W₄=Pre emergence application with M.C.P.A. at 0.6 Kg/ha., W₅=W₁+W₃ and W₆=W₂+W₄

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 4.9 m.×3.7 m. (b) 3.7 m.×3.2 m. (v) 61 cm.×23 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 75.9 Q/ha. (ii) 17.1 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of tuber Q/ha.

Treatment	W ₀	W ₁	W ₂	W ₃	W ₄	W ₅	W ₆
Av. yield	79.7	87.7	61.8	73.7	75.7	79.7	72.7

Crop :- Potato (Rabi).**Ref :- W.B. 63(32).****Site :- State Agri. Farm, Bhanjang.****Type :- 'D'.**

Object :- To study the effect of chemicals in controlling weeds in Potato.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) 1st. week of December, 63. (iv) (a) 2 to 3 ploughings and hoeing. (b) Sprouts placed in furrows 5 cm. deep. (c) 12.4 Q/ha. (d) 61 cm. x 23 cm. (e) 1. (v) N.A. (vi) Bhanjang 65. (vii) Unirrigated. (viii) 2 earthing up. (ix) 232.3 cm. (x) 1st week of August, 64.

2. TREATMENTS :

6 weedicidal treatments: W_0 =Hand weeding, W_1 =Atrazine 50 W.P. at 2.2 Kg/ha. formulation, W_2 Atrazine 50 w.p. at 4.5 Kg/ha. formulation, W_3 =Tatazine 50 w.p. at 4.5 Kg/ha. formulation, W_4 =Tatapon (Dalapon) at 5.6 Kg/ha. formulation and W_5 =Tatazine+Tatapon at 4.5 Kg/ha. formulation of each.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) 5.2 m. x 2.4 m. (b) 5.2 m. x 1.8 m. (v) 30 cm. on each side along breadth. (vi) Yes.

4. GENERAL :

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

5. RESULTS :

(i) 136.5 Q/ha. (ii) 39.2 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in Q/ha.

Treatment	W_0	W_1	W_2	W_3	W_4	W_5
Av. yield	138.2	126.8	142.9	149.6	141.4	120.2

Crop :- Potato (Kabi).**Ref :- W.B. 64(14), 65(38).****Site :- State Agri. Farm, Bhanjang.****Type :- 'D'.**

Object :- To study the efficiency of different fungicide against late blight disease.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. for 64; No. Potato for 1965. (c) N as A/S, P_2O_5 as Super and K_2O as Mur. Pot. applied @ 90, 180 and 90 Kg/ha. + Cowdung @ 186.4 Q/ha. (ii) Sandy loam. (iii) 14.1 64; 14.1.65. (iv) 2-3 ploughings followed by breaking of lods+laddering, hoeing and spading etc. (b) Line sowing in trenches 4" deep. (c) 12.4 to 14.8 Q/ha. for 64; 6 Q/ha. for 65. (d) 61 cm. x 23 cm.; 46 cm. x 23 cm. (e) N.A.; one tuber/hole. (v) N.A.; N as A/S, P_2O_5 as Super and K_2O as Mur. Pot. @ 90, 180 and 90 Kg/ha. + 184.6 Q/ha. of Cowdung. (vi) Asoka (early). (vii) Unirrigated. (viii) 1-2 weedings and one earthing up. (ix) 458.7 cm.; 395 cm. (x) 14.9.64; 13.9.65.

2. TREATMENTS :

All combinations of (1) and (2)+a control (No spraying).

(1) 4 types of fungicides: F_1 =Fytolan, F_2 =Dithane Z-78, F_3 =Dithane M-22, F_4 =Craigs.

(2) 2 intervals of spraying: I_1 =10 days, I_2 =15 days.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A.; 11.6 m. x 3.7 m. (iii) 3. (iv) (a) 3.7 m. x 3.7 m. (b) 2.7 m. x 2.7 m. (v) 46 cm. x 46 cm. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of blight disease; Control measures as per treatments, blitox. (iii) Yield of tuber. (iv) (a) 1964-67. (b) and (c) N.A. (v) Fulia. (vi) N.A. (vii) Experiment is continued after 1965 hence individual results are presented.

5. RESULTS :

64(14)

(i) 127.7 Q/ha. (ii) 14.5 Q/ha. (iii) Main effects of F and I are significant. Control vs. other is highly significant. (iv) Av. yield of tuber in Q/ha.

Control=96.6 Q/ha.

	F ₁	F ₂	F ₃	F ₄	Mean
I ₁	160.8	119.6	142.2	136.4	139.8
I ₂	129.3	111.2	124.9	128.0	123.4
Mean	145.0	115.4	133.6	132.2	131.6

C.D. for F marginal means=17.7 Q/ha.

C.D. for I marginal means=12.5 Q/ha.

C.D. for control vs. others=18.8 Q/ha.

65(38)

(i) 57.8 Q/ha. (ii) and (iii) N.A. (iv) Av. yield of tuber in Q/ha.

	F ₁	F ₂	F ₃	F ₄	Mean
I ₁	64.3	61.9	55.7	61.8	60.9
I ₂	55.8	52.9	57.1	52.2	54.5
Mean	60.0	57.4	56.4	56.9	57.8

Crop :- Potato (Rabi).**Ref :- W.B. 63(19).****Site :- State Agri. Farm, Burdwan.****Type :- 'D'.**

Object :- To study the effect of different seed treating chemical on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay loam. (iii) 1st week of November, 63. (iv) (a) 2 to 3 ploughings and laddering. (b) and (c) N.A. (d) 61 cm. x 23 cm. (e) N.A. (v) N.A. (vi) Royal kidney (medium). (vii) N.A. (viii) 2 weedings and earthing up 2 to 3 times. (ix) 2.4 cm. (x) 2nd week of March, 64.

2. TREATMENTS :

5 seed treating treatments : T₀=Control, T₁=Aretan for (1 mint. dipping), T₂=Aretan for (2 mint. dipping), T₃=Agallol for (1 mint. dipping) and T₄=Agallol for (2 mint. dipping).

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 6.1 m. x 4.7 m. (b) 5.5 m. x 4.1 m. (v) 30 cm. x 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) No. (b) N.A. (c) Nil. (v) Fulia. (vi) and (vii) Nil.

5. RESULTS :

(i) 111.6 Q/ha. (ii) 20.6 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of tuber Q/ha.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Av. yield	120.0	118.9	106.1	109.1	103.9

Crop :- Potato (Rabi).

Ref :- W.B. 62(30), 63(21).

Site :- State Agri. Farm, Fulia.

Type :- 'D'.

Object :- To study the effect of different fungicides on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) Jute-Potato. (b) Jute. (c) N.A. (ii) Ganga riverine. (iii) 12.11.62; 2nd week of Nov. 1963; (iv) (a) 3 to 4 ploughings and laddering. (b) and (c) N.A. (d) 61 cm. × 23 cm. in 1962; N.A. (e) 1; N.A. (v) N.A. (vi) Royal kidney (medium). (vii) Irrigated. (viii) 1 to 3 weedings and earthing up done thrice. (ix) N.A. (x) 11.3.63; 3rd week of March 1964.

2. TREATMENTS :

5 spraying done with : F₀=No spray ; F₁=Fytolan, F₂=Dithane Z-78, F₃=Dithane M-22 and F₄=Craigs fungicides.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) 4.7 m. × 4.3 m. (b) 4.1 m. × 3.7 m. (v) 30.5 cm. × 30.5 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) 1962 to 64 (from 1964 treatment modified). (b) Yes. (c) N.A. (v) Kalyani. (vi) N.A. (vii) Error variances are homogeneous and Treatments × years interaction is present.

5. RESULTS :

Pooled results

(i) 104.4 Q/ha. (ii) 36.4 Q/ha. (based on 28 d.f. made up of Treatment × year interaction and pooled error). (iii) Treatment differences are not significant. (iv) Av. yield of tuber in Q/ha.

Treatment	F ₀	F ₁	F ₂	F ₃	F ₄
Av. yielded	98.4	116.1	104.9	101.9	100.3

Individual results

Av. yield of tuber in Q/ha.

Years	F ₀	F ₁	F ₂	F ₃	F ₄	Sig.	G.M.	S.E./plot
1962	83.1	93.9	121.3	110.0	78.9	*	97.4	22.6
1963	117.6	103.0	111.0	99.9	125.0	N.S.	111.3	19.4
Pooled	98.4	116.1	104.9	101.9	100.3	N.S.	104.4	36.4

Crop :- Potato (Rabi).**Ref :- W.B. 64(31).****Site :- State Agri. Farm, Fulia.****Type :- 'D'.**

Object :—To study the effect of fungicidal spray on the yield of Potato.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) Last week of Nov., 1964. (iv) (a) 3 to 4 ploughing and laddering. (b) and (c) N.A. (d) 61 cm. × 23 cm. (e) 1. (v) N.A. (vi) Royal kidney. (vii) Irrigated. (viii) 1 weeding and 2 earthing up. (ix) N.A. (x) Last week of March, 65.

2. TREATMENTS :

5 fungicidal spraying with : F_0 =No spray, F_1 =Fytolan, F_2 =Dithane Z-78, F_3 =Dithane M-22 and F_4 =Dithane M-45.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 5.2 m. × 4.3 m. (b) 4.6 m. × 3.7 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of pest (control measures as per treatments). (iii) Yield of tuber. (iv) (a) 1962-64 [Expts. for 1962 and 1963 with modified treatments]. (b) Yes. (c) N.A. (v) (a) and (b) No. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 78.7 Q/ha. (ii) and (iii) N.A. (iv) Av. yield of tuber in Q/ha.

Treatment	F_0	F_1	F_2	F_3	F_4
Av. yield	67.8	81.8	79.2	77.3	87.6

Crop :- Potato (Rabi).**Ref :- W.B. 62(32), 64(33).****Site :- State Agri. Farm, Fulia.****Type :- 'D'.**

Object :—To study the effect of different seed treated chemically on the yield of Potato.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Ganga riverine for 1962, and sandy loam in 1964. (iii) 2nd week of Nov. 1962 and 1st week of Nov. 1964. (iv) (a) 3 to 4 ploughings for both and laddering for 1962 and harrowing for 1964. (b) One sprout placed in furrows 5 cm. deep for 1962 and N.A. for 1964. (c) N.A. (d) 61 cm. × 23 cm. for 1962 and N.A. for 1964. (e) N.A. (v) N.A. (vi) Burma, Royal kidney. (vii) Irrigated, N.A. (viii) Weeding and earthing up (3 to 4) times and 2 to 3 weeding and earthing up twice. (ix) N.A. (x) 1st week of March 63, 2nd week of March 1965.

2. TREATMENTS :

5 seed treated treatments : T_0 =Control, T_1 =Aretan 6% for 1 min. dipping, T_2 =Aretan 6% for 2 min. dipping, T_3 =Agallot 1 min dipping and T_4 =Agallot 2 min. dipping.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 6.1 m. × 4.7 m. (b) 5.5 m. × 4.1 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) 1962—1964 [1963 expt. not conducted]. (b) Yes. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments × years interaction is absent. Hence individual years results are given.

5. RESULTS :

62(32)

(i) 193.7 Q/ha. (ii) 14.0 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in Q/ha.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Av. yield	197.1	189.9	193.5	189.7	198.3

64(33)

(i) 121.6 Q/ha. (ii) and (iii) N.A. (iv) Av. yield of tuber in Q/ha.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Av. yield	123.0	123.5	115.9	119.6	125.9

Crop :- Potato (Rabi)

Ref :- W.B. 65 (15)

Site :- State Agri. Farm, Fulia.

Type :- 'D'.

Object :-To study the efficiency of different Fungicides against late blight disease.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy Loam. (iii) 22.3.65. (iv) (a) 3-4 ploughings+Laddering. (b) One sprout placed in furrows 5 cm. deep. (c) 14.8 to 15.7 Q/ha. (d) 61 cm. x 23 cm. (v) 92.2 Q/ha. of Cowdung. (vi) Royai Kidney (Medium). (vii) Irrigated. (viii) 2-3 weeding 1-3 earthing-up (ix) N.A. (x) 14 to 16th March 1969.

2. TREATMENTS :

(i) 8 fungicidal treatments : T₀=Control, T₁=Fytolan, T₂=Dithane 278, T₃=Dithane M-22, T₄=Dithane M-45, T₅=Cuman, T₆=Captan and T₇=Ferbam.

Quantity N.A., Fungicides were sprayed after two months of ploughing.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) 9.3 m. x 6.1 m. (b) 8.7 m. x 5.5 m. (v) 61 cm. kept as border around each Plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of blight disease control measures as under treatments. (iii) Yield of tube. (iv) 1965—contd. (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 121.6 Q/ha. (ii) 15.6 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in Q/ha. :-

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Av. yield	107.0	132.3	117.5	133.8	127.9	115.2	126.3	113.4

Crop :- Potato (Rabi).**Ref :- W.B. 63 (23)****Site :- State Agri. Farm, Kalyani.****Type :- 'D'.**

Object :-To study the effect of different fungicides on the yield of Potato.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) N.A. (iii) 1st week of Nov., 1963. (iv) (a) 2 to 3 ploughings. (b) N.A. (c) 15.8 to 16.6 Q/ha. (d) 61 cm. x 23 cm. (e) N.A. (v) N.A. (vi) Royal Kidney. (vii) Unirrigated. (viii) 1 to 2 weedings and earthing up 2 to 3 times. (ix) N.A. (x) 2nd week of March, 1964.

2. TREATMENTS :

5 sprayings treatments : F_0 =No Spray, F_1 =Fytolan, F_2 =Dithane Z-78, F_3 =Dithane M-22 and F_4 =
Craigs Fungicides.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4.3 m. x 5.2 m. (iv) 3.7 m' x 4.6 m. (v) 30 cm. x 30 cm. (vi) Yes.

4. GENERAL

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) No. (b) and (c) Nil. (v) Fullia. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 192.2 Q/ha. (ii) 16.6 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in Q/ha.

Treatment	F_0	F_1	F_2	F_3	F_4
Av. yield :	186.9	197.4	193.0	207.1	176.4

Crop :- Cauliflower.**Ref :- W.B. 64 (76), 65 (67)****Site :- State Agri. Farm, Krishnagar.****Type :- 'M'.**

Objects :-To find out the fertilizer requirements for the experiment.

1. BASAL CONDITIONS :

(i) (a) No. (b) Cauliflower. (c) 90 Kg/ha of N as F.Y.M., as under treatment. (ii) Sandy Loam. (iii) 24.12.64, November 1966: (iv) (a) 2 ploughings, laddering and spading. (b) planting. (c) N.A. (d) 76 cm. x 46 cm. (e) One. (v) F.Y.M. applied at 90 Kg/ha of N. (vi) Dania. (vii) Unirrigated, N.A. (viii) 1 weeding + 2-3 earthing up done. (ix) 1 cm., 4 cm. (x) Last week of Feb. 1966.

2. TREATMENTS :

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

(1) 3 levels of N : $N_0=0$, $N_1=90$ Kg/ha. and $N_2=180$ Kg/ha.

(2) 3 levels of P_2O_5 , $P_0=0$, $P_1=45$ Kg/ha. and $P_2=90$ Kg/ha.

(3) 3 levels of K_2O , $K_0=0$, $K_1=67$ Kg/ha. and $K_2=134$ Kg/ha.

'N' as A/S, P_2O_5 as super and K_2O as Potato were applied by broadcasting and at the time of planting the crop.

3. DESIGN :

(i) 3³ Fact. R.B.D. (ii) (a) 27plots/block. (b) 4.6 m' x 100 m. (iii) 4. (iv) (a) 4.6 m.m x 3.7 m. (b) 3.0 m. x 2.7m. (v) 91 cm. kept on border. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of Cauliflower. (iv) (a) 64 to 66. (b) Yes. (c) Nil. (v) No. (vi) N.A. (vii) The experiment is continued after 65 Hence individual year results are presented.

5. RESULTS :

64(77)

- (i) 103.2 Q/ha. (ii) 36.12 Q/ha. (iii) Main effect of N is highly significant, other effects are not significant.
 (iv) Av. yield of Cauliflowers in Q/ha :—

	P ₀	P ₁	P ₂	K ₀	K ₁	K ₂	Mean
N ₀	60.6	50.9	68.1	60.0	67.1	52.5	59.9
N ₁	115.6	112.3	132.3	123.4	126.3	110.5	120.1
N ₂	142.0	111.4	135.2	125.5	118.2	144.9	129.5
Mean	103.0	103.9	102.6	106.1	91.5	111.9	103.2
K ₀	112.5	92.4	103.6				
K ₁	104.1	93.9	113.6				
K ₂	101.6	87.9	118.4				

C.D. for N marginal means=17.02 Q/ha.

65(67)

- (i) 306.8 Q/ha. (ii) 58.46. (iii) Mean effect of N in highly significant other effects are not significant,
 (iv) Av. yield of Cauliflower in Q/ha. :—

	P ₀	P ₁	P ₂	K ₀	K ₁	K ₂	Mean
N ₀	196.5	177.5	202.1	203.6	181.7	190.8	192.1
N ₁	372.7	355.0	347.2	370.8	360.7	343.4	358.3
N ₂	348.6	358.7	402.6	340.6	361.8	407.5	370.0
Mean	305.9	297.1	317.3	305.0	301.4	313.9	306.8
K ₀	309.9	291.0	314.0				
K ₁	295.5	296.0	312.7				
K ₂	312.4	304.2	325.2				

C.D. for N marginal means=27.5 Q/ha.

Crop :- Radish (Rabi).**Ref :- W.B. 64(74).****Site :- State Agri Farm, Krishnagar.****Type :- 'E'.**

Object :— To see if the time of sowing of the crop has any effect on the yield of radish seed.

1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) Sandy loam. (iii) As per treatment. (iv) (a) 2 ploughings, spading etc. (b) Planting. (c) N.A. (d) 30.5 cm. x 23 cm. (e) One. (v) Nil. (vi) Red Bombai (medium). (vii) Unirrigated. (viii) 1 weeding and 2 earthing up done. (ix) 1 cm. (x) 1st week of Jaunary, 65.

2. TREATMENTS :

6 date of sowing of radish crop as follows : D₁=1.9.64, D₂=15.9.64, D₃=3.10.64, D₄=16.10.64, D₅=1.11.65 and D₆=15.11.64.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 6.1 m. × 3.7 m. (b) 5.5 m. × 3.0 m. (v) 61 cm. kept as border. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of radish seed. (iv) (a) No. (b) and (c) N.A. (v) No. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 8.1 Gm/plant. (ii) 2.1 Gm/plant. (iii) Treatment differences are significant. (iv) Av. yield of radish seed in Gm/plant.

Treatment	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆
Av. yield	14.2	10.8	5.4	7.6	4.7	5.7

C.D. = 2.5 Gm/plant.

Crop :- Chillis (*Rabi*)

Ref :- W.B. 64, 65(S.F.T.)

Site :- (District) : W. Dinajpur

Type : 'M'.

Object :—Type A₃—To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

O=control (no manure)

N₁=60 Kg/ha of N

N₂=120 Kg/ha of N

P₁=30 Kg/ha of P₂O₅

N₁P₁=60 Kg/ha. of N+30 Kg/ha of P₂O₅

N₂P₁=120 Kg/ha of N+30 Kg/ha of P₂O₅

N₂P₂=120 Kg/ha of N+60 Kg/ha of P₂O₅

N₂P₂K₂=120 Kg/ha of N+60 Kg/ha of P₂O₅+60 Kg/ha of K₂O

N applied as A/s, P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN :

A select district is divided into four agriculturally homogeneous zones based on climate, soil, cropping pattern etc. In each zone one block is selected at random. A block normally consists of a group of 50—100 villages. In each block 36 experiments are conducted in a year of which 11 are of type A₁, 11 of type A₂, 11 of type A₃ and 3 are of type C. The eleven experiments under type A₁, A₂ and A₃ are distributed as 3 on a kharif cereal, 3 on a cash crop and 2 on oil seed. All the three type-C experiments are conducted on a legume crop. For the purpose of conducting the A₁, A₂ and A₃ experiments 11 villages are randomly selected in each block and in each village 3 experiments one each of type A₁, A₂ and A₃ are laid out. For conducting the three type-C trials three villages are randomly selected in each block.

4. GENERAL:

(i) to (iii) N.A. (iv) (a) 1964—65 (63—65) (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS:

W. Dinajpur

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	273	323	120	427	517	629	645	41.3

Control mean=1078 Kg/ha. ; No. of trials=6.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	213	323	-137	249	410	641	920	11.2

Control mean=1937 Kg/ha. ; No. of trials=4.

Crop :- Chillies**Ref. :- W.B. 64 (S.F.T.)****Site :- (District) : Malda.****Type :- 'M'.**

Object :—Type A₃—To study the response curves of important cereal, oilseed and cash crops to Nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

O=Control (no manure)

N₁=60 Kg/ha of NN₂=120 Kg/ha of NP₁=30 Kg/ha of NN₁P₁=60 Kg/ha of N+30 Kg/ha of P₂O₅N₂P₁=120 Kg/ha of N+30 Kg/ha of P₂O₅N₂P₂=120 Kg/ha of N+60 Kg/ha of P₂O₅N₂P₂K₁=120 Kg/ha of N+60 Kg/ha of P₂O₅+60 Kg/ha of K₂ON applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.**3. DESIGN:**Same as in Type A₁ (*Mundakar*) on page 224.**4. GENERAL :**

(i) to (iii) N.A. (iv) (a) 1964. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Malda

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	369	185	553	739	462	646	923	0.6

Control mean=921 Kg/ha. ; No. of trials=2.

Crop :- Chillies (Rabi)**Ref :- W.B. 64, 65(S.F.T.) for W. Dinajpur and 64 (S.F.T.) for Malda.****Site :- (District) : W. Dinajpur and Malda.****Type :- 'M'.**

Object :—Type A₃—To study the response curves of important cereal, cash and oilseed crops to Nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

O=Control (no manure)

 $N_1=60$ Kg/ha of N $P_1=30$ Kg/ha of P_2O_5 $P_2=60$ Kg/ha of P_2O_5 $N_1P_1=60$ Kg/ha of N+30 Kg/ha of P_2O_5 $N_1P_2=60$ Kg/ha of N+60 Kg/ha of P_2O_5 $N_2P_1=120$ Kg/ha of N+60 Kg/ha of P_2O_5 $N_2P_2K_2=120$ Kg/ha of N+60 Kg/ha of P_2O_5 +120 Kg/ha of K_2O N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

Same as in type A_1 (irrigated) on page 224.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 64—65 for W. Dinajpur and 64—only for Malda. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

W. Dinajpur

64 (S.F.T.)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of green Wt. of chillies in Kg/ha.	310	102	175	443	507	654	710	32.0

Control mean=1022 Kg/ha ; No. of trials=6.

65(S.F.T.)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of green Wt. of chillies in Kg/ha.	354	389	558	592	611	847	1003	63.8

Control mean=1845 Kg/ha ; No. of trials=4.

Malda

64(S.F.T.)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of green Wt. of chillies in Kg/ha.	289	197	612	382	382	197	336	174.3

Control mean=1093 Kg/ha ; No. of trials=2.

Crop :- Chillies (Rabi)

Ref. :- W.B. 64, 65 (S.F.T.) for W. Dinajpur and 64 (S.F.T.) for Malda.

Site :- (District) : W. Dinajpur and Malda.

Type :- 'M'.

Object :- Type A_2 —To study the response curves of important cereal, cash and oil seeds crops to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Irrigated for W. Dinajpur and Unirrigated for Malda. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

O=Control (no manure)

N_1 =60 Kg/ha of N

K_1 =60 Kg/ha of K_2O

K_2 =120 Kg/ha of K_2O

N_1K_1 =60 Kg/ha of N+60 Kg/ha of K_2O

N_1K_2 =60 Kg/ha of N+120 Kg/ha of K_2O

N_2K_2 =120 Kg/ha of N+120 Kg/ha of K_2O

$N_1P_1K_1$ =60 Kg/ha of N+30 Kg/ha of P_2O_5 +60 Kg/ha of K_2O

N applied as A/S ; P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

Same as in type A_1 (irrigated) on page 224.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1964-65 for W. Dinajpur and 1964 for Malda. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

W. Dinajpur

64(S.F.T.)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	275	39	109	366	435	583	551	33.3

Control mean=1019 Kg/ha. ; No. of trials=6.

65(S.F.T.)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	295	245	380	407	504	754	779	112.2

Control mean=1821 Kg/ha. ; No. of trials=4.

Malda

64(S.F.T.)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	282	374	467	190	559	237	512	67.8

Control mean=1008 Kg/ha. ; No. of trials=2.

Crop :- Mukhikachu (*Colocasia Antiquarum*) (Kharif).

Ref :- W.B. 65(37).

Site :- State Agri. Farm, Fulia.

Type :- 'M'.

Object :- To find out the optimum requirement of N, P & K for the Crop.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) 24.7.65. (iv) (a) 2 ploughings, spading and laddering. (b) Line sowing. (c) 8.3 to 9.2 Q/ha. (d) 61 cm. × 30 cm. (e) One. (v) 80 to 92.2 Q/ha. (vi) R.C. 63. (vii) N.A. (viii) 2 weedings and 2 earthing up. (ix) 90 cm. (x) 30.1.66.

2. TREATMENTS :

All combinations of (1), (2) and (3)+Control.

(1) 2 levels of N : $N_1=56$ and $N_2=112$ Kg/ha.

(2) 2 levels of P_2O_5 : $P_1=45$ and $P_2=90$ Kg/ha.

(3) 2 levels of K_2O : $K_1=45$ and $K_2=90$ Kg/ha.

N as Urea, P_2O_5 as Super and K_2O as Mur. Pot. were applied by broadcasting. Entire Super and Mur. Pot. were applied at the time of land preparation with $\frac{1}{4}$ rd of the whole N as Urea, remaining $\frac{3}{4}$ rd N was applied one month after sowing.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) 39.0 m. × 3.7 m. (iii) 3. (iv) (a) 4.3 m. × 3.7 m. (b) 3.7 m. × 3.0 m. (v) 61 cm. kept as border. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of Mukhikachu. (iv) (a) 1964 to 1967 (In 1967 treatments modified). (b) No. (c) N.A. (v) No. (vi) N.A. (vii) Data for 1964 N.A.

5. RESULTS :

(i) 99.1 Q/ha. (ii) 32.2 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of Mukhikachu in Q/ha.

	P_1	P_2	K_1	K_2	Mean
N_1	132.0	97.9	109.9	120.1	115.0
N_2	121.4	112.7	106.1	128.0	117.1
Mean	126.7	105.3	108.0	124.0	116.0
K_1	110.6	105.4			
K_2	142.8	105.2			

Crop :- Sugarcane.

Ref :- W.B. 60(53).

Site :- State Agri. Farm, Berhampore.

Type :- 'M'.

Object :- To study the effect of A/S, C/N and A/C on the yield of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) and (c) N.A. (ii) Ganga riverine clay loam. (iii) 7.2.60 to 24.2.60. (iv) (a) Ploughing and spading. (b) Cutting placed horizontally in trenches 25 cm. deep. (c) N.A. (d) 91 cm. between rows. (e) N.A. (v) N.A. (vi) Co-527 (medium). (vii) N.A. (viii) 3 weedings and earthing up. (ix) and (x) N.A.

2. TREATMENTS :

Main plot treatments :

3 sources of N : $S_1=A/S$, $S_2=C/N$ and $S_3=A/C$.

Sub plot treatments :

3 levels of N : $N_0=0$, $N_1=67.2$ and $N_2=134.5$ Kg/ha.

Fertilizer applied on 29.6.60 by broadcasting.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block : 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) and (b) 5.5 m. × 10.1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of Sugarcane. (iv) (a) 1958 to 60. (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 793.3 Q/ha. (ii) (a) 156.3 Q/ha. (b) 142.7 Q/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of Sugarcane in Q/ha.

	N ₀	N ₁	N ₂	Mean
S ₁	—	901.5	973.9	937.7
S ₂	—	813.6	854.4	834.0
S ₃	—	804.3	859.5	851.9
Mean	645.7	839.8	909.3	—

C.D. for N marginal means=97.1 Kg/ha.

Crop :- Sugarcane.

Ref :- W.B. 62(60), 63(53)

Site :- State Agri. Farm, Maynaguri.

Type :- 'M'.

Object :—To see the effect of N, P and K alone and in combinations on the yield of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. ; Sugarcane. (c) N.A. ; As per treatments. (ii) Tista riverine. (iii) 12.3.62 ; 5.2.63 to 9.2.63. (iv) (a) 2 to 3 ploughings, harrowing and laddering. (b) Line sowing, cutting were placed in trenches 15 cm. to 23 cm. deep. (c) 55 Q/ha. (d) End to end. (e) N.A. (v) N.A. (vi) Co-527 (medium). (vii) Irrigated, Unirrigated. (viii) Weeding, hoeing and earthing up done twice ; mulching, 1 to 2 weedings and 2 earthing up. (ix) N.A. (x) N.A. ; Last week of Feb. 1964.

2. TREATMENTS :

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

(1) 4 levels of N as A/S : N₀=0, N₁=89.7, N₂=134.5 and N₃=172.3 Kg/ha.

(2) 3 levels of P₂O₅ as Super : P₀=0, P₁=67.2 and P₂=134.5 Kg/ha.

(3) 2 levels of K₂O as Mur. Pot. : K₀=0 and K₁=112.1 Kg/ha.

Fertilizers applied by broadcasting.

3. DESIGN :

(i) 4 × 3 × 2 Partially confd. fact. (ii) (a) 12 plots/block ; 2 blocks/replication. (b) 74.4 m. × 32.3 m. (iv) 3. (iv) (a) 12.5 m. × 8.2 m. (b) 11.9 m. × 7.6 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1962 and 63. (b) Yes. (c) Results of combined analysis given under 5. Results. (v) Nalhati. (vi) N.A. (vii) Error variances are heterogeneous and Treatments × years interaction is absent. Hence individual results are presented.

5. RESULTS :

62(60)

(i) 290.5 Q/ha. (ii) 142.6 Q/ha. (iii) Interaction P × K alone is significant. (iv) Av. yield of sugarcane in Q/ha.

	P ₀	P ₁	P ₂	K ₀	K ₁	Mean
N ₀	241.5	253.0	231.8	255.6	228.6	242.1
N ₁	428.8	236.2	362.5	337.3	347.7	342.5
N ₂	198.1	341.1	362.1	253.4	347.5	300.4
N ₃	292.3	243.4	295.4	317.0	237.1	277.1
Mean	290.2	268.5	313.0	290.8	290.2	290.5
K ₀	265.7	327.9	278.9			
K ₁	321.6	209.1	347.1			

C.D. for the body of P×K table =116.5 Q/ha.

63(53)

(i) 295.0 Q/ha. (ii) 87.5 Q/ha. (iii) Main effects of N and K are highly significant. (iv) Av. yield of sugarcane in Q/ha.

	P ₀	P ₁	P ₂	K ₀	K ₁	Mean
N ₀	202.5	166.9	176.4	176.3	187.5	181.9
N ₁	270.0	331.5	297.4	299.5	300.0	299.6
N ₂	351.2	348.4	310.7	280.5	393.1	336.8
N ₃	348.8	343.3	392.1	334.7	388.4	361.5
Mean	293.1	297.5	294.3	272.8	317.2	295.0
K ₀	265.2	284.9	268.2			
K ₁	321.0	310.1	320.3			

C.D. for N marginal means=71.5 Q/ha.

C.D. for K marginal means=29.2 Q/ha.

Crop :- Sugarcane.

Ref :- W.B. 65(80).

Site :- State Agri. Farm, Bamandanga, Nadia.

Type :- 'M'.

Object :- To find out the most economic doses of nutrient combination for Sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) No. (b) Sugarcane. (c) N.A. (ii) N.A. (iii) 9.4.65. (iv) (a) 2 ploughings, 2-3 spadings. (b) Cutting placed horizontally in trenches 25 cm. deep. (c) N.A. (d) Row to row 122 cm. (e) N.A. (v) (v) Cowdung at 92.2 Q/ha. (vi) Co-527. (vii) N.A. (viii) 2 weedings and earthing up twice. (ix) 156 cm. (x) 18.4.66.

2. TREATMENTS :

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

(1) 4 levels of N : N₀=0, N₁=89.7, N₂=134.4 and N₃=179.2 Kg/ha.

(2) 3 levels of P₂O₅ : P₀=0, P₁=44.8 and P₂=67.3 Kg/ha.

(3) 2 levels of K₂O : K₀=0 and K₁=112.1 Kg/ha.

N as Urea, P₂O₅ as Super and K₂O as Mur. Pot. were applied by broadcasting. Fertilizers applied in furrows 10.2 cm. deep ; $\frac{1}{3}$ of the dose applied at the time of long preparation and $\frac{1}{3}$ at the time of earthing up

3. DESIGN :

(i) Fact in R.B.D. (ii) (a) 24. (b) N.A. (iii) 3. (iv) (a) 0.003 ha. (b) 0.007 ha. (v) 0.001 ha. (vi) Yes.

4. GENERAL :

(i) Bad, due to water logging after 3 to 4 weeks of plants' age. (ii) N.A. (iii) Yield of Sugarcane. (iv) (a) 1965-67. (b) Yes. (c) N.A. (v) No. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 685.3 Q/ha. (ii) 141.0 Q/ha. (iii) Main effect of N is highly significant and interaction N×P is significant. (iv) Av. yield of sugarcane in Q/ha.

	N ₀	N ₁	N ₂	N ₃	K ₀	K ₁	Mean
P ₀	163.5	684.3	944.0	1072.9	727.1	705.3	716.2
P ₁	187.2	658.4	921.5	946.2	675.0	681.7	678.3
P ₂	155.0	849.1	777.1	864.3	674.3	648.5	661.4
Mean	168.6	730.6	880.9	961.2	692.1	678.5	685.3
K ₀	150.8	781.0	924.7	912.0			
K ₁	186.3	680.2	837.0	1010.3			

C.D. for N marginal means = 94.5 Q/ha.

C.D. for the body of N×P table = 163.6 Q/ha.

Crop :- Sugarcane.

Ref :- 61(67), 62(59), 63(52), 64(22).

Site :- State Agri. Farm, Nalhati.

Type :- 'M'.

Object :- To see the effect of N, P and K alone and in combination on the yield of Sugarcane.

1. BASAL CONDITIONS:

(i) (a) No. (b) Sugarcane. (c) N.A. for 61 (67); As per treatments for others. (ii) Sandy clay loam. (iv) 1st to 2nd week of Feb. 1961; Last week of Feb. 1962; N.A. for others. (iv) (a) 2 ploughings+harrowing and 2 spading for 61 (67), 63 (59); 2 ploughings+laddering and 2 spading for 62(59), 64(22). (b) Line sowing, cutting placed horizontally in trenches 25 cm. deep. (c) 55 Q/ha. (d) End to end for 63 (52); N.A. for others. (e) N.A. (v) N.A. (vi) Co-527 (medium). (vii) Irrigated. (viii) 1-2 weedings, hoeing and 2 earthing up. (ix) N.A. (x) Last week of Feb. 1962; 1st week of March 1963; 1st. week of March 1964; 1st week of March 1965.

2. TREATMENTS :

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

(1) 4 levels of N as A/3 : N₀=0, N₁=89.7, N₂=134.5 and N₃=179.3 Kg/ha.

(2) 3 levels of P₂O₅ as Super : P₀=0, P₁=67.2 and P₂=134.5 Kg/ha.

(3) 2 levels of K₂O as Mur. Pot. : K₀=0, and K₁=112.1 Kg/ha.

Fertilizers applied by broadcasting.

3. DESIGN :

(i) 4×3×2 partially confd. fact. (ii) 12 plots/block; 2 blocks/replication. (b) N.A. (iii) 3. (iv) (a) 14.3 m.×7.3 m., for 1961, 62 and 6.7 m.×13.4 m. for others. (b) 13.7 m.×6.7 m., for 1961, 62 and 6.1 m.×12.8 m. for others. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of Sugarcane. (iv) (a) 1961-64. (b) No. (c) N.A. (v) No. (vi) N.A. (vii) Error variances are homogeneous and Treatments \times years interaction is absent.

5. RESULTS :

(i) 547.7 Q/ha. (ii) 199.4 Q/ha. (based on 217 d.f. made up of error and Treatments \times years interaction). (iii) Main effect of N is significant. (iv) Av. yield of sugarcane in Q/ha.

	P ₀	P ₁	P ₂	K ₀	K ₁	Mean
N ₀	378.0	309.9	381.5	379.0	333.7	356.4
N ₁	516.5	614.3	549.1	564.1	555.0	560.0
N ₂	627.5	604.0	572.0	583.3	619.0	601.2
N ₃	610.7	701.1	707.7	669.1	677.2	673.2
Mean	533.2	557.2	552.6	548.9	546.2	547.6
K ₀	537.2	559.3	550.1			
K ₁	529.1	555.2	555.1			

C.D. for N marginal means = 65.2 Q/ha.

Years	N ₀	N ₁	N ₂	N ₃	Sig.	P ₀	P ₁	P ₂	Sig.
1961	162.6	247.2	339.1	319.4	*	220.8	312.9	267.5	N.S.
1962	310.0	512.5	519.2	574.0	*	477.5	461.7	497.6	N.S.
1963	559.2	756.2	807.4	860.1	*	717.6	758.9	760.6	N.S.
1964	393.8	724.1	739.0	939.2	*	716.8	695.5	684.7	N.S.
Pooled	356.4	560.0	601.2	673.2	*	533.2	557.2	552.6	N.S.

K ₀	K ₁	Sig.	G.M.	S.E./plot
281.9	252.2	N.S.	267.0	89.9
495.1	462.8	N.S.	478.9	116.3
719.8	771.7	*	745.7	152.1
698.7	699.3	N.S.	699.0	169.8
548.9	546.2	N.S.	547.7	199.4

Crop :- Sugarcane.

Ref :- W.B. 61(24), 62(6), 63(29).

Site :- Kadamkhali Expt. Farm, Ramnagar (Palasy).

Type :- 'M'.

Object :- To find out the efficiency of different inorganic nitrogenous fertilizer on the yield of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) 29.12.60, 4.1.62 ; 2.12.62. (iv) (a) Ploughing, spading and levelling of soil in 1961 ; 3 to 4 ploughings and spading etc. in 1962 and 4 ploughings and spading in 1963. (b) Cutting placed horizontally in trenches 25 cm. deep in 1961, 62 and planting in 1963. (c) N.A. (d) 91 cm. to 122 cm. in 1961 ; 122 cm. between rows in 1962 and N.A. for 1963. (e) N.A. (v) N.A. (vi) Bo-17. (vii) N.A.

for 61 and 62, Irrigated for 1963. (viii) 3 earthings up and interculture during 1961; 3 earthings up and weeding in 1962 and 2 earthings up and interculture. (ix) N.A. (x) 21.3.62; 21.1.63 and 7.1.1964 to 9.1.1964.

2. TREATMENTS ;

7 sources of 134.5 Kg/ha. of N : S_0 =Control (no manure), S_1 =A/S, S_2 =A/S/N, S_3 =A/S, S_4 =C/A/N, S_5 =Urea and S_6 =Urea nitrate.

3. DESIEN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 10.1 m. \times 10.1 m. (b) 9.5 m. \times 9.5 m. (v) and (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of Sugarcane. (iv) (a) 1961 to 63. (b) Yes. (c) N.A. (v) No. (vi) N.A. (vii) Error variances are heterogeneous and Treatments \times years interaction is absent. Hence individual results are presented.

5. RESULTS :

61(24)

(i) 394 Q/ha. (ii) 52.7 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of Sugarcane in Q/ha

Treatment	S_0	S_1	S_2	S_3	S_4	S_5	S_6
Av. yield	361	362	404	432	396	395	411

62(6)

(i) 300 Q/ha. (ii) 33.6 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of Sugarcane in Q/ha.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5	S_6
Av. yield	237	283	353	262	339	312	314

C.D.=49.9 Q/ha.

63(29)

(i) 607.7 Q/ha. (ii) 96.4 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of Sugarcane in Q/ha.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5	S_6
Av. yield	416.0	600.3	644.5	593.1	628.1	574.5	145.4

C.D.=143.3 Q/ha.

Crop :- Sugarcane.

Ref :- W.B. 61 (S.F.T.)

Site :- (District) : Nadia.

Type :- 'M'.

Object :- Type A—To study the response of Sugarcane to different levels of N, P_2O_5 and K_2O applied individually and in combination.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial (iii) to (x) N.A.

2. TREATMENTS ;

8 manurial treatments

- O = Control (no manure)
 - N = 67.2 Kg/ha of N
 - P = 44.8 Kg/ha of P_2O_5
 - K = 44.8 Kg/ha of K_2O
 - NP = 66.2 Kg/ha of N + 44.8 Kg/ha of P_2O_5
 - NK = 67.2 Kg/ha of N + 44.8 Kg/ha of K_2O
 - PK = 44.8 Kg/ha of P_2O_5 + 44.8 Kg/ha of K_2O
 - NPK = 67.2 Kg/ha of N + 44.8 Kg/ha of P_2O_5 + 44.8 Kg/ha of K_2O
- N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

(i) and (ii) The district has been divided into four agriculturally homogeneous zones and one field assistant posted in each zone. The field assistant conducts the trials in one revenue circle or thana in the zone and the circle/thana is changed once in two years within the same zone. Each field assistant is required to conduct 31 trials in a year, 8 on kharif cereal, 8 on a rabi cereal, 8 on cash crop, 4 on oilseed crop and 3 on a leguminous crop. Half the number of trials conducted are of type A and the other half of type B on crops other than the legumes. The three trials on legumes are of Type C. Residual effects of phosphate application are studied on Type C trials in two out of the four zones in each district every year. The experiments are laid out in randomly located fields in randomly selected villages in each of the 4 zones at the rate of one experiment per village. (iii) (a) 1/93.8 ha. (b) 1/97.7 ha (iv) Yes.

4. GENERAL ;

(i) to (vii) N.A.

5. RESULTS :

Av. response of sugarcane in Q/ha.

District	No. of trials	Control mean	N	P	K	S.E.	NP	NK	PK	NPK	S.E.
Nad.a	3	535.0	215.5	12.6	7.7	10.14	3.4	-13.2	5.8	13.2	9.9

Crop :- Sugarcane.

Ref :- W.B. 60, 61 (SFT)

Site :- (District) : As per results.

Type :- 'M'.

Object :—Type B—To investigate the relative efficiency of different fertilizers at different dose.

1. BASAL CONDITIONS :

(i) (a) to (e) N.A. (ii) As per results. (iii) to (x) N.A.

2. TREATMENTS :

0 = Control (no manure)

n_1 = 67.2 Kg/ha of N as A/S.

n_2 = 134.4 Kg/ha of N as A/S.

n_1' = 67.2 Kg/ha of N as Urea.

n_2' = 134.4 Kg/ha of N as Urea.

n_1'' = 67.2 Kg/ha of N as A/S/N.

n_2'' = 134.4 Kg/ha of N as A/S/N.

n_1''' = 67.2 Kg/ha of N as C/A/N.

n_2''' = 134.4 Kg/ha of N as C/A/N.

3. DESIGN:

Same as in type A on page 233.

4. GENERAL :

(i) to (vi) N.A.

5. RESULTS :

District	Year	Soil class	No. of trials	Control mean in Q/ha	Av. response of sugarcane in Q/ha.								S.E.
					n_1	n_1'	n_1''	n_1'''	n_2	n_2'	n_2''	n_2'''	
W. Dinajpur	1960	Alluvial	1	154.9	287.8	158.6	154.9	—	149.4	250.9	140.2	—	—
Malda	1960	"	1	446.4	55.3	83.0	9.2	—	97.8	33.2	129.1	—	—
Nadia	1961	"	4	495.7	86.2	115.7	—	90.5	253.7	211.6	—	235.1	36.82

Crop :- Sugarcane.

Ref :- W.B. 63, 64, 65(S.F.T.) for Malda, 65(S.F.T.)
for Nadia and 64(S.F.T.) for Murshidabad.Site :- (District) : Nadia,
Malda and Murshidabad.

Type :- 'M'.

Object :—Type A₁—To study the response curves of important cereal, cash and oilseed crops to Nitrogen applied singly in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial for Nadia, Red and yellow for Malda and Murshidabad. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

O=Control (no manure)

N₁=70 Kg/ha. of N.N₂=140 Kg/ha. of NP₁=70 Kg/ha. of P₂O₅N₁P₁=70 Kg/ha. of N+70 Kg/ha. of P₂O₅.N₂P₁=140 Kg/ha. of N+70 Kg/ha. of P₂O₅N₂P₂=140 Kg/ha. of N+140 Kg/ha. of P₂O₅N₂P₂K₁=140 Kg/ha. of N+140 Kg/ha. of P₂O₅+70 Kg/ha. of K₂O.N applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN :

A selected district is divided into four agriculturally homogeneous zones based on climate, soil, cropping pattern etc. In each zone one block is selected at random. A block normally consists of a group of 50 – 100 villages. In each block 36 experiments are conducted in a year of which 11 are of type A₁, 11 of type A₂, 11 of type A₃ and 3 are of type C. The eleven experiments under type A₁, A₂ and A₃ are distributed as on a *khari* cereal, 3 on a *rabi* cereal, 3 on a cash crop and 2 on oilseed. All the three type-C experiments are conducted on a legume crop. For the purpose of conducting the A₁, A₂ and A₃ experiments 11 villages are randomly selected in each block and in each village 3 experiments one each of type A₁, A₂ and A₃ are laid out. For conducting the three type-C trials three villages are randomly selected in each block.

4. GENERAL :

(i) to (iii) Nil. (iv) (a) 1965 for Nadia, 63—66 for Malda and 64 for Murshidabad. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Malda

63(S.F.T.)

Treatment	N ₂	N ₁	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of cane in Kg/ha.	83145	23721	1976	14727	24611	27279	27774	5938.0

Control mean=37361 Kg/ha. ; No. of trials=2.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of cane in Kg/ha.	2569	10872	6918	15913	26489	31826	32814	7137.1

Control mean=38349 Kg/ha. ; No. of trials=2.

65(S.F.T.)

Treatment	N ₂	N ₁	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of cane in Kg/ha.	10900	16800	—	9900	17600	18800	22300	4231.4

Control mean=38700 Kg/ha. ; No. of trials=2.

Nadia

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₁ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of cane in Kg/ha.	10600	21200	4900	19000	25100	29900	36100	2353.0

Control mean=38000 Kg/ha. ; No. of trials=2.

Murshidabad

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of cane in Kg/ha.	14539	20222	1146	21902	38715	51548	63400	6969.0

Control mean=60183 Kg/ha. ; No. of trials=2.

Crop :- Sugarcane.

Ref :- W.B. 63, 64, 65(S.F.T.) for Malda, 65(S.F.T.) for Nadia and 64(S.F.T.) for Murshidabad.

Site :- (District) :- Malda, Type :- 'M'.

Nadia and
Murshidabad.Object :- Type A₂—To study response curves of important cereal, cash and oilseed crops to Phosphorus applied singly in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O=Control (no manure)

N₁=70 Kg/ha. of NP₁=70 Kg/ha. of P₂O₅P₂=140 Kg/ha. of P₂O₅N₁P₁=70 Kg/ha. of N+70 Kg/ha. of P₂O₅N₁P₂=70 Kg/ha. of N+140 Kg/ha. of P₂O₅N₂P₂=140 Kg/ha. of N+140 Kg/ha. of P₂O₅N₂P₂K₁=140 Kg/ha. of N+140 Kg/ha. of P₂O₅+140 Kg/ha. of K₂O.N applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN :

Same as in type A₁ (Unirrigated) on page 235.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1963—56 for Malda, 65 for Nadia, 64 for Murshidabad. (b) N.A. (c) Nil (v) to (vii) N.A.

5. RESULTS :

Malda

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of cane in Kg/ha.	17791	4052	6819	13936	20756	26587	27774	4240.0

Control mean=34297 Kg/ha ; No. of trials=2.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of cane in Kg/ha.	20459	3953	2174	14331	29948	31233	30541	8217.3

Control mean=29652 Kg/ha. ; No. of trials=2.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of cane in Kg/ha.	17600	5900	5300	16600	19600	24700	27600	3026.9

Control mean=26400 Kg/ha ; No. of trial=2.

Nadia

65 (S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of cane in Kg/ha.	13000	3900	9200	16300	20200	29400	34800	1156.3

Control mean=40800 Kg/ha ; No. of trials=2.

Murshidabad

64 (S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of cane in Kg/ha.	19797	3024	6958	26706	27734	45585	65313	3641.2

Control mean=61330 Kg/ha ; No. of trials=2.

Crop :- Sugarcane.

Ref :- W.B. 63, 64, 65 (SFT) for Malda, 64 (SFT) for Murshidabad and 65 (SFT) for Nadia.

Site :- (District) : Malda, Murshidabad and Nadia. Type :- 'M'.

Object :-Type A₃—To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red and yellow for Malda and Murshidabad and laterite for Nadia. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O=Control (no manure)

N₁=70 Kg/ha. of N

K₁=70 Kg/ha. of K₂O

K₂=140 Kg/ha. of K₂O

N₁K₁=70 Kg/ha. of N+70 Kg/ha. of K₂O

N₁K₂=70 Kg/ha. of N+140 Kg/ha. of K₂O

N₂K₂=140 Kg/ha. of N+70 Kg/ha. of K₂O

N₁P₁K₁=70 Kg/ha. of N+70 Kg/ha. of P₂O₅+70 Kg/ha. of K₂O.

N applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN :

Same as in type A₁ (unirrigated) on page 235.

4 GENERAL :

(i) to (iii) N.A. (iv) (a) 63—66 for Malda, 64 for Murshidabad and 65 for Nadia. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Malda

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of cane in Kg/ha.	22189	7561	14282	19422	25253	26736	24067	5595.0

Control mean=30689 Kg/ha.; No. of trials=2.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of cane in Kg/ha.	11668	5732	9488	14035	18770	26884	10872	3867.7

Control mean=38448 Kg/ha. ; No. of trials=2.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of cane in Kg/ha.	10500	2600	4600	13600	16600	33100	16000	3469.6

Control mean=31400 Kg/ha.; No. of trials=2.

Murshidabad

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of cane in Kg/ha.	14385	6987	16881	27764	32706	50447	42491	2989.9

Control mean=57346 Kg/ha.; No. of trials=2.

Nadia

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of cane in Kg/ha.	9600	4400	7000	13200	18700	27100	23300	2135.3

Control mean=35900 Kg/ha. ; No. of trials=2.

Crop :- Sugarcane.

Site :- State Agri. Farm, Bamandanga.

Ref :- W.B. 65(84).

Type :- 'D'.

Object :- To find out the efficiency of different chemicals in controlling the attack of different major pests for Sugarcane.

1. BASAL CONDITIONS :

(i) (a) No. (b) Sugarcane. (c) N.A. (ii) Sandy loam. (iii) March, 65. (iv) (a) 2-3 ploughings and 1 spading. (b) Cuttings placed in trenches horizontally 25 cm. deep. (c) N.A. (d) 15 cm. x 122 cm. (e) One. (v) N.A. (vi) Co-419. (vii) N.A. (viii) 2 weedings+earthing up. (ix) 149 cm. (x) 8.12.65.

2. TREATMENTS :

6 chemical treatments : T₀=Control, T₁=Endrin 0.1% E.C., T₂=B.H.C. 0.1% E.C., T₃=D.D.T. 0.3% E.C., T₄=Malathion 0.04% and T₅=D.D.T.+B.H.C. 0.5% W.P.

4 sprayings were done at an interval of 20 days starting from 15.6.65 and last sprayings done at the time of harvest is on 8.12.65.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 20.7 m. × 10.7 m. (b) 20.1 m. × 10.1 m. (v) 61 cm. kept as border. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of root, stem and top borer ; measure etc. as per treatments. (iii) Yield of cane, and incident attack etc. (iv) (a) 1965 to 67. (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 275 Q/ha. (ii) and (iii) N.A. (iv) Av. yield of cane in Q/ha.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Av. yield	257.6	270.9	262.0	271.6	275.6	317.6

Crop :- Sugarcane.

Ref :- W.B. 61(68), 62(62), 63(54), 64(27).

Site :- State Agri. Farm, Burdwan..

Type :- 'D'.

Object :- To find out the effect of application of chemicals for controlling the attack of borer.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. for 61(68) ; Sugarcane for others. (c) N.A. for 61(68) ; 184.5 Q/ha. of cowdung + 181.5 Kg/ha. of N as A/S + 103.1 Kg/ha. of P₂O₅ as Super + 99.8 Kg/ha. of K₂O as Mur. Pot. (ii) Clay loam. (iii) 25.2.61 and 26.2.61 ; 22.3.62 to 25.3.62 ; 13.4.63 to 17.4.63 ; 23.3.64 to 28.3.64. (iv) (a) 2 ploughings + harrowing for 64 (27) ; 2-3 ploughings, harrowing and laddering for others. (b) Line sowing, cuttings are placed in trenches 15 to 23 cm. deep. (c) N.A. for 63 (54) ; 55 Q/ha. for others. (d) End to end for 64 (27) ; N.A. for others. (e) N.A. (v) 184.5 Q/ha. of cowdung + 181.5 Kg/ha. of N as A/S + 103 Kg/ha. of P₂O₅ as super + 92.8 Kg/ha. of K₂O as Mur. Pot. (vi) Co-419 (medium). (vii) Irrigated ; Un-irrigated N.A. ; Irrigated. (viii) 2 weedings, 2-3 mulchings and 2-3 earthings up for 61(68) ; 2 weedings, 2 hoeings and 2-3 earthings up for others. (ix) 120 cm. ; 158 cm. ; 156 cm. ; 174 cm. (x) 23.12.61.

2. TREATMENTS :

6 chemical treatments : T₀=Control ; T₁=Endrin 0.1% E.C. ; T₂=B.H.C. 0.1% E.C. ; T₃=D.D.T. 0.3% E.C. ; T₄=Malathion 0.04% and T₅=D.D.T.+B.H.C. 0.5% W.P.

Each of the treatments sprayed 5 times.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 63.4 m. × 20.1 m. (iii) 4. (iv) (a) 20.1 m. × 10.7 m. (b) 20.1 m. × 10.1 m. (v) 61 cm. between plots. (vi) Yes.

4. GENERAL :

(i) Good. (iii) Attack of borer, control measures as per treatments. (iii) Yield of cane and count. of attack cane. (iv) (a) 1961 to 64. (b) Yes. (c) N.A. (v) to (vi) Nil.

5. RESULTS :

690.9 Q/ha. (ii) 178.2 Q/ha. (based on 75 d. f.) (iii) None of the effects is significant. (iv) Av. yield of sugarcane in Q/ha.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅			
Av. yield	634.0	664.5	721.3	720.6	667.5	737.3			
	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	Sig.	G.M.	S.E./plot
1961	983.0	1097.0	1062.0	1193.0	1112.0	1231.0	N.S.	113.0	188.7
1962	396.0	442.2	712.0	532.0	452.0	641.0	N.S.	529.0	229.4
1963	820.0	829.0	827.0	844.0	831.0	887.0	N.S.	840.0	155.2
1964	337.0	290.0	284.0	314.0	275.0	190.0	N.S.	282.0	141.3
Mean	634.0	664.5	721.3	720.6	667.5	737.3	N.S.	690.9	178.2

Crop :- Sugarcane.**Ref :- W.B. 61(69), 62(63), 63(57), 64(39).****Site :- State Agri. Farm, Burdwan.****Type :- 'D'.****Object :-** To see the effect of influence of general climatic conditions on the population of pests.**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) N.A. for 61 (69) ; Sugarcane for others. (c) N.A. for 61(69) ; 184.5 Q/ha. of cowdung for others. (ii) Clay loam. (iii) 20.2.61 to 23.2.61 ; 14.3.62 to 17.3.62 ; (iv) (a) 2 ploughings, harrowings and laddering. (b) Line sowing, cutting were placed in trenches 15 to 23 cm. deep. (c) 75, 3-budded setts/row for V_1 and V_2 and 72 for V_3 ; 73, 3-budded setts/row for V_1 and 10 for V_2 and V_3 ; 72, 3-budded setts/row for V_1 and 80 for V_2 and V_3 ; N.A. (d) and (e) N.A. (v) 184.5 Q/ha. of cowdung. (vi) As per treatments. (vii) Unirrigated. (viii) 2 weedings, 2 to 3 mulching and 2 earthings up for 61 (69) 1 to 2 weedings, 2 hoeings and 2 earthings up for others. (ix) 126 cm. ; 158 cm. (x) 6.12.61 ; 8.1.63.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 3 varieties of sugarcane : V_1 =Co-419 ; V_2 =Co-527 and V_3 =Bo-529.

(2) 12 dates of observations for borer attack	61(69)	62(63)	63(67)	64(39)
D_1 =	19.4.61	22.5.62	10.6.63	27.5.64
D_2 =	10.5.61	12.6.62	1.7.63	17.6.64
D_3 =	31.5.61	3.7.62	22.7.63	8.7.64
D_4 =	21.6.61	24.7.62	12.8.63	29.7.64
D_5 =	12.7.61	14.8.62	2.9.63	19.8.64
D_6 =	2.8.61	4.9.62	23.9.63	9.9.64
D_7 =	23.8.61	25.9.62	14.10.63	30.9.64
D_8 =	13.9.61	16.10.62	4.11.63	21.10.64
D_9 =	4.10.71	6.11.62	25.11.63	11.11.64
D_{10} =	25.10.61	27.11.62	16.12.63	2.12.64
D_{11} =	15.11.61	18.12.62	N.A.	23.12.64
and D_{12} =	6.12.61	8.1.63	N.A.	N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) 54.6 m. x 23.8 m. (iii) 6. (iv) (a) 23.8 m. x 13.7 m. (b) 23.8 m. x 13.1 m. (v) 30 cm. on either side. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of borer. No. control measure was taken up. (iii) Count of attacked cane. (iv) (a) 1961 to 64. (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :**61(69)**

(i) 32.0 degrees (ii) 9.1 degrees (iii) Main effects of V and D are highly significant. (iv) Mean angle in degrees.

	D_1	D_2	D_3	D_4	D_5	D_6	D_7	D_8	D_9	D_{10}	D_{11}	D_{12}	Mean
V_1	16.6	14.4	24.1	49.9	44.3	46.4	40.1	45.8	38.8	51.7	46.7	43.3	38.3
V_2	4.8	19.6	19.9	38.4	36.1	35.6	34.2	29.7	33.1	39.4	32.7	31.2	29.6
V_3	0.0	4.3	22.5	39.5	31.9	37.4	29.2	37.6	31.0	34.2	37.2	30.7	27.9
Mean	7.1	12.8	22.2	42.6	37.4	39.8	34.5	37.7	34.3	41.8	38.9	35.1	32.0

C.D. for V marginal means=3.0 degrees.

C.D. for D marginal means=7.3 degrees.

62(63)

(i) 35.7 degrees. (ii) 7.58 degrees. (iii) Main effects of V and D are highly significant. (iv) Mean angle in degrees.

	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈	D ₉	D ₁₀	D ₁₁	D ₁₂	Mean
V ₁	19.4	23.6	45.6	48.2	49.0	48.9	45.9	43.0	37.7	43.3	39.5	36.0	40.0
V ₂	22.4	20.1	34.2	43.8	41.1	40.9	41.9	40.5	32.4	36.2	37.2	36.8	35.6
V ₃	11.4	12.0	32.2	42.6	37.5	34.8	35.9	34.7	32.1	31.6	37.0	37.1	31.6
Mean	17.7	18.6	37.3	44.9	42.5	41.5	41.2	39.4	34.1	37.0	37.9	36.6	35.7

C.D. for V marginal means=2.4 degrees.

C.D. for D marginal means=6.0 degrees.

64(57)

(i) 18.3 degrees. (ii) 8.7 degrees. (iii) Main effects of V and D are highly significant. (iv) Mean angle in degrees.

	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈	D ₉	D ₁₀	Mean
V ₁	10.8	11.9	15.7	27.7	25.4	17.6	21.6	26.5	24.9	30.0	21.2
V ₂	4.1	11.4	21.7	19.0	23.3	18.8	18.0	18.2	15.8	22.1	17.2
V ₃	5.2	10.7	22.2	13.8	19.1	15.5	19.6	17.5	19.5	22.2	16.5
Mean	6.7	11.3	19.9	20.2	22.6	17.3	19.7	20.7	20.1	24.8	18.3

C.D. for V marginal means=2.8 degrees.

C.D. for D marginal means=6.9 degrees.

64(39)

(i) 20.7 degrees. (ii) 11.8 degrees. (iii) Main effects of V and D are highly significant. (iv) Mean angle in degrees.

	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	11.5	25.4	20.7	42.4	45.1	30.6	27.0	19.5	22.1	14.2	14.1	24.8
V ₂	10.0	8.0	16.8	34.5	35.9	26.4	19.1	15.6	18.9	17.9	11.0	19.5
V ₃	2.7	6.9	8.1	29.6	37.6	22.3	23.8	19.4	12.5	18.1	17.8	18.0
Mean	8.1	13.4	15.2	35.5	39.2	26.4	23.3	18.2	17.8	16.7	14.3	20.7

C.D. for V marginal means=3.8 degrees.

C.D. for D marginal means=9.4 degrees.

Crop :- Cotton (*Rabi*).

Ref :- W.B. 64(56).

Site :- State Agri. Farm, Fulia.

Type :- 'M'.

Object :- To see the effect of N, P and K alone and in combination on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Loam and Sandy loam. (iii) N.A. (iv) (a) Ploughings+laddering. (b) Dibbling. (c) 11 Kg/ha. (d) 61 cm. × 61 cm. (e) N.A. (v) N.A. (vi) D-5 (medium). (vii) Unirrigated. (viii) Weeding+thinning. (ix) N.A. (x) Feb. 65.

3. TREATMENTS :

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

3 levels of N as A/S : $N_1=22.4$, $N_2=67.2$ and $N_3=100.9$ Kg/ha.

(2) 2 levels of P_2O_5 as Super : $P_1=33.6$ and $P_2=67.2$ Kg/ha.

(3) 2 levels of K_2O as Mur. Pot. : $K_1=67.2$ and $K_2=100.9$ Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 6.7 m. × 5.5 m. (b) 6.1 m. × 4.9 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of Kapas. (iv) (a) to (c) N.A. (v) No. (vi) Nil. (vii) Raw data N.A.

5. RESULTS :

(i) 792 Kg/ha. (ii) and (ii) N.A. (iv) Av. yield of Kapas in Kg/ha.

	P_1	P_2	K_1	K_2	Mean
N_1	777	766	865	678	772
N_2	816	642	638	820	729
N_3	938	815	739	1013	876
Mean	844	741	747	837	792
K_1	756	739			
K_2	932	743			

Crop :- Jute (Kharif).

Ref :- W.B. 60(23).

Sie :- State Agri. Farm, Cooch Behar.

Type :- 'M'.

Object :- To study the effect of A/S and A/C on the yield of Jute.

1. BASAL CONDITIONS:

(i) Jute-wheat. (b) Wheat. (c) 92.2 Q/ha. of cowdung. (ii) Buxa riverine. (iii) 23.4.60. (iv) (a) 3-4 ploughings, 2 laddering and harrowing. (b) Line sowing. (c) 6-7 Kg/ha. (d) 7.5 cm. × 30 cm. (e) N.A. (v) 92.2 Q/ha. of cowdung. (vi) G.R.C. 321 (medium). (vii) 3-4 weeding by hand. (ix) N.A. (x) 18-8-60 to 19.8.60.

2. TREATMENTS :

All combinations of (1) and (2)+a Control.

(1) 2 levels of N : $N_2=45$ and $N_1=67$ Kg/ha.

(2) 2 sources of N : $S_1=A/S$ and $S_2=A/C$.

Manuring done on 21.6.60.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 10.4 m. × 7.9 m. (b) 9.8 m. × 7.3 m. (v) 61 cm. kept as border around each plot. (vii) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of fibre. (iv) (a) 1957 to 60. (b) Yes. (c) N.A. (v) Fulia. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 2446 Kg/ha. (ii) 146.5 Kg/ha. (iii) Control vs. rest of the effect is highly significant. Main effects of N and S are significant. (iv) Av. yield of fibre in Kg/ha.

Control=2158 Kg/ha.

	S ₁	S ₂	Mean
N ₁	2354	2511	2432
N ₂	2537	2669	2603
Mean	2446	2590	2518

C.D. for N or S marginal means=138.9 Kg/ha.

C.D. for control vs. others =155.3 Kg/ha.

Crop :- Jute (Kharif).

Site :- State Agri. Farm, Cooch Behar.

Ref :- W.B. 61(18).

Type :- 'M'.

Object :- To study the effect of urea and C/A/N on the yield of Jute.

1. BASAL CONDITIONS :

(i) (a) Wheat-Jute. (b) Wheat. (c) N.A. (ii) Buxa riverine. (iii) 14.4.61. (iv) (a) 3-4 ploughings, ladder-
ing and spading. (b) Line sowing. (c) 4-5 Kg/ha. (d) and (e) N.A. (v) N.A. (vi) D-152 (medium.)
(vii) N.A. (viii) 2-3 weedings by hand+thinning. (iv) 272 cm. (x) 5.9.61 and 6.9.61.

2. TREATMENTS :

All combinations of (1) and (2)+a Control (no manuring).

(1) 2 sources of N : S₁=C/A/N and S₂=Urea.

(2) 3 levels of N : N₁=33.6, N₂=44.8 and N₃=56 Kg/ha.

Top-dressing by broadcasting on 22.5.61.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 10.4 m. × 7.9 m. (b) 9.8 m. × 7.3 m. (v) 30 cm.
kept as border around each plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of fiber. (iv) (a) 1961 only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 1092 Kg/ha. (ii) 183.1 Kg/ha. (iii) Main effects of N and control v.s. others are highly significant.
(iv) Av. yield of fibre in Kg/ha.

Control=621 Kg/ha.

	N ₁	N ₂	N ₃	Mean
S ₁	899	1226	1349	1158
S ₂	1014	1177	1357	1183
Mean	956	1202	1353	1170

C.D. for N marginal means=192.4 Kg/ha.

C.D. for control v.s. others=207.7 Kg/ha.

Crop :- Jute (Kharif).**Ref :- W.B. 60(29).****Site :- State Agri. Farm, Fulia.****Type :- 'M'.**

Object :- To study the effects of A/S and A/C on the yield of Jute.

1. BASAL CONDITIONS :

(i) (a) Wheat-Jute. (b) Wheat. (c) N.A. (ii) Sandy clay loam. (iii) 24.6.60. (iv) (a) 4-5 ploughings, laddering. (b) Line sowing. (c) to (e) N.A. (v) 92.0 Q/ha. of cowdung. (vi) Copularies. (vii) Irrigated details N.A. (viii) 4-5 weedings, thinning. (ix) N.A. (x) 28.9.60

2. TREATMENTS :

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

(1) 2 sources of N : S₁=A/S and S₂=A/C.(2) 2 levels of N : N₁=44.8 and N₂=67.2 Kg/ha.

Fertilizers applied by broadcasting on 10.8.60.

3. DESIGN :

(i) Latin Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 10.4 m.×7.9 m. (b) 9.8 m.×7.3 m. (v) 30 cm. kept as border around each plot. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of fibre. (iv) (a) 1958 to 1960. (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 560 Kg/ha. (ii) 109.9 Kg/ha. (iii) Main effects of N and S are highly significant. (iv) Av. yield of fibre in Kg/ha.

Control=481 Kg/ha.

	S ₁	S ₂	Mean
N ₁	752	582	667
N ₂	660	327	494
Mean	706	454	580

C.D. for N or S marginal means=104.2 Kg/ha.

Crop :- Jute (Kharif).**Ref :- W.B. 61(16), 62(53), 63(45).****Site :- State Agri. Farm, Fulia.****Type :- 'M'.**

Object :— To study the effect of urea and C/A/N on the yield of Jute.

1. BASAL CONDITIONS :

(i) (a) Wheat-Jute. (b) wheat (c) As per treatments. (ii) Clay loam and sandy loam. (iii) 21.6.61 ; 11.6.62 ; 4.6.63. (iv) (a) 3-4 ploughings and laddering. (b) Line sowing. (c) 3.4 to 4.5 Kg/ha., N.A. ; 9.9 to 12.4 Kg/ha. (d) N.A. (e) 1-2. (v) N.A. (vi) I.R.O-632 (medium). (vii) Irrigated for 63, N.A. for others. (viii) 2-3 weedings+thinning. (ix) N.A. ; 79.6 cm. ; N.A. (x) 20.10.61 ; 14.9.64 ; 21.9.63.

2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure).

(1) 2 sources of N : $S_1=C/A/N$ and $S_2=Urea$.(2) 3 levels of N : $N_1=33.6$, $N_2=44.8$ and $N_3=56$ Kg/ha.

Manuring done on 17.6.61 and top dressed on 25.7.61 and 12.8.61 by broadcasting.

Fertilizer applied by broadcasting on 18.7.62 and 4.8.62.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 12.2 m. \times 6.7 m. (b) 11.6 m. \times 6.1 m. (v) 61 cm. kept as border around each plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of fibre. (iv) (a) 1961 to 63. (b) Yes. (c) The results of combined analysis are given under 5 results. (v) and (vi) N.A. (vii) Error variances are heterogeneous and Treatments \times years interaction is present.

5. RESULTS:

(i) 864 Kg/ha. (ii) 164.5 Kg/ha. (based on 12 d. f. made up of Treatments \times years interaction. (iii) Main effect N and S alone is significant. (iv) Av. yield of fiber in Kg/ha.

Control=651 Kg/ha.

	N_1	N_2	N_3	Mean
S_1	748	754	902	801
S_2	797	917	1067	927
Mean	772	836	984	864

C.D. for N marginal means=106.6 Kg/ha.

C.D. for S marginal means=87.3 Kg/hh.

	N_1	N_2	N_3	Sig.	S_1	S_2	Sig.	G.M.	S.E./plot
1961	983	1074	1231	*	1024	1168	N.S.	1096	166.5
1962	698	842	988	*	726	960	*	843	32.4
1963	637	591	734	*	653	655	N.S.	654	108.9
Mean	772	836	984	*	801	927	*	864	164.5

Crop :- Jute (Kharif).**Ref :- W.B. 64(61).****Site :- State Agri. Farm, Kalyani.****Type :- 'M'.**

Object :— To see the effect of N, P and K alone and in combination on the yield of fibre.

1. BASAL CONDITIONS :

(i) (a) Wheat-Jute. (b) Wheat. (c) As per treatments. (ii) Sandy to sandy loam. (iii) 1st week of May, 64. (iv) (a) 3-4 ploughings+laddering. (b) Line sowing (drill). (c) 3 to 4 Kg/ha. (d) 30 cm. apart between plants. (e) 1-2. (v) Cowdung @ 40 to 50 Kg/ha. (vi) I.R.O. 632 (medium). (vii) Irrigated. (viii) 2-3 weedings+winning. (ix) N.A. (x) 2nd week of Oct. 64.

2. TREATMENTS :

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

(1) 3 levels of N : $N_0=0$, $N_1=22$ and $N_2=45$ Kg/ha.

(2) 3 levels of P_2O_5 : $P_0=0$, $P_1=22$ and $P_2=45$ Kg/ha.

(3) 3 levels of K_2O : $K_0=0$, $K_1=22$ and $K_2=45$ Kg/ha.

N as urea, P_2O_5 as Super and K_2O as Mur. Pot. were applied by broadcasting. Urea applied as up-dressing one month after sowing.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) 2. (iii) 32.9 m. \times 27.4 m. (iv) (a) 11.0 m. \times 9.1 m. (b) 10.4 m. \times 8.5 m. (v) 61 cm. kept as border around each plot. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of fibre. (iv) (a) 1961-contd. (1961-63 Expt, failed 65 N.A.) (b) Yes. (c) N.A. (v) (a) No. (b) —. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 2000 Kg/ha. (ii) 168.3 Kg/ha. (iii) Main effects of N, P, K and interaction $N \times K$ are highly significant. (iv) Av. yield of fibre in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	1200	1457	1869	1428	1596	1502	1509
N_1	1661	2161	2293	1857	2124	2135	2039
N_2	2252	2474	2661	2026	2585	2746	2452
Mean	1704	2021	2274	1770	2102	2128	2000
K_0	1397	1800	2114				
K_1	1756	2199	2350				
K_2	1960	2063	2359				

C.D. for N,P, K marginal means=116.3 Kg/ha.

C.D. for $N \times K$ marginal means =201.5 Kg/ha.

Crop :- Jute.

Ref :- W.B. 60, 61 (S.F.T.)

Site :- (District) : As per results.

Type :- 'M'.

Object :—Type A—To study the response of Jute to different levels of N, P and K applied individually and in combination.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) As per results. (iii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O =Control (no manure).

N =44.8 Kg/ha. of N as A/S.

P =22.4 Kg/ha. of P_2O_5 as Super.K =22.4 Kg/ha. of K_2O as Mur. Pot.NP =44.8 Kg/ha. of N as A/S+22.4 Kg/ha. of P_2O_5 as Super.NK =44.8 Kg/ha. of N as A/S+22.4 Kg/ha. of K_2O as Mur. Pot.PK =22.4 Kg/ha. of P_2O_5 as Super+22.4 Kg/ha. of K_2O as Mur. Pot.NPK=44.8 Kg/ha. of N+22.4 Kg/ha. of P_2O_5 +22.4 Kg/ha. of K_2O as Mur. Pot.N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

(i) and (ii) The district has been divided into four agriculturally homogeneous zones and one field assistant posted in each zone. The field assistant conducts the trials in one revenue circle or thana in the zone and the circle/thana is changed once in two years within the same zone. Each field assistant is required to conduct 31 trials in a year, 8 on *Kharif* cereal, 8 on a *rabi* cereal, 8 on cash crop, 4 on an oilseed crop and 3 on a leguminous crop. Half the number of trials conducted are of type A and the other half of type B on crops other than the legumes. The three trials on legumes are of Type C. Residual effects of Phosphate application are studied on Type C trials in two out of the four zones in each district every year. The experiments are laid out in randomly located fields in randomly selected villages in each of the 4 zones at the rate of one experiment per village. (iii) (a) 1/98.8 ha. (b) 1/197.7 ha. (iv) Yes.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

District.	Year	Soil class	No. of trials	Control mean in. Q/ha.	Av. response of fibers in Q/ha.								
					N	P	K	S.E.	NP	NK	PK	NPK	S.E.
Howrah	1960	Red	7	193.0	93.9	46.9	21.6	21.60	11.5	-3.9	16.5	22.2	7.40
Hooghly	1960	„	8	165.6	5.9	2.6	0.8	1.00	-5.2	-5.8	-2.9	1.6	7.40
	1961	„	12	184.0	23.4	9.8	-0.9	6.05	4.0	-2.7	4.2	4.0	3.32
Nadia	1960	Alluvial	13	199.3	41.8	3.5	17.1	3.34	-6.5	-0.7	+0.6	1.2	3.30
	1961	Laterite	12	188.8	35.7	3.1	12.7	1.51	-2.5	-3.1	0.7	4.7	2.40
24 Parganas	1960	Alluvial	16	213.8	47.6	12.9	8.4	2.23	6.5	1.3	1.3	4.2	1.18
	1961	Alluvial	17	158.0	45.7	20.2	22.6	5.72	7.0	-0.3	-5.6	-0.5	3.82
Burdwan	1960	„	5	190.6	9.2	4.0	3.5	1.00	-2.7	-3.4	-2.1	-0.4	1.88
	1961	„	3	202.9	12.0	6.2	-0.3	2.78	-2.2	-6.2	-0.4	-0.7	2.23
Midnapore	1960	Red	6	233.4	33.0	31.7	3.0	6.51	-3.4	-10.9	3.4	-2.1	4.89
	1961	„	8	275.5	37.5	8.9	-1.2	6.18	4.3	-2.3	-4.9	-8.4	5.03
Malda	1960	„	4	110.7	13.0	13.0	1.9	4.10	-3.3	-3.3	3.6	3.8	5.16
W. Dinajpur	1960	„	4	196.1	58.3	19.6	28.4	37.50	-10.9	-22.3	-30.3	-17.7	33.41

Crop :- Jute.

Ref :- W.B. 60, 61 (S.F.T.).

Site :- District : As per results.

Type :- 'M'.

Object :-Type B -To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) As per results. (iii) to (x) N.A.

2. TREATMENTS :

o = Control (no manure)
 n_1 = 44.8 Kg/ha. of N as A/S
 n_2 = 89.6 Kg/ha. of N as A,S
 n_1' = 44.8 Kg/ha. of N as Urea
 n_2' = 89.6 Kg/ha. of N as Urea
 n_1'' = 44.8 Kg/ha. of N as A/S/N
 n_2'' = 89.6 Kg/ha. of N as A/S,N
 n_1''' = 44.8 Kg/ha. of N as C/A/N
 n_2''' = 89.6 Kg/ha. of N as C/A,N

3. DESIGN :

Same as in type A on page 247.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

District	Years	Soil class	No. of trials	Control mean in Q/ha.	S.E. of response								
					n_1	n_1'	n_1''	n_1'''	n_2	n_2'	n_2''	n_2'''	
Howrah	1960	Laterite	2	14.3	2.3	4.2	—	1.4	4.6	7.8	—	3.7	1.46
Hooghly	1960	„	9	166.3	4.6	4.4	—	8.3	8.6	5.7	—	10.6	1.25
	1961	„	3	203.7	36.5	24.0	—	35.8	35.4	31.2	—	44.8	11.18
Nadia	1960	„	11	234.3	20.6	17.7	—	24.4	49.2	27.9	—	29.7	5.05
	1961	„	12	223.4	23.5	19.0	—	25.0	46.6	28.2	—	38.0	6.05
24-Parganas	1960	„	12	227.2	31.4	29.8	—	27.9	63.1	41.9	—	40.4	5.02
	1961	„	16	186.0	34.2	31.2	—	27.2	66.2	50.5	—	48.7	7.69
Burdwan	1960	Alluvial	5	192.8	14.8	21.2	—	10.1	22.8	18.4	—	14.6	7.82
	1961	„	3	184.4	17.3	9.2	—	19.3	8.9	11.7	—	13.5	5.94
Murshidabad	1960	Alluvial	6	249.8	43.5	39.3	—	44.8	68.5	53.3	—	70.1	16.97
	1961	„	8	197.2	20.0	21.8	—	18.0	36.8	42.0	—	27.1	7.74
Bankura	1961	Laterite	1	59.8	51.8	30.4	—	64.4	65.3	46.5	—	14.2	—

Crop :- Jute (*Kharif*).

Ref :- W.B. 63, 64, 65 (S.F.T.) for W. Dinajpur
 Hooghly, Malda, Murshidabad, Nadia,
 and 24-Parganas ; 63, 65 (S.F.T.) for
 Midnapore and Burdwan.

Site :- (District) : W. Dinajpur, Burdwan, Midnapore, Hooghly, Malda, Murshidabad, Nadia, 24-Parganas. Type :- 'M'.

Object :- Type A₁—To study the response curves of important cereal, cash and oilseed crops to Nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red for Midnapore and Alluvial for others. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

O =Control (no manure)

N₁ =60 Kg/ha. of NN₂ =120 Kg/ha. of NP₁ =35 Kg/ha. of P₂O₅N₁P₁ =60 Kg/ha. of N+35 Kg/ha. of P₂O₅N₂P₁ =120 Kg/ha. of N+35 Kg/ha. of P₂O₅N₂P₂ =120 Kg/ha. of N+70 Kg/ha. of P₂O₅N₂P₂K₁ =120 Kg/ha. of N+70 Kg/ha. of P₂O₅+35 Kg/ha of K₂ON applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN :

A selected district is divided into four agriculturally homogeneous zones based on climate, soil, cropping pattern etc. In each zone one block is selected at random. A block normally consists of a group of 50-100 villages. In each block 36 experiments are conducted in a year of which 11 are of type A₁, 11 of type A₂, 11 of type A₃ and 3 are of type—C. The eleven experiments under type A₁, A₂ and A₃ are distributed as 3 on a *Kharif* cereal, 3 on a *rabi* cereal, 3 on a cash crop and 2 on oilseed. All the three type—C experiments are conducted on a legume crop. For the purpose of conducting the A₁, A₂ and A₃ experiments 11 villages are randomly selected in each block and in each village 3 experiments one each of type A₁, A₂ and A₃ are laid out. For conducting the three type—C trials three villages are randomly selected in each block.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 63-66 for W. Dinajpur, Murshidabad. 24-parganas, 63-65 (64 N.A.) for Burdwan, Midnapore and 63-65 for Hooghly, Malada and Nadia. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

W. Dinajpur

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of fibre in Kg/ha.	1317	2952	105	1581	4111	7063	5693	1772.0

Control mean=21560 Kg/ha. ; No. of trials=6.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of fibre in Kg/ha.	4744	7314	2569	5930	9290	10318	11070	755.1

Control mean=22337 Kg/ha. ; No. of trials=3.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of fibre in Kg/ha.	2100	2843	2066	2816	3533	5116	5793	1051.8

Control mean=8349 Kg/ha. ; No. of trials=6.

Burdwan

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of fibre in Kg/ha.	2169	2905	1448	2223	2648	1932	2673	572.0

Control mean=17875 Kg/ha. ; No. of trials=4.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of fibre in Kg/ha.	4800	6200	3000	4900	6700	8500	8000	868.2

Control mean=30100 Kg/ha. ; No. of trials=2.

Midnapur**63(S.F.T.)**

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of fibre in Kg/ha.	1950	3213	1146	3353	4157	4913	6097	364.0

Control mean=14797 Kg/ha. ; No. of trials=9.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of fibre in Kg/ha.	2653	2680	66	3133	3406	4720	5040	405.6

Control mean=13119 Kg/ha. ; No. of trials=3.

Hooghly**63(S.F.T.)**

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of fibre in Kg/ha.	2668	2856	1213	2821	3437	3815	3940	213.0

Control mean=15475 Kg/ha. ; No. of trials=9.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of fibre in Kg/ha.	1139	2206	1652	1606	1386	2537	2831	607.0

Control mean=15569 Kg/ha. ; No. of trials=8.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of fibre in Kg/ha.	1600	2175	1000	1925	3000	3300	3025	433.0

Control mean=13775 Kg/ha. ; No. of trials=8.

Malda**63(S.F.T.)**

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of fibre in Kg/ha.	1300	2846	1317	2846	3022	6202	7397	932.0

Control mean=19592 Kg/ha. ; No. of trials=7.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of fibre in Kg/ha.	2573	4269	3064	3340	4800	5600	5953	954.0

Control mean=14921 Kg/ha. ; No. of trials=6.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of fibre in Kg/ha.	2500	6500	1900	3300	8000	4500	6800	1929.3

Control mean=23500 Kg/ha. ; No. of trials=2.

Murshidabad**63(S.F.T.)**

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of fibre in Kg/ha.	3835	4811	1312	5864	7676	9043	9618	485.0

Control mean=21822 Kg/ha. ; No. of trials=15.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of fibre in Kg/ha.	4624	7085	2000	5713	7892	9225	10869	264.2

Control mean=22534 Kg/ha. ; No. of trials=11.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of fibre in Kg/ha.	2813	5206	1510	3806	5416	6573	8200	250.5

Control mean=18179 Kg/ha. ; No. of trials=6.

Nadia**63(S.F.T.)**

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of fibre in Kg/ha.	4072	6602	471	4200	6589	7795	7679	1502.1

Control mean=14825 Kg/ha. ; No. of trials=6.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of fibre in Kg/ha.	3185	5050	1288	4029	5752	6022	6635	607.1

Control mean=21056 Kg/ha. ; No. of trials=6.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of fibre in Kg/ha.	3103	4833	560	3993	5770	6153	7120	708.5

Control mean=20919 Kg/ha. ; No. of trials=6.

24-Parganas**63(S.F.T.)**

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of fibre in Kg/ha.	5409	8073	2582	6051	9846	10844	13449	860.0

Control mean=16894 Kg/ha. ; No. of trials=9.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of fibre in Kg/ha.	4646	5745	1026	6313	8010	8199	8587	866.9

Control mean=14328 Kg/ha. ; No. of trials=8.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of fibre in Kg/ha.	3406	4811	781	4778	6898	7046	9158	540.0

Control mean=19254 Kg/ha. ; No. of trials=11.

Crop :- Jute (Rabi).

Ref :- W.B. 63, 65 (S.F.T.) for Burdwan and Midnapur and 63, 64, 65 (S.F.T.) for all others.

**Site :- (District) : Murshidabad ; Type : 'M'.
24-Pargana ; W. Dinajpur;
Burdwan ; Midnapore
Hooghly ; Malda and Nadia.**

Object :—Type A₂—To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red for Midnapore and Alluvial. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

O=control (no manure)

N₁=60 Kg/ha of N

P₁=35 Kg/ha of P₂O₅

P₂=70 Kg/ha of P₂O₅

N₁P₁=60 Kg/ha. of N+35 Kg/ha of P₂O₅

N₁P₂=60 Kg/ha of N+70 Kg/ha of P₂O₅

N₂P₂=120 Kg/ha of N+70 Kg/ha of P₂O₅

N₂P₂K₁=120 Kg/ha of N+70 Kg/ha of P₂O₅+70 Kg/ha of K₂O

N applied as A/s, P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN :

Same as in Type A₁ (Unirrigated) on page 249.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1963—66 for Murshidabad ; 24-Parganas and W. Dinajpur, 63—65 (64 N.A.) for Burdwan and Midnapore ; 63—65 for Hooghly, Malda and Nadia. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Murshidabad

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of fibre in Kg/ha.	3748	756	1926	4268	5051	6784	8462	348.0

Control mean=22121 Kg/ha. ; No. of trials=15.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of fibre in Kg/ha.	3617	1417	2536	4936	5695	7849	10015	344.3

Control mean=22776 Kg/ha.; No. of trials=11.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of fibre in Kg/ha.	3840	1273	2046	4350	5233	6536	7956	205.8

Control mean=18279 Kg/ha.; No. of trials=6.

24-Parganas

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of fibre in Kg/ha.	8085	2985	2807	8635	8648	10674	12285	1315.0

Control mean= 15937 Kg/ha. ; No. of trials=9.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of fibre in Kg/ha.	3657	37	1822	5510	5129	8081	7459	757.9

Control mean=15463 Kg/ha. ; No. of trials=8.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of fibre in Kg/ha.	3831	715	2169	4457	5952	8213	9584	446.5

Control mean=18100 Kg/ha. ; No. of trials=11.

W. Dinajpur

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of fibre in Kg/ha.	2477	1845	685	5271	6220	9277	10701	1171.0

Control mean=22772 Kg/ha. ; No. of trials=6.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of fibre in Kg/ha.	4546	2965	3558	6523	7511	11663	12849	428.7

Control mean=21547 Kg/ha ; No. of trials=3.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of fibre in Kg/ha.	1666	-250	700	3640	4050	4400	5070	493.1

Control mean=7883 Kg/ha ; No. of trials=6.

Burdwan

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of fibre in Kg/ha.	3953	1022	1561	2475	2293	4324	5223	772.0

Control mean=23420 Kg/ha ; No. of trials=4.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of fibre in Kg/ha.	6400	1800	3700	5000	6000	7700	9600	1546.8

Control mean=29900 Kg/ha ; No. of trials=2.

Midnapore

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of fibre in Kg/ha.	2099	999	1484	2299	2741	3694	4412	242.0

Control mean=13798 Kg/ha. ; No. of trials=9.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of fibre in Kg/ha.	2726	433	920	3893	4593	4720	5860	669.4

Control mean=12626 Kg/ha. ; No. of trials=3.

Hooghly

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of fibre in Kg/ha.	1828	407	961	2011	1719	2113	2742	290.0

Control mean=15545 Kg/ha.; No. of trials=15.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of fibre in Kg/ha.	2137	1210	1492	2416	2789	3197	3575	537.0

Control mean=16736 Kg/ha. ; No. of trials=7.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of fibre in Kg/ha.	1425	875	1200	2225	2525	3300	3850	273.2

Control mean=13750 Kg/ha. ; No. of trials=8.

Malda

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of fibre in Kg/ha.	5868	1388	3953	6923	4428	6852	7098	837.0

Control mean=19135 Kg/ha. ; No. of trials=7.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of fibre in Kg/ha.	2909	668	1281	2480	2695	4095	5815	1177.4

Control mean=16381 Kg/ha. ; No. of trials=5.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of fibre in Kg/ha.	5000	2300	900	7000	3900	9400	6300	1057.6

Control mean=23700 Kg/ha. ; No. of trials=2.

Nadia

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of fibre in Kg/ha.	4213	464	1159	6128	5541	7515	7857	691.0

Control mean=146611 Kg/ha. ; No. of trials=5.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of fibre in Kg/ha.	4101	853	2220	4134	5475	6625	7221	695.0

Control mean=20851 Kg/ha. ; No. of trials=6.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of fibre in Kg/ha.	4530	200	1470	4253	6003	6720	8500	798.9

Control mean=18096 Kg/ha. ; No. of trials=5.

Crop :- Jute

Ref :- W.B. 63, 65 (S.F.T.) for Burdwan and Midnapore ; 63, 64, 65 (S.F.T.) for Hooghly, Malda, Murshidabad, Nadia and 24-Paragans and W. Dinajpur.

Site :- (District) : Burdwan, Midnapore, Hooghly, Malda, Murshidabad, Nadia, 24-Parganas and W. Dinajpur.

Type :- 'M'.

Object :- Type A₃—To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITION :

(i) (a) to (c) N.A. (ii) Red for Midnapore and Alluvial for others. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 maaurial treatments

0=Control (no manure)

N₁=60 Kg/ha of N

K₁=35 Kg/ha of K₂O

K₂=70 Kg/ha of K₂O

N₁K₁=60 Kg/ha of N+35 Kg/ha of K₂O

N₁K₂=60 Kg/ha of N+70 Kg/ha of K₂O

N₂K₂=120 Kg/ha of N+70 Kg/ha of K₂O

N₁P₁K₁=60 Kg/ha of N+35 Kg/ha of P₂O₅ + 35 Kg/ha of K₂O

N applied as A/S ; P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN :

Same as in type A₁ (Unirrigated) on page 249.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1963-65 N.A. for Burdwan, 63-65 for Midnapore, Hooghly, Malda Nadia, 63-66 for Murshidabad, 24-Paraanas and W. Dinajpore. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Burdwan**63(S.F.T.)**

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of fibre in Kg/ha.	2772	49	667	1764	1151	1892	2604	818.0

Control mean=19150 Kg/ha ; No. of trials=4.

65 (S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of fibre in Kg/ha.	6800	3600	5000	7500	5900	7200	9000	1601.3

Control mean=36300 Kg/ha ; No. of trials=2.

Midnapore**63(S.F.T.)**

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of fibre in Kg/ha.	2198	1143	2077	3690	4421	5526	5578	1017.0

Control mean=13723 Kg/ha ; No. of trials=9.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of fibre in Kg/ha:	3546	326	633	3746	4193	5480	4340	540.0

Control mean=11739 Kg/ha ; No. of trials=3.

Hooghly**63(S.F.T.)**

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of fibre in Kg/ha.	2332	993	1667	2359	2176	3508	3464	192.0

Control mean=15846 Kg/ha ; No. of trials=9.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of fibre in Kg/ha.	1932	1015	1784	2354	2829	2896	3207	326.5

Control mean=15715 Kg/ha ; No. of trials=8.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of fibre in Kg/ha.	1175	525	800	1500	1850	2375	2825	141.8

Control mean=15025 Kg/ha ; No. of trials=8.

Malda

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of fibre in Kg/ha.	2460	1177	1616	2600	1546	3127	4287	641.0

Control mean=20365 Kg/ha ; No. of trials=7.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of fibre in Kg/ha.	1818	457	780	2599	3726	3716	4329	561.7

Control mean=14657 Kg/ha ; No. of trials=6.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of fibre in Kg/ha.	3400	-200	2700	3100	5900	6500	8800	1148.9

Control mean=20300 Kg/ha ; No. of trials=2.

Murshidabad

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of fibre in Kg/ha.	3944	831	1208	4350	5039	7849	6609	397.0

Control mean=19507 Kg/ha ; No. of trials=14.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of fibre in Kg/ha.	4156	2881	3874	6211	6790	8814	7125	691.7

Control mean=21798 Kg/ha ; No. of trials=11.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of fibre in Kg/ha.	2866	1413	2160	3836	4596	6443	5323	250.3

Control mean=17399 Kg/ha ; No. of trials=6.

Nadia

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of fibre in Kg/ha.	3950	629	2190	5086	6955	8091	5083	847.0

Control mean=14496 Kg/ha ; No. of trials=6.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of fibre in Kg/ha.	3328	862	1989	3634	4022	6145	4778	541.6

Control mean=20106 Kg/ha ; No. of trials=6.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of fibre in Kg/ha.	4993	1113	2036	5406	5543	8543	7430	1023.6

Control mean=17436 Kg/ha ; No. of trials=6.

24-Parganas

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of fibre in Kg/ha.	7228	1742	3252	8564	8832	10627	10503	802.0

Control mean=12547 Kg/ha.; No. of trials=9.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of fibre in Kg/ha.	4521	1042	1920	5946	5895	7548	6920	646.0

Control mean=10543 Kg/ha ; No. of trials=8.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of fibre in Kg/ha.	4088	1088	1485	5353	5050	6706	7463	257.1

Control mean=17254 Kg/ha. ; No. of trials=11.

W. Dinajpur

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of fibre in Kg/ha.	3479	1317	3268	4322	6905	7749	6536	1147.0

Control mean=18660 Kg/ha.; No. of trials=6.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of fibre in Kg/ha.	8846	395	1838	5732	6128	8500	8104	4754.3

Control mean=21349 Kg/ha. ; No. of trials=3.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of fibre in Kg/ha.	2273	1000	1426	3536	4006	4770	5260	414.4

Control mean=7549 Kg/ha. ; No. of trials=6.

Crop :- Groundnut (Kharif).**Ref :-W. B. 63 (62), 64 (50).****Site :- State Agri. Farm, Berhampore.****Type :- 'M'**

Object :-To find out the effect of N, P and K alone and in combination on the yield of Groundnut.

1. BASAL CONDITIONS :

(i) (a) to (c) N. A. (ii) Sandy loam. (iii) 9.7.1963 ; 25.5.1964. (iv) (a) 2 to 3 ploughings, spading and laddering. (b) Line sowing (dibbling). (c) 67 Kg/ha., 62 to 74 Kg/ha. (d) 61 cm. x 15 cm. (e) N. A. (v) 92.2 Q/ha. of cowdung. (vi) A. K. 8-11 (B-31) (medium) (vii) Unirrigated. (viii) 2 to 3 weedings and 2 earthings up. (ix) 70 cm. ; 130 cm. (x) 19.11.1963 ; 1st week of Oct. 1964.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : $N_0=0$, $N_1=11.2$ and $N_2=22.4$ Kg/ha.(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=33.6$ and $P_2=67.2$ Kg/ha.(3) 3 levels of K_2O as Mur. Pot. : $K_0=0$, $K_1=22.4$ and $K_2=44.8$ Kg/ha.

Fertilizers applied by broadcasting.

3. DESIGN :

(i) 3^3 Fact partially confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N. A. (iii) 4. (iv) (a) $6.4 \text{ m} \times 3.7 \text{ m}$. (b) $6.1 \text{ m} \times 3.1 \text{ m}$. (v) $30 \text{ cm} \times 15 \text{ cm}$. (vi) Yes.

4. GENERAL :

(i) N. A. (ii) Attack of red boring cater pillar. 10% B. H.C. at 28.0 Kg/ha. dusting on 21.8.1963; N. A. (iii) Yield of groundnut. (iv) (a) 1963-64. (b) Yes. (c) N.A. (v) and (vi) Nil. (vii) Error variances are heterogeneous. Treatments x years interaction is absent. Hence individual years results are presented.

5. RESULTS :

63 (62)

(i) 778 Kg/ha. (ii) 132.4 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of pod in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	847	758	840	855	775	815	815
N_1	833	711	703	793	637	817	749
N_2	748	727	836	776	810	725	771
Mean	809	732	793	808	741	786	778
K_0	862	726	836				
K_1	740	730	752				
K_2	826	740	791				

64 (50)

(i) 2182 Kg/ha. (ii) 513.4 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of pod in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	2134	2009	2382	2143	2294	2088	2175
N_1	2486	2171	2275	2388	2216	2328	2311
N_2	2127	2047	2004	2042	2138	1998	2059
Mean	2249	2076	2220	2191	2216	2138	2182
K_0	2346	2015	2212				
K_1	2173	2055	2420				
K_2	2228	2157	2029				

Crop :- Groundnut (Kharif)**Ref :- W. B. 65 (65)****Site :- State : Agri. Farm, Berhampore.****Type :- 'M'.****Object :—**To find out the optimum dose of fertilizer and manures in kharif Groundnut.**1. BASAL CONDITIONS :**

(i) (a) Mustard-Groundnut. (b) Mustard. (c) As per treatments. (ii) Sandy loam. (iii) 19.7.65. (iv) (a) 2 ploughings+1 laddering+spading. (b) Line sowing (hand). (c) 62 Kg/ha. (d) 30 cm×15 cm. (e) 1. (v) 92.2 Q/ha of compost. (vi) B-31 (from A. K. 108-11). (vii) Irrigated. (viii) 2 weedings and 1 earthing up done. (ix) 103 cm. (x) 2nd week of Nov.'65.

2. TREATMENTS :

All combinations of (1), (2), (3) and (4).

(1) 3 levels of N as A/S : $N_0=0$, $N_1=17$ and $N_2=34$ Kg/ha.(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=22$ and $P_2=45$ Kg/ha.(3) 3 levels of K_2O as Mur. Pot. : $K_0=0$, $K_1=22$ and $K_2=45$ Kg/ha.(4) 3 levels of F. Y. M. : $F_0=0$, $F_1=5604$ and 11208 Kg/ha.N as A/S, ' P_2O_5 ' as Super and K_2O as Mur. Pot. was applied by broadcasting at the time of sowing and F. Y. M. applied at the time of land preparation.**3. DESIGN :**

(i) 3^4 confd. fact. (ii) (a) 9 plots/block ; 9 blocks/replication. (b) 64 m×8 m. (iii) one. (iv) (a) 7.9 m×6.4 m. (b) 7.0 m×5.8 m. (v) 91 cm×91 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N. A. (iii) Yield of groundnut. (iv) (a) 1965 to 1967 (b) Yes. (c) Nil (v) Midnapore. (vi) N. A. (vii) Nil.

5. RESULTS :

(i) 1226 Kg/ha. (ii) 293.3 Kg/ha. (iii) Main effect of P alone is significant. (iv) Av. yield of pod in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	F_0	F_1	F_2	Mean
N_0	1029	1165	1213	1214	1048	1145	1132	1175	1100	1136
N_1	1019	1314	1343	1126	1246	1304	1178	1220	1278	1225
N_2	1134	1380	1438	1332	1386	1234	1498	1323	1131	1317
Mean	1061	1286	1331	1224	1227	1228	1269	1239	1170	1226
F_0	1008	1378	1422	1233	1290	1285				
F_1	1129	1280	1309	1210	1210	1298				
F_2	1045	1201	1263	1229	1180	1100				
K_0	1034	1255	1383							
K_1	1059	1317	1304							
K_2	1089	1287	1307							

C. D. for P marginal means=161.3 Kg/ha.

Crop :- Groundnut (Kharif).**Ref :- W.B. 65(66).****Site :- State Agri. Farm, Midnapore.****Type :- 'M'.**

Object :- To find out the optimum dose of fertilizers and manures in kharif Groundnut.

1. BASAL CONDITIONS :

(i) (a) No. (b) Fallow. (c) Nil. (ii) Lateritic. (iii) 19.7.65. (iv) (a) 2 ploughings+1 spading and laddering. (b) Line sowing (hand), (c) 56.8 to 61.8 Kg/ha.; (d) 30 cm.×15 cm. (e) One. (v) N.A. (vi) B-30 (from A.K. 10). (vii) Unirrigated. (viii) 2 weedings+thinning. (ix) 96 cm. (x) 2nd week of Nov., 65.

2. TREATMENTS :

All combinations of (1), (2), (3) and (4).

(1) 3 levels of N : $N_0=0$, $N_1=17$ and $N_2=34$ Kg/ha.(2) 3 levels of P_2O_5 : $P_0=0$, $P_1=22$ and $P_2=45$ Kg/ha.(3) 3 levels of K_2O : $K_0=0$, $K_1=22$ and $K_2=45$ Kg/ha.(4) 3 levels of F.Y.M. : $F_0=0$, $F_1=5604$ and $F_2=11208$ Kg/ha.N as A/S, P_2O_5 as Super and K_2O as Mur. Pot. were applied by broadcasting at the time of sowing and F.Y.M. as manures were applied by broadcasting at the time of land preparation.**3. DESIGN :**(i) 3rd confd. fact. (ii) (a) 9 plots/block ; 9 blocks/replication. (b) 44 m.×8 m. (iii) One. (iv) (a) 7.9 m.×4.9 m. (b) 7.0 m.×5.8 m. (v) 60 cm.×60 cm. (vi) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of groundnut. (iv) (a) 1965 to 67. (b) Yes. (c) Nil. (v) Berhampore. (vi) N.A. (vii) Nil.

5. RESULTS :(i) 8122 Kg/ha. (ii) 216.0 Kg/ha. (iii) Main effect of P is significant and interaction $K \times F$ is significant. (iv) Av. yield of pod in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	F_0	F_1	F_2	Mean
N_0	547	817	950	736	735	843	731	770	771	771
N_1	690	877	947	803	835	876	799	895	838	838
N_2	559	921	1002	829	801	851	785	822	827	827
Mean	598	871	966	789	790	856	771	829	835	812
F_0	567	789	961	608	884	824				
F_1	575	935	977	806	677	1004				
F_2	654		961	955	809	742				
K_0	617	816	936							
K_1	593	825	952							
K_2	536	974	1010							

C.D. for P marginal means =134.7 Kg/ha.

C.D. for body of $K \times F$ table =233.3 Kg/ha.**Crop :- Groundnut (Kharif).****Ref :- W.B. 64(48).****Site :- State Agri. Farm, Berhampore.****Type :- 'C'.**

Object :- To find out the suitable spacing for the crop.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) 20.6.64. (iv) (a) 2 to 3 ploughings+laddering. (b) Line sowings (Dibbling). (b) 67 Kg/ha. (d) As per treatments. (e) N.A. (v) N.A. (vi) A.K. 10 (B. 30) (medium). (vii) Unirrigated. (viii) 2 weedings+2 earthing up. (ix) 139 cm. (x) 24.10.64 and 26.10.64.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 3 row spacings : $R_1=30$, $R_2=46$ and $R_3=61$ cm.

(2) 3 plant spacings : $P_1=8$, $P_2=15$ and $P_3=23$ cm.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) 43.3 m. \times 32.9 m. (iii) 4. (iv) (a) 6.7 m. \times 4.3 m. (b) 5.5 m. \times 3.7 m. (v) 61 cm. \times 30 cm. (vi) Yes.

4. GENERAL :

(i) Crop affected due to lodging. (ii) N.A. (iii) Yield of groundnut. (iv) (a) to (c) No. (v) Midnapore. (vi) and (vii) Nil.

5. RESULTS :

(i) 1260 Kg/ha. (ii) 310.4 Kg/ha. (iii) Main effect of R is significant and interaction $R \times P$ is highly significant. (iv) Av. yield of pod in Kg/ha.

	P_1	P_2	P_3	Mean
R_1	912	985	1317	1071
R_2	1459	1263	1178	1300
R_3	1013	1665	1547	1408
Mean	1128	1304	1347	1260

C.D. for R marginal means = 261.5 Kg/ha.

C.D. for means in the body of $K \times P$ table = 453.0 Kg/ha.

Crop :- Groundnut (Kharif).

Ref :- W.B. 64(45).

Site :- State Agri. Farm, Midnapore.

Type :- 'C'.

Object :- To find out the suitable spacing for the crop.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Lateritic. (iii) Middle of June, 1964. (iv) (a) 3 ploughings, spading+laddering. (b) Line sowing (Dibbling). (c) 74 Kg/ha. (d) As per treatments. (e) N.A. (v) 138.3 Q/ha. of cowdung. (vi) A.K. 10 (B-30). (vii) Unirrigated. (viii) 2 to 3 weedings and 2 earthing up. (ix) 129 cm. (x) Last week of Oct. 64.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 3 spacings between rows : $R_1=30$, $R_2=46$ and $R_3=61$ cm.

(2) 3 spacings between plants : $P_1=8$, $P_2=15$ and $P_3=23$ cm.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 6.7 m. \times 4.3 m. (b) 5.5 m. \times 3.7 m. (v) 61 cm \times 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of groundnut. (iv) (a) to (c) No. (v) Berhampore. (vi) and (vii) Nil.

5. RESULTS :

(i) 1894 Kg/ha. (ii) 243.3 Kg/ha. (iii) Main effect of R alone is highly significant. (iv) Av. yield of pod in Kg/ha.

	P ₀	P ₁	P ₂	Mean
R ₀	1669	1992	1619	1760
R ₁	1983	2266	1806	2018
R ₂	1896	2086	1731	1904
Mean	1849	2115	1719	1894

C.D. for R marginal means=204.9 Kg/ha.

Crop :- Groundnut (Kharif).

Ref :- W.B. 65(45).

Site :- State Argi. Farm, Midnapore.

Type :- 'C'.

Object :—To study the cultivation of Groundnut (errect type) in relation to different agronomic practices.

1. BASAL CONDITIONS :

(i) (a) Fallow-Groundnut. (b) Groundnut. (c) Nil. (ii) Laterite. (iii) 6.7.65. (iv) (a) 2 ploughings, 1 laddering and spading. (b) Line sowing. (c) 89 to 91 Kg/ha. (d) N.A. (e) 1. (v) 92.2 Q/ha. of cowdung +22.4 Kg/ha. of N as A/S. (vi) A.K. 10. (vii) Unirrigated. (viii) 2 weedings+earthing as per treatments. (ix) 68cm. (x) 20.10.65.

2. TREATMENTS :

4 cultural treatments : C₁=Conventional method (control) in earthing up one, harvesting with spading, C₂=No. earthing up, C₃=Uprooting with harvesting and C₄=Special harvesting appliance (Bullock draw) to harvest the crop.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 9.8 m.×9.8 m. (b) 9.1 m.×9.1 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Crop partly affected by draught. (ii) No. (iii) Yield of groundnut. (iv) (a) No. (b) —. (c) N.A. (v) No. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 941 Kg/ha. (ii) 220.5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of pod in Kg/ha.

Treatment	C ₁	C ₂	C ₃	C ₄
Av. yield	1304	282	1200	978

Crop :- Groundnut (*Kharif*).**Ref :- W.B. 63(65), 64(54), 65(50).****Site :- State Agri. Farm, Berhampore.****Type :- 'CV'.****Object :-**To find out the optimum stage of harvesting for different varieties of Groundnut.**1. BASAL CONDITIONS :**

(i) (a) N.A. 1963, 64 ; Mustard-Groundnut in 1965. (b) N.A. for 1963 and 64 ; Mustard for 1965. (c) N.A. for 1963 and 64 ; 92.2 Q/ha. of compost for 1955. (ii) Sandy loam. (iii) June 1963, Feb. 1964 and 7.7.65. (iv) (a) 2 to 3 ploughings and 1 laddering. (b) Line sowing. (c) 54 to 62 ; 64 to 69 ; 57 Kg/ha. (d) 61 cm. \times 15 cm. for 1963 and 65 ; N.A. for 1964. (e) One. (v) 92.2 Q/ha. of compost for 1963, 64 and 110.7 Q/ha. of compost + 22.4 Kg/ha. of N as A/S + 22.4 Kg/ha. of P_2O_5 as B.M. and 16.8 Kg/ha. of Mur. Pot. in 1965. (vi) As per treatments. (vii) Unirrigated for 1963 and 64 and irrigated for 1965. (viii) 2 weedings and 1 to 2 earthing up. (ix) N.A. ; 48 cm. : 69 cm. (x) N.A. ; May to June 1964 ; 8, 27.10 65 and 17.11.65.

2. TREATMENTS:**Main-plot treatments :**

10 varieties : $V_1=Hg-8$, $V_2=TMV-2$, $V_3=B-30$, $V_4=B-31$, $V_5=Ng-70$, $V_6=Spanish\ peanut$, $V_7=Ng-53$, $V_8=Ng-5144$, $V_9=AH-32$ and $V_{10}=K-3$.

Sub-plot treatments :

3 stages of harvesting : $H_1=$ After 90 days of sowing, $H_2=$ After 110 days of sowing and $H_3=$ After 130 days of sowing.

3. DESIGN :

(i) Split-plot. (ii) (a) 10 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 6.7 m. \times 3.7 m. (b) 6.1 m. \times 3.1 m. (v) 30 cm. \times 30 cm. (vi) Yes.

4. GENERAL :

(i) N.A. in 1963, 64 ; Fair in 1965. (ii) N.A. (iii) Yield of groundnut. (iv) (a) 1963 to 64. (b) Yes. (c) N.A. (v) Midnapore. (vi) N.A. (vii) Since the experiment is continued after 1965, hence individual results are given.

5. RESULTS :**63(65)**

(i) 942 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of pod in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8	V_9	V_{10}	Mean
H_1	383	955	693	811	855	684	652	588	788	657	707
H_2	639	1300	1051	1374	1465	944	1100	833	1035	1054	1079
H_3	744	768	1056	1214	1078	851	1635	950	1087	1027	1041
Mean	589	1008	933	1133	1133	826	1129	790	970	913	942

64(54)

(i) 840 Kg/ha. (ii) (a) 183.6 Kg/ha. (b) 83.0 Kg/ha. (iii) All the effects are highly significant. (iv) Av. yield of pod in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8	V_9	V_{10}	Mean
H_1	191	269	274	539	376	227	486	266	315	293	324
H_2	384	732	631	1201	898	865	458	783	706	781	744
H_3	973	1719	831	2170	1731	1604	904	1540	1300	1700	1452
Mean	516	907	595	1303	1002	899	616	863	774	925	840

C.D. for V marginal means = 153.7 Kg/ha.

C.D. for H marginal means = 37.2 Kg/ha.

C.D. for H means at the same level of V = 117.4 Kg/ha.

C.D. for V means at the same level of H = 181.1 Kg/ha.

65(50)

- (i) 1621 Kg/ha. (ii) (a) 231.4 Kg/ha. (b) 205.6 Kg/ha. (iii) Main effect of H alone is highly significant.
(iv) Av. yield of pod in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈	V ₉	V ₁₀	Mean
H ₁	886	1300	1072	1458	995	1485	1081	1305	1477	1478	1254
H ₂	1281	1766	1591	2247	1517	1809	1962	1906	1770	2288	1814
H ₃	1566	1785	1532	2071	1744	1203	1779	2140	1499	2644	1796
Mean	1244	1617	1393	1925	1419	1499	1607	1784	1582	2137	1621

C.D. for H marginal means=91.9 Kg/ha.

Crop :- Groundnut (Kharif).

Ref :- W.B. 63(67), 64(55), 65(53).

Site :- State Agri. Farm, Midnapore.

Type :- 'CV'.

Object :- To find out the optimum stage of harvesting for different varieties of Groundnut.

1. BASAL CONDITIONS :

(i) (a) N.A. for 1963, 64 ; Wheat-Groundnut for 1965. (b) N.A. for 1963, 64 ; Wheat for 1965. (c) N.A. for 1963 and 64 ; 110.7 Q/ha. of cowdung for 65. (ii) Laterite. (iii) June 1963 ; Feb. 1964 ; June 1965. (iv) (a) 2 to 3 ploughings and 1 laddering. (b) Line sowing (dibbling). (c) 54 Kg/ha. ; 74 Kg/ha. ; 62 Kg/ha. (d) 61 cm. × 15 cm. ; N.A. ; 61 cm. × 15 cm. (e) 1. (v) N.A. ; 73.8 to 92.2 Q/ha. of cowdung, 110.7 Q/ha. of cowdung. (vi) As per treatments. (vii) Unirrigated for 1963, 64 ; N.A. for 65. (viii) 1 weeding and 1 to 2 earthing up. (ix) 152 cm. ; N.A. ; 97 cm. (x) Last week of Sept. 1963 ; May to June 1964 ; Sept. to Oct. 1965.

2. TREATMENTS :

Same as in expt. nos. 63(65), 64(54), 65(50) on page 264.

3. DESIGN :

(i) Split-plot. (ii) (a) 10 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 5.5 m. × 3.7 m. for 1964 ; 4.9 m. × 4.9 m. for 1963 and 65. (b) 4.9 m. × 3.0 m. for 1964, 4.3 m. × 4.3 m. for 1963 and 65. (v) 30 cm. × 30 cm. (vi) es.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of groundnut. (iv) (a) 1963 to 66. (b) Yes. (c) N.A. (v) Berhampore. (vi) N.A. (vii) Since the experiment is continued after 1965, hence individual results are given.

5. RESULTS :

63(67)

- (i) 1657 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of pod in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈	V ₉	V ₁₀	Mean
H ₁	1056	1270	1396	1730	1666	1541	1457	1281	1525	1732	1465
H ₂	1486	1693	2009	2394	1980	1828	1971	1797	1724	2007	1889
H ₃	1581	1229	1523	1906	1955	1278	1888	1561	1441	1802	1616
Mean	1374	1397	1643	2010	1867	1549	1772	1546	1563	1847	1657

64(55)

(i) 1374 Kg/ha. (ii) (a) 186.8 Kg/ha. (b) 89.2 Kg/ha. (iii) All effects are highly significant. (iv) Av. yield of pod in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈	V ₉	V ₁₀	Mean
H ₁	1036	1076	1466	1782	1177	1298	1062	1412	995	1379	1268
H ₂	1264	1210	1991	2407	1379	1432	1466	1648	1446	1432	1568
H ₃	1177	1042	1489	2185	1365	861	1231	1626	928	950	1285
Mean	1159	1109	1648	2125	1307	1197	1253	1562	1123	1254	1374

C.D. for V marginal means = 156.6 Kg/ha.

C.D. for H marginal means = 39.8 Kg/ha.

C.D. for H means at the same level of V = 126.2 Kg/ha.

C.D. for V means at the same level of H = 187.3 Kg/ha.

65(53)

(i) 887 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of pod in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈	V ₉	V ₁₀	Mean
H ₁	506	746	675	707	652	785	718	782	768	859	720
H ₂	852	813	1136	1261	1121	964	1057	1057	974	1186	1042
H ₃	730	830	930	1069	924	852	874	941	846	1002	900
Mean	696	796	914	1012	899	867	883	927	863	1016	887

Crop :- Groundnut (Kharif).

Ref :- W.B. 65(57).

Site :- State Agri. Farm, Berhampore.

Type :- 'CM'.

Object :- To find out suitable plant population and its inter-relationship with fertilizers level in kharif Groundnut.

1. BASAL CONDITIONS :

(i) (a) No. (b) Groundnut. (c) As per treatments. (ii) Sandy loam. (iii) 9.7.65. (iv) (a) 2 ploughings and 1 laddering. (b) Line sowing (hand). (c) 54 Kg/ha. (d) As per treatments. (e) One. (v) 92.2 Q/ha. of T.C. (vi) A.K. 8-11. (vii) N.A. (viii) 2-3 weedings and 1 earthing up done. (ix) 103 cm. (x) Middle of Oct. 65.

2. TREATMENTS :

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

(1) 3 spacings between rows : $S_1=30.5$, $S_2=38.1$ and $S_3=45.7$ cm.

(2) 3 spacings within rows between plants : $R_1=6.7$, $R_2=15.2$ and $R_3=22.8$ cm.

(3) 3 doses of fertilizers : $F_0=N_0P_0K_0$ ($N_0=0$, $P_0=0$ and $K_0=0$), $F_1=N_1P_1K_1$ ($N_1=16.8$, $P_1=22.4$ and $K_1=22.4$ Kg/ha.) and $F_2=N_2P_2K_2$ ($N_2=33.6$, $P_2=44.8$ and $K_2=44.8$ Kg/ha.)

N as A/S, P₂O₅ as Super and K₂O as Mur. Pot. were applied by broadcasting at the time of planting.

3. DESIGN :

(i) 3³ confd. fact. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) 6.4 m. × 83.5 m. (iii) 2. (iv) (a) 7.9 m. × 6.4 m. (b) 7.0 m. × 5.8 m. (v) 61 cm. kept as border between plots. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of Groundnut. (iv) (a) 1965 to 1967. (b) Yes. (c) N.A. (v) Midnapore. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 7063 Kg/ha. (ii) 125.6 Kg/ha. (iii) Main effects of S, F and interaction $S \times F$ and $R \times F$ are significant. (iv) Av. yield of groundnut in Kg/ha.

	R ₁	R ₂	R ₃	F ₀	F ₁	F ₂	Mean
S ₁	6389	6663	6968	7865	6712	5443	6673
S ₂	6525	7256	6788	7675	7320	5574	6857
S ₃	8015	7086	7877	8126	7530	7323	7659
Mean	6975	7002	7212	7887	7187	6113	7063
F ₀	7160	7746	8759				
F ₁	7310	7604	6648				
F ₂	6458	5655	6227				

C.D. for S or F marginal means = 88.0 Kg/ha.

C.D. for the body of $S \times F$ or $R \times F$ table = 152.6 Kg/ha.

Crop :- Groundnut (Kharif).

Ref :- W.B. 65(58).

Site :- State Agri. Farm, Midnapore.

Type :- 'CM'.

Object :- To find out the suitable plant population and its inter-relationship with fertilizers level in kharif Groundnut.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Laterite. (iii) 1st. week of June 65. (iv) (a) ploughings and laddering + spading. (b) Line sowing. (c) 57 to 59 Kg/ha. (d) As per treatments. (e) One. (v) 92.2 Q/ha. of cowdung. (vi) AK. 8-11. (vii) Unirrigated. (viii) 2 weedings and 1 earthing up done. (ix) 97 cm. (x) Last week of Oct. 65.

2. TREATMENTS :

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

(1) 3 spacings between rows : $S_0=30.5$, $S_1=38.1$ and $S_2=45.7$ Kg/ha.

(2) 3 spacings within rows (between plants) : $R_0=7.6$, $R_1=15.2$ and $R_2=22.9$ cm.

(3) 3 levels of fertilizers dose : $F_0=N_0P_0K_0$ ($N_0=0$, $P_0=0$ and $K_0=0$ Kg/ha.), $F_1=N_1P_1K_1$ ($N_1=16.8$, $P_1=22.4$ and $K_1=22.4$ Kg/ha.) and $F_2=N_2P_2K_2$ ($N_2=33.6$, $P_2=44.8$ and $K_2=44.8$ Kg/ha.)

N as A/S, P_2O_5 as Super and K_2O as Mur. Pot. were applied by broadcasting at the time of planting.

3. DESIGN :

(i) 3^3 confd. fact. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) 7.9 m. \times 58.8 m. (iii) 2. (iv) (a) 7.9 m. \times 6.4 m. (b) 7.0 m. \times 5.8 m. (v) 61 cm. kept as border between plants. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of Groundnut. (iv) (a) 1965 to 1967. (b) Yes. (c) N.A. (v) Berhampore. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 2604 Kg/ha. (ii) 23.6 Kg/ha. (iii) Main effects of R and F are significant. (iv) Av. yield of pod in Kg/ha.

	R ₁	R ₂	R ₃	F ₀	F ₁	F ₂	Mean
S ₁	3128	2586	2278	2278	2808	2906	2664
S ₂	2648	2663	2315	2155	3067	2404	2542
S ₃	2771	2734	2315	1897	2870	3054	2607
Mean	2849	2661	2303	2110	2915	2788	2604
F ₀	1934	2402	1995				
F ₁	2993	3017	2734				
F ₂	3621	2564	2180				

C.D. for R or F marginal means=28.0 Kg/ha.

Crop :- Groundnut (Kharif).

Ref :- W.B. 65(49).

Site :- State Agri. Farm, Berhampore.

Type :- 'CM'.

Object :—To determine the suitable date for sowing and inter-relationship with fertilizers application on irrigated Groundnut (Branch type).

1. BASAL CONDITIONS :

(i) (a) No. (b) Groundnut. (c) As per treatments and Compost @ 92.2 Q/ha. (ii) Sandy loam. (iii) As per treatments. (iv) (a) 2 ploughings and 1 laddering. (b) Line sowing. (c) 54.4 to 59.3 Kg/ha. (d) As per treatment. (e) 1. (v) 110.7 Q/ha. of Compost. (vi) A.K. 8—11. (vii) Irrigated. (viii) 2 weedings and 1 thinning. (ix) 47 cm. (x) 28.6.65.

2. TREATMENTS :

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

(1) 3 dates of sowing : D₀=1st February '65, D₁=10th of February '65 and D₂=20th February '65.

(2) 3 spacings between rows : S₀=30 cm., S₁=38 cm. and S₂=46 cm.

(3) 3 spacings within rows between plants : R₀=7.5 cm., R₁=15 cm. and R₂=23 cm.

(4) 3 fertilizers doses : F₀=N₀P₀K₀, F₁=N₁P₁K₁ (N₁=15, P₁=20 and K₁=20 Q/ha.) and F₂=N₂P₂K₂ (N₂=30, P₂=40 and K₂=40 Q/ha).

N as A/S, P₂O₅ as Super and K₂O as Mur. Pot. were applied by broadcasting.

3. DESIGN :

(i) 3⁴ confd. fact. (ii) (a) 9 plots/block ; 9 blocks/replication. (b) 8 m. × 62 m. (iii) 1. (iv) (a) 7.9 m. × 6.4 m. (b) 7.0 m. × 5.5 m. (v) 91 cm. × 91 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Attack of *tikka* disease ; spraying of folidol @ 3 c.c./gallon, Blitox @ 50 gm/gallon, B.H.C. @ 20 gm/gallon. (iii) Yield of Groundnut. (iv) (a) 1965—contd. (b) Yes. (c) Nil. (v) No. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 1922 Kg/ha. (ii) 263.9 Kg/ha. (iii) Main effects of S and R are highly significant and interaction S × R is significant. (iv) Av. yield of pod in Kg/ha.

	S ₀	S ₁	S ₂	R ₀	R ₁	R ₂	F ₀	F ₁	F ₂	Mean
D ₀	2329	1885	1729	2487	1862	1594	2043	1941	1959	1981
D ₁	2156	1728	1543	2361	1734	1332	1763	1807	1856	1809
D ₂	2295	1943	1757	2583	1939	1403	2053	1904	1968	1975
Mean	2237	1852	1676	2477	1845	1443	1953	1884	1927	1922
F ₀	2153	1970	1736	2414	1858	1587				
F ₁	2241	1822	1589	2519	1828	1305				
F ₂	2315	1764	1703	2498	1848	1436				
R ₀	2767	2485	2178							
R ₁	2299	1713	1523							
R ₂	1645	1358	1327							

C.D. for S or R marginal means=144.8 Kg/ha.

C.D. for the body of S×R table=250.8 Kg/ha.

Crop :- Mustard (Rabi).

Ref :- W.B. 60(17), 61(14), 62(33).

**Site :- State Seed Multiplication Farm,
Bhajanghata.**

Type :- 'M'.

Object :-To study the effect of Super and A/S on the yield of Mustard.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Loam and sandy loam. (iii) 30.10.60 ; 13.10.61 and 17.10.62. (iv) (a) 3 ploughings and spading. (b) Line sowing in 60 and broadcasting in 61 and 62. (c) to (e) N.A. (v) N.A. (vi) B—54 (medium). (vii) Unirrigated. (viii) Weeding and thinning in 60 ; weeding and interculture operation in 61 and N.A. in 62. (ix) N.A. (x) 5.2.61 ; 13.1.62 and 25, 26.1.63.

2. TREATMENTS

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N₀=0, N₁=44.8 and N₂=67.2 Kg/ha.

(2) 3 levels of P₂O₅ as Super : P₀=0, P₁=44.8 and P₂=67.2 Kg/ha.

N and P applied on 5.12.60 for 60(17) ; Super is applied on 12.10.61 and top dressing of A/S on 14.10.61 by broadcasting for 61(14) and N as A/S top dressed on 10.11.62 and P₂O₅ as Super applied as basal on 15.10.62 for 62(33).

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 8.5 m.×4.9 m. (b) 7.9 m.×4.3 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of seed. (iv) (a) 1960—62. (b) Yes. (c) Results of combined analysis given under 5. Results. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments×years interaction is present.

5. RESULTS :

(i) 744 Kg/ha. (ii) 345.9 Kg/ha. (made up of 16 d.f. for Treatments×years interaction) (iii) Main effect of N alone is significant. (iv) Av. yield of seed in Kg/ha.

	P ₀	P ₁	P ₂	Mean
N ₀	505	527	605	546
N ₁	715	799	980	831
N ₂	755	917	897	856
Mean	658	748	827	744

C.D. for N marginal means=172.9 Kg/ha.

Years	P ₀	P ₁	P ₂	Sig.	N ₀	N ₁	N ₂	Sig.	G.M.	S.E./plot
1960	685	701	822	*	494	880	833	*	736	88.3
1961	620	694	768	*	696	728	658	N.S.	694	71.7
1962	671	848	892	*	447	886	1078	*	804	168.6
Pooled	658	748	827	N.S.	546	831	856	*	744	345.9

Crop :- Mustard.

Ref :- W.B. 60, 61 (S.F.T.)

Site :- (District) : As per results.

Type :- 'M'.

Object :-Type A : To study the response of Mustard to different levels of N, P₂O₅ and K₂O applied individually and in combination.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) As per results. (iii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O =Control (no manure).

N =22.4 Kg/ha. of N.

P =22.4 Kg/ha. of P₂O₅.

K =22.4 Kg/ha. of K₂O.

NP =22.4 Kg/ha. of N+22.4 Kg/ha. of P₂O₅.

NK =22.4 Kg/ha. of N+22.4 Kg/ha. of K₂O.

PK =22.4 Kg/ha. of P₂O₅+22.4 Kg/ha. of K₂O.

NPK =22.4 Kg/ha. of N+22.4 Kg/ha. of P₂O₅+22.4 Kg/ha. of K₂O.

N applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN :

(i) and (ii) The district has been divided into four agriculturally homogeneous zones and one field assistant posted in each zone. The field assistant conducts the trials in one revenue circle or thana in the zone and the circle/thana is changed once in two years within the same zone. Each field assistant is required to conduct 31 trials in a year, 8 on *khari* cereal, 8 on a *rabi* cereal, 8 on cash crop, 4 on an oilseed crop and 3 on a leguminous crop. Half the number of trials conducted are of type A and the other half of type B on crops other than the legumes. The three trials on legumes are of type C. Residual effects of phosphate application are studied on Type C trials in two out of the four zones in each district every year. The experiments are laid out in randomly located fields in randomly selected villages in each of the 4 zones at the rate of one experiment per village. (iii) (a) 1/98.8 ha. (b) 1/197.7 ha. (iv) Yes.

4. GENERAL :

(i) to (vii) N.A

5. RESULTS :

District	Year	Soil class	No. of trials	Control mean Kg/ha.	Av. response of grain in Kg/ha.									
					N	P	K	S.E.	NP	NK	PK	NPK	S.E.	
W. Dinajpur	1960	Alluvial	5	310	80	60	10	10.0	—	—20	—60	—20	11.0	
Malda	1960	Alluvial	8	520	110	50—50	40.0	—40	20	—20	10	21.0		
	1961	Alluvial	1	210	170	160—10	—	50	—10	—50	—20	—		
Midnapore	1960	Red	7	860	110	70	110	35.0	10	—10	—	20	11.0	
Howrah	1960	Alluvial	1	140	270	130	150	—	—10	60	10	—40	—	
Nadia	1960	Alluvial	9	430	60	20	—	12.0	0	—10	10	—	8.0	
	1961	Alluvial	4	740	180	30—20	43.0	—40	10	—20	50	25.0		
24-Parganas	1960	Alluvial	2	340	70	30	20	33.0	—10	10	20	30	11.0	
	1961	Alluvial	2	200	30	20	30	3.0	—	—	—	—	4.0	
Murshidabad	1961	Alluvial	2	540	20	10	10	6.0	10	10	10	10	5.0	

Crop :- Mustard.

Ref :- W.B. 60, 61 (S.F.T.)

Site :- (District) : As per results.

Type :- 'M'.

Object :- Type B—To investigate the relative efficiency of different fertilizers at different doses.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) As per results. (iii) to (x) N.A.

2. TREATMENTS :

- o = Control (no manure)
 n_1 = 22.4 Kg/ha. of N as A/S.
 n_2 = 44.8 Kg/ha. of N as A/S.
 n_1' = 22.4 Kg/ha. of N as Urea.
 n_2' = 44.8 Kg/ha. of N as Urea.
 n_1'' = 22.4 Kg/ha. of N as A/S/N.
 n_2'' = 44.8 Kg/ha. of N as A/S/N.
 n_1''' = 22.4 Kg/ha. of N as C/A/N.
 n_2''' = 44.8 Kg/ha. of N as C/A/N.

3. DESIGN :

Same as in type A on page 270.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

District	Year	Soil class	No. of trials	Control mean (Kg/ha.)	Av. response of grain in Kg/ha.								S.E. of response
					n_1	n_1'	n_1''	n_1'''	n_2	n_2'	n_2''	n_2'''	
24-Parganas	1960	Alluvial	2	450	120	110	—	140	180	140	—	140	42.0
	1961	Alluvial	2	220	40	40	—	30	70	70	—	60	10.0
Nadia	1960	Alluvial	9	380	70	60	—	80	100	80	—	80	18.0
	1961	Alluvial	4	720	90	60	—	—	180	100	—	220	48.0
W. Dinajpore	1960	Alluvial	4	370	120	80	—	80	220	160	—	120	75.0
Malda	1960	Alluvial	5	290	60	60	—	20	180	90	—	140	121.0
	1961	Alluvial	1	250	400	280	—	460	140	530	—	300	—
Murshidabad	1961	Alluvial	2	700	40	50	—	40	80	150	—	100	40.0

Crop :- Mustard (Rabi).**Ref :- W.B. 65(S.F.T.).****Site :- (Disirict) : Birbhum.****Type :- 'M'.**

Object :—Type A₁—To study the response curves of important cereal, cash and oilseed crops to Nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Laterite. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O =Control (no manure)

N₁=35 Kg/ha. of NN₂=70 Kg/ha. of NP₁=25 Kg/ha. of P₂O₅N₁P₁=35 Kg/ha. of N+25 Kg/ha. of P₂O₅N₂P₁=70 Kg/ha. of N+25 Kg/ha. of P₂O₅N₂P₂=70 Kg/ha. of N+50 Kg/ha. of P₂O₅N₂P₂K₁=70 Kg/ha. of N+50 Kg/ha. of P₂O₅+25 Kg/ha. of K₂O.N applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.**3. DESIGN:**

A selected district is divided into four agriculturally homogeneous zones based on climate, soil, cropping pattern etc. In each zone one block is selected at random. A block normally consists of a group of 50—100 villages. In each block 36 experiments are conducted in a year of which 11 are of type A₁, 11 of type A₂, 11 of type A₃ and 3 are of type C. The eleven experiments under type A₁, A₂ and A₃ are distributed as 3 on a kharif cereal, 3 on a rabi cereal, 3 on a cash crop and 2 on oil seed. All the three type-C experiments are conducted on a legume crop. For the purpose of conducting the A₁, A₂ and A₃ experiments, 11 villages are randomly selected in each block and in each village 3 experiments one each of type A₁, A₂ and A₃ are laid out. For conducting the three type-C trials three villages are randomly selected in each block.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1965. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :**Birbhum****65(S.F.T.)**

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of seed in Kg/ha.	50	120	—20	65	200	195	210	29.4

Control mean=470 Kg/ha. ; No. of trials=2.

Crop :- Mustard.

**Ref. :- W.B. 62, 63, 64, 65 (S.F.T.) for Nadia
62, 63, 64 (S.F.T.) for Murshidabad
64 (S.F.T.) for Midnapore, 63, 64, 65
(S.F.T.) for W. Dinajpur, 24-Parganas
and Malda.**

Site :- (District) : Midnapore,**Type :- 'M'.****W. Dinajpur- Nadia,****24-Parganas, Bankura,****Murshidabad & Malda.**

Object:—Type A₁—To study the response curves of important cereals, cash and oil seed crops to nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red for Midnapore and Alluvial for others. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O = Control (no manure).

N₁ = 25 Kg/ha. of N.N₂ = 50 Kg/ha. of N.P₁ = 25 Kg/ha. of P₂O₅.N₁P₁ = 25 Kg/ha. of N+25 Kg/ha. of P₂O₅.N₂P₁ = 50 Kg/ha. N+25 Kg/ha. of P₂O₅.N₂P₂ = 50 Kg/ha. of N+ 50 Kg/ha. of P₂O₅.N₂P₂K₁ = 50 Kg/ha. of N+50 Kg/ha. of P₂O₅ + 25 Kg/ha. of K₂ON applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN :

Same as in type A₁ (Irrigated) on page 140.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of seed. (iv) (a) 1964 for Midnapore, Bankura ; 1963—65 for W. Dinajpur, 24-Parganas ; 1962—65 for Nadia ; 1962—66 (65—N.A.) for Murshidabad ; 1963—66 for Malda. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Midnapore

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of seed in Kg/ha.	73	106	18	78	110	132	138	7.4

Control mean=422 Kg/ha. ; No. of trials=422.

W: Dinajpur

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.F.
Av. response of seed in Kg/ha.	106	164	44	128	211	191	248	19.0

Control mean=425 Kg/ha. ; No. of trials=5.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of seed in Kg/ha.	201	212	64	272	303	337	334	38.5

Control mean=387 Kg/ha. ; No. of trials=4.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of seed in Kg/ha.	143	197	41	258	297	368	379	14.2

Control mean= 467 Kg/ha. ; No. of trials=10.

Nadia

62(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of seed in Kg/ha.	183	207	96	138	217	252	271	41.9

Control mean=491 Kg/ha. ; No. of trials=6.

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of seed in Kg/ha.	31	89	-28	74	137	202	254	33.0

Control mean=642 Kg/ha. ; No. of trials=6.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of seed in Kg/ha.	129	216	41	211	289	327	367	27.3

Control mean=554 Kg/ha. ; No. of trials=7.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of seed in Kg/ha.	129	216	41	211	289	327	367	27.3

Control mean=499 Kg/ha. ; No. of trials=9.

24-Parganas

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of seed in Kg/ha.	16	81	-40	34	121	115	57	66.0

Control mean=207 Kg/ha. ; No. of trials=2.

64 (S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of seed in Kg/ha.	95	142	24	145	186	175	225	22.9

Control mean=250 Kg/ha. ; No. of trials=4.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of seed in Kg/ha.	70	120	25	140	190	235	240	20.9

Control mean=330 Kg/ha. ; No. of trials=2.

Bankura

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of seed in Kg/ha.	41	53	19	55	71	76	102	8.8

Control mean=181 Kg/ha. ; No. of trials=7.

Murshidabad

62(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of seed in Kg/ha.	75	86	45	97	114	150	155	13.7

Control mean=381 Kg/ha. ; No. of trials=2.

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of seed in Kg/ha.	168	255	129	248	295	394	452	—

Control mean=504 Kg/ha. ; No. of trials=3.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of seed in Kg/ha.	86	123	39	146	197	273	373	18.7

Control mean=630 Kg/ha. ; No. of trials=6.

Maida

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of seed in Kg/ha.	55	75	11	59	75	59	77	25.0

Control mean=487 Kg/ha. ; No. of trials=6.

64(S.F.T.)

Treatment	*N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of seed in Kg/ha.	79	96	54	112	57	70	109	25.5

Control mean=554 Kg/ha. ; No. of trials=7.

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of seed in Kg/ha.	152	294	33	260	275	308	299	48.9

Control mean=267 Kg/ha. ; No. of trials=9.

Crop :- Mustard (Rabi).

Ref :- W.B. 65(S.F.T.).

Site :- (District) : Birbhum.

Type :- 'M'.

Object :- Type A₁—To study the response curves of important cereal, cash and oilseed crops to Phosphorus applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Laterite. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O =Control (no manure)

N₁ =35 Kg/ha. of N.P₁ =25 Kg/ha. of P₂O₅.P₂ =50 Kg/ha. of P₂O₅.N₁P₁ =35 Kg/ha. of N+25 Kg/ha. of P₂O₅.N₁P₂ =35 Kg/ha. of N+50 Kg/ha. of P₂O₅.N₂P₂ =70 Kg/ha. of N+50 Kg/ha. of P₂O₅.N₂P₂K₁=70 Kg/ha. of N+50 Kg/ha. of P₂O₅+50 Kg/ha. of K₂O.N applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN :

Same as in type A₁ (irrigated) on page 140.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1965 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Birbhum

62(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of seed in Kg/ha.	50	5	30	70	80	210	215	3.7

Control mean=475 Kg/ha. ; No. of trials=2.

Crop :- Mustard.

Ref. :- W.B. 63, 64, 65 (S.F.T.) for Malda, 24-Parganas. and W. Dinajpur ; 62, 63, 64, (S.F.T.) for Murshidabad; 62, 63, 64, 65 (S.F.T.) for Nadia and 64(S.F.T.) for Bankura, and Midnapore.

Site :- (District) : Malda, Murshidabad, Nadia, 24-Parganas, W. Dinajpur, Bankura and Midnapore

Type :- 'M'.

Object :-Type A₂ :-To study the response curves of important cereal, cash and oil seed crops to phosphorus applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Laterite for Bankura ; Red for Midnapore and Alluvial for others. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O =Control (no manure)

N₁ =25 Kg/ha. of N.

P₁ =25 Kg/ha of P₂O₅.

P₂ =50 Kg/ha. of P₂O₅.

N₁P₁ =25 Kg/ha. of N+25 Kg/ha. of P₂O₅.

N₁P₂ =25 Kg/ha. of N+50 Kg/ha. of P₂O₅.

N₂P₂ =50 Kg/ha. of N+50 Kg/ha. of P₂O₅.

N₂P₂K₂=50 Kg/ha. of N+50 Kg/ha. of P₂O₅+50 Kg/ha. of K₂O.

N applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN:

Same as in type A₁ (irrigated) on page 140.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of seed. (iv) (a) 1963—1966 for Malda ; 1962—1964 for Murshidabad ; 1962—1965 for Nadia, 24-Parganas and W. Dinajpur and 64 only for Bankura and Midnapore. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Malda

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of seed in Kg/ha.	63	56	63	76	86	77	131	21.0

Control mean=480 Kg/ha ; No. of trials=6.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of seed in Kg/ha.	112	89	76	151	93	140	173	25.9

Control mean=410 Kg/ha ; No. of trials=7.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of seed in Kg/ha.	191	86	89	277	317	373	393	56.9

Control mean=269 Kg/ha ; No. of trials=8.

Murshidabad

62(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of seed in Kg/ha.	139	57	81	127	156	219	265	30.6

Control mean=299 Kg/ha ; No. of trials=2.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of seed in Kg/ha.	107	81	106	204	0	297	351	N.A.

Control mean=574 Kg/ha ; No. of trials=3.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of seed in Kg/ha.	57	20	51	133	167	257	336	14.1

Control mean=.615Kg/ha. ; No. of trials=6.

Nadla

62(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of seed in Kg/ha.	127	54	133	130	215	238	250	63.9

Control mean=548 Kg/ha. ; No. of trials=8.

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of seed in Kg/ha.	92	4	77	160	168	257	287	32.0

Control mean=532 Kg/ha ; No. of trials=6.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of seed in Kg/ha.	170	80	102	184	266	318	357	24.1

Control mean=585 Kg/ha. ; No. of trials=7.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of seed in Kg/ha.	183	108	132	221	273	365	408	23.9

Control mean=495 Kg/ha. ; No. of trials=9.

24-Parganas

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of seed in Kg/ha.	45	-11	5	62	62	138	115	42.0

Control mean=207 Kg/ha. ; No. of trials=2.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of seed in Kg/ha.	123	15	37	148	167	177	236	33.2

Control mean=269 Kg/ha. ; No. of trials=4.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of seed in Kg/ha.	55	5	25	135	135	170	185	24.7

Control mean=355 Kg/ha. ; No. of trials=2.

W. Dinalpur

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of seed in Kg/ha.	123	21	34	154	168	214	219	22.0

Control mean=422 Kg/ha. ; No. of trials=5.

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of seed in Kg/ha.	161	57	90	239	274	315	326	33.4

Control mean=423 Kg/ha. ; No. of trials=4.

65(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of seed in Kg/ha.	149	101	136	239	289	358	407	16.9

Control mean=453 Kg/ha ; No. of trials=10.

Bankura

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of seed in Kg/ha.	47	24	43	99	75	88	124	11.7

Control mean=175 Kg/ha ; No. of trials=7.

Midnapore

64(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of seed in Kg/ha.	78	23	43	96	111	134	156	5.3

Control mean=424 Kg/ha ; No. of trials=3.

Crop :- Mustard (Early)**Ref :- W.B. 65(S.F.T.)****Site :- (District) : Birbhum****Type :- 'M'.**

Object :- Type A₃—To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Laterite. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

O=Control (no manure)

N₁=35 Kg/ha. of NK₁=25 Kg/ha. of K₂OK₂=50 Kg/ha. of K₂ON₁K₁=35 Kg/ha. of N+25 Kg/ha. of K₂ON₁K₂=35 Kg/ha. of N+50 Kg/ha. of K₂ON₂K₂=70 Kg/ha. of N+50 Kg/ha. of K₂ON₁P₁K₁=35 Kg/ha. of N+25 Kg/ha. of P₂O₅+25 Kg/ha. of K₂ON applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.**3. DESIGN :**(i) Same as in type A₁ (irrigated) on page 140.**4. GENERAL :**

(i) to (iii) N.A. (iv) (a) 1965. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :**Birbhum**

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of seed in Kg/ha.	65	15	20	85	95	150	110	7.5

Control mean=470 Kg/ha ; No. of trials=2.

Crop :- Mustard (Rabi)

Ref :- W.B. 62, 63, 64 (S.F.T) for Murshidabad, 63, 64,65(S.F.T.) Malda, 24-Parganas and W. Dinajpur, and 64, (S. F. T.) for Bankura and Midnapore ; 62,63, 64, 65 (S.F.T.) for Nadia.

**Site :- (District) : Murshidabad, Nadia, Type :- 'M'.
Malda, 24-Parganas, W. Dinajpur,
Midnapore and Bankura.**

Object :-Type A₂ —To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red for Midnapore, Laterite for Bankura and Alluvial for all others. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O =Control (no manure).

N₁ =35 Kg/ha. of N.

K₁ =25 Kg/ha. of K₂O.

K₂ =50 Kg/ha. of K₂O.

N₁K₁ =25 Kg/ha. of N+25 Kg/ha. of K₂O.

N₁K₂ =25 Kg/ha. of N+50 Kg/ha. of K₂O.

N₂K₂ =50 Kg/ha. of N+50 Kg/ha. of K₂O.

N₁P₁K₁ =25 Kg/ha. of N+25 Kg/ha. of P₂O₅+25 Kg/ha. of K₂O.

N applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN :

Same as in type A₁ (irrigated) on page 140.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962—66 (65 N.A.) for Murshidabad, 1962—65 for Nadia, 1963—66 for Malda, 1963—65 for 24-Parganas, W. Dinajpur, 64 for Midnapore and Bankura. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

**Murshidabad
62(S.F.T.)**

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of seed in Kg/ha.	41	11	16	65	71	116	104	14.7

Control mean=316 Kg/ha ; No. of trials=2.

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of seed in Kg/ha.	91	48	63	181	256	321	289	N.A.

Control mean=545 Kg/ha ; No. of trials=3.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of seed in Kg/ha.	88	38	71	136	144	234	172	18.7

Control mean=607 Kg/ha ; No. of trials=5.

Nadia

62(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of seed in Kg/ha.	171	26	29	110	198	140	144	52.0

Control mean=470 Kg/ha ; No. of trials=8.

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of seed in Kg/ha.	75	39	44	132	183	244	247	31.0

Control mean=587 Kg/ha ; No of trials=6.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of seed in Kg/ha.	148	29	65	166	207	256	278	32.3

Control mean=510 Kg/ha. ; No. of trials=7.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of seed in Kg/ha.	166	30	85	189	222	317	271	16.9

Control mean=472 Kg/ha. ; No. of trials=9.

Malda

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of seed in Kg/ha.	43	46	75	86	48	73	88	18.0

Control mean=442 Kg/ha. ; No. of trials=6.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of seed in Kg/ha.	111	53	70	113	112	136	164	29.3

Control mean=412 Kg/ha. ; No. of trials=7.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of seed in Kg/ha.	194	128	149	247	253	295	294	46.9

Control mean=238 Kg/ha. ; No. of trials=9.

24-Parganas

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of seed in Kg/ha.	52	-15	0	63	52	75	81	11.0

Control mean=120 Kg/ha. ; No. of trials=4.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of seed in Kg/ha.	-116	47	35	-95	-54	34	-10	N.A.

Control mean=456 Kg/ha. ; No. of trials=4.

65(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of seed in Kg/ha.	105	25	45	165	145	215	155	16.2

Control mean=355 Kg/ha. ; No. of trials=2.

W. Dinajpur

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of seed in Kg/ha.	92	58	30	127	142	200	154	18.0

Control mean=407 Kg/ha. ; No. of trials=5.

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of seed in Kg/ha.	157	44	71	209	227	268	312	34.9

Control mean=392 Kg/ha ; No. of trials=4.

65 (S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of seed in Kg/ha.	136	39	93	190	239	291	307	13.9

Control mean=459 Kg/ha ; No. of trials=10.

Midnapore

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of seed in Kg/ha.	102	3	24	114	119	157	119	6.8

Control mean=357 Kg/ha ; No. of trials=5.

Bankura

64(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of seed in Kg/ha.	57	17	30	65	65	104	124	10.9

Control mean=219 Kg/ha. ; No. of trials=7.

Crop :- Mustard (Rabi).

Ref :- W.B. 64(66).

Site :- State Agri. Farm, Berhampore.

Type :- 'CV'.

Object :-To see the effect of different dates of sowing on the yield of different varieties of Oilseed.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay loam. (iii) As per treatments. (iv) (a) 2 ploughings and laddering. (b) Line sowing. (c) 7 to 10 Kg/ha. (d) 30 cm. × 15 cm. (e) 1. (v) 73.8 Q/ha. to 92.2 Q/ha. of cowdung. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding and thinning. (ix) 160 cm. (x) February '65.

2. TREATMENTS :

Main-plot treatments :

2 dates of sowing : $D_1=7.11.64$ and $D_2=17.11.64$.

Sub-plot treatments :

6 varieties of oilseeds : $V_1=$ Mustard L—18, $V_2=$ Toria T—22, $V_3=$ Toria B—22, $V_4=$ Toria B—54, $V_5=$ Rai B—85 and $V_6=Y/S—9y$.

3. DESIGN

(i) Split-plot. (ii) (a) 2 main-plots/block ; 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 9.8 m. × 6.7 m. (b) 9.1 m. × 6.1 m. (v) 61 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grain. (iv) (a) 1964—66 (Treatments modified in 65). (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 596 Kg/ha. (ii) (a), (b) and (iii) N.A. (iv) Av. yield of seed in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	Mean
D_1	676	443	488	793	859	1015	712
D_2	447	474	283	479	548	642	479
Mean	561	458	386	636	703	829	596

Crop :- Mustard (Rabi).

Ref :- W.B. 65(36).

Site :- State Agri. Farm, Berhampore.

Type :- 'CV'.

Object :-To see the effect of different dates of sowing on different varieties of Oilseed.

1. BASAL CONDITIONS :

(i) (a) No. (b) Mustard, *Toria*, *Rai* etc. (c) 92.2 Q/ha. of cowdung. (ii) Clay loam. (iii) As per treatments. (iv) (a) 2 ploughings and 1 laddering. (b) Line sowing. (c) 7 Kg/ha. (d) 23 cm. × 15 cm. (e) 1. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings and thinning. (ix) 11 cm. (x) 1st week of February '66.

2. TREATMENTS :

Main-plot treatments :

3 dates of sowing : $D_1=27.10.65$, $D_2=6.11.65$ and $D_3=16.11.65$.

Sub-plot treatments :

6 varieties of oilseeds : $V_1=$ Mustard L—18, $V_2=$ Toria T—22, $V_3=$ Toria B—22, $V_4=$ Toria B—54, $V_5=$ Rai B—85 and $V_6=Y/S—9y$.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 plots/block ; 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 9.8 m. × 6.7 m. (b) 9.1 m. × 6.1 m. (v) 61 cm. (vi) Yes.

4. GENERAL :

(f) Fair. (ii) N.A. (iii) Yield of grain. (iv) (a) 1964—66. (b) Yes. (c) N.A. (v) and (vi) Nil. (vii) Treatments modified in 65.

5. RESULTS :

(i) 791 Kg/ha. (ii) (a) 51.0 Kg/ha. (b) 198.5 Kg/ha. (iii) Main effects of D and V are highly significant. (iv) Av. yield of seed in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	Mean
D ₁	628	973	938	995	1388	1397	1053
D ₂	561	771	601	911	1240	1257	890
D ₃	269	276	209	708	501	617	430
Mean	486	673	583	871	1043	1090	791

C.D. for D marginal means=36.1 Kg/ha.

C.D. for V marginal means=163.3 Kg/ha.

Crop :- Mustard (Rabi).

Ref :- W.B. 62(58).

Site :- State Agri. Farm, Berhampore.

Type :- 'D'.

Object :—To observe the efficiency of different insecticides on Mustard aphid, *lipa* is *erysime* (Kalt).

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay-loam. (iii) Middle of June, 62. (iv) (a) Ploughing and laddering. (b) Line sowing. (c) to (e) N.A. (v) and (vi) N.A. (vii) Unirrigated. (viii) 1 to 2 weedings and thinning. (ix) 94.4 cm. (x) N.A.

2. TREATMENTS :

7 insecticidal treatments : T₀=Control, T₁=Rogar—40 @ fl 4. oz./100 gallons of water, T₂=Folidol—E 605 @ 4 fl oz./100 gallons of water, T₃=B.H.C.—50% w.p. @ 4 lbs./100 gallon of water, T₄=Endrex—20 E.C. @ 5 c.c. per gallon of water, T₅=Pyrocclloid @ 1 : 500 parts of water and T₆=Nicotine Sulphate × 1 : 100 parts of water.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 6.1 m. × 7.0 m. (b) 5.5 m. × 6.4 m. (v) 61 cm. border around each plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of mustard aphids, *Athalia proxima* measure etc. As stated in the treatment. (iii) Count of aphid population. (iv) (a) N.A. (b) and (c) Nil. (v) (a) No. (b) Nil. (vi) N.A. (vii) Ten plants were selected at random from each plot and were labelled. Aphid population was counted for each plant before spraying. The living population at the post-spraying period was again counted at an interval of 72 hrs. [The aphid population after 72 hours of duration diminished in all the plots except in the control plots].

5. RESULTS :

(i) 69.5% of dead aphid population. (ii) 11.4% of dead aphid population. (iii) Treatment differences are significant. (iv) Av. mortality percentages.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Av. percentage	71.6	81.4	81.9	64.8	56.3	60.9

C.D.=16.9 Kg/ha.

Crop :- Rai (Rabi).

Ref :- W.B. 60(18), 61(15), 62(34).

**Site :- State Seed Multiplication Farm,
Bhajanghata.**

Type :- 'M'.

Object :—To study the effect of N and P on the yield of Rai.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Loam and sandy loam ; N.A., Loam and sandy loam. (iii) 29.10.60 ; 23.11.61 ; 29.10.62. (iv) (a) 2 to 3 ploughings and spading for 60(18), 61(15); 2 to 3 ploughings and laddering for 62(34). (b) Line sowing ; Broadcasting ; Broadcasting. (c) to (e) N.A. (v) N.A. (vi) B—85 (medium). (vii) Unirrigated. (viii) Thinning ; 2 hand weedings ; 1 hand weeding. (ix) N.A. (x) 17.2.61 ; 15.3.62 ; 28.1.63 to 30.1.63.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : $N_0=0$, $N_1=44.8$ and $N_2=67.2$ Kg/ha.

(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=44.8$ and $P_2=67.2$ Kg/ha.

Super and A/S applied on 5.12.60 for 60(18) ; Super applied on 22.11.61 and A/S as top dressing on 27.12.61 for 61(15) and A/S top dressed on 17.12.62 and P_2O_5 as Super applied as basal on 27.10.62 for 62(34).

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 8.5 m. x 4.9 m. (b) 7.9 m. x 4.3 m. (v) and (vi) Yes.

4. GENERAL :

(i) Good ; N.A.; N.A. (ii) N.A. (iii) Yield of grain. (iv) (a) 1960—62. (b) Yes. (c) Combined analysis given under 5. Results. (v) to (vi) Nil.

5. RESULTS :

(i) 674 Kg/ha. (ii) 388.1 Kg/ha. [made up of 12 d.f. for years x Treatments]. (iii) Main effect of N is significant. (iv) Av. yield of seed in Kg/ha.

	P_0	P_1	P_2	Mean
N_0	364	415	427	402
N_1	685	758	803	749
N_2	879	830	899	869
Mean	643	668	710	674

C.D. for N marginal means=194.0 Kg/ha.

	P_0	P_1	P_2	Sig.	N_0	N_1	N_2	Sig.	G.M.	S.E./plot
1960	494	495	499	N.S.	181	592	715	**	496	102.1
1961	255	274	304	N.S.	253	320	260	**	278	50.8
1962	1178	1235	1326	N.S.	771	1333	1634	**	1246	215.9
Pooled	643	668	710	N.S.	402	749	869	**	674	388.1

Crop :- Rai (Rabi).

Ref :- W.B. 61(61).

Site :- State Agri. Farm, Berhampore.

Type :- 'C'.

Object :—To see the best time of sowing for Rai.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) As per treatments. (iv) (a) 2 to 3 ploughings. (b) Broadcasting. (c) 7 to 10 Kg/ha. (d) and (e) Nil. (v) N.A. (vi) B-85. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

6 dates of sowing : $D_1=10.10.61$, $D_2=20.10.61$, $D_3=30.10.61$, $D_4=9.11.61$, $D_5=19.11.61$ and $D_6=29.11.61$.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) $9.8\text{ m.} \times 6.1\text{ m.}$ (b) $9.1\text{ m.} \times 5.5\text{ m.}$ (v) Nil. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 19C-62 [Expt. failed in 1960 and 62 N.A.]. (b) Yes. (c) N.A. (v) (a) No. (b) Nil. (vi) and (vii) N.A.

5. RESULTS :

(i) 463 Kg/ha. (ii) 99.6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	D_1	D_2	D_3	D_4	D_5	D_6
Av. yield	790	697	636	491	153	138

Crop :- Rai (Rabi).

Ref :- W.B. 60(34).

Site :- State Agri. Farm, Kalyani.

Type :- 'C'.

Object :- To find out the best time of sowing for Rai.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Loam and sandy loam. (iii) As per treatments. (iv) (a) 2 to 3 ploughings and laddering. (b) Broadcasting. (c) 12 Kg/ha. (d) and (e) Nil. (v) N.A. (vi) R. 5 (medium). (vii) Unirrigated. (viii) 2 to 3 weedings. (ix) N.A. (x) Feb.—March 61.

2. TREATMENTS :

5 dates of sowing : $D_1=21.10.60$, $D_2=5.11.60$, $D_3=20.11.60$, $D_4=5.12.60$ and $D_5=20.12.60$.

3. DESIGN :

(i) R.B.D (ii) (a) 5. (b) $4.6\text{ m.} \times 41.8\text{ m.}$ (iii) 5. (iv)(a) $7.6\text{ m.} \times 4.6\text{ m.}$ (b) $7.0\text{ m.} \times 4.0\text{ m.}$ (v) 30 cm. \times 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1960-62 (61 and 62 N.A.) (b) Yes. (c) N.A. (v) (a) Malda. (b) N.A. (vi) N.A. (vii) Nil.

5. RESULTS ;

(i) 961 Kg/ha. (ii) 108.7 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	D_1	D_2	D_3	D_4	D_5
Av. yield	2124	1443	576	460	202

C.D.=145.7 Kg/ha.

Crop :- Rai (Rabi).

Ref :- W.B. 60(35).

Site :- State Agri. Farm, Malda.

Type :- 'C'.

Object :- To find out the best time of sowing for Rai.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Riverine clay. (iii) As per treatments. (iv) (a) 2—3 ploughings and laddering. (b) Broadcasting. (c) 10 Kg/ha. (d) and (e) Nil. (v) N.A. (vi) R—5 (medium). (vii) Unirrigated. (viii) 2 to 3 hand weedings. (ix) N.A. (x) Feb. to March 61.

2. TREATMENTS :

5 dates of sowing : $D_1=11.10.60$, $D_2=5.12.60$, $D_3=20.11.60$, $D_4=5.12.60$ and $D_5=20.12.60$.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 9.8 m. \times 6.1 m. (b) 9.1 m. \times 5.5 m. (v) 30 cm. \times 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1960—62 (61 and 62 N.A.) (b) Yes. (c) N.A. (v) (a) Kalyani. (b) N.A. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 1013 Kg/ha. (ii) 206.3 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	D_1	D_2	D_3	D_4	D_5
Av. yield	1181	1432	978	993	480

C.D.=276.2 Kg/ha.

Crop :- Toria.

Ref :- W.B. 63(6), 64(2).

Site :- State Agri. Farm, Berhampore.

Type :- 'M'.

Object :—To study the effect of different levels of N and P alone and in combination on the yield of Toria.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) 8.10.63 ; 10.10.64. (iv) (a) 2 to 3 ploughings and laddering. (b) Broadcasting. (c) 14.8 Kg/ha. (d) and (e) N.A. (v) N.A. (vi) B—54 (medium). (vii) Unirrigated. (viii) 2 to 3 weedings and thinning. (ix) and (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N as A/S : $N_0=0$, $N_1=22.4$, $N_2=44.8$ and $N_3=67.2$ Kg/ha.

(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=33.6$ and $P_2=67.2$ Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 6.7 m. \times 3.7 m. (b) 6.1 m. \times 3.1 m. (v) 30 cm. \times 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of seed. (iv) (a) 1963—contd. (65 N.A.) (b) Yes. (c) N.A. (v) Malda. (vi) Nil. (vii) Experiment is continued beyond 65. Hence individual results are presented.

5. RESULTS :

63(6)

(i) 521 Kg/ha. (ii) 124.3 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of seed in Kg/ha.

	N ₀	N ₁	N ₂	N ₃	Mean
P ₀	386	402	709	567	521
P ₁	436	463	615	585	525
P ₂	404	431	604	634	518
Mean	409	432	643	602	521

C.D. for N marginal means=103.7 Kg/ha.

64(2)

(i) 596 Kg/ha. (ii) 131.9 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of seed in Kg/ha.

	N ₀	N ₁	N ₂	N ₃	Mean
P ₀	398	505	585	685	543
P ₁	355	635	723	777	622
P ₂	424	575	593	894	622
Mean	392	572	634	785	596

C.D. for N marginal means=110.1 Kg/ha.

Crop :- Toria (Rabi).

Ref :- W.B. 65(28).

Site :- State Agri. Farm, Berhampore.

Type :- 'M'.

Object :- To find out the optimum doses of fertilizers and manures for the yield of Toria.

1. BASAL CONDITIONS :

(i) (a) No. (b) Toria. (c) N. A. (ii) Clay loam. (iii) Last week of Oct, 65. (iv) (a) 2 ploughings and 1 laddering. (b) Line sowing. (c) 3 Kg/ha. (d) 23 cm. × 15 cm. (e) 1. (v) N. A. (vi) B-54. (vii) Un-irrigated. (viii) 2 weedings and thinning. (ix) 10.5 cm. (x) Feb. 66.

2. TREATMENTS :

All combinations of (1), (2), (3) and (4).

(1) 3 levels of N: N₀=0, N₁=22 and N₂=45 Kg/ha.

(2) 3 levels of P₂O₅: P₀=0, P₁=18 and P₂=34 Kg/ha.

(3) 3 levels of K₂O: K₀=0, K₁=17 and K₂=34 Kg/ha.

(4) 3 levels of manures: M₀=0, M₁=56.0 and M₂=112.1 Q/ha.

N as A/S, P₂O₅ as Super and K₂O as Mur. Pot. were applied as fertilizer and F.Y.M. were applied as manures. F.Y.M. were applied at the time of land preparation. Fertilizer were applied at the time of sowing by broadcasting.

3. DESIGN :

(i) 3⁴ Confd. fact. (ii) (a) 9 blocks/replication, 9 plots/block. (b) N.A. (iii) One. (iv) (a) 8.0 m. × 6.4 m. (b) 7.0 m. × 5.8m. (v) 91 cm. kept as border. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of grain. (iv) (a) 1965 contd. (b) Yes. (c) N.A. (v) (a) State Agri. Farm Cooch Behar. (b) N.A. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 802 Kg/ha. (ii) 130.5 Kg/ha. (iii) Main effects of M and K are highly significant. (iv) Av. yield of toria in Kg/ha.

	P ₀	P ₁	P ₂	M ₀	M ₁	M ₂	K ₀	K ₁	K ₂	Mean
N ₀	700	633	720	724	654	676	781	620	653	684
N ₁	852	818	798	841	802	826	811	817	840	823
N ₂	921	979	796	916	861	920	982	835	881	899
Mean	824	810	771	827	772	807	858	757	791	802
M ₀	902	833	838	899	825	850				
M ₁	779	797	696	786	723	762				
M ₂	791	800	780	795	769	810				
K ₀	884	798	799							
K ₁	789	793	734							
K ₂	800	840	781							

C. D for N or K marginal means=70.3 Kg/ha

Crop :- Toria (Rabi.)

Ref :- W.B. 65(30).

Site :- State Agri. Farm, Cooch Bihar.

Type :- 'M'.

Object :- To find out the optimum doses of fertilizer and manures on the yield of Toria.

1. BASAL CONDITIONS :

(i) (a) to (c) NA. (ii) Buxa rivine (iii) N.A. (iv) (a) 2 to 3 ploughings, laddering and spading. (b) Line sowing. (c) 7.4 to 10.0 Kg/ha. (d) 30 cm. between rows. (e) One. (v) N.A. (vi) B-54. (vii) Unirrigated. (viii) 2 weedings and thinning (ix) N.A. (x) 1st week of March 1966.

2. TREATMENTS :

All combinations of (1), (2), (3) and (4).

(1) 3 levels of N : N₀=0, N₁=22 and N₂=45 Kg/ha.

(2) 3 levels of P₂O₅ : P₀=0, P₁=17 and P₂=34 Kg/ha.

(3) 3 levels of K₂O : K₀=0, K₁=17 and K₂=34 Kg/ha.

(4) 3 levels of Manures : M₀=0, M₁=56.0 and M₂=112.1 Q/ha.

N as A/S, P₂O₅ as Super and K₂O as Mur. Pot. were applied by broadcasting at the time of sowing and F. Y. M were applied as manures at the time of land preparation.

3. DESIGN :

(i) 3³ Confd. fact. (ii) (a) 9 blocks/replication, 9 plots/block. (b) N.A. (iii) One. (iv) (a) 7.9 m. × 6.4 m. (b) 7.0 m. × 5.8 m. (v) 91 cm. kept as border. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1965-contd. (b) Yes. (c) N.A. (v) Berhampore. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 131 Kg/ha. (ii) 4.5 Kg/ha. (iii) Main effect of N, P and M are significant and interaction of P × M is significant. (iv) Av. yield of seed in Kg/ha.

	P ₀	P ₁	P ₂	M ₀	M ₁	M ₂	K ₀	K ₁	K ₂	Mean
N ₀	93	118	116	85	121	122	104	94	130	109
N ₁	120	167	151	112	147	179	155	151	132	146
N ₂	127	138	145	111	136	163	143	116	151	137
Mean	113	141	137	103	135	155	134	120	138	131
K ₀	122	146	134	92	145	165				
K ₁	104	126	132	82	126	155				
K ₂	115	152	147	135	135	144				
M ₀	62	112	134							
M ₁	106	171	127							
M ₂	172	140	151							

C. D for N, P or M marginal means=2.4 Kg/ha.
C.D. for body of P×M table =4.2 Kg/ha.

Crop :- Toria (Rabi).

Ref :- W.B. 60(15), 61(9), 62(1).

Site :- State Agri. Farm, Malda.

Type :- 'M'.

Object :-To study the effect of different levels of N and P on the yield of Toria.

1. BASAL CONDITIONS :

(i) (a) to (c). Nil for 60, N.A. for others. (ii) Alluvial. (iii) 15.10.60; 15.10.61; 15 to 20.10.62. (iv) (a) 1 to 4 ploughings, spading and 2 laddering. (b) Line sowing. (c) 4.9 to 6.2 Kg/ha. (d) 30 cm.×15cm. (e) N.A. (v) N.A., 138.3 Q/ha. of cowdung; 92.2 Q/ha. of cowdung. (vi) B-54 (late). (vii) Irrigated. (viii) 2 to 3 weedings and 2 thinning. (ix) N.A. (x) 16 to 20.1.61; 1st week of January 62; 1st week of January, 63.

2. TREATMENTS :

All combinations of (1) and (2).

- (1) 4 levels of N as A/S : N₀=0, N₁=22.4, N₂=44.8 and N₃=67.2 Kg/ha.
- (2) 3 levels of P₂O₅ as Super : P₀=0, P₁=33.6 and P₂=67.2 Kg/ha.

3. DESIGN :

(i) Fact in R. B. D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 5.2 cm.×3.7 cm. (b) 4.6 cm.×3.4 cm. (v) 30 cm.×15 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of seed. (iv) (a) 1958-62. (b) Yes. (c) The results of the combined analysis are given under 5. Results. (v) Berhampore. (vi) Nil. (vii) Variances are heterogeneous and Treatments×years interaction is present.

5. RESULTS:

(i) 1636 Kg/ha. (ii) 484.0 Kg/ha. (made up of 22 d.f. of Treatments×years interaction). (iii) Main effect of N is significant. (iv) Av yield of seed in Kg/ha.

	N ₀	N ₁	N ₂	N ₃	Mean
P ₀	1280	1681	1826	1956	1686
P ₁	1250	1523	1607	2125	1626
P ₂	1146	1467	1871	1896	1595
Mean	1225	1557	1768	1992	1636

C. D for N marginal means=236.6 Kg/ha.

Years	N ₀	N ₁	N ₂	N ₃	Sig.	P ₀	P ₁	P ₂	Sig.	G.M.	S.E./plot
1960	1134	1260	1426	1565	**	1324	1360	1354	N.S.	1081	159.8
1961	1600	2314	2560	2954	**	2492	2222	2356	*	1308	261.0
1962	942	1098	1318	1458	**	1241	1296	1076	*	1128	234.9
Pooled	1225	1557	1768	1992	*	1686	1626	1595	N.S.	1636	484.0

Crop :- Toria (Rabi),

Ref :- W.B. 61(60).

Site :- State Agri. Farm, Kalyani.

Type :- 'C'.

Object :- To see the best time of sowing for Toria.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Loamy. (iii) As per treatments. (iv) (a) 2 to 3 ploughings and spading. (b) Broadcasting. (c) to (e) N.A. (v) N.A. (vi) B-65. (vii) Unirrigated. (viii) Weeding and thinning. (ix) and (x) N.A.

2. TREATMENTS :

6 dates of sowing : D₁=21.10.61, D₂=31.10.61, D₃=10.11.61, D₄=20.11.61, D₅=30.11.61 and D₆=10.12.61.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 9.8 m. × 6.1 m. (b) 9.1 m. × 5.5 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of seed. (iv) (a) 1958 to 61 (failed in 1960). (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 420 Kg/ha. (ii) 66.4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of seed in Kg/ha.

Treatment :	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆
Av. yield :	940	815	588	120	38	16

Crop :- Toria (Rabi).**Ref :- W.B. 60(36).****Site :- State Agri. Farm, Malda.****Type :- 'C'.**

Object :—To find out the best time of sowing for Toria.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Reverine. (iii) As per treatments. (iv) (a) 2 to 3 ploughings. (b) Broadcasting. (c) to (e) N.A. (v) and (vi) N.A. (vii) Unirrigated. (viii) 2 to 3 weedings. (ix) and (x) N.A.

2. TREATMENTS :4 dates of sowing : $D_1=15.10.60$, $D_2=30.10.60$, $D_3=14.11.60$ and $D_4=29.11.60$.**3. DESIGN :**(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 9'8 m. \times 6'1 m. (b) 9'1 m. \times 5'5 m. (v) 30 cm. \times 30 cm. (vi) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of seed. (iv) (a) 1958–62. (Treatments modified in 61 ; 62 N.A.) (b) Yes. (c) N.A. (v) Kalyani. (vi) and (vii) Nil.

5. RESULTS :

(i) 1111 Kg/ha. (ii) 215.1 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of seed in Kg/ha.

Treatment	D_1	D_2	D_3	D_4
Av. yield	1150	1460	995	838

C.D. = 343.9 Kg/ha.

Crop :- Toria (Rabi).**Ref :- W.B. 61(59).****Site :- State Agri. Farm Malda.****Type :- 'C'**

Object :—To see the best time of sowing for Toria.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) As per treatments. (iv) (a) 2 to 3 ploughings. (b) Broadcasting. (c) 9.9 to 12.3 Q/ha. (d) N.A. (e) 1. (v) N.A. (vi) B—54 (Medium). (vii) Unirrigated. (viii) Weeding and thinning. (ix) and (x) N.A.

2. TREATMENTS :6 dates of sowing : $D_1=9.10.61$, $D_2=24.10.61$, $D_3=8.11.61$, $D_4=23.11.61$, $D_5=8.12.61$ and $D_6=23.12.61$.**3. DESIGN :**(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 7'6 m. \times 4'3 m. (b) 7'0 m. \times 3'7 m. (v) 30 cm. \times 30 cm. (vi) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of seed. (iv) (a) 1958 to 62 (Treatments modified in 60;62 N.A.) (b) Yes. (c) N.A. (v) Kalyani. (vi) N.A. (vii) Last two sowings completely failed' as such data was not statistically analysed.

5. RESULTS :

(i) 654 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of seed in Kg/ha.

Treatment :	D_1	D_2	D_3	D_4
Av. yield :	1293	1276	1145	212

Crop :- Toria (Kharif).**Ref :- W.B. 61(10), 62(2), 63(1), 64(1).****Site :- State Agri. Farm, Berhampore. Type :- 'P'**

Object :- To study the effect of irrigation on Toria.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Ganga rivine clay loam. (iii) 15.10.1961; 15 to 18.10.1962; 15 to 20.10.1963; 16.10.1964. (iv) (a) 3 to 4 ploughings and laddering in 1961; 2 to 3 ploughings and spading for others. (b) Line sowing in 1961, 1962 and Broadcasting in 1963, 64. (c) N.A. in 1961 and 1962 and 6.9 Kg/ha. in 1963 and 6.9 to 9.2 Kg/ha. in 1964. (d) N.A. (e) —. (v) N.A. in 1961, 1963; 138.3 Q/ha. of cowdung in 1963, 168.1 Kg/ha. of cowdung in 1964. (vi) B-54. (vii) Irrigated. (viii) 2 weedings in 1961; 2-3 weedings in 1962 to 1964 by hand. (ix) N.A. (x) 7.1.1962; 15.1.1963; 12 to 15.1.1964; and 10 to 12.1.1965.

2. TREATMENTS :

4 irrigational treatments :- I_0 =No irrigation, I_1 =one irrigation after 20 days of sowings. I_2 =Two irrigations at an interval of 20 days after sowing and I_3 =Three irrigations at an interval of 20 days after sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 9.8 m. \times 6.7 m. (b) 9.1 m. \times 6.1 m. (v) 30 cm. \times 30 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of seed; (iv) (a) 1961 to 1964. (b) Yes. (v) and (vi) N.A. (vii) Error variances are heterogeneous and Treatments \times Years interactions is present.

5. RESULTS :

(i) 365 Kg/ha. (ii) 115.1 Kg/ha. (based on 9 d.f. made up of Treatments \times Years interaction). (iii) Treatment differences are significant. (iv) Av. yield of seed in Kg/ha.

Treatment	I_0	I_1	I_2	I_3
Av. yield	298	378	431	351

C.D.=92.2 Kg/ha.

Years	I_0	I_1	I_2	I_3	Sig.	G.M.	S.E./plot
1961	607	759	844	691	**	725	70.1
1962	82	107	120	97	**	102	4.1
1963	127	128	121	130	N.S.	126	30.5
1964	375	523	640	485	**	506	19.7
Pooled	298	378	431	351	*	365	115.1

Crop :- Soyabean (Kharif).**Ref :- W.B. 65(59).****Site :- State Agri. Farm, Berhampore****Type :- 'MV'.**Object :- To find out the optimum dose of 'N' and 'P₂O₅' for different varieties of Soyabean.**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) Sandy Loam. (iii) Last week of June '65. (iv) (a) 2-3 ploughings, spading + laddering. (b) Line sowing by hand. (c) 44.5 Kg/ha. (d) 30 cm. \times 10 cm. (e) One. (v) 92.2 Q/ha. of compost. (vi) As per treatments. (vii) Unirrigated. (viii) 2-3 weedings and thinning. (ix) 118 cm. (x) Middle of Oct. '65.

2. TREATMENTS :

Main-plot treatments :

2 varieties of Soyabean : V_1 =Soyamax and V_2 =E.C. 2542.

Sub-plot treatments :

All combinations of (1) and (2).

(1) 3 levels of N : $N_0=0$, $N_1=24.7$ and $N_2=49$ Kg/ha.

(2) 3 levels of ' P_2O_5 ' : $P_0=0$, $P_1=37$ and $P_2=49$ Kg/ha.

'N' as A/S, ' P_2O_5 ' as Super were applied by broadcasting at the time of land preparation.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) 3.0 m. \times 4.6 m. (b) 2.7 m. \times 4.4 m. (v) 30 cm. kept as border between plots. (vi) Yes.

4. GENERAL ;

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1965 to 1966. (b) Yes. (c) Nil. (v) and (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 2155 Kg/ha. (ii) (a) 509.1 Kg/ha. (b) 238.7 Kg/ha. (iii) Main effect of V is highly significant and interaction of 'N \times V' and 'N \times P' are also highly significant. (iv) Av yield of seed in Kg/ha.

	P_0	P_1	P_2	V_1	V_2	Mean
N_0	2074	2199	2219	1875	2453	2164
N_1	2088	2135	2240	1828	2480	2154
N_2	2317	2033	2090	1819	2474	2147
Mean	2160	2122	2183	1840	2469	2155
V_1	1825	1846	1850			
V_2	2494	2398	2516			

C.D. for V marginal means = 381.8 Kg/ha.
 C.D. for V means at the same level of N = 210.6 Kg/ha.
 C.D. for N means at the same level of V = 340.3 Kg/ha.
 C.D. for the body of N \times P table = 240.6 Kg/ha.

Crop :- Soyabean (Kharif).

Ref :- W.B. 65(60).

Site :- State Agri. Farm, Kalyani.

Type :- 'C'.

Object :- To find out the optimum spacing for the crop.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) 1st week of June, '65. (iv) (a) 2 to 3 ploughings, spading and laddering. (b) Line sowing by hand. (c) 18 Kg/ha. (d) As per treatments. (e) One. (v) 92.2 Q/ha. of compost. (vi) Symose (medium). (vii) Unirrigated. (viii) 2 weedings and 1 thinning. (ix) N.A. (x) Middle of Oct. '65.

2. TREATMENTS :

8 cultural treatments : $T_1=30$ cm. \times 10 cm., $T_2=45$ cm. \times 10 cm., $T_3=60$ cm. \times 10 cm., $T_4=30$ cm. \times 2.5 cm., $T_5=45$ cm. \times 2.5 cm., $T_6=60$ cm. \times 3.7 cm., $T_7=60$ cm. \times 3.7 cm. and T_8 =Broadcasting.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) 35.4 m. × 5.2 m. (iii) 4. (iv) 4.3 m. × 5.2 m. (b) 3.6 m. × 4.6 m. (v) 60 cm. kept as border between-plots. (vi) Yes.

4. GENERAL :

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

5. RESULTS :

(i) 2558 Kg/ha. (ii) 59.8 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of seed in Kg/ha.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	2282	2381	2818	2772	2989	2423	2391	2404

C.D. = 87.9 Kg/ha.

Crop :- Sesamum (Kharif).

Ref :- W.B. 63(S.F.T.).

Site :- (District) : Malda.

Type :- 'M'.

Object :- Type A₁ :- To study the response curves of important cereal, cash and oilseed crops to nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O = Control (no manure).

N₁ = 25 Kg/ha. of N

N₂ = 50 Kg/ha. of N

P₁ = 25 Kg/ha. of P₂O₅

N₁P₁ = 25 Kg/ha. of N + 25 Kg/ha. of P₂O₅

N₂P₁ = 50 Kg/ha. of N + 25 Kg/ha. of P₂O₅

N₂P₂ = 50 Kg/ha. of N + 50 Kg/ha. of P₂O₅

N₂P₂K₁ = 50 Kg/ha. of N + 50 Kg/ha. of P₂O₅ + 25 Kg/ha. of K₂O

N applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN :

A selected district is divided into four agriculturally homogeneous zones based on climate, soil, cropping pattern etc. In each zone one block is selected at random. A block normally consists of a group of 50-100 villages. In each block 36 experiments are conducted in a year of which 11 are of type A₁, 11 of type A₂, 11 of type A₃ and 3 are of type C. The eleven experiments under type A₁, A₂ and A₃ are distributed as 3 on a *Kharif* cereal, 3 on a *rabi* cereal, 3 on a cash crop and 2 on oil seed. All the three type-C experiments are conducted on a legume crop. For the purpose of conducting the A₁, A₂ and A₃ experiments 11 villages are randomly selected in each block and in each village 3 experiments one each of type A₁, A₂ and A₃ are laid out. For conducting the three type-C trials three villages are randomly selected in each block.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1963 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

1963

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of seed in Kg/ha.	90	155	—	114	148	181	229	30.0

Control mean = 208 Kg/ha. ; No. of trials = 2.

Crop :- Sesamum (Kharif).**Ref :- W.B. 63(S.F.T.)****Site :- (District) : Malda.****Type :- 'M'.**

Object :—Type A₁ :-To study the response curves of important cereal, cash and oilseed crops to Phosphorus applied singly and in combination with other nutrients.

1. BASAL CONDITIONS

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O = Control (no Manure)

N₁ = 25 Kg/ha. of NP₁ = 25 Kg/ha. of P₂O₅P₂ = 50 Kg/ha. of P₂O₅N₁P₁ = 25 Kg/ha. of N+25 Kg/ha. of P₂O₅N₁P₂ = 25 Kg/ha. of N+50 Kg/ha. of P₂O₅N₂P₁ = 50 Kg/ha. of N+50 Kg/ha. of P₂O₅N₁P₂K₁ = 50 Kg/ha. of N+50 Kg/ha. P₂O₅+50 Kg/ha. of K₂ON applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.**3. DESIGN:**Same as in type A₁ (unirrigated) on page 293.**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of G'ingelly. (iv) 1963 only. (v) to (vii) N.A.

5. RESULTS :**Malda****63(S.F.T.)**

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₁ P ₂	N ₂ P ₁	N ₁ P ₂ K ₁	S.E.
Av. response of g'ingelly in Kg/ha.	90	34	28	143	99	178	184	45.0

Control mean=254 Kg/ha. ; No. of trials=2.

Crop :- Sesamum (Kharif).**Ref :- W.B. 63(S.F.T.)****Site :- (District) : Malda.****Type :- 'M'.**

Object :—Type A₁ :-To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O=Control (no manure)

N₁=25 Kg/ha of NK₁=25 Kg/ha of K₂OK₂=50 Kg/ha of K₂ON₁K₁=25 Kg/ha of N+25 Kg/ha of K₂ON₁K₂=25 Kg/ha of N+50 Kg/ha of K₂ON₂K₂=50 Kg/ha of N+50 Kg/ha of K₂ON₁P₁K₁=25 Kg/ha of N+25 Kg/ha of P₂O₅+25 Kg/ha of K₂ON applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN :

Same as in type A₁ (unirrigated) on page 293.

4. GENERAL :

(i) to (iii) N.A. (iv) 1963 only. (v) to (vii) N.A.

5. RESULTS :

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of gingelly in Kg/ha.	51	5	10	97	85	155	143	21.0

Control mean=156 Kg/ha. ; No. of trials=2.

Crop :- Sesamum (Kharif).

Ref :- W.B. 65(54).

Site :- State Agri. Farm, Monmothongar.

Type :- 'MV'.

Object :—To see the effect of fertilizers on different varieties of the crop.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Saline. (iii) 7.4.65. (iv) (a) 2—3 ploughings and laddering. (b) Line sowing. (c) N.A. (d) 30 cm.×20 cm. (e) 1. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) 2—3 weedings and thinning. (ix) N.A. (x) 7.7.65.

2. TREATMENTS :

Main-plot treatments :

5 levels of fertilizers : T₀=0 (No fertilizers), T₁=45 Kg/ha. of N as A/S, T₂=22.5 Kg/ha. of P₂O₅ as Super, T₃=45 Kg/ha. of K₂O as Mur. Pot. and T₄=45 Kg/ha. of N+22.5 Kg/ha. of P₂O₅+45 Kg/ha. of K₂O.

Sub-plot treatments :

4 varieties of Sesamum : V₁=Local, V₂=B-9, V₃=B-14 and V₄=Jinnari.

Fertilizers applied by broadcasting at the time of land preparation.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/block ; 4 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 1.5 m.×6.1 m. (b) 1.4 m.×5.5 m. (v) 60 cm. kept as border. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of seed. (iv) (a) No. (b) and (c) Nil. (v) No. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 507 Kg/ha. (ii) (a) 128.6 Kg/ha. (b) 92.0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of seed in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	Mean
T ₀	505	532	292	558	472
T ₁	651	691	545	319	552
T ₂	399	678	425	346	462
T ₃	478	585	598	505	542
T ₄	545	611	465	412	508
Mean	516	619	465	428	507

Crop :- Sesamum (Rabi).**Ref :- W.B. 63(5), 64(57).****Site :- State Agri. Farm, Berhampore.****Type :- 'CM'.**

Object :—To study the effect of different spacings between plants and different levels of fertilizers on the yield of Til.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A., Til. (c) N.A., As per treatments. (ii) Sandy loam. (iii) 2nd week of May for 1963 and 64. (iv) (a) 2—4 ploughings, spading and laddering. (b) Line sowing. (c) 6 to 7 Kg/ha. (d) As per treatments. (e) N.A. (v) 73.8 to 92.2 Q/ha. of cowdung. (vi) B.T.—14 (medium). (vii) Unirrigated. (viii) 2 weedings and thinning. (ix) 91 cm. and 105 cm. (x) Last week of Sept. 63 ; 11.8.64.

2. TREATMENTS :**Main-plot treatments :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S : $N_0=0$, $N_1=44.8$ and $N_2=89.7$ Kg/ha.

(2) 3 levels of K_2O as Mur. Pot. : $K_0=0$, $K_1=44.8$ and $K_2=89.7$ Kg/ha.

Sub-plot treatments :

4 spacings : $S_1=23$ cm. \times 23 cm., $S_2=30$ cm. \times 23 cm., $S_3=38$ cm. \times 23 cm. and $S_4=46$ cm. \times 23 cm.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 5.2 m. \times 4.3 m. (b) 4.6 m. \times 3.7 m. (v) 61 cm. \times 61 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of seed. (iv) (a) 1963—contd. [65 N.A.]. (b) Yes. (c) The results of the combined analysis are given under 5. Results. (v) No. (vi) N.A. (vii) Sub-plot error variances are heterogeneous. Hence individual results are presented.

5. RESULTS :**63(5)**

(i) 759 Kg/ha. (ii) (a) 209.3 Kg/ha. (b) 155.5 Kg/ha. (iii) Main effect of S alone is significant. (iv) Av. yield of seed in Kg/ha.

	N_0	N_1	N_2	K_0	K_1	K_2	Mean
S_1	788	746	857	769	732	891	797
S_2	790	769	862	848	815	758	807
S_3	698	727	771	785	668	743	732
S_4	634	717	750	728	663	710	700
Mean	728	740	810	782	720	776	759
K_0	751	711	885				
K_1	642	754	764				
K_2	791	755	781				

C.D. for S marginal means=71.9 Kg/ha.

64(57)

(i) 408 Kg/ha. (ii) (a) 89.7 Kg/ha. (b) 95.7 Kg/ha. (iii) Interaction $N \times K \times S$ alone is significant. (iv) Av. yield of seed in Kg/ha.

	N ₀	N ₁	N ₂	K ₀	-K ₁	K ₂	Mean
S ₁	388	418	431	447	397	393	412
S ₂	425	417	394	372	414	449	412
S ₃	403	409	427	415	414	410	413
S ₄	341	426	420	330	417	439	396
Mean	389	418	418	391	410	423	408
K ₀	354	432	386				
K ₁	397	390	444				
K ₂	416	431	423				

Crop :- Niger (Kharif)

Ref :- W.B. 63 (S.F.T.)

Site :- (District) : Burdwan, Hooghly and Nadia

Type :- 'M'.

Object :-Type A₁—To study the response curves of important cereal, cash and oilseed crops to nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O =Control (no manure)

N₁ =25 Kg/ha of N

N₂ =50 Kg/ha of N

P₁ =25 Kg/ha of P₂O₅

N₁P₁ =25 Kg/ha of N+25 Kg/ha of P₂O₅

N₂P₁ =50 Kg/ha of N+25 Kg/ha of P₂O₅

N₂P₂ =50 Kg/ha of N+50 Kg/ha of P₂O₅

N₂P₂K₁=50 Kg/ha of N+50 Kg/ha of P₂O₅+25 Kg/ha of K₂O

N applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN :

A selected district is divided into four agriculturally homogeneous zones based on climate, soil, cropping pattern etc. In each zone one block is selected at random. A block normally consists of a group of 50—100 villages. In each block 36 experiments are conducted in a year of which 11 are of type A₁, 11 of type A₂, 11 of type A₃ and 3 are of type C. The eleven experiments under type A₁, A₂ and A₃ are distributed as 3 on a kharif cereal, 3 on a cash crop and 2 on oil seed. All the three type-C experiments are conducted on a legume crop. For the purpose of conducting the A₁, A₂ and A₃ experiments 11 villages are randomly selected in each block and in each village 3 experiments one each of type A₁, A₂ and A₃ are laid out. For conducting the three type-C trials three villages are randomly selected in each block.

4. GENERAL:

(i) to (iii) N.A. (iv) (a) 1963 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Burdwan

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of seed in Kg/ha.	118	149	15	128	196	283	358	26.0

Control mean=556 Kg/ha. ; No. of trials=5.

Hooghly

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of seed in Kg/ha.	119	181	127	190	209	282	348	76.0

Control mean=784 Kg/ha. ; No. of trials=3.

Nadia

63(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₁	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of seed in Kg/ha.	168	222	50	146	248	288	275	N.A.

Control mean=762 Kg/ha. ; No. of trials=2.

Crop :- Niger (Rabi).**Ref :- W.B. 63 (S.F.T.)****Site :- (District) : Hooghly, Nadia, W. Dinajpur and Burdwan.****Type :- 'M'.**

Object :- Type A₁—To study response curves of important cereal, cash and oilseed crops to Phosphorus applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O =Control (no manure)

N₁ =35 Kg/ha of NP₁ =25 Kg/ha of P₂O₅P₂ =50 Kg/ha of P₂O₅N₁P₁ =35 Kg/ha of N+25 Kg/ha of P₂O₅N₁P₂ =35 Kg/ha of N+50 Kg/ha of P₂O₅N₂P₂ =70 Kg/ha of N+50 Kg/ha of P₂O₅N₂P₂K₁ =70 Kg/ha of N+50 Kg/ha of P₂O₅+50 Kg/ha of K₂ON applied as A/S, P₂O₅ as Super and K₂O as Mur. Pot.

3. DESIGN

Same as in type A₁ (unirrigated) on page 299.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of seed. (iv) 1963 only. (v) to (vii) N.A.

5. RESULTS:

Hooghly

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of seed in Kg/ha.	112	43	72	169	181	251	329	30.0

Control mean=658 Kg/ha ; No. of trials=3.

Nadia

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of seed in Kg/ha.	95	73	94	146	161	253	329	N.A.

Control mean=674 Kg/ha ; No. of trials=2.

W. Dinajpur

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of seed in Kg/ha.	168	59	98	237	252	296	321	45.0

Control mean=336 Kg/ha ; No. of trials=2.

Burdwan

63(S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₂ K ₂	S.E.
Av. response of seed in Kg/ha.	149	72	01	188	203	255	317	12.0

Control mean=631 Kg/ha ; No. of trials=5.

Crop :- Niger (Rabi).**Ref :- W.B. 63 (S.F.T.)****Site :- (District) : Burdwan, Hooghly, Nadia and W. Dinajpur.****Type :- 'M'.**

Object :- Type A₃—To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O = Control (No manure)

N₁ = 25 Kg/ha. of NK₁ = 25 Kg/ha. of K₂OK₂ = 50 Kg/ha. of K₂ON₁K₁ = 25 Kg/ha. of N+25 Kg/ha. of K₂ON₁K₂ = 25 Kg/ha. of N+50 Kg/ha. of K₂ON₂K₂ = 50 Kg/ha. of N+50 Kg/ha. of K₂ON₁P₁K₁ = 25 Kg/ha. of N+25 Kg/ha. of P₂O₅+25 Kg/ha. of K₂ON applied as A/S, P₂O₅ as Super, K₂O as Mur. Pot.**3. DESIGN :**Same as in type A₁ (unirrigated) on page 299.**4. GENERAL :**

(i) to (iii) N.A. (iv) (a) 1963. (b) N.A. (c) Nil. (v) to (vii) N.A.

Burdwan

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of seed in Kg/ha.	153	30	56	195	239	303	296	25.0

Control mean=535 Kg/ha. ; No. of trials=5.

Hooghly

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of seed in Kg/ha.	165	110	178	172	201	246	197	54.0

Control mean=678 Kg/ha. ; No. of trials=3.

Nadia

63(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of seed in Kg/ha.	127	000	74	113	139	204	156	N.A.

Control mean=438 Kg/ha. ; No. of trials=2.

W. Dinajpur

52(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₁ P ₁ K ₁	S.E.
Av. response of seed in Kg/ha.	187	49	69	168	247	286	247	51.0

Control mean=326 Kg/ha. ; No. of trials=2.

Crop :- Mosambi (Sweet Orange).**Ref :- W.B. 64(75).****Site :- State Agri. Farm, Krishnagar.****Type :- 'D'.**

Object :—To determine if the use of 2, 4—D, a plant regulator, can reduce the fruit drop in Sweet Orange (Mosambi) to an appreciable extent.

1. BASAL CONDITIONS

(i) N.A. (ii) Sandy loam. (iii) Planting. (iv) Mosambi (local). (v) N.A. (vi) 1 month. (vii) Nil. (viii) Spading and weeding etc. (ix) No. (x) Unirrigated. (xi) 93.8 cm. (xii) Sept. to Oct. 64.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 6 types of spraying fruits : T₀=Control (spraying fruits with water once only), T₁=Spraying fruits with 2, 4—D-10 ppm. conc. once only, T₂=Spraying fruits with 2, 4—D-20 ppm. conc. once only, T₃=Spraying fruits with water at an interval of 15 days, T₄=Spraying fruits with 2 4—D-10 ppm. at an interval of 15 days and T₅=Spraying fruits with 2, 4—D-20 ppm. at an interval of 15 days.

(2) 12 dates of sprayings : D₁=2.4.64, D₂=17.4.64, D₃=2.5.64, D₄=17.5.64, D₅=1.6.64, D₆=16.6.64, D₇=1.7.64, D₈=16.7.64, D₉=31.7.64, D₁₀=15.8.64, D₁₁=31.8.64 and D₁₂=15.9.64.

Spraying done at the marble stage of the fruits.

3. DESIGN:

(i) R.B.D. (ii) (a) 10 (selected at random). (b) N.A. (iii) 5. (iv) 1. (v) 61 cm, kept as border between rows. (vi) Yes.

4. GENERAL:

(i) and (ii) N.A. (iii) Yield of fruits. (iv) (a) No. (b) and (c) Nil. (v) No. (vi) N.A. (vii) Nil.

5. RESULTS:

(i) 5.2 (mean no. of fruits retained per plant out of 10 fruits treated). (ii) and (iii) N.A. (iv) Av. no. of fruits retained per plant out of 10 fruits treated.

	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈	D ₉	D ₁₀	D ₁₁	D ₁₂	Mean
T ₀	7.6	7.0	6.8	6.8	6.8	6.8	6.2	6.0	5.0	4.8	3.6	1.0	5.7
T ₁	6.2	5.6	5.4	5.2	5.2	5.2	4.8	4.4	3.0	2.4	1.0	0.2	4.1
T ₂	8.0	6.4	6.4	6.4	6.4	6.0	5.0	5.0	4.0	3.2	2.4	0.8	5.0
T ₃	6.4	6.0	6.0	6.0	5.8	5.4	4.6	4.4	3.2	2.8	1.6	1.4	4.4
T ₄	8.0	7.4	7.2	7.2	7.0	6.4	6.2	6.2	5.8	5.6	5.0	3.6	6.3
T ₅	7.8	7.0	6.8	6.4	6.4	6.0	5.6	5.4	5.0	4.8	4.8	4.4	5.9
Mean	7.3	6.6	6.4	6.3	6.3	6.0	5.4	5.2	4.3	3.9	3.1	1.9	5.2

Crop :- Pineapple (Rabi).

Ref :- W.B. 65(74).

Site :- State Agri. Farm, Salbari.

Type :- 'M'.

Object :- To find out the suitable nitrogenous fertilizers and its method of application.

1. BASAL CONDITIONS:

(i) N.A. (ii) Sandy loam. (iii) By suckers. (iv) Giant kew. (v) Planting the suckers with spacing 91 cm. × 45 cm. in March 64. (vi) N.A. (vii) 92.2 Q/ha. of cowdung. (viii) 1 weeding and 1 earthing up. (ix) to (xi) N.A. (xii) August 65.

2. TREATMENTS:

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

(1) 3 sources of N: S₁=Urea, S₂=C/A/N and S₃=A/S.

(2) 3 types of application of fertilizer: F₁=Fertilisers applied to soil as top dressing, F₂= $\frac{1}{2}$ of the fertilizer applied to soil + $\frac{1}{2}$ sprayed and F₃=Fertilizer applied as foliar spray +control (no application of fertilizer).

Fertilizer applied @ 112.1 Kg/ha. were applied. Soil application done at the time of land preparation.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 5.5 m. × 3.7 m. (b) 4.6 m. × 3.7 m. (v) 91 cm, kept as border. (vi) Yes.

4. GENERAL:

(i) and (ii) N.A. (iii) Yield of Pineapple. (iv) (a) 1965-69. (b) and (c) Nil. (v) to (viii) Nil.

5. RESULTS:

(i) 135.6 Q/ha. (ii) 51.8 Kg/ha. (iii) Interaction of S × F alone is significant. (iv) Av. yield of Pineapple in Q/ha.

Control=92.2 Q/ha.

	F ₁	F ₂	F ₃	Mean
S ₁	141.4	104.9	131.7	126.0
S ₂	125.4	135.6	214.8	158.6
S ₃	132.2	174.0	103.4	136.5
Mean	133.0	138.2	150.0	140.4

C.D. of body of S×F table=75.1 Q/ha.

Crop :- Pineapple (Rabi).**Ref :- W.B. 64(78), 65(71)****Site :- State Agri. Farm, Salbari.****Type :- 'C'.**

Object :—To control weeds and conserve moisture in soil through mulching and cultural practices.

1. BASAL CONDITIONS :

(i) N.A. (ii) Sandy loam. (iii) N.A. (iv) Giant Kew. (v) March 1964 ; N.A. spacing 46 cm. (vi) N.A. (vii) 112.1 Kg/ha. of N as A/S, 56.0 Kg/ha. of P₂O₅ and K₂O as Super and Mur.Pot. for 64(78) ; N.A. for 65(71). (viii) 1 weeding and 1 earthing up done once. (ix) N.A. (x) Unirrigated. (xi) N.A. (xii) July-August 1964 ; August 1965.

2. TREATMENTS :

4 cultural treatments : T₁=Cutting weeds occasionally and leaving them in between the rows, T₂= Spading and removing weeds occasionally, T₃=Mulching with trash and Farm waste material and T₄=Mulching with black polythylene film.

3. DESIGN

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) 4.7 m.×3.7 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of pineapple. (iv) 1964—1969. (v) to (vii) Nil.

5. RESULTS :**64(78)**

(i) 89.9 Q/ha. (ii) 45.1 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of pineapple in Kg/ha.

Treatment	T ₁	T ₂	T ₃	T ₄
Av. yield	46.9	28.1	133.4	151.2

C.D.=55.5 Q/ha.

65(71)

(i) 13.5 Q/ha. (ii) 32.5 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of pineapple in Kg/ha.

Treatment	T ₁	T ₂	T ₃	T ₄
Av. yield	152.0	168.6	108.4	111.2

C.D.=40.0 Q/ha.

Crop :- Pineapple (Rabi).**Ref :- W.B. 65(76)****Site :- State Agri. Farm, Salbari.****Type :- 'CV'**

Object .—To determine suitable spacings for different varieties of Pineapple.

1. BASAL CONDITIONS :

(i) N.A. (ii) Sandy loam. (iii) By suckers. (iv) As per treatments. (v) Planting the suckers with spacing as per treatments (vi) N.A. (vii) 112.1 Kg/ha. of N as A/S, 56 Kg/ha. of P_2O_5 and K_2O as Super and Mur. Pot. (viii) 1 weeding and 1 earthing-up. (ix) N.A. (x) Unirrigated. (xi) N.A. (xii) Aug. 1965.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 2 varieties of Pineapple : V_1 —Giant Kew and V_2 —Queen.(2) 3 spacings between rows and plants : S_1 —91 cm. \times 46 cm., S_2 —122 cm. \times 61 cm. \times 30 cm. (double row system) and S_3 —122 cm. \times 61 cm. \times 46 cm. (double row system).**3. DESIGN:**(i) Fact in R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 5.5 m. \times 3.7 m. (b) 4.6 m. \times 3.6 m. (v) 91 cm. kept as border. (vi) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of Pineapple. (iv) 1965—1969. (v) to (vii) Nil.

5. RESULTS :

(i) 78.0 Q/ha. (ii) 46.0 Q/ha. (iii) Main effect of S alone is highly significant. (iv) Av. yield of Pineapple in Q/ha.

	S_1	S_2	S_3	Mean
V_1	32.2	94.3	71.3	65.9
V_2	51.9	125.9	92.2	90.0
Mean	42.0	110.1	81.8	78.0

C.D. for S marginal means = 38.7 Q/ha.

Crop :- Pineapple.**Ref :- W.B. 65(75):****Site :- State Agri. Farm, Salbari.****Type :- 'D'**

Object :—To find out the suitable concentration of hormone for initiations of roots and sprouting of buds.

1. BASAL CONDITIONS :

(i) N.A. (ii) Sandy loam. (iii) By suckers. (iv) Giant Kew. (v) Planting the suckers with spacing 46 cm. (vi) N.A. (vii) 112.1 Kg/ha. of N + 56.0 Kg/ha. of P_2O_5 as Super + 56.0 Kg/ha. of K_2O as Mur. Pot. (viii) to (xi) N.A. (xii) Aug. 1966.

2. TREATMENTS :2 types of hormones : H_1 —IAA (Indole Acetic acid) and H_2 —NAA (Naphthalene Acetic acid).5 concentrations : C_1 —10 PPM, C_2 —20 PPM, C_3 —30 PPM, C_4 —40 PPM and C_5 —50 PPM.

+ a Control.

Slices were dipped in IAA and NAA according to their cone. (for control only water) dried and treated with mercuric fungicides. 20 slices of 2 cm. thickness were treated in each treatment.

3. DESIGN :(i) Fact in R.B.D. (ii) (a) 11. (b) N.A. (iii) 4. (iv) (a) 49 cm. \times 76 cm. (b) 49 cm. \times 61 cm. (v) 15 cm. as border. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Count of sprouted buds. (iv) (a) 1965—70. (b) Yes. (c) N.A. (v) No. (vi) Nil. (vii) N.A. (viii) Records taken after 5 months of planting.

5. RESULTS :

(i) 19.9%. (ii) and (iii) N.A. (iv) Mean no. of buds sprouted (in%)

Control=21.5%.						
	C ₁	C ₂	C ₃	C ₄	C ₅	Mean
H ₁	23.0	20.0	13.5	16.0	22.5	19.0
H ₂	22.5	21.5	18.5	16.3	8.5	17.5
Mean	22.8	20.8	16.0	16.2	15.5	18.3

Crop :- Banana.

Ref :- W.B. 60(25), 61(12), 62(7), 63(10), 64(26), 65(21).

Site :- State Agri. Farm, Chinsurah.

Type :- 'M'.

Object :—To study the effect of application of K and P in combination with N both from inorganic and organic sources on the yield of Banana.

1. BASAL CONDITIONS :

(i) N.A. (ii) Clay loam. (iii) By suckers. (iv) Champa. (v) 20.6.55, planting the suckers 30 cm. to 46 cm deep. (vi) 2—4 months. (vii) 627.7 Q/ha. of T.C. for 60(25), N.A. for others. (viii) Ploughing, spading and interculturing. (ix) Nil. (x) Irrigated. (xi) 130 cm ; 102 cm ; 144 cm ; 135 cm ; 128 cm ; 136 cm. (xii) N.A.

2. TREATMENTS:

12 manurial treatments : M₀=Control, M₁=113 gm. of N as Mustard or Groundnut cake, M₂=113 gm. of N as A/S, M₃=M₁+M₂, M₄=2M₁, M₅=2M₂, M₆=M₁+M₂+K₂O as Pot. Sul. to make up a total of 227 gm., M₇=2M₁+227 gm. of K₂O as Pot. Sul., M₈=M₁+M₂+P₂O₅ as Super to make up a total of 227 gm., M₉=2M₂+227 gm. of P₂O₅ as Super, M₁₀=M₁+M₂+K₂O as Pot. Sul. to make up a total of 227 gm. and P₂O₅ as Super to make up a total of 227 gm. and M₁₁=227 gm. of N as A/S +227 gm. of K₂O as Pot. Sul.+227 gm. of P₂O₅ as Super.

Fertilizers were applied in two equal doses just before and after the monsoon and were applied per plant.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) 0.69 ha. (iii) 4. (iv) (a) N.A. (b) 2 rows of 4 plants. (v) 1 row of 6 plants. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Slight attack of Panama disease. (iii) Yield of Banana. (iv) 1955—contd , (v) No. (vi) Nil. (vii) N.A. (viii) Nil.

5. RESULTS :

60(25)

(Yield of 4th ratoon)

(i) 9.66 Kg/plant. (ii) 1.30 Kg/plant. (iii) Treatment differences are not significant (iv) Av. Yield of banana in Kg/plant.

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	8.75	10.74	9.58	10.30	9.47	9.61	9.78	9.79	9.42	8.84	9.95	9.72

(Yield of 5th ratoon)

(i) 9.36 Kg/plant. (ii) 1.22 Kg/plant. (iii) Treatment differences are not significant. (iv) Av. yield of banana in Kg/plant.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇
Av. yield	8.04	9.62	8.80	9.26	10.21	9.73	9.46	9.59
	M ₈	M ₉	M ₁₀	M ₁₁				
	8.92	8.76	10.15	9.84				

61(12)

(i) 8.74 Kg/plant. (ii) 1.04 Kg/plant. (iii) Treatment differences are highly significant. (iv) Av. yield of banana in Kg/plant.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆
Av. yield	7.47	9.03	7.54	9.21	9.55	8.52	8.79
	M ₇	M ₈	M ₉	M ₁₀	M ₁₁		
	9.66	7.87	8.63	9.45	9.16		

C.D.=1.50 Kg/plant.

62(7)

(i) 7.83 Kg/plant. (ii) 0.53 Kg/plant. (iii) Treatment differences are highly significant. (iv) Av. yield of banana in Kg/plant.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇
Av. yield	7.18	4.56	6.90	8.47	8.64	7.94	8.88	9.71
	M ₈	M ₉	M ₁₀	M ₁₁				
	7.46	7.62	7.48	9.17				

C.D.=0.76 Kg/plant.

63(10)

(i) 9.41 Kg/plant. (ii) 1.02 Kg/plant. (iii) Treatment differences are significant. (iv) Av. yield of banana in Kg/plant.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆
Av. yield	7.89	10.25	9.98	9.71	9.21	8.71	8.35
	M ₇	M ₈	M ₉	M ₁₀	M ₁₁		
	9.80	9.30	10.16	8.98	10.61		

C.D.=1.47 Kg/plant.

64(26)

(i) 9.85 Kg/plant. (ii) and (iii) N.A. (iv) Av. yield of banana in Kg/plant.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇
Av. yield	8.89	9.81	8.96	9.27	8.97	9.94	9.95	9.35
	M ₈	M ₉	M ₁₀	M ₁₁				
	9.99	12.93	9.56	10.55				

65(21)

(i) 9.15 Kg/plant. (ii) and (iii) N.A. (iv) Av. yield of banana in Kg/plant.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆
Av. yield	8.14	9.81	8.48	9.63	10.12	8.86	9.87
	M ₇	M ₈	M ₉	M ₁₀	M ₁₁		
	9.78	9.21	8.81	9.26	7.87		

Crop :- Banana.**Ref :- W.B. 60(28), 61(21), 62(8).****Site :- State Agri. Farm, Chinsurah.****Type :- 'M'.**

Object :- To find out the optimum level of N and ascertain the response of P at different levels of N for perennial plantation.

1. BASAL CONDITIONS :-

(i) N.A. (ii) Ganga low land clay. (iii) By suckers. (iv) *Champa*. (v) 10.11.57, planting the suckers in pits 30 cm deep and 3.1 m. apart. (vi) 3—4 months. (vii) N.A. (viii) Ploughing, spading and stacking. (ix) Nil. (x) Irrigated. (xi) 130 cm., 102 cm., 144 cm. (xii) N.A.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N as A/S : $N_0=0$, $N_1=113$, $N_2=227$ and $N_3=340$ gm/plant.(2) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=113$ gm/plant.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) 0.4 ha. (iii) 4. (iv) (a) N.A. (b) 2 rows of 3 plants. (v) 1 row around each plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of Banana. (iv) 1957—contd.. (v) No. (vi) Nil. (vii) N.A. (viii) Nil.

5. RESULTS :

60(28)

(i) 7.3 Kg/plant. (ii) 0.7 Kg/plant. (iii) Interaction $N \times P$ alone is significant. (iv) Av. yield of banana in Kg/plant.

	N_0	N_1	N_2	N_3	Mean
P_0	7.22	6.81	6.89	7.89	7.20
P_1	8.50	7.51	6.96	6.98	7.49
Mean	7.86	7.16	6.92	7.44	7.34

C.D. for body of $N \times P$ table=1.0 Kg/ha.

61(21)

(i) 7.5 Kg/plant. (ii) 1.5 Kg/plant. (iii) None of the effects is significant. (iv) Av. yield of banana in Kg/plant.

	N_0	N_1	N_2	N_3	Mean
P_0	7.57	7.53	6.85	8.17	7.53
P_1	5.84	8.29	8.28	7.22	7.41
Mean	6.70	7.91	7.56	7.70	7.47

62(8)

(i) 7.1 Kg/plant. (ii) 1.2 Kg/plant. (iii) Treatment differences are not significant. (iv) Av. yield of banana in Kg/plant.

	N_0	N_1	N_2	N_3	Mean
P_0	6.34	7.17	6.88	6.58	6.74
P_1	7.07	6.86	7.62	7.90	7.34
Mean	6.70	7.02	7.25	7.24	7.05

Crop :- Banana.

Ref :- W.B. 60(26), 61(22), 62(9), 63(12), 64(23).

Site :- State Agri. Farm, Chinsurah. Type :- 'C'.

Object :- To find out the most suitable combination of spacing for perennial plantation of Banana.

1. BASAL CONDITIONS :

(i) N.A. (ii) Clay loam. (iii) By suckers. (iv) *Kabuli*. (v) 25.3.57, by planting the suckers in a pit 30 cm. to 46 cm. deep with different spacings. (vi) 2-4 months. (vii) N.A. (viii) Ploughing, spading and interculturing. (ix) N.A. (x) Irrigated, Unirrigated, N.A., N.A., N.A. (xi) 130 cm., 102 cm., 144 cm., 135 cm., 128 cm. (xii) N.A.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings : $S_1=160 \text{ cm.} \times 160 \text{ cm.}$, $S_2=183 \text{ cm.} \times 183 \text{ cm.}$ and $S_3=213 \text{ cm.} \times 213 \text{ cm.}$

(2) 2 suckering practices : $C_1=1$ sucker only allowed to grow when mother plant shoots and $C_2=1$ st sucker allowed to grow when the mother plant is 4/6 months old and second sucker when the plant shoots.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) $25.6 \text{ m.} \times 38.4 \text{ m.}$ (iii) 4. (iv) (a) $12.8 \text{ m.} \times 12.8 \text{ m.}$ (b) 64 plants for S_1 , 49 plants for S_2 and 36 plants for S_3 . (v) 1 row kept as border. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of Banana. (iv) 1957—contd. (v) No. (vi) Nil. (vii) N.A. (viii) 1965—N.A.

5. RESULTS :

60(26)

(i) 293.8 Q/ha. (ii) 40.5 Q/ha. (iii) Main effect of S alone is highly significant. (iv) Av. yield of banana in Q/ha.

	S_1	S_2	S_3	Mean
C_1	373.0	271.0	244.3	296.1
C_2	355.2	304.0	215.2	291.5
Mean	364.1	287.1	229.8	293.8

C.D. for S marginal means = 43.2 Q/ha.

61(22)

(i) 294.3 Q/ha. (ii) 41.4 Q/ha. (iii) Main effect of S alone is highly significant. (iv) Av. yield of banana in Q/ha.

	S_1	S_2	S_3	Mean
C_1	337.3	327.5	235.1	300.0
C_2	353.7	315.9	196.3	288.6
Mean	345.5	321.7	215.7	294.3

C.D. for S marginal means = 44.1 Q/ha.

62(9)

(i) 272.4 Q/ha. (ii) 49.6 Q/ha. (iii) Main effect of S alone is highly significant. (iv) Av. yield of banana in Q/ha.

	S_1	S_2	S_3	Mean
C_1	299.9	267.8	218.0	261.9
C_2	322.5	304.5	221.6	282.9
Mean	311.2	286.2	219.8	272.4

C.D. for S marginal means = 52.9 Q/ha.

63(12)

(i) 261.3 Q/ha. (ii) 47.2 Q/ha. (iii) Main effect of S alone is significant. (iv) Av. yield of banana in Q/ha.

	S ₁	S ₂	S ₃	Mean
C ₁	316.3	269.4	210.0	265.2
C ₂	297.2	272.1	202.9	257.4
Mean	306.8	270.8	206.4	261.3

C.D. for S marginal means=50.3 Q/ha.

64(23)

(i) 268.0 Q/ha. (ii) and (iii) N.A. (iv) Av. yield of banana in Q/ha.

	S ₁	S ₂	S ₃	Mean
C ₁	343.0	251.0	192.0	262.0
C ₂	332.0	268.0	222.0	274.0
Mean	338.0	260.0	207.0	268.0

Crop :- Banana.

**Ref :- W.B. 60(27), 61(23), 62(10),
63(11), 64(24).**

Site :- Banana Res. Stn., Chinsurah.

Type :- 'C'.

Object :—To find out the most suitable combination of spacing for perennial plantation for Banana.

1. BASAL CONDITIONS :

(i) N.A. (ii) Ganga low land clay. (iii) By suckers. (iv) Champa. (v) 22.5.56, planting the suckers. (vi) 2 to 4 months. (vii) N.A. (viii) Ploughing, spading and inter culturing practices. (ix) Nil. (x) Unirrigated for 1960, 1961; Irrigated for 1962, 1963; N.A. for 1964. (xi) 130 cm., 102 cm., 144 cm., 135 cm., 128 cm. (xii) N.A.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings : S₁=213 cm. × 213 cm., S₂=274 cm. × 274 cm. and S₃=320 cm. × 320 cm.

(2) Two suckering practices : C₁=1 sucker only allowed when mother plants shoots and C₂=1st sucker allowed to grow when the mother plant is 6 months old and the second sucker when the plant shoots.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 115.2 m. × 19.2 m. (iii) 4. (iv) (a) 19.2₄m. × 19.2 m. (b) 81 plants for S₁, 49 plants for S₂ and 36 plants for S₃. (v) 1 row kept as border around each plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of Banana. (iv) 1956—contd. (v) No. (vi) Nil. (vii) N.A. (viii) 1965—N.A.

5. RESULTS :

60(27)

(i) 152.2 Q/ha. (ii) 20.6 Q/ha. (iii) Main effect of S alone is highly significant. (iv) Av. yield of banana in Q/ha.

	S ₁	S ₂	S ₃	Mean
C ₁	202.8	146.1	100.3	147.9
C ₂	198.3	147.0	118.7	154.7
Mean	200.6	146.6	109.5	152.2

C.D. for S marginal means = 22.0 Q/ha.

61(23)

(i) 11.1 Kg/plant. (ii) 1.6 Kg/plant. (iii) Main effect of C alone is highly significant. (iv) Av. yield of banana in Kg/plant.

	S ₁	S ₂	S ₃	Mean
C ₁	11.4	11.7	12.7	11.9
C ₂	9.5	10.1	11.1	10.2
Mean	10.4	10.9	11.9	11.1

C.D. for C marginal means = 1.4 Kg/plant.

62(10)

(i) 140.4 Q/ha. (ii) 16.6 Q/ha. (iii) Main effect of S alone is highly significant. (iv) Av. yield of banana in Q/ha.

	S ₁	S ₂	S ₃	Mean
C ₁	183.8	123.6	100.4	135.9
C ₂	175.6	141.0	117.8	144.8
Mean	179.7	132.3	109.1	140.4

C.D. for S marginal means = 17.7 Q/ha.

63(11)

(i) 126.4 Q/ha. (ii) 27.0 Q/ha. (iii) Main effect of S alone is highly significant. (iv) Av. yield of banana in Q/ha.

	S ₁	S ₂	S ₃	Mean
C ₁	153.8	114.4	97.2	121.8
C ₂	168.0	116.4	108.3	130.9
Mean	160.9	115.4	102.8	126.4

C.D. for S marginal means = 28.8 Q/ha.

64(24)

(i) 161.0 Q/ha. (ii) 36.3 Q/ha. (iii) Main effect of S alone is significant. (iv) Av. yield of banana in Q/ha.

	S ₁	S ₂	S ₃	Mean
C ₁	226.0	141.0	112.0	160.0
C ₂	213.0	151.0	121.0	162.0
Mean	220.0	146.0	117.0	161.0

C.D. for S marginal means = 38.7 Q/ha.

Crop :- Mango.**Ref :- W.B. 64(72).****Site :- State Agri. Farm, Krishnagar.****Type :- 'IV'.**

Object :-To find out if irrigation can prevent or reduce fruit drop.

1. BASAL CONDITIONS :

(i) N.A. (ii) Sandy loam. (iii) Planting with spacing 12.2 m. apart. (iv) As per treatments. (v) N.A. (vi) One month (approx.) (vii) N.A. (viii) Spading, weeding and clearing etc. (ix) No. (x) As per treatments. (xi) 93.8 cm. (xii) Plucking in the month of May '65.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 5 varieties of Mango : V_1 =Langra, V_2 =Enayet pasand, V_3 =Shah pasand, V_4 =Rani pasand and V_5 =Begumi pasand.

(2) 2 levels of irrigations : I_0 =No. irrigation and I_1 =4 irrigations at an interval of 15 days.

1st irrigation on	8.4.64	Irrigation done from tank
2nd	23.4.54	by pump. intensity etc.
3rd	8.5.64	N.A.
4th	23.5.64.	

3. DESIGN :

(i) Fact in R.B.D. (ii) (a) and (b) N.A. (iii) 5. (iv) 1 and No. of fruits/replication : 150. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Count of fruits. (iv) 1964—contd. (with changes in Treatments in 1965). (v) N.A. (vi) Nil. (vii) N.A. (viii) Nil.

5. RESULTS :

(i) 34.6% (Av. % of fruits retained). (ii) and (iii) N.A. (iv) Av. % of fruits retained.

	V_1	V_2	V_3	V_4	V_5	Mean
I_0	33.2	30.5	35.5	46.2	36.7	36.4
I_1	30.1	31.9	30.2	32.9	38.5	32.7
Mean	31.6	31.2	32.9	39.5	37.6	34.6

Crop :- Mango.**Ref :- W.B. 65(62)****Site :- State Agri. Farm, Krishnagar.****Type :- 'IV'.**

Object :-To find out if irrigation can prevent or reduce fruit drops.

1. BASAL CONDITIONS ;

(i) N.A. (ii) Sandy loam. (iii) Planting with spacing 12.2 cm. apart. (iv) As per treatments. (v) N.A. (vi) One month. (vii) N.A. (viii) Spading, weeding and cleaning of lands etc. (ix) No. (x) As per treatments. (xi) 149.4 cm. (xii) May to June '65.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 varieties of Mango : V_1 =Bombai, V_2 =Safdar pasand, V_3 =Rani pasand and V_4 =Panja pasand,

(2) 2 levels of irrigations : I_0 =No irrigations and I_1 =4 irrigations at an interval of 15 days.

1st irrigation on	11.4.65	Irrigations done from tank by pump.
2nd	26.4.65	
3rd	11.5.65	
4th	26.5.65	

3. DESIGN :

(i) Fact in R.B.D. (ii) (a) and (b) N.A. (iii) 5. (iv) 1 and No. of fruits/replication : 100. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Count of fruits. (iv) 1964—Contd. (with changes in treatments in 1965). (v) No. (vi) Nil. (vii) N.A. (viii) Nil,

5. RESULTS :

(i) 34.1 % (Av. % of fruits retained). (ii) 27.4% (Av. % of fruits retained). (iii) None of the effects is significant. (iv) Av. % of fruits retained.

	V ₁	V ₂	V ₃	V ₄	Mean
I ₀	32.4	35.5	39.3	32.4	34.9
I ₁	31.8	32.5	33.7	34.7	33.2
Mean	32.1	34.0	36.5	33.6	34.1

Crop :- Mango.

Ref :- W.B. 64(73).

Site :- State Agri. Farm, Krishnagar.

Type :- 'DV'.

Object :—To determine if the use of plant regulator can reduce to an appreciable extent the fruit drops in Mango.

1. BASAL CONDITIONS :

(i) N.A. (ii) Sandy loam. (iii) N.A. (iv) As per treatments. (v) N.A. (vi) One month. (vii) N.A. (viii) Spading, weeding, clearing etc. (ix) Nil. (x) Unirrigated. (xi) 94 cm. (xii) May '64.

2. TREATMENTS:

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

(1) Spraying fruits with NAA : A₀=No NAA (only with water spraying), A₁=Spraying NAA with conc. 10 P.P.M., A₂=spraying NAA with conc. 20 P.P.M. and A₃=Spraying NAA with conc. 30 P.P.M.

(2) Spraying fruits with 2, 4-D : D₀=No 2, 4-D, spring (only water springs), D₁=2, 4-D spraying with conc. 20 PPM, D₂=2, 4-D spraying with conc. 30 PPM and D₃=2, 4-D spraying with conc. 40 PPM.

(3) 2 varieties of Mango : V₁=Langra and V₂=Himsagar.

Growth regulation were applied to fruits selected at random on 19th April '64. and repeated after a month.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) and (b) N.A. (iii) 3 (one replication per treatment). (iv) 20 fruits/treatment. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of Mango. (iv) No. (v) No. (vi) Nil. (vii) N.A. (viii) Nil.

5. RESULTS :

(i) 47.4% (Av. % cf. fruits retained). (ii) and (iii) N.A. (iv) Mean % of fruits retained at maturity.

	A ₀	A ₁	A ₂	A ₃	D ₀	D ₁	D ₂	D ₃	Mean
V ₁	46.5	46.5	47.2	41.1	44.1	47.9	47.9	41.3	45.3
V ₂	53.7	45.7	50.0	48.7	48.9	52.6	49.2	47.4	49.5
Mean	50.1	46.1	48.6	44.9	46.5	50.3	48.5	44.4	47.4
D ₀	47.0	47.4	45.5	46.0					
D ₁	51.5	48.9	52.1	48.6					
D ₂	55.4	44.5	49.8	44.5					
D ₃	46.4	43.6	46.9	40.6					

Crop :- Mango.**Ref :- W.B. 65(68).****Site :- State Agri. Farm, Krishnagar.****Type :- 'DP'.**

Object :—To determine if the use of plant regulator with irrigation can reduce the fruit drop in Mango.

1. BASAL CONDITIONS :

(i) N.A. (ii) Sandy loam. (iii) N.A. (iv) Langra. (v) N.A. (vi) One month. (vii) N.A. (viii) Spading, weeding etc. (ix) No. (x) As per treatments. (xi) 141.4 cm. (xii) June '66.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of irrigation : I_0 =No irrigation and I_1 =4 irrigations at interval of 15 days. 1st on 13.4.65, 2nd on 28.4.65, 3rd on 13.5.64 and 4th on 28.5.65.(2) 9 spraying on fruits with NAA and 2, 4—D (plant regulation) as different concentrations : T_0 =Control (spraying with center only), T_1 =Spraying fruits with NAA 10 PPM, T_2 =Spraying fruits with NAA 20 PPM, T_3 =Spraying fruits with NAA 2, 4—D 20 PPM, T_4 =Spraying fruits with NAA 2, 4—D 30 PPM, $T_5=T_1+T_2$, $T_6=T_2+T_3$, $T_7=T_1+T_4$ and $T_8=T_3+T_4$.

Plant regulators were sprayed on fruits selected at random, thrice i.e. on 13.4.65, 13.5.65 and 26.5.65.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 20. (b) N.A. (iii) 2. (iv) 2. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of Mango. (iv) No. (expt. modified from the previous year). (v) (a) No. (b) —. (vi) N.A. (vii) Nil.

5. RESULTS:

(i) 30.6 % (Mean % of fruits retained at maturity). (ii) 5.1% (Mean % of fruits retained at maturity). (iii) Main effect of I alone is significant. (iv) Av. % of fruits retained at maturity (in %).

	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	Mean
I_0	32.9	28.3	37.7	31.6	33.2	37.8	37.6	31.6	30.0	33.4
I_1	26.0	26.4	26.4	26.4	31.4	29.9	26.4	29.6	26.6	27.7
Mean	30.5	27.3	32.0	29.0	32.3	33.8	32.0	30.6	28.3	30.6

C.D. for I marginal means=3.6 %

Crop :- Wheat & Rai (Rabi).**Ref :- W.B. 65(34).****Site :- State Agri. Farm, Berhampore.****Type :- 'X'.**

Object :— To find out the suitability of mixing Rai with other major crop.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay loam. (iii) End of Nov. to Dec. 65., (iv) (a) 2 ploughings, spading and laddering. (b) Line sowing. (c) 7.1 Kg/ha. (Rai) ; 93.9 Kg/ha. (Wheat). (d) 23 cm. x 15 cm. (e) One. (v) N.A. (vi) B-85 (Rai) and NP--852 (Wheat). (vii) Irrigated. (viii) Weeding and thinning. (ix) 10.4 cm. (x) Last week of Feb. 1965.

2. TREATMENTS :5 mixed cropping treatments : T_1 =Wheat alone, T_2 =Rai alone, T_3 =6 rows of Wheat and 1 row of Rai (22.9 cm. between rows), T_4 =9 rows of Wheat and 1 row of Rai (22.9 cm. between rows) and T_5 = 12 rows of Wheat and 1 row of Rai (22.9 cm. between rows).

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 7.9 m. × 6.4 m. (b) 7.0 m. × 5.8 m. (v) 91 cm. kept as border. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1965 to 67. (b) Yes. (c) N.A. (v) No. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 2305 Rs/ha. (ii) 112.6 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. money value of produce in Rs/ha.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅
Money value	2540.0	1785.0	2755.0	2310.0	2137.0

C.D.=150.9 Rs/ha.

Crop :- Linseed, Gram and Wheat (Rabi).

Ref :- W.B. 65(35).

Site :- State Agri. Farm, Berhampore.

Type :- 'X'.

Object :—To see the possibilities of mixed cropping with Linseed, Gram and Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay loam. (iii) Nov. 65. (iv) (a) 2 ploughings, laddering and spading. (b) Line sowing. (c) 14.8 to 19.8 Kg/ha. (Linseed), 37.0 Kg/ha. for (Gram) and 86.4 to 88.9 Kg/ha. for (Wheat). (d) 30.5 cm. between rows. (e) N.A. (v) Cowdung @ 92.2 to 110.7 Q/ha. (vi) B-67 (Linseed); T-75 (Gram) and NP-829 (Wheat). (vii) N.A. (viii) 2 weedings and thinning etc. (ix) 11 cm. (x) March '66.

2. TREATMENTS :

7 mixed cropping treatments : T₁=Wheat alone, T₂=Gram alone, T₃=One row of linseed and one row of Wheat (between rows spacing 30.5 m), T₄=Three rows of Linseed and three rows of Wheat (strips of 3 rows of Linseed alternating with strips of 3 rows of Wheat), T₅=Linseed alone, T₆=One row of Linseed and one row of Gram, between rows 30.5 cm. apart and T₇=3 rows of Linseed and 3 rows of Gram (strips of 3 rows of Linseed alternating with strips of 3 rows of Gram).

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) 25.6 m. × 38.4 m. (iii) 4. (iv) (a) 7.9 m. × 6.4 m. (b) 7.0 m. × 5.8 m. (v) 91 cm., kept as border. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of gram (converted to money value). (iv) (a) 1965—1966. (b) Yes. (c) Nil. (v) No. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 870.0 Rs./ha. (ii) 70.7 Rs./ha. (iii) Treatment differences are highly significant. (iv) Av. money value of produce in Rs./ha.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇
Money value	1157.5	622.5	1642.5	1035.0	530.0	622.5	480.0

C.D.=105.0 Rs./ha.

Crop :- Groundnut and Castor (Rabi).

Ref :- W.B. 65(33).

Site :- State Agri. Farm, Berhampore.

Type :- 'X'.

Object :—To find out suitability of mixing Groundnut with castor crop.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay loam. (iii) 26.7.65. (iv) (a) 2 ploughings+laddering+spading. (b) Line sowing. (c) 86Kg/ha. for Groundnut and 5 to 7 Kg/ha. for Castor. (d) 61 cm×15 cm. (e) One. (v) N.A. (vi) B-30 for (Groundnut) and B-I for (Castor). (vii) Unirrigated. (viii) 2 weedings and thinning. (ix) 69 cm. (x) Last week of Dec. '65.

2. TREATMENTS :

5 mixed cropping treatments : T_1 =Groundnut alone (with 61 cm.×15 cm. spacing), T_2 =Caster alone, (with 60 cm.×15 cm. spacing), T_3 =6 rows of Groundnut and one row of Castor (inter spacing 90 cm.), T_4 =9 rows of Groundnut and two rows of Castor (inter spacing 90 cm.) and T_5 =12 rows of Groundnut and two rows of Castor (inter spacing 90 cm.).

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 45.7 m.×6.4 m. (iii) 4. (iv) 7.9 m.×6.4 m. (b) 7.0 m.×5.8 m. (v) 60 cm. kept as border. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of Castor and Groundnut (yield converted to money value). (iv) (a) 1965 to 1967. (b) Yes. (c) Nil. (v) Midnapore. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 538.3 Rs/ha. (ii) 144.6 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. money value of produce in Rs,ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Money value	719.5	275.5	620.0	502.0	574.5

C.D.—222.8 Rs/ha.

Crop :- Arhar and Aus. Paddy (Rabi).

Ref :- W.B. 61(64).

Site :- State Agri. Farm, Berhampore.

Type :- 'X'.

Object :—To study the economics of growing pure crops Arhar and Aus. Paddy as against their mixture.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Clay loam. (iii) 15.6.61 to 20.6.61 (for Arhar and Aus). (iv) (a) Ploughing and laddering (b) to (d) As per treatments. (e) N.A. (v) N.A. (vi) B-7 (medium) for Arhar ; Aus—N.A. (vii) Unirrigated. (viii) 1 to 2 weedings and thinning. (ix) 119 cm. (x) N.A.

2. TREATMENTS :

8 mixed cropping treatments : T_1 =Pure Arhar in lines (61 cm.×61 cm.), T_2 =Pure Aus. Paddy in lines (23 cm.×23 cm.), T_3 =Arhar in lines (61 cm.×122 cm.) mixed with Aus. Paddy in lines (27 cm.—23 cm.—23 cm.—27 cm.), T_4 =Arhar in (61 cm.×61 cm.) mixed with Aus. broadcasted with seed 69 Kg/ha., T_5 =Arhar in lines (61 cm.×122 cm.) mixed with Groundnut in lines (20 cm.—30 cm.—46 cm.), T_6 =Arhar in lines (61 cm.×122 cm.) mixed with early moong in lines. (30 cm.—30 cm.—30 cm.—30 cm.), T_7 =Arhar broadcasted seed at 9 Kg/ha. mixed with Aus broadcasted with seed at 58 Kg/ha and T_8 =Arhar broadcasted at 16 Kg/ha. mixed with Aus. broadcasted with seed at 58 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) 9.8 m.×7.9 m. (b) 9.1 m.×7.3 m. (v) 30 cm.×30 cm. (vi) Yes.

4 GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) to (c) No. (v) and (vi) Nil. (vii) Nil. Raw data N.A. at the Res. Stn.

5. RESULTS :

(i) +164.4 Rs./ha. (Av. net profit in Rs.) (ii) 99.0 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. net profit (+) or loss (—) in Rs/ha.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. Profit or loss in (Rs)	+59.8	+73.3	+372.1	+542.5	-79.2	-182.3	+180.8	+348.2

C.D.=173.3 Rs/ha.

Crop :- Castor, Groundnut and Til (Kharif).

Ref :- W.B. 63(49), 64(43).

Site :- State Agri. Farm, Berhampore.

Type :- 'X'.

Object :—To see the possibilities of mixed cropping.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Ganga riverine clay loam. (iii) Middle of June to last week of June 63/last week of June 64. (iv) (a) 2 to 4 ploughings and laddering. (b) Line sowing. (c) N.A., Til 7 Kg/ha. Groundnut 64 to 69 Kg/ha. and Castor 5 to 7 Kg/ha. (d) Castor: spacing 91 cm. between rows and 1 row of Til and Groundnut in between lines. (e) N.A. (v) N.A., 92.2 Kg/ha. of cowdung. (vi) Castor B—8, Til B—14 and Groundnut B—31 from A.K. 8-11. (vii) Irrigated. (viii) 1-2 weeding, thinning and earthing up. (ix) 111 cm., 140 cm. (x) N.A.

2. TREATMENTS :

5 mixed cropping treatments: T₁=Castor pure, T₂=Til pure, T₃=Groundnut pure, T₄=Castor+Groundnut and T₅=Castor+Til.

Other details N.A.

3. DESIGN :

(i) R.B.D./5×5 latin sq. (ii) (a) 5. (b) N.A. (iii) 4. (iv) 9.8 m.×6.1 m. (b) 9.1 m.×5.5 m. (v) 60 cu. kept as border around each plot. (vi) Yes.

4. GENERAL:

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1963-contd. [1965-N.A.] (b) Yes. (c) N.A. (v) Midnapore. (vi) N.A. (vii) Nil.

5. RESULTS :

63(49)

(i) 531.5 Rs./ha. (ii) 194.3 Rs./ha. (iii) Treatment differences are highly significant. (iv) Av. money value of produce in Rs./ha.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅
Money value	217.0	1176.6	414.1	438.0	412.1

C.D.=299.4 Rs./ha.

64(43)

(i) 356.2 Rs./ha. (ii) 106.7 Rs./ha. (iii) Treatment differences are highly significant. (iv) Av. money value of produce in Rs./ha.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅
Money value	58.8	532.9	444.6	394.2	300.4

C.D.=143.1 Rs./ha.

Crop :- Aus Paddy + Cotton (Rabi).**Ref :- W.B. 61(8).****Site :- State Agri. Farm, Fulia.****Type :- 'X'.**

Object :— To study the yields of Aus Paddy and Cotton as mixed crop.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay loam. (iii) Middle of June, 61. (iv) (a) Ploughing, spading and laddering. (b) Broadcasting for Aus and dibbling for other. (c) N.A. (d) 91 cm. × 61 cm. for Cotton and 15 cm. × 23 cm. for Aus (e) Nil. (v) N.A. (vi) Dharial (Aus), D-5 (Cotton). (vii) Unirrigated. (viii) 2 to 3 weedings, interculture. (ix) 105 cm. (x) End of Sept. for Aus Paddy and from end of Sept. to early March for Cotton.

2. TREATMENTS :

8 mixed cropping treatments : T_1 =Cotton alone with 91 cm. × 61 cm. spacing, T_2 =Aus Paddy alone broadcast, T_3 =Aus Paddy in lines 15 cm. apart, T_4 =Aus Paddy in lines 23 cm. apart, T_5 =Aus Paddy broadcast and Cotton dibbled with 91 cm. × 61 cm. spacing, T_6 =Aus Paddy in lines 15 cm. apart and Cotton dibbled with 91 cm. × 61 cm. spacing, T_7 =Aus Paddy in lines 23 cm. apart and Cotton dibbled with 91 cm. × 61 cm. spacing and T_8 =Aus Paddy dibbled between Cotton with 91 cm. × 61 cm. spacing.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) 9.1 m. × 6.7 m. (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain and *Kapas*. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS:

(i) 1219.6 Rs/ha. (ii) 290.0 Rs/ha. (iii) Treatment differences are not significant. (iv) Av. money value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Money value	1059.1	1101.7	843.6	1240.3	1522.5	1640.0	1291.2	1058.4

Crop :- Groundnut and Castor (Rabi).**Ref :- W.B. 65(31).****Site :- State Agri. Farm, Midnapore.****Type :- 'X'.**

Object :— To find out the suitability of mixing Groundnut crop with other crop.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Laterite. (iii) Last week of July 65. (iv) (a) 2 ploughings and laddering. (b) Line sowing. (c) 86.5 Kg/ha. for Groundnut and 4.9 to 7.4 Kg/ha. for Castor (d) 61 cm. × 15 cm. between rows and 61 cm. × 15 cm. between plant. (e) One. (v) 92.2 Q/ha. of cowdung. (vi) B. 30 (Groundnut) and B-1 (Castor). (vii) Unirrigated. (viii) 1-2 weedings, thinning. (ix) 67.3 cm. (x) 2nd week of December 65.

2. TREATMENTS :

5 mixed cropping treatments : T_1 =Groundnut alone (with 61 cm. × 15 cm.), T_2 =Castor alone with (61 cm. × 15 cm.), T_3 =Six rows of Groundnut and 1 row of Castor, T_4 =Nine rows of Groundnut and two rows of castor and T_5 =Twelve rows of Groundnut and two rows of Castor (inter spacing 91 cm.)

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 32 m. × 8 m. (iii) 4. (iv) (a) 8.0 m. × 6.4 m. (b) 7.0 m. × 6.0 m. (v) 91 cm. kept as border. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of groundnut and castor. (iv) (a) 1965 to 67. (b) No. (c) N.A. (v) Berhampore. (vi) N.A. (vii) Nil.

5. RESULTS:

(i) 543.2 Rs/ha. (ii) 65.4 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. money value of groundnut and castor in Rs/ha.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅
Money value	779.1	67.0	612.5	636.5	625.8

C.D.=100.8

Crop :- Castor, Groundnut and Til (Kharif).

Ref :- W.B. 63(43), 64(42).

Site :- State Agri. Farm, Midnapore.

Type :- 'X'.

Object :— To see the possibilities of mixed cropping.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Laterite. (iii) June 63, 64. (iv) (a) 2-4 ploughings, laddering and spading. (b) Line sowing. (c) N.A., Castor and Til 5 to 7 Kg/ha. and Groundnut at 69 Kg/ha. (d) N.A., Castor spacing 91 cm. between rows and one row of Til and Groundnut in between. (e) N.A. (v) N.A., 92.2 Q/ha. Cowdung. (vi) Castor B.I. (early), Groundnut AK-8-11 and Til B 9-14. (vii) Unirrigated. (viii) 1-2 weedings and 2 earthing up. (ix) and (x) N.A.

2. TREATMENTS :

Five mixed cropping treatments : T₁=Castor pure, T₂=Groundnut pure, T₃=Til pure, T₄=Castor+Til and T₅=Castor+Groundnut.

3. DESIGN :

(i) R.B.D. for 63 (43) ; 5×5 for 64 (42) Latin square. (ii) (a) 5. (b) N.A. (iii) 4 for 63(43) and 5 for 64 (42). (iv) (a) 9.8 m.×6.1 m. (b) 9.1 m.×5.5 m. (v) 60 cm. kept as border around each plot. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain ; Til, Castor and Groundnut. (iv) (a) 1963-64. (b) Yes. (c) N.A. (v) Berhampore. (vi) N.A. (vii) Design modified in 1964.

5. RESULTS :

63(43)

(i) 124.6 Rs/ha. (ii) 43.9 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. money value of produce in Rs/ha.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅
Money value	10.0	310.6	89.6	65.7	147.3

C.D.=67.6 Rs/ha.

64(42)

(i) 191.5 Rs/ha. (ii) 124.6 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. money value of produce in Rs/ha.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅
Money value	19.9	424.0	101.5	69.7	342.4

C.D.=167.1 Rs/ha.

Crop :- Arhar and Til (Kharif).

Ref :- W.B. 64(67), 65(42).

Site :- State Agri. Farm, Midnapore.

Type :- 'X'.

Object :— To see the comparative yield of mixed cropping and single cropping with Arhar and Til.

1. BASAL CONDITIONS :

(i) (a) Cowdung @ 37.7 Q/ha and 'N' as A/S, P_2O_5 as Super and ' K_2O ' as Mur. Potash @ 33.6, 22.4, 16.8 Kg/ha. (b) Til; Arhar and Til. (c) Cowdung @ 37.7 Q/ha. and 'N' as A/S, ' P_2O_5 ' as Super and K_2O as Mur. Potash @ 44.8, 22.4 and 16.8 Kg/ha. (ii) Lateritic. (iii) July 1964, 21.7.65. (iv) (a) 2 ploughings and laddering both years and spading in 64. (b) Line sowing. (c) 14.8 to 17.3 Kg/ha. (Arhar) and 7 to 10 Kg/ha. of Til. (d) 22.5 cm. between plants. (e) One. (v) Cowdung @ 37.7 Q/ha. and 'N' as A/S, ' P_2O_5 ' as Super and K_2O as Mur. Pot. @ 33.6, 22.4 and 16.8 Kg/ha. (vi) B-14 (Til), B-7 (Arhar). (vii) Unirrigated. (viii) 2 weedings and 1 thinning. (ix) 109 cm. for 1964 and 65 cm. for 1965. (x) 10.10.64 (Arhar); 21.9.65 (Arhar) and 16.9.65 (Til).

2. TREATMENTS :

3 types of cropping: T_1 =Arhar crop alone, T_2 =Til crop alone and T_3 =Arhar and Til mixed.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) N.A. in 1964; 9.7m. x 7.3 m. in 65 (b) N.A. in 1964 9.1 m. x 7.3 m. in 65. (v) N.A.; 30 cm. kept as border. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain (converted into money value). (iv) (a) 1964 and 65. (b) No. (c) N.A. (v) No. (vi) N.A. (vii) Error variances are heterogeneous and Treatments x years interaction is absent.

5. RESULTS:

(i) 278.6 Rs/ha. (ii) 138.3 Rs/ha. (based on 14 d.f. made up of Treatments x years interaction and pooled error). (iii) Treatment differences are not significant. (iv) Av. money value of produce in Rs/ha.

Treatment	T_1	T_2	T_3
Money value	341.6	206.8	287.5

Years	T_1	T_2	T_3	Sig.	G.M.	S.E./plot
1964	350.5	182.0	196.6	N.S.	243.0	118.6
1965	332.7	231.6	378.3	N.S.	314.2	154.1
Pooled	341.6	206.8	287.5	N.S.	278.6	138.3

Crop :- Aus. Paddy and Arhar (Kharif).

Ref :- W.B. 64(68), 65(43).

Site :- State Agri. Farm, Midrapore.

Type :- 'X'.

Object :- To see the comparative yield of mixed and single cropping with Arhar and Aus Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A., No. (b) N.A., Aus and Arhar. (c) N.A., cowdung @ 37.7 Q/ha. and N, P, K @ 34, 22, 17 Kg/ha. (ii) Laterite. (iii) 21.7.64, last week of July, 65. (iv) (a) 2 ploughings, laddering and spading. (b) Line sowing. (c) 61.8 to 74.1 Kg/ha. (Aus) and 14.8 to 17.3 Kg/ha. (Arhar). (d) 22.5 cm. between rows. (e) One to two. (v) Cowdung @ 37.7 Q/ha. and N, P_2O_5 and K_2O as A/S, Super and Potash @ 44.8, 22.4 and 16.8 Kg/ha. (vi) Dular (Aus); B-7 (Arhar). (vii) N.A.; Irrigated. (viii) 2 weedings (by hand) and thinning. (ix) 1.7 cm.; 66 cm. (x) 22.10.64 (Aus), Arhar (N.A.); 5.10.65 (Aus), 22.9.65 (Arhar).

2. TREATMENTS :

3 types of cropping: T_1 =Aus alone, T_2 =Arhar alone and T_3 =Aus and Arhar mixed.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) N.A., 9.8 m. x 7.9 m. (b) 101 sq. m., 9.1 m. x 7.3 m. (v) N.A., 30 cm. kept as border. (vi) Yes.

4. GENERAL :

(i) N.A., Normal. (ii) N.A. (iii) Yield of grain (converted into money value). (iv) (a) 1964-contd. (b) No. (c) Nil. (v) No. (vi) and (vii) N.A.

5. RESULTS :

64(68)

(i) 1680.1 Rs/ha. (ii) 332.0 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. money value of produce in Rs/ha.

Treatment	T ₁	T ₂	T ₃
Money value	2233.9	350.5	2455.9

C.D.=574.4 Rs/ha.

65(43)

(i) 1377.0 Rs/ha. (ii) 386.8 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. money value of produce in Rs/ha.

Treatment	T ₁	T ₂	T ₃
Money value	1768.0	333.0	2031.0

C.D.=669.3 Rs/ha.

Crop :- Arhar, Aus, Paddy, Groundnut, Castor, etc. (Rabi). Ref :- W.B. 64(83), 65(83).

Site :- State Agri. Farm, Midnapore.

Type :- 'R'.

Object :- To study the different crop rotation regarding best economic yield with different crops:

1. BASAL CONDITIONS :

(i) (a) No. (b) As per treatments. (c) 92.2 Q/ha. 37.7 Q/ha. of Cowdung (ii) Laterite. (iii) N.A.; last week of July 1965. (iv) (a) 2-3 ploughings, spading laddering. (b) Transplanting. (c) N.A. (d) 20 cm. to 25 cm (e) One. (v) Compost @ 37.7 Q/ha. (vi) Arhar (T₁), Cowpea (local), Groundnut—A KS-11, Aus (Dular), Tomato, Joar (local) and others N.A. (vii) N.A. (viii) 2 weedings and thinning. (ix) N.A., 53 cm. (x) Last week of September 64; 24.9.65 (Aus) 10.9.65 (Tomato) 16.8.65 (Mung) 20.10.65 (Cowpea), 19.10.65 (Groundnut) and 20.10.65 (Castor).

2. TREATMENTS :

4 rotational treatments : T₁=Arhar—Aus Paddy, T₂=Tomato—Mung, T₃=Cowpea—Joar and T₄=Groundnut—Castor.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 12.8 m. × 7.9 m. (b) 12.2 m. × 7.3 m. (v) 61 cm. kept as border. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of crops (converted into money value). (iv) (a) 1964 to 1966 and 1967 to 69 (with other crops). (b) Yes. (c) —. (v) No. (vi) N.A. (vii) Nil (yield converted into money value with the available market price (average) 7.

5. RESULTS :

64(83)

(i) 1835.6 Rs/ha. (ii) 475.2 Rs/ha. (iii) Treatment differences are not significant. (iv) Av. money value of produce in Rs/ha.

Treatment	T ₁	T ₂	T ₃	T ₄
Money value	1740.1	1828.7	2086.9	1686.9

65(83)

(i) 2024.1 Rs/ha. (ii) 584.2 Rs/ha. (iii) Treatment differences are not significant. (iv) Av. money value of produce in Rs/ha.

Treatment	T ₁	T ₂	T ₃	T ₄
Money value	2142.6	2297.6	1823.6	1832.3

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