

NATIONAL INDEX

OF

AGRICULTURAL

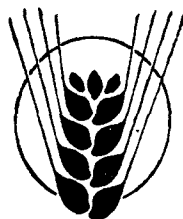
FIELD

EXPERIMENTS

VOL. 10 PART 3

ORISSA

1960—65



ICAR

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FOREWORD

The I. C. A. R. has adopted the 'Coordinated 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 period 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 cooperation 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.

NEW DELHI,
January 1, 1973

B. K. SONI
Deputy Director General (AS)
Indian Council of Agricultural Research

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 one 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 volume 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) Assam, Manipur, Meghalaya, Arunachal, Nagaland, Mizoram and Tripura, (3) Bihar, (4) Gujarat, (5) Kerala, (6) Madhya Pradesh, (7) Maharashtra, (8) Mysore, (9) Orissa, (10) Punjab, Haryana, J & K 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 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 the 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 1960-65, 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, Sr. Statistician of the Institute. At the preparatory stage the work of the third series of compendia was looked after by Shri O. P. Kathuria, Jr. Statistician, now Statistician in Indian Agricultural Research Institute. Subsequently, Shri R. K. Khosla, Jr. Statistician was responsible for the actual working of the scheme. Servashri P. P. Rao, S. N. Bajpai, M. P. Saksena, B. L. Chaudhary, M. L. Sahni, H. C. Jain, Mahesh Kumar, J. K. Kapoor, U. N. Dikshit, S. L. Garg, G. V. S. R. Krishna, G. L. Khurana, D. P. Singh, A. Lahari, Mahender Singh, S. S. Kutaula, Kuldip Singh and Suresh Chand Jain statistical staff of the 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 data of experiments from various research 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. acknowledge with thanks this 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.

M. N. DAS

Director

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

NEW DELHI,
January 1, 1973

**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)	1. Shri C. H. Rao 2. Shri G. V. S. R. Krishna 3. Shri P. R. Yeri	1. Shri P. Govinda Rao, Head of the Agri. Res. Instt. 2. Shri S. Vittal Rao, H. Q. Dy. Director (Research)
2.	Assam (Shillong)	1. Shri A. Sinha 2. Shri K. D. Saha	1. Shri U. C. Borah, Research Officer (Stat.)
3.	Bihar (Sabour)	1. Shri R. K. Jain 2. Shri S. M. G. Saran	1. Shri G. P. Singh, Statistician
4.	Gujarat (Ahmedabad)	1. Shri S. P. Doshi	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)	—	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)	1. Shri Rama Rao Patil 2. Shri S. S. Kutaula	1. Shri A. G. Khare, Dy. Director of Agriculture (Stat.)
7.	Maharashtra (Poona)	1. Shri P. R. Yeri 2. Shri B. Ramakrishnan	1. Shri V. G. Sharma, Sr. Statistician 2. Shri G. C. Shaligram, Dy. Statistician 3. Shri D. T. Sawant, Asstt. Statistician
8.	Mysore (Bangalore)	1. Shri K. A. Balakrishnan 2. Shri P. T. N. Nambiar	1. Dr. N. P. Patil, Director of Research
9.	Orissa (Bhubaneswar)	1. Shri Rama Rao Patil	1. Shri B. Mishra, Dy. Director of Agri. (HQ) 2. Shri A. Mishra, Chief Statistician
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

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|--------------------------------|---|--|--|
| | | | 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) |

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 are given in brackets.

Abbreviations adopted for States are as follows :

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

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 abbreviations MAE or SFT are given in the brackets 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 under an Indian Council of Agricultural Research scheme or by the State Government, the abbreviation (c. f.) is given along with the site or centre as, for example, Cuttack (c. f.).

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

C—Cultural ; D—Control of Diseases and Pests ; I—Irrigational ; M—Manurial ; R—Rotational ; V—Varietal and X—Mixed cropping. 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			
A/N	=	Ammonium Nitrate	G. N. C.	=	Groundnut Cake
A/C	=	Ammonium Chloride	M. C.	=	Municipal Compost
C/N	=	Chilean Nitrate	T. C.	=	Town Compost
Mur. Pot.	=	Muriate of Potash	G. M.	=	Green Manure
Pot. Sul.	=	Potassium Sulphate	G. L. M.	=	Green Leaf Manure
Super.	=	Super Phosphate			

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.

D. Soil type and Soil analysis :

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

E. No. of Experiments :

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

Information under the following heads is to be read against the respective items under experimental data as given on next page.

*A. For experiments on annual crops :**Basal conditions :*

(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) (a) Soil type (b) Analytical results of soil, if available. (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 ; 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 ; 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 the 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 ; B. For experiments on perennial crops, and C. For experiments on cultivators' fields.

(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) Type 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, if any. (vi) Abnormal occurrences such as heavy rains, frost, storm, drought, etc. (vii) Any other important information.

GLOSSARY OF VERNACULAR NAMES OF CROPS—Conf.

Sl. No.	Name of crop.	Botanical Name	Assamese	Bengali	Oriya	Telugu	Tamil	Ma layalam	Kannada	Marathi	Gujarati	Hindi	Punjabi
13	Linseed	<i>Linum usitatissimum</i> L.	Tisi	Tishi	Peshi	Avisē	Alivithai	Cheruchanavithu	Agase	Javas, Alsi	Alsi	Alsi	Alsi
14	Mustard	<i>Brassica juncea</i> Coss.	Saria	Rai Sarisha	Ra	Avalu	Kadugu	Kaduku	Kempusasive	Mohri	Rai	Rai	Rai
15	Niger	<i>Guizotia abyssinica</i> Cass.	Sorguja	Sarguza	Alashi	Verrinuvulu	Peyellu	—	Huchellu	Karale, Khursani	Ramtal	Ramtil	Ramtil
16	Onion	<i>Allium Cepa</i> L.	Piyaz	Piaj	Peas, Ulli	Ulli	Vengayam, Erangam	Ulli	Eerulli	Kanda	Dungli, Kando	Piaz	Ganda, Payaz
17	Chilli	<i>Capsicum frutescens</i> L.	Jalakiya	Lanka, Marich.	Lanka	Mirapakaya	Milakai	Mulaku	Menasina kayi	Mirchi	Marcha	Lal mirch	Lal mirch
18	Berseem	<i>Trifolium alexandrinum</i> L.	—	Berseem	Ginighasa	—	—	—	—	Barsim, Gavāt	Barsim	Berseem	Berseem
19	Mossambique	<i>Citrus sinensis</i> Osbeck	Malta, Mozambique	Mosambi	Mitha Kamala, Mhata Kamala	Battayi	Sathugudi, Cheeni	Madura, Naranga	Sathkudi	Mosambi	Mosambi	Malta, Mausmee	Malta
20	Guava	<i>Psidium guajava</i> L.	Madhuri	Peyara	Pijuli	Jama	Koyya	Pera	Sabe	Peru	Jamphal	Amrood	Amrud
21	Pineapple	<i>Ananas sativa</i> Schuti ; <i>Ananas comosus</i> Merr.	Matikathal	Anarash	Sapuri, Saphrd, Panasa	Anasa	Annasipalam	Kaitha chakka.	Ananas	Ananas	Anenas	Ananas	Ananas

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	Maize	<i>Zea mays</i> L.	Gom dhan	Bhutta	Macca	Mokka- Jonna	Makka- cholam	Cholam ; Makka- cholam	Musukina jola	Makka	Makkaj	Makka	Makki ; Makayee
4	Ragi	<i>Eleusine coracana</i> Gaertn.	—	Marwa	Mandia	Ragi, Chodi	Keppai, Ragi	Ragi, Muthari	Ragi	Nagli, Nachni	Nagli, Bavto	Ragi, Mand ka, Marwah	Mandhuka, Mandhal
5	Bhindi (Lady's finger)	<i>Hibiscus esculentus</i> ; <i>Abelmoschus esculentus</i> , Moench.	Bhendi	Dhenrosh	Vendi	Benda	Bendai Kai	Venda	Bende kayi	Bhendi	Bhida, Bhinda	Bhindi	Bhindi, Tori
6	Potato	<i>Solanum tuberosum</i> L.	Alooguti	Alu	Bilati Alu	Bangala- dumpa, Urlagadda	Uruzhai Kilangu	Urala kizangu	Alu gedde	Batata	Aloo ; Batata	Aaloo,	Alu
7	Sugarcane	<i>Saccharum officinarum</i> L.	Kuhiar	Akh	—	Cheruku	Karumbu	Karimbu	Kabbu	Oos	Sherdi	Ganna, Kamad, Naishakar	Kamad, Ganna, Eakh
8	Cotton	<i>Gossypium spp.</i>	Kapah	Karpas, Tula	Kapa	Pratti	Paruthi	Paruthi	Hatti	Kapus	Kapas	Kapas	Kapah
9	Jute	<i>Corchorus spp.</i>	Marapat	Shada pat, Tosha pat	Jhota	Janumu	Chanapai	Chanam- bu	Senabu	Joot	Moti	Jute	Patsan
10	Tobacco	<i>Nicotiana tobacum</i> L.	Dhopat	famak	Uanpatra	Pogaku	Pugayilai	Pukayila	Hoge soppu	Tambaku	Tamaku	Tambaku	Tamaku, Tambaku
11	Groundnut	<i>Arachis hypogaea</i> L.	China Badam	Cheena Badam	China Badam	Veru Senaga	Nilakada- lai	Nilakka- dala	Kadale kayi	Bhuimug	Bhoising; Magafali	Mung- phali	Mungfali
12	Gingelly	<i>Sesamum indicum</i> L. <i>Sesamum orientale</i> L.	Til	Til	Rasi	Nevvulu	Ellu	Ellu	Yellu	Til, Tili	Tal	Til -	Til

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ORISSA

(Salient features of experimentation)

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

This volume includes the results of 315 experiments conducted during the period 1960-65, besides experiments belonging to All-India Co-ordinated Agronomic Experiments scheme of I.C.A.R., as against 207 experiments for the period 1954-59 and 84 experiments for the period 1948-53. The consolidated results of experiments conducted for more than one year and concluded during the period 1960-65, numbering 85, and forming 35 groups, have been presented in Table 1 below :

TABLE I

Number of groups and experiments concluded during 1960-65 period.

(Crop-wise and Type-wise)

Crop	M	MV	C	CV	CM	IM	D	R	Total
Paddy	8(20)	1(2)	—	—	1(2)	—	—	—	10(24)
Maize	1(2)	—	—	—	—	—	1(3)	—	2(5)
Ragi	1(2)	4(8)	—	—	—	—	—	—	5(10)
Bhindi	—	—	—	—	—	—	1(2)	—	1(2)
Sugarcane	2(4)	—	1(2)	—	—	1(2)	2(4)	—	6(12)
Jute	5(13)	—	1(3)	2(7)	—	—	—	—	8(23)
Berseem	1(3)	—	—	—	—	—	—	—	1(3)
Rotational	—	—	—	—	—	—	—	2(6)	2(6)
Total	8(44)	5(10)	2(5)	2(7)	1(2)	1(2)	4(9)	2(6)	35(85)

N.B.—Figures in brackets indicate total number of experiments in the groups.

Also the results of experiments conducted for only one year during the period under report numbering 204 and also those of the experiments which are continued beyond 1965, numbering 26 and forming 17 groups, have been presented. The distribution of all experiments, according to crop and type of treatments, is furnished in Table 2 below :-

TABLE 2
Number of experiments (Crop-wise and Type-wise)

Crop	M	MV	C	CV	CM	CMV	I	IM	D	R	Total
Paddy	39	101	7	2	5	1	1	2	9	—	167
Wheat	2	—	1	—	—	—	—	1	—	—	4
Maize	4	1	—	—	—	—	—	1	5	—	11
Ragi	2	10	—	3	—	—	—	—	—	—	15
Bhindi	—	—	—	—	—	—	—	—	2	—	2
Potato	12	—	2	—	—	—	—	1	4	—	19
Sugarcane	12	1	7	2	—	—	1	2	10	—	35
Cotton	—	—	—	—	1	—	—	—	—	—	1
Jute	13	—	5	12	—	—	—	—	—	—	30
Tobacco	1	—	—	—	—	—	—	—	—	—	1
Groundnut	3	—	1	—	—	—	—	—	—	—	4
Gingelly	—	—	—	—	—	—	—	—	5	—	5
Linseed	—	1	—	—	—	—	—	—	—	—	1
Mustard	—	—	—	2	—	—	—	—	—	—	2
Onion	1	—	—	—	—	—	—	—	—	—	1
Berseem	3	—	—	—	—	—	—	—	—	—	3
Legumes	—	—	—	—	1	—	—	—	—	—	1
Mossambique	1	—	—	—	—	—	—	—	—	—	1
Guava	1	—	—	—	—	—	—	—	—	—	1
Pineapple	—	—	—	1	—	—	—	—	—	—	1
Rotational	—	—	—	—	—	—	—	—	—	10	10
TOTAL	94	114	23	22	7	1	2	7	35	10	315

The principal crop of the State is Paddy. Pulses and Oilseeds are the other important crops. Ragi, Jute and Sugarcane are also grown in some parts of the State, but these occupy relatively small areas. The salient features of the experimentation on different crops are given on next page.

Paddy :—Paddy covers 4332* thousand hectares i.e. 58.2% of the total cropped area. 167 experiments were reported on paddy crop, of which 81 experiments were conducted under irrigated conditions. 117 experiments were laid out in Split-plot Design, 39 in Randomised Block Design and the remaining 11 experiments in Confounded Designs.

In 101 (MV) experiments having Manurial and Varietal treatment combinations, except in one case, Split-plot Design was used ; 83% of these were having 2 to 3 replications with sub-plot size upto 20 square metres. The maximum and the minimum number of varieties tried in these 101 experiments were 22 and 3 respectively. In about 58% of such experiments 5 to 10 varieties were tried. In 90% of experiments 0 level of Nitrogen was not tried. In a majority of the experiments 2 to 4 levels of Nitrogen ranging between 22 to 90 Kg/ha. of Nitrogen were tried as a factor. Only 8 experiments had levels of P_2O_5 as a factor, ranging between 0 and 45 Kg/ha. of P_2O_5 . No experiment was conducted with Potash as a factor.

In 63 experiments of M, C, CM, I, IM and D types 17, 13, 13 and 7 experiments were conducted with T_{90} , T_{1242} , T_{1342} and BAM-6 paddy varieties respectively. The remaining 13 experiments were conducted with 10 other varieties. Randomised Block Design, Split-plot Design and Confounded Designs were used in 38, 15 and 10 experiments respectively. In experiments with Randomised Block Design, treatments ranging between 2 and 18 were tried. In 18, 14, 3 and 3 of these experiments, 3, 4, 5 and 6 replications respectively were used. Of the 15 experiments with Split-plot design, 6, 3 and 6 were conducted with 2, 3 and 4 replications respectively. Single or 2 replications were used in the 10 experiments conducted with Confounded designs.

In 39 M type experiments, levels of Nitrogen were tried in a majority of the cases, followed by levels of P_2O_5 . Of these, in only 3 experiments levels of K_2O were tried. In 15 C, CV, CM and CMV types of experiments weeding, methods of sowing and ploughing, dates of planting, seed rates, spacings, age and type of seedlings, etc. were used as treatments. Only 3 irrigational (I & IM types) experiments were conducted. Out of the 9 D type experiments, 5 related to use of insecticides and pesticides to control diseases and pests and 4 to the use of weedicides.

Sugarcane :— Sugarcane covers 40.4* thousand hectares i.e. 0.54% of the total cropped area. 35 experiments were reported on this crop, of which 34 were conducted under irrigated conditions. Co. 997, Co. 527, Co. 617 and Co. 881 were the main varieties used in these experiments. 15 and 9 experiments had manurial and cultural treatments respectively while 10 were of D type. 25, 6 and 4 experiments respectively were conducted in Randomised Block Designs, Split-plot designs and Confounded designs. In Randomised Block Design, 3 to 10 treatments were tried with 3 replications in 4 experiments, with 4 replications in 16 and with 5 replications in the remaining 5 experiments. In Split-plot design 3 to 4 replications were used. 3 experiments with Confounded design were unreplicated while one such had 3 replications.

In the manurial experiments, levels of Nitrogen ranged between 0 and 360 Kg/ha., levels of P_2O_5 between 0 and 180 Kg/ha. and levels of K_2O between 0 and 112 Kg/ha. Effects of lime and F.Y.M. at different levels were also investigated. In cultural experiments, methods and depths of planting, dates of planting, row spacings, seed rates, etc. were tested. In the D type of experiments, effects of insecticides and pesticides were tested. Efficacies of different weedicides for controlling weeds in Sugarcane were also determined.

Jute :— Jute covers 51.0* thousand hectares i.e. 0.68% of the total cropped area. 30 experiments were reported on this crop, of which 13 had manurial (M) treatments, 5 cultural (C) and 12 had combination of varietal and cultural (CV) treatments. 14, 10 and 6 experiments were conducted in Randomised Blok Design, Split-plot Design and Confounded Designs respectively. Experiments in Randomised Block Design included 12 experiments with 4 repli-

*Figures taken from Indian Agricultural Statistics, Vol. 1, issued by the Directorate of Economics and Statistics, Ministry of Food and Agriculture, C.D. and Co-operation for 1964—65.

cations and 2 with 5 replications. In Split-plot design 4 experiments had 3 replications and 6, 4 replications. The 6 experiments in Confounded designs were evenly divided between 2 and 3 replications. Out of 18 experiments of M and C types, 15 were conducted with variety J.R.C.-212 and 3 experiments with variety J.R.O.—632.

In manurial experiments doses of N ranged between 0 and 90 Kg/ha. and doses of P_2O_5 and K_2O between 0 and 45 Kg/ha. 5 experiments were conducted to study the effectiveness of foliar spray of Urea. In C and CV types, of experiments, sowing dates, dates and stages of harvesting were tried as treatments.

Potato :—Potato covers 29.6* thousand hectares, i.e. 0.40% of the total cropped area. 19 experiments were reported on this crop of which 12, 2, 1 and 4 were of M, C, IM and D types respectively.

Ragi :— Ragi covers 64.7* thousand hectares, i.e. 0.87% of the total cropped area, but only 15 experiments were reported on this crop. 2, 10 and 3 experiments were of M, MV, and CV types.

Maize :— Maize covers 21.6* thousand hectares, i.e. 0.29% of the total cropped area. 11 experiments including 4 of M type and 5 of D type were reported.

Oilseeds :— Different Oilseed crops cover in all 272.7* thousand hectares, i.e. 3.66% of the total cropped area, but relatively a few experiments have been conducted on these crops. Gingelly, Groundnut, Mustard and Linseed accounted for 5, 4, 2 and 1 experiments respectively.

Other crops :— 26 experiments were reported on other crops, of which 10, 9, 2 and 2 experiments were of R, M, CM and D types respectively. C, CV and IM types accounted for one experiment each. Four experiments on wheat, 3 on berseem and 2 experiments on bhindi were conducted. One experiment each was conducted on cotton, tobacco, onion, legumes, mossambique, guava and pineapple crops.

PARTICULARS OF RESEARCH STATIONS AND SOIL ANALYSIS

1. Rice Research Station, Berhampur.

A. General Information :

(i) In Ganjam district, 10 Km. from Berhampur R.S. (S.E. Rly.) with Lat. 19.5°N/Long. 84.3°E/Alt. N.A. As for general topography, the research station has (a) high land depending on the vagaries of the monsoon and (b) low land—having facilities. (ii) Coastal tract. (iii) Established in 1932. (iv) Ragi, Paddy, Mung. (v) Programme of Research : (a) Collection of indigenous and exotic types of paddy varieties. (b) Study of collected materials and evolution of suitable varieties of paddy and millets. (c) Intra indica crosses in paddy. (d) Japonica indica crosses in paddy. (e) Trials on standard varieties of paddy and millets to test their suitability in different zones. (f) To find out the high yielding varieties of paddy and millets. (g) Production of breeder seeds. (h) Miscellaneous : Maintenance of genetic stock, selfing of released strains, observation of promising strains and fixed hybrids of paddy and millets.

B. Normal Rainfall :

Average annual rainfall : About 125 cm. (the period on which the figure is based is not available).

C. Irrigation and Drainage facilities :

(i) Irrigation—4 ha. under canal irrigation during *kharif* season only. 8 ha. under rain-fed condition. A part of the high land is under tank irrigation. (ii) There is proper drainage system.

D. Soil type and Soil analysis :

(i) Broad soil type : Sandy loam.

(ii) Chemical analysis :

(a) Total Nitrogen (%) :—0.032 to 0.088. (b) Available Phosphoric Acid :—30.4 to 57.6 Kg/ha. (c) Available Potash :—34.5 to 66.0 Kg/ha. (d) pH :— 6.6 to 8.0.

(iii) Mechanical analysis.

(a) Sand (%) :—44.45 to 77.10. (b) Silt (%) :—7.00 to 19.10. (c) Clay (%) :—14.20 to 33.50. (d) Stones (%) :— 1.5 to 11.0.

E. No. of Experiments.

Paddy—23 ; Total=23.

2. Agriculture Experimental Station, O.U.A.T., Bhubaneswar.

A. General Information :

(i) In Puri district, 5 Km. from Bhubaneswar R.S. with Lat. 20°—15' N/Long. 85°-52'E/Alt. 25.9 m. above M.S.L. Most of the land is slopy, much of the soil is low lying, majority of high land have rocks below surface. (ii) Red alluvial tract (Portion of Eastern Ghat). (iii) Established in 1949. (iv) Normal cropping pattern is :—1. Rice-Rice (very common) 2. Jute-Rice-Rice. 3. Rice-Potato-Groundnut. 4. Rice-Maize-Cowpea. 5. Rice-Vegetables-Vegetables. Other patterns are also followed, depending upon the type of land. (v) Applied research programmes mainly on rice in different aspects of agronomy, breeding, plant protection and soils are planned and conducted by concerned departments annually. In addition, horticultural research on fruits and vegetables are also conducted.

B. Normal Rainfall :

Jan.		Feb.		March		April		May		June		July	
1	2	1	2	1	2	1	2	1	2	1	2	1	2
0.7	0.1	2.1	0.4	2.0	1.0	1.0	2.7	3.8	3.6	6.1	8.9	20.3	13.3
Aug.		Sept.		Oct.		Nov.		Dec.		Total			
1	2	1	2	1	2	1	2	1	2	147.7			
19.9	15.5	15.2	11.3	8.8	10.8	—	—	0.1	0.1				

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

C. Irrigation and Drainage facilities :

- (i) Perennial stream available from which 25% of the total area is irrigated.
(ii) Yes, there is proper drainage system.

D. Soil type and Soil analysis :

- (i) Loamy sand to sandy clay loam, Depth—more than 2 m., Colour—varying from pale yellow to light red, Structure—Loose friable.
(ii) Chemical analysis : pH value varies from 5.2 to 6.7.
(iii) Mechanical analysis : Clay—9.7 to 27.8%, Silt—7.8 to 19.4%, Sand—32.6 to 58.0%.

E. No. of Experiments :

Paddy-89 ; Wheat-2 ; Maize-11 ; Ragi-15 ; Bhindi-2 ; Potato-12 ; Sugarcane 23 ; Cotton-1 ; Tobacco-1 ; Groundnut-1 ; Gingelly-5 ; Linseed-1 ; Legumes-1 ; Mimosoqui-1 ; Guava-1 ; Pine-apple-1 ; Rotational-6 ; Total=173.

3. Irrigation Research Centre, Chakuli.**A. General Information :**

(i) In Bargarh taluka of Sambalpur district, 6 Km from Arabika Railway Station with Lat. 21°29' N./Long. 84°0' E./Alt. 178.8 m. above M.S.L. Rolling topography. (ii) It represents Red-Laterite tract. (iii) Established in 1965. (iv) Rice-Rice; Rice-Potato; Rice-Hybrid Maize; Rice-Irrigated Groundnut; Rice-S.cane-Ratoon. Rice-Winter Vegetables; Rice-Wheat. (v) Agronomical, Entomological, and Chemical experiments on Wheat, Rice, Cotton and Jowar.

B. Normal Rainfall :

Jan.		Feb.		March		April		May		June		July	
1	2	1	2	1	2	1	2	1	2	1	2	1	2
1.7	0.4	1.0	0.4	2.1	0.1	0.3	1.2	1.8	1.2	9.0	15.0	11.0	25.2
Aug.		Sept.		Oct.		Nov.		Dec.		Total			
1	2	1	2	1	2	1	2	1	2	141.5			
26.3	16.6	13.5	7.4	3.9	0.4	1.1	0.7	0.1	0.1				

(Av. fortnightly rainfall in cm. based on data for the period 1965-71).

C. Irrigation and Drainage facilities :

- (i) (a) The Research station has irrigation facilities since 1964. It gets irrigation except in the month of May when the canal is closed.
(b) Flow irrigation facilities available.
(ii) There is no proper drainage system. Due to rapid rise of water table, the area suffers from water-logging.

D. Soil type and Soil analysis :

- (i) Soil type—Sandy loam ; Depth—1.52 m. to 1.83 m. at highest contour ; Colour—yellowish brown ; Structure—Friable.

	N	P	K
(ii) Chemical analysis : Total nutrient%	0.04	0.01	0.7
Organic carbon %	0.43		
Calcium	0.3 me/100 gm. soil.		
Magnesium	0.5 me/100 gm soil.		
(iii) Mechanical analysis : Sand %—83 ; Silt %—8 ; Clay %—9.			

E. No. of Experiments :

Paddy-1 ; Total=1.

4. Rice Research Station, Jeypore.

A. General Information :

(i) In Koraput district, near Vizianagram R.S., with Lat. 18°6' N./Long. 82°44' E/Alt. 600 m. above M.S.L., Terrace lands. (ii) Hilly tract. (iii) Established in 1937. (iv) Rice-What. (v) Research on Rice, Wheat, Maize and Millets.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July
2.8	0.5	6.1	7.4	5.8	37.9	59.9
Aug.	Sept.	Oct.	Nov.	Dec.	Total	
58.2	35.3	15.7	2.8	5.8	238.2	

(Av. rainfall in cm.; based on the data for the period 1966-71).

C. Irrigation and Drainage facilities :

- (i) (a) Available from December to February. (b) Irrigation by Tank.
 (ii) Yes, there is a proper drainage system.

D. Soil type and Soil analysis :

(i) Broad soil type—Sandy clay. (a) Depth—Upto 23 cm. (b) Colour—Black and Red. and (c) Structure—Granular.

(ii) Chemical analysis :

(a) Total Nitrogen%—0.0478 to 0.063 (at 23 cm. depth). (b) Available Phosphoric Acid—46.4 to 64.0. Kg/ha. (c) Available Potash — 32.5 to 41.5 Kg/ha. (d) pH—5.6 to 7.5.
 (e) Electric conductivity in m. mhos/cm.—0.084 to 0.246.

(iii) Mechanical analysis :

- (a) Sand %—32.48 to 49.24.
 (b) Silt %—14.15 to 15.30.
 (c) Clay %—32.20 to 48.30.

E. No. of Experiments :

Paddy-39 ; Total=39.

5. Jute Research Station, Kendrapara.

A. General Information :

(i) In Cuttack district, nearest Railway Station—Kendrapara Road with Lat. 19° 34' N./Long. 86°—36' E/Alt. 2.4 m. above M.S.L. The general topography of the experimental area is plane. (ii) It represents Coastal type of tract. (iii) Established in 1956-57. (iv) Jute-paddy-fallow; Jute-paddy-mung. (v) Agronomical, botanical, entomological and soil nutrient up take experiments on jute crop.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July
1.8	2.7	4.2	2.1	5.9	16.8	28.7
Aug.	Sept.	Oct.	Nov.	Dec.	Total	
32.2	29.2	18.0	3.9	0.1	145.6	

(Av. rainfall in cm.; based on the data for the period 1959-70).

C. Irrigation and Drainage facilities :

(i) (a) Poor drainage condition. Irrigation is temporarily done by pump. (b) Water is lifted by 5 h.p. pump from retting tank. (ii) No proper drainage system.

D. Soil type and Soil analysis :

(i) Laterite clay soil which develops cracks on drying and forms clods on ploughing :
Colour—Deep gray ; Depth—91 cm.

(ii) Chemical analysis :

E.C. m mhos/cm.--	0.08	Av. K ₂ O in Kg/ha.—	195.00
Org. carbon %--	0.50	Ex-Ca. in m.e. %--	8.00
Av. P ₂ O ₅ in Kg/ha.—	17.00	C.E.C. m.e. %--	15.00
Av. Mg. in Kg/ha.—	720.00		

(iii) Mechanical analysis :

Sand—	9.5%
Silt—	40.3%
Clay—	50.2%

E. No. of Experiments :

Jute—21 ; Total=21.

6. Sugarcane Research Sub-Station, Rayagada.**A. General Information :**

(i) In Koraput district, about 3 Km. from Rayagada R.S. with Lat. 19°27' N Long. 83°37' E/Alt. 222 m. above M.S.L. Plain area having 2 to 5% slope. (ii) The Eastern Ghats region tract. (iii) Established in 1954. (iv) Only Sugarcane. (v) Agro-climatic trials on mineral, cultural, varietal and irrigational aspects.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July
—	1.4	—	7.0	14.8	12.2	24.4
Aug.	Sept.	Oct.	Nov.	Dec.	Total	
35.9	46.2	20.5	—	—	112.4	

(Av. rainfall in cm. : based on the data for the year 1971).

C. Irrigation and Drainage facilities :

(i) (a) Yes, since 1962. (b) Lift irrigation by Nagavali Irrigation Society. (ii) Yes, there is a proper drainage system.

D. Soil type and Soil analysis :

(i) Soil type—Sandy Loam containing white single grain. (ii) Chemical analysis :—Not done. (iii) Mechanical analysis :—Sands + Fine Gravel—50 to 80% Clay about—20%.

E. No. of Experiments :

Sugarcane-12 ; Total=12.

7. Agricultural Research Station, Sambalpur.

A. General Information :

(i) In Sambalpur district, nearest Railway Station is Sambalpur Road with Lat. 21° N/Long. 84°E/Alt. 148 m. above M.S.L. The General topography of the experimental area is undulating plain. (ii) Central Table Land as per land classification of Orissa State. (iii) Established in 1956. (iv) (a) Paddy—Wheat, Paddy—Pulse. (b) Paddy—Mustard, Early Paddy—Winter Vegetables—Summer Vegetables. (v) Agronomical, Botanical, Chemical, Entomological and Microbiological experiments on Paddy, Wheat, Cotton and Oilseeds.

B. Normal Rainfall :

Jan.		Feb.		March		April		May		June		July	
1	2	1	2	1	2	1	2	1	2	1	2	1	2
0.6	0.9	0.2	1.1	2.6	1.8	0.7	1.2	1.1	0.9	9.0	13.6	14.2	29.0
Aug.		Sept.		Oct.		Nov.		Dec.		Total			
1	2	1	2	1	2	1	2	1	2				
34.8	29.0	13.4	10.6	4.4	0.3	0.2	—	0.5	0.2	170.3			

(The Av. fortnightly rainfall in cm.; based on the data for the period 1967-71).

C. Irrigation and Drainage facilities :

(i) (a) Yes, since 1961, Lift irrigation by pump, operated by electricity and diesel.
 (b) Source of irrigation is from a perennial nala and tank. (ii) No, by natural drainage.

D. Soil type and Soil analysis :

(i) Medium Texture, Light black in colour, loam and clay loam type of soil with depth 20 to 30 cm.

(ii) Chemical analysis : Nitrogen—Average ; Phosphate—Low ; Potash—Medium.

(iii) Mechanical analysis : N.A.

E. No. of Experiments :

Paddy-15, Wheat-2, Potato-7, Jute-9, Groundnut-3, Mustard-2, Onion-1, Berseem-3, Rotational-4 ; Total=46.

EXPERIMENTAL DATA

Crop :- Paddy (Kharif).

Ref :- Or. 62(5), 63(2), 64(1).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :-To study the effect of different sources of P on the yield of Paddy.

1. BASAL CONDITIONS :

(i) N.A. for 62(5) ; Nil for others. (b) N.A. for 62(5) ; Paddy for others. (c) N.A. for 62(5) ; 44.8 Kg/ha. of N as A/S for 63(2) ; 44.8 Kg/ha. of N as urea for 64(1). (ii) Lateritic soil. (iii) 11.8.1962 ; 25, 26.8.1963 ; 31.8.1964 to 2.9.1964. (iv) (a) N.A. (b) Japanese method of transplanting. (c) N.A. (d) 15 cm. x 15 cm. (e) —. (v) 44.8 Kg/ha. of N : $\frac{1}{2}$ at the planting and $\frac{1}{2}$ after one month. N was applied as A/S, Urea, C/A/N for 62(5), 63(2), 64(1) respectively. (vi) T-90 for 62(5) ; T-1242 for others. (vii) Unirrigated. (viii) Weeding by hand. (ix) 57 cm., 64 cm., 39 cm. (x) 12.1.1963 ; 6.2.1964 ; 4.1.1965.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of P_2O_5 : $P_0=0$, $P_1=22.4$ and $P_2=44.8$ Kg/ha.

(2) 3 sources of P_2O_5 : $S_1=$ Super, $S_2=$ Basic slag and $S_3=B.M.$

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a) 9.3 m. x 4.7 m. (b) 9.0 m. x 4.4 m. (v) 15 cm. x 15 cm. (vi) Yes.

4. GENERAL :

(i) Good for 62(5) ; Normal for others. (ii) Most of the spikelets were choffy due to stan borer attack for 63(2) ; No incidence for others. (iii) Grain yield. (iv) (a) 1962 to 1964. (b) Yes. (c) Results of combined analysis given under 5. (v) N.A. (vi) Heavy rains damaged the crop for 63(2). (vii) Error variances are heterogeneous and Treatments x years interaction is present.

5. RESULTS :

(i) 1480 Kg/ha. (ii) 237.2 Kg/ha. (12 d.f. made up of various components of Treatments x years interaction). (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

$P_0=1543$ Kg/ha.

	S_1	S_2	S_3	Mean
P_1	1297	1382	1496	1392
P_2	1462	1385	1670	1506
Mean	1380	1384	1583	1449

Crop :- Paddy (Kharif).

Ref :- Or. 60(24), 63(35), 64(17)

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :-To study the effect of N, P and K with and without F.Y.M. on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Fallow. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 18, 19.7.1960 ; 1, 2.7.1963 ; 22.7.1964. (iv) (a) 3 ploughings with one laddering. (b) Transplanting. (c) 22 Kg/ha. for 60(24) ; 12 Kg/ha. for others. (d) 23 cm. x 23 cm. (e) 3 for 60(24) ; 2 for others. (v) Nil. (vi) T-90 (late). (vii) Unirrigated. (viii) Weeding by Japanese weeder and hand weeding. (ix) 66 cm., 132 cm., 82 cm. (x) 11, 12. 2.1960 ; 20.12.1963 ; Last week of Dec., 1964.

2. TREATMENTS :

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

- (1) 3 levels of N as A/S : $N_0=0$, $N_1=22.4$ and $N_2=44.8$ 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 : $K_0=0$, $K_1=22.4$ and $K_2=44.8$ Kg/ha.
 (4) 2 levels of F.Y.M. : $F_0=0$ and $F_1=8967$ Kg/ha.

3. DESIGN :

- (i) $3^3 \times 2$ confd. (ii) (a) 9 plots/block ; 6 blocks/replication. (b) N.A. (iii) 1. (iv) (a) $5.5 \text{ m.} \times 7.3 \text{ m.}$
 (b) $5.0 \text{ m.} \times 6.8 \text{ m.}$ (v) $23 \text{ cm.} \times 23 \text{ cm.}$ (vi) Yes.

4. GENERAL :

(i) Normal. Lodging in some plots for 63(35) and 64(17). (ii) Attack of case worm, having caterpillar, Mealy bugs and stem borer for 60(24); No incidence for others. (iii) Grain yield. (iv) (a) 1958-1964 (Expt. for 1961 is N.A. and Expt. for 1962 conducted with modified treatments). (b) No. (c) Results of combined analysis are presented under 5. (v) N.A. (vi) Nil. (viii) Results of expts. no. 58(19) and 59(8) have also been included for giving combined results. Error variances are heterogeneous and $(F \times N)$, years, $(F \times P) \times \text{years}$ and $(F \times K) \times \text{years}$ interactions are present.

5. RESULTS :

- (i) 2026 Kg/ha. (ii) 599.0 Kg/ha. (52 d.f. made up of various components of Treatments \times years interaction)
 (iii) Main effect of F 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	1797	1762	1871	1691	1847	1892	1807	1881	1742	1810
F_1	2196	2226	2304	2161	2297	2268	2204	2274	2248	2242
Mean	1996	1994	2088	1926	2072	2080	2006	2077	1995	2026

C.D. for F marginal means=146.5 Kg/ha.

60(24)

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	2225	2427	2455	2433	2461	2213	2369
N_1	2052	2526	2559	2264	2467	2406	2379
N_2	2185	2598	2627	2491	2674	2245	2470
Mean	2154	2517	2547	2396	2534	2288	2406
K_0	2188	2387	2613				
K_1	2572	2611	2419				
K_2	1702	2553	2609				

S.E. plot=735.0 Kg/ha.

63(35)

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	1598	1509	1288	1302	1638	1455	1465
N_1	1348	1404	1409	1485	1323	1353	1387
N_2	1266	1380	1371	1353	1440	1224	1339
Mean	1404	1431	1356	1380	1467	1344	1397
K_0	1401	1339	1400				
K_1	1479	1434	1488				
K_2	1332	1520	1180				

S.E. plot=345.0 Kg/ha.

64(17)

	P ₀	P ₁	P ₂	K ₀	K ₁	K ₂	Mean
N ₀	1856	2228	2222	2204	1971	2131	2102
N ₁	1963	2039	2088	1798	2102	2190	2030
N ₂	2121	2078	1792	2136	1912	1943	1997
Mean	1980	2115	2034	2046	1995	2088	2043
K ₀	2093	2136	1909				
K ₁	1947	2058	1980				
K ₂	1900	2151	2213				

S.E./plot=465.0 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 63(5), 64(2).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'M'.**

Object :—To study the effect of N and P with and without F.Y.M. on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Fallow. (b) Paddy. (c) N.A. for 63(5); as per treatments for 64(2). (ii) Sandy loam. (iii) 26.5.1963/7.7.1963; 21.6.1964/19.7.1964. (iv) (a) 2 ploughings and 1 puddling. (b) Transplanting (c) N.A. (d) 23 cm. × 15 cm. (e) 2. (v) 1121 Kg/ha. of lime. (vi) T-90 (late). (vii) Irrigated. (viii) Weeding. (ix) 20 cm., 139 cm. (x) N.A.; 15.12.1964.

2. TREATMENTS :

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

- (1) 2 levels of N : N₀=0 and N₁=33.6 Kg/ha.
 (2) 2 levels of P₂O₅ : P₀=0 and P₁=22.4 Kg/ha.
 (3) 2 levels of F.Y.M. : F₀=0 and F₁=4483 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) 7.3 m. × 5.5 m. (b) 6.9 m. × 5.2 m. (v) 23 cm. × 15 cm.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1963-1964. (b) Yes. (c) N.A. (v) N.A. (vi) Nil. (vii) Error variances are homogeneous and Treatments × years interaction is absent.

5. RESULTS :

(i) 3112 Kg/ha. (ii) 376.2 Kg/ha. (34 d.f. made up of pooled error and various components of Treatments × years interaction). (iii) Main effect of N alone is highly significant (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	F ₀	F ₁	Mean
N ₀	3356	3218	3170	3403	3287
N ₁	2922	2950	3014	2859	2936
Mean	3139	3084	3092	3131	3112
F ₀	3144	3040			
F ₁	3134	3128			

C.D. for N marginal means=220.9 Kg/ha.

Crop :- Paddy (Rabi).

Ref :- Or. 63(57), 64(21).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :-To study the comparative efficiency of Super and Nitrophosphate on the yield of Paddy.

1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 1st week of January, 1963 : 10.1.1964/7.2. 1964.
 (iv) (a) 2 to 3 ploughings and puddlings. (b) Transplanting. (c) 25 Kg/ha. (d) 23 cm. x 15 cm. (e) 2
 (v) Nil. (vi) P.T.B.-10. (vii) Irrigated. (viii) One hand weeding. (ix) 6 cm., 11 cm. (x) 26.4.1963, 3rd
 week of April, 1964.

2. TREATMENTS :

All combinations of (1), (2) and (3) = 4 extra treatments

(1) 3 types of fertilizers : S_1 = Super, S_2 = Nitrophos, O.D.D.A. and S_3 = Nitrophos P.E.C.

(2) 3 manurial treatments : L_1 = 13.4 Kg/ha. of N + 11.8 Kg/ha. of P_2O_5 , L_2 = 26.9 Kg/ha. of N + 23
 Kg/ha. of P_2O_5 and L_3 = 53.8 Kg/ha. of N + 47.1 Kg/ha. of P_2O_5 .

(3) 3 methods of placement : M_1 = Broadcasting at final puddling, M_2 = Through mudslush immediately before planting and M_3 = Pellet immediately after planting.

4 extra treatments : N_0 = 0, N_1 = 13.4, N_2 = 26.9 and N_3 = 53.8 Kg/ha.

3. DESIGN :

- (i) 3rd confd. + 4 extra treatments in each block (S_2LM and SL_2M confd.). (ii) (a) 13 plots/block, 3 blocks -
 replication. (b) N.A. (iii) 2. (iv) (a) 5.6 m. x 3.7 m. (b) 5.2 m. x 3.4 m. (v) 23 cm. x 15 cm. (vi) Yes

4. GENERAL :

- (i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1962 to 1964. (b) Yes. (c) N.A. (v) N.A. (vi) Nil.
 (vii) Error variances are heterogeneous and Treatments x years interaction is absent.

5. RESULTS :

- (i) 1264 Kg/ha. (ii) 527.9 Kg/ha. (18 d.f. made up of various components of Treatments x years interaction).
 (iii) Only between extra treatments is significant. (iv) Av. yield of grain in Kg/ha.

N_0 = 969, N_1 = 1158, N_2 = 1510 and N_3 = 1534

C.D. for extra treatment means = 369.8 Kg/ha.

	S_1	S_2	S_3	M_1	M_2	M_3	Mean
L_1	1156	993	1200	1114	1102	1134	1116
L_2	1434	1150	1201	1232	1200	1354	1262
L_3	1458	1359	1312	1366	1332	1431	1376
Mean	1349	1167	1238	1237	1211	1306	1251

63(57)

S.E./plot. = 346.0 Kg/ha.

	M_1	M_2	M_3	Mean
S_1	2235	2149	2111	2165
S_2	1772	1713	1837	1774
S_3	1894	1679	1947	1840
Mean	1967	1847	1965	1926

64(21)

S.E./plot=245.0 Kg/ha.

	M ₁	M ₂	M ₃	Mean
S ₁	476	566	560	534
S ₂	403	515	765	561
S ₃	645	644	616	635
Mean	508	575	647	577

Crop :- Paddy (Kharif).**Ref :- Or. 62(6), 64(16).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'M'.**

Object :—To study the effect of continuous application of A/S alone and in combination with organic manures on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Fallow. (b) Paddy. (c) As per treatments. (ii) Sandy loam. (iii) 28, 29.7.1962 ; 12.8.1964
(iv) (a) 3 ploughings. (b) Transplanting. (c) 12 Kg/ha. (d) 23 cm. × 23 cm. (e) 2. (v) 33.6 Kg/ha. of P₂O₅ as B.M. + 33.6 Kg/ha. of P₂O₅ as Super. (vi) T-90 (late). (vii) Unirrigated. (viii) One hand weeding. (ix) 63 cm., 56 cm. (x) 9 to 15.12.1962 ; 3rd week of December, 1964.

2. TREATMENTS :**Main-plot treatments :**

4 organic manures at 44.8 Kg/ha. of N : G₀=Control (no manure), G₁=*Sannhemp*, brought from outside, G₂=G.N.C. and G₃=F.Y.M.

Sub-plot treatments :

5 levels of N as A/S : N₀=0, N₁=22.4, N₂=44.8, N₃=67.2 and N₄=89.7 Kg/ha.
A/S was top dressed after transplanting in two split doses.

3. DESIGN :

(i) Split-plot. (ii) 4 main-plots/replication : 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 13.7 m. × 3.7 m. (b) 13.3 m. × 3.2 m. (v) 23 cm. × 23 cm. (vi) Yes.

4. GENERAL :

(i) Good. Lodging in some plots for 64 (16). (ii) No incidence : Endrex sprayed. (iii) Grain yield. (iv) (a) 1956-contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :**62(6)**

(i) 2271 Kg/ha. (ii) (a) 315.0 Kg/ha. (b) 294.0 Kg/ha. (iii) Main effects of G and N are highly significant. (iv) Av. yield of grain in Kg/ha.

	N ₀	N ₁	N ₂	N ₃	N ₄	Mean
G ₀	2270	2540	2358	2582	2229	2396
G ₁	2245	2308	2370	1798	1785	2101
G ₂	2240	2413	2255	1746	1782	2087
G ₃	2675	2681	2725	2369	1941	2499
Mean	2357	2485	2427	2124	1961	2271

C.D. for G marginal means=225.3 Kg/ha.

C.D. for N marginal means=209.2 Kg/ha.

64(16)

(i) 2848 Kg/ha. (ii) (a) 442.0 Kg/ha. (b) 260.0 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
G ₀	2598	2681	2805	2693	2663	2688
G ₁	3040	3099	2952	3017	2616	2945
G ₂	2905	3005	2952	2622	2746	2846
G ₃	2811	2970	2964	2987	2834	2913
Mean	2838	2939	2918	2830	2715	2848

Crop :- Paddy (Kharif).

Ref :- Or. 61(24), 62(7), 63(18).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :- To study the relative efficiency of A/S and C/A,N and to find out their proper time of application for Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil for 61 (24); Paddy-Fallow for others. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 17.6.1961, 12.7.1961; 10.6.1962/18.7.1962, N.A./21.7.1963. (iv) (a) 3 ploughings followed by laddering. (b) Transplanting. (c) 25 Kg/ha. (d) 23 cm. x 23 cm. (e) 2. (v) 2242 Kg/ha. of F.Y.M. + 22.4 Kg/ha. of P₂O₅ as Super. (vi) T-141 (medium). (vii) Unirrigated. (viii) One weeding by Japanese weeder and 1 hand weeding. (ix) 146 cm., 115 cm., 116 cm. (x) 12.11.1961; 26.11.1962; 25.11.1963.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 sources of N at 33.6 Kg/ha. : S₁=A/S and S₂=C/A,N.

(2) 3 times of application : T₁=Full dose at planting, T₂= $\frac{1}{2}$ at planting and $\frac{1}{2}$ after one month and T₃= $\frac{1}{3}$ at planting + $\frac{1}{3}$ one month after planting + $\frac{1}{3}$ before 15 days of flowering.

One control plot was taken besides all combinations of (1) and (2) above for 63 (18)

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6 [7 for 63 (18)]. (b) N.A. (iii) 4. (iv) (a) 6.5 m. x 6.2 m. for 61 (24); 8.8 m. x 4.6 m. for others. (b) 6.0 m. x 5.7 m. for 61 (24); 8.4 m. x 4.1 m. for others. (v) 23 cm. x 23 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1961-1963 (modified in 1963). (b) No. (c) Results of com-biend analysis for 1961 and 1962 are given under 5. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous and Treatments x years interaction is absent.

5. RESULTS :

61(24), 62(7)

(i) 2703 Kg/ha. (ii) 314.5 Kg/ha. (35 d f. made up of pooled error and various components of Treatments x years interaction). (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T ₁	T ₂	T ₃	Mean
S ₁	2695	2628	2630	2651
S ₂	2567	2882	2814	2754
Mean	2631	2755	2722	2703

63(18)

(i) 1376 Kg/ha. (ii) 503.0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control mean=1574 Kg/ha.

	T ₁	T ₂	T ₃	Mean
S ₁	1337	1479	1371	1396
S ₂	1252	1642	980	1291
Mean	1294	1560	1175	1343

Crop :- Paddy (Kharif).

Ref :- Or. 60(34), 61(62), 62(21).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :- To study the effect of lime, super and F.Y.M. on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil for 60 (34) ; Paddy-Fallow for others. (b) Paddy. (c) 44.8 Kg/ha. of N+22.4 Kg/ha. of P₂O₅ for 60 (34) ; As per treatments for 61 (62) ; Nil for 62 (21). (ii) Sandy loam. (iii) 4.8.1960/26 to 28.8.1960 ; 22.6.1961/15.7.1961 ; 30.6.1962/11, 12.8.1962. (iv) (a) 3 ploughings+laddering for 60(34) ; 2 ploughings+puddling for others. (b) Transplanting. (c) 22 Kg/ha. (d) 23 cm × 23 cm. (e) 2. (v) 22.4 Kg/ha. of N as A/S as top dressing. (vi) BAM-6 (late). (vii) Unirrigated. (viii) Hand weeding and weeding by Japanese weeder. (ix) 35 cm., 156 cm., 104 cm. (x) 6.7.1.1961 ; 28, 29.12.1961 ; 21, 22.12.1962.

2. TREATMENTS :

Main-plot treatments :

3 levels of F.Y.M. : F₀=0, F₁=4483 and F₂=8967 Kg/ha.

Sub-plot treatments :

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

Sub-sub-plot treatments :

4 levels of lime : L₀=0, L₁=560.4, L₂=840.6 and L₃=1120.8 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 3 sub-plots/main-plot and 4 sub-sub-plots/sub-plot. (b) N.A. (iii) 2. (iv) (a) 9.6 m. × 3.7 m. for 62 (21) ; 7.5 m. × 5.5 m. for others. (b) 9.1 m. × 3.2 m. for 62 (21) ; 7.1 m. × 5.0 m. for others. (v) 23 cm. × 23 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Endrex was sprayed to control the attack of rice-hispa and stem borer for 60 (34) ; Endrex was sprayed to control the attack of Gallfly and rice-hispa for 61 (62) ; No incidence for 62 (21). (iii) Grain yield. (iv) (a) 1960-1962. (b) No for 62(21) ; yes for others (c) Results of combined analysis are given under 5. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × years interaction is absent.

5. RESULTS :

(i) 1749 Kg/ha. (ii) (a) 718.6 Kg/ha. (10 d.f. made up of pooled error and Treatments × years interaction) (b) 329.3 Kg/ha. (30 d.f. made up of pooled error and various components of Treatments × years interaction). (c) 235.9 Kg/ha. (111 d.f. made up of pooled error and various components of Treatments × years interaction). (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	P ₀	P ₁	P ₂	L ₀	L ₁	L ₂	L ₃	Mean
F ₀	1778	1732	1641	1689	1803	1675	1802	1717
F ₁	1796	1649	1716	1609	1684	1749	1839	1720
F ₂	1794	1816	1823	1826	1721	1809	1880	1811
Mean	1789	1732	1727	1708	1736	1744	1807	1749
L ₀	1777	1680	1667					
L ₁	1736	1734	1743					
L ₂	1780	1754	1699					
L ₃	1862	1762	1797					

Crop :- Paddy (*kharij*).

Ref :- Or. 62(41), 63(16), 64(22).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :- To study the residual effect of Nitrophosphate on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) Sandy loam (iii) 27.6.1962, 8.8.1962; Last week of June, 1963, 18.6.1964, 5.7.1964. (iv) (a) 2 to 3 plougings and puddling. (b) Transplanting. (c) 17 to 25 Kg/ha. (d) 23 cm. × 23 cm. (e) 2. (v) Nil. (vi) T-1242 (late). (vii) Unirrigated. (viii) 2 weedings. (ix) 106 cm.; 135 cm.; 139 cm. (x) 16.12.1962, 19.12.63; 21.12.64.

2. TREATMENTS :

All combinations of (1), (2) and (3) - 4 extra treatments

(1) 3 types of fertilizers : S₁=Super, S₂=Nitro. Phos. O.D.D.A. and S₃=Nitro. Phos. P.E.C.

(2) 3 manurial treatments : L₁=13.4 Kg/ha. of N+11.8 Kg/ha. of P₂O₅, L₂=26.9 Kg/ha. of N+23 Kg/ha. of P₂O₅ and L₃=53.8 Kg/ha. of N+47.1 Kg/ha. of P₂O₅.

(3) 3 methods of placement : M₁=Broadcasting at final puddling, M₂=Through mud slush immediately before planting and M₃=Pellet immediately after planting.

4 extra treatments : N₀=0, N₁=13.4, N₂=26.9 and N₃=53.8 Kg/ha.

Treatments were applied to previous Paddy crop.

3. DESIGN :

(i) 3³ confd. + 4 extra treatments (S³L³M, S³L³M are confd.). (ii) (a) 13 plots/block; 3 blocks, replication. (b) N.A. (iii) 2. (iii) 6.1 m. × 2.7 m. for 62(41); 5.6 m. × 3.7 m. for others. (b) 5.6 m. × 2.3 m. for 62(41); 5.2 m. × 3.2 m. for others. (v) 23 cm. × 23 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Stem borer attack. Spraying Endrex at 03 Kg. in 27 litres of water. (iii) Gram yield. (iv) (a) 1962-1964. (b) Yes. (c) Nil. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × years interaction is absent.

5. RESULTS :

62(41)

(i) 1708 Kg/ha. (ii) 297.0 Kg/ha. (iii) Main effects of S, M and interaction N vs. others are highly significant. (iv) Av. yield of grain in Kg/ha.

$N_0=1401, N_1=1462, N_2=1549, \text{ and } N_3=1730$

	L_1	L_2	L_3	M_1	M_2	M_3	Mean
S_1	1693	1405	1678	1481	1661	1634	1592
S_2	1734	1919	1894	1560	1937	2050	1849
S_3	1835	1914	1993	1693	2018	2031	1914
Mean	1754	1746	1855	1578	1872	1905	1785
M_1	1588	1533	1613				
M_2	1697	1908	2011				
M_3	1977	1797	1941				

C.D. for S or M marginal means = 200.0 Kg/ha.

C.D. for the means of N vs. others tables = 146.2 Kg/ha.

63(16)

(i) 2382 Kg/ha. (ii) 509.0 Kg/ha, (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

$N_0=2181, N_1=2254, N_2=2377 \text{ and } N_3=2439$

	L_1	L_2	L_3	M_1	M_2	M_3	Mean
S_1	2447	2534	2549	2467	2724	2339	2510
S_2	2255	2288	2525	2297	2475	2296	2356
S_3	2297	2387	2438	2325	2262	2535	2374
Mean	2333	2403	2504	2363	2487	2390	2413
M_1	2432	2048	2609				
M_2	2512	2427	2522				
M_3	2055	2734	2381				

64(22)

(i) 3010 Kg/ha. (ii) 666.0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain is Kg/ha.

$N_0=3317, N_1=2869, N_2=2859 \text{ and } N_3=2580$

	L_1	L_2	L_3	M_1	M_2	M_3	Mean
S_1	3189	2734	2990	2317	3263	3332	2971
S_2	3525	2827	3110	3113	2869	3481	3154
S_3	3138	3049	2945	2839	3362	2932	3044
Mean	3284	2870	3015	2756	3165	3248	3056
M_1	3083	2029	3156				
M_2	3269	3231	2995				
M_3	3500	3350	2894				

Crop :- Paddy (Rabi).
Site :- State Agri. Res. Stn., Bhubaneswar.

Ref :- Or. 64(8).
Type :- 'M'.

Object :- To compare the efficiency of different nitrogenous fertilizers on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Fallow. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 15.12.64/16.1.65. (iv) (a) 2 ploughings and puddlings. (b) Transplanting. (c) 25 Kg./ha. (d) 15 cm. \times 23 cm. (e) 2. (v) 4483 Kg./ha. of F.Y.M. (vi) MTU-15. (vii) Irrigated. (viii) Weeding by Japanese weeder and one hand-weeding. (ix) 11 cm. (x) 1st week of April 1965.

2. TREATMENTS :

7 sources of 33.6 Kg./ha. of N : S₀ - Control, S₁ = A, S, S₂ = A, C, S₃ = Anmo. Phos., S₄ = C/A, N₁, S₅ = Urea and S₆ = Nitro. Phos.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) Nil. (iii) 3. (iv) (a) 12.5 m. \times 4.4 m. (b) 12.2 m. \times 4.0 m. (v) 15 cm. \times 23 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Mild attack of stem borer. (iii) Height, tiller count, panicle length, weight of grain and straw. (iv) (a) 1964 to 66. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1826 Kg./ha. (ii) 382.0 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
Av. yield	1867	2367	1901	1756	1618	1842	1428

Crop :- Paddy (Kharif).

Ref :- Or. 65(27).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :- To compare efficiency of different nitrogenous fertilizers on Paddy

1. BASAL CONDITIONS :

(i) (a) Nil, (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 17.8.65. (iv) (a) 3 ploughings and levelling. (b) Transplanting. (c) 22.4 Kg./ha. (d) 15 cm. \times 15 cm. (e) 2. (v) F.Y.M. @ 4.83 Kg./ha. (vi) T-1242. (vii) Irrigated. (viii) 2 hand-weedings. (ix) 62.4 cm. (x) 29.12.65.

2. TREATMENTS :

Same as in expt. no. 64(8) above.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a) 12.2 m. \times 9.1 m. (b) 11.9 m. \times 8.3 m. (v) 15 cm. \times 15 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Shoot borer attack was noticed on 8.11.66. (iii) Height, tiller and panicle length. (iv) (a) 1964-1966. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1983 Kg./ha. (ii) 235 Kg./ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg./ha.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆
Av. yield	1443	1951	2109	2265	2093	1992	2027

C.D. = 417.9 Kg./ha.

Crop :- Paddy (Kharif).

Ref :- Or. 60(25).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :—To study the effect of different green matters in the presence and absence of Super on the yield of Paddy.

1. BASAL CONDITIONS :

(i) *Mung*-Paddy. (ii) *Mung*. (c) N.A. (ii) Sandy loam. (iii) 13.8.1960. (iv) (a) 3 ploughings. (b) Line planting. (c) 22 Kg/ha. (d) 23 cm.×23 cm. (e) 2. (v) Nil. (vi) BAM-6 (late). (vii) Unirrigated. (viii) Gap filling. (ix) 44 cm. (x) 6.1.1961.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 9 types of G. M. : G_0 =Control (No G. M.), G_1 =*Sannhemp.*, G_2 =*Dhaincha*, G_3 =*Sesbainia*, G_4 =*Cassia*, G_5 =*Glyricidia*, G_6 =*Indigofera*, G_7 =*Karanja* and G_8 =*Ipomea Carliea*.

(2) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=28.0$ Kg./ha.

G.M. applied from 30.7.1960 to 5.8.1960 at 44.8 Kg/ha. P_2O_5 applied to G.M. crop.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 3. (iv) (a) 8.8 m.×4.3 m. (b) 8.4 m.×3.9 m. (v) 23 cm.×23 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height, tiller count and grain yield. (iv) (a) and (b) N.A. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2177 Kg/ha. (ii) 360.0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	G_0	G_1	G_2	G_3	G_4	G_5	G_6	G_7	G_8	Mean
P_0	1856	2179	2274	2115	2622	2019	2260	2338	2149	2201
P_1	2338	2033	2071	2123	1787	1897	2367	2309	2451	2153
Mean	2097	2106	2172	2119	2204	1958	2313	2323	2300	2177

Crop :- Paddy (Kharif).

Ref :- Or. 63(4).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :—To study the effect of different forms of G.L. with and without super on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) N.A./11.8.63. (iv) (a) Two ploughings and one puddling. (b) Transplanting. (c) N.A. (d) 23 cm.×15 cm. (e) 2. (v) Nil. (vi) T_9 (late). (vii) Irrigated. (viii) 1 weeding. (ix) 82 cm. (x) 31.12.63.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 6 types of G.L. : G_0 =Nil, G_1 =*Sesbania speciosa*, G_2 =*Dhaincha*, G_3 =*Sannhemp.*, G_4 =*Glyricidia* and G_5 =*Ipomea*.

(2) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=26.9$ Kg/ha.

3. DESIGN :

(a) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 7.6 m.×5.8 m. (b) 7.3 m.×5.5 m. (v) 15 cm.×15 cm. (vi) Yes.

4. GENERAL :

(a) Good. (ii) Nil. (iii) Height, tiller count and grain yield. (iv) (a) 1963 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2413 Kg/ha. (ii) 74.0 Kg/ha. (iii) Main effect of G alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	G ₀	G ₁	G ₂	G ₃	G ₄	G ₅	Mean
P ₀	1872	2771	2355	2417	2234	2646	2382
P ₁	2122	2089	2542	2625	2528	2754	2443
Mean	1997	2430	2448	2521	2381	2700	2413

C.D. for G marginal means = 88.6 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 60(33).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :- To study the effect of organic wastes and green leaves with and without Super on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) Sandy loam. (iii) 2.7.60-29.7.60. (iv) (a) 2 ploughings and 1 ladder-ing. (b) Transplanting. (c) 22 Kg/ha. (d) 23 cm. x 23 cm. (e) 2. (v) Nil. (vi) T₉₀ (late). (vii) Unirrigated. (viii) Weeding by Japanese weeder and one hand weeding. (ix) 82 cm. (x) 19.12.60.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 6 types of organic manures : G₀=No organic manure, G₁=Night soil com post, G₂= Dhaincha, G₃=Sannhemp, G₄=Glyricidia and G₅=Ipomea.

Organic manures were applied at 4483 Kg/ha.

(2) 2 levels of P₂O₅ as Super : P₀=0 and P₁=26 Kg/ha.

Manures applied 8 days before transplanting.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 7.3 m. x 6.4 m. (b) 5.9 m. x 5.9 m. (v) 23 cm. x 23 cm. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Height, tiller count and grain yield. (iv) (a) 1958 to 60. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2474 Kg/ha. (ii) 320.0 Kg/ha. (iii) None of the effects is significant. (iv) Av yield of grain in Kg/ha.

	G ₀	G ₁	G ₂	G ₃	G ₄	G ₅	Mean
P ₀	2327	2494	2596	2552	2605	2532	2518
P ₁	2026	2385	2689	2494	2615	2374	2430
Mean	2176	2439	2642	2523	2610	2453	2474

Crop :- Paddy (Kharif).**Ref :- Or. 60(28).****Site :- Agri. Res. Stn., Bhubaneswar.****Type :- 'M'.**

Object :—To study the residual effect of organic manure and inorganic fertilizers on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) Sandy loam. (iii) 25.8.1960. (iv) (a) 3 ploughings followed by laddering. (b) Line sowing. (c) 22 Kg/ha. (d) 23 cm. × 23 cm. (e) 2. (v) Nil. (vi) B.A.M. 6 (late). (vii) Unirrigated. (viii) Hand weeding and weeding by Japanese weeder. (ix) 35 cm. (x) 5.1.1961.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : $N_0=0$, $N_1=22.4$ and $N_2=44.8$ 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 F.Y.M. : $F_0=0$, $F_1=8967$ and $F_2=17930$ Kg/ha.**3. DESIGN :**

(i) 3^3 confd. (ii) (a) 9 plots/block and 3 blocks/replication. (b) Nil. (iii) One. (iv) (a) 3.7 m. × 11.0 m. (b) 3.2 m. × 10.5 m. (v) 23 cm. × 23 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of rice cash-worm, rice-hispa. (iii) Tiller height, growth, yield of grain and straw. (iv) (a) 1956 to 60. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Crop damaged by birds.

5. RESULTS :

(i) 969 Kg/ha. (ii) 451.0 Kg/ha. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	F_0	F_1	F_2	Mean
N_0	1784	1381	855	1306	1129	1584	1340
N_1	876	1168	988	1213	674	1146	1011
N_2	595	595	475	379	573	713	555
Mean	1085	1048	773	966	792	1148	969
F_0	1126	1342	430				
F_1	1128	618	630				
F_2	1000	1185	1258				

C.D. for N marginal means = 520.1 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 62(15).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'M'.**

Object :—To study the effect of N, P, K and F.Y.M. applied to Jute on the yield of succeeding crop of Paddy.

1. BASAL CONDITIONS :

(i) (a) Jute-Paddy. (b) Jute. (c) As per treatments. (ii) Sandy loam. (iii) 28.9.62. (iv) (a) 2 ploughings. (b) Transplanting. (c) N.A. (d) 23 cm. × 15 cm. (e) 2. (v) 44.8 Kg/ha. of N, 22.4 Kg/ha. of N at the time of transplanting. (vi) B.A.M.-6 (late). (vii) Irrigated. (viii) Weeding. (ix) 28 cm. (x) 10.12.62.

2. TREATMENTS :

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

- (1) 3 levels of N : $N_0=0$, $N_1=44.8$ and $N_2=89.7$ 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.
 (4) 2 levels of F.Y.M. : $F_0=0$ and $F_1=44.9$ Kg/ha.

3. DESIGN :

- (i) $3^3 \times 2$ confd. (ii) (a) 9 plots/block and 6 blocks/replication. (iii) One. (iv) (a) 6.4 m. \times 5.5 m. (b) 5.9 m. \times 5.2 m. (v) 23 cm. \times 15 cm. (vi) Yes.

4. GENERAL :

- (i) Good. (ii) Attack of hispa. Endrex was sprayed. (iii) Grain yield. (iv) (a) 1958 --contd. (modified) in 1962 only. (b) N.A. (c) Nil. (v) and (vi) Nil. (vii) Expt. for the year 1961 is N.A.

5. RESULTS :

- (i) 1523 Kg/ha. (ii) 212.0 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	1483	1592	1543	1496	1472	1652	1614	1543	1461	1539
F_1	1503	1485	1535	1496	1555	1471	1465	1492	1566	1508
Mean	1493	1538	1539	1496	1513	1561	1539	1518	1513	1523
N_0	1453	1531	1635	1489	1451	1680				
N_1	1505	1626	1422	1493	1497	1562				
N_2	1521	1459	1561	1506	1593	1442				
P_0	1454	1481	1554							
P_1	1467	1465	1608							
P_2	1558	1669	1457							

Crop :- Paddy (Kharif).

Ref :- Or. 60(39).

Site :- State Agri. Res. Stn, Bhubaneswar.

Type :- 'M'.

Object: To study the effect of Phosphate on mineralisation of green matter judged by the succeeding crop of Paddy.

1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Paddy. (c) N.A. (ii) Sandyloam. (iii) 2.7.60 ; 1.8.60. (iv) (a) 3 ploughings and puddling. (b) Line sowing. (c) 22 Kg/ha. (d) 23 cm. \times 23 cm. (e) 2. (v) Nil. (vi) T_{90} (late). (vii) Unirrigated. (viii) Weeding by Japanese weeder. (ix) 165 cm. (x) 13.12.60.

2. TREATMENTS :

6 manurial treatments : M_0 =Control, M_1 =Dhanicha alone, M_2 =Dhanicha B.M. at the time of sowing Dhanicha, M_3 =Dhanicha B.M. at the time of puddling, M_4 =Dhanicha + cowdung at the time of sowing Dhanicha and M_5 =B.M. meal alone at the time of puddling.

Bone meal at 22.4 Kg/ha. of P_2O_5 and Cowdung @ 5604 Kg/ha.
 Dhincha was sown on 23.5.60.

- (i) N.A. (ii) 5. (iii) 5. (iv) (a) 8.1 m. \times 5.0 m. (b) 7.6 m. \times 4.6 m. (v) 23 cm. \times 23 cm. (vi) Yes.

4. GENERAL :

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

5. RESULTS :

(i) 2654 Kg/ha. (ii) 261.0 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	M ₅
Av. yield	2524	2656	2757	2786	2718	2485

Crop :- Paddy (*Kharif*).

Ref :- Or. 60(40).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :—To study the effect of Dhal silt as manure on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) Sandy loam. (iii) 22.6.60. (iv) (a) 3 ploughings and laddering. (b) N.A. (c) 28 Kg/ha. (d) 23 cm. × 23 cm. (e) 4. (v) Nil. (vi) N-136 (early). (vii) Unirrigated. (viii) Weeding by Japanese weeder. Hand weeding and gap filling. (ix) 173 cm. (x) 23.9.60.

2. TREATMENTS :

5 manurial treatments : M₀=Control, M₁=138.3 Q./ha. of Dhal silt, M₂=276.7 Q./ha. of Dhal silt, M₃=46.1 Q./ha. of F.Y.M. and M₄=92.2 Q./ha. of F.Y.M.
Dhal was applied on 8.6.60 to 11.6.60 and F.Y.M. was applied on 8.6.60.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 8.1 m. × 5.0 m. (b) 7.6 m. × 4.6 m. (v) 23 cm. × 23 cm. (vi) Yes.

4. GENERAL :

(i) Very poor. (ii) Nil. (iii) Height, tiller count and grain yield. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) Germination hampered due to heavy rain on the next day of sowing seeds.

5. RESULTS :

(i) 595 Kg./ha. (ii) 221.0 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	662	496	481	761	574

Crop :- Paddy (*Rabi*).

Ref :- Or. 60(26).

Site :- Agri. Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :—To study the residual effect of utilisation of Dhal silt as manure on the second crop of Paddy

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) Sandy loam. (iii) 27.9.1960. (iv) (a) 3 ploughings and one laddering. (b) Line sowing. (c) 22 Kg./ha. (d) 23 cm. × 23 cm. (e) 2. (v) 24.4 Kg./ha. of P₂O₅ as Super + 22.4 Kg./ha. of N as A/S were applied during puddling. (vi) B.A.M.-6 (late). (vii) Unirrigated. (viii) Weeding by hand. (ix) 32 cm. (x) 2.2.1961.

2. TREATMENTS : and 3. DESIGN :

Same as in Expt. No. 60(40) on page .
Treatments were applied to previous paddy crop.

4. GENERAL :

(i) Poor. (ii) Nil. (iii) Fillers height, straw and grain weight. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 487 Kg./ha. (ii) 146.0 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	485	469	574	514	455

Crop :- Paddy (*Kharij*).

Ref :- Or. 60(17), 61(61).

Site :- Agri. Res. Stn., Sambalpur.

Type :- 'M'.

Object :—To study the most suitable time of application of N as A/S and C/A/N for Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Mung* for 60(17), Paddy for 61(61). (c) Nil for 60(17), As per treatments for 61(61). (ii) Clay for 60(17), Sandy loam for 61(61). (iii) 27.7, 1960, 28, 29.7. 1961. (iv) (a) 7 ploughings and 3 ladderings for 60(17), one ploughing with spade for 61(61). (b) Transplanting. (c) 22 Kg./ha. for 60(17), 38 Kg./ha. for 61(61). (d) 23 cm. × 15 cm. (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) 2 weedings. (ix) N.A., 134 cm. (x) 26.11.1960, 28, 29.12.1961.

2. TREATMENTS :

All combinations of (1) and (2) — a Control

(1) 2 sources of N at 44.8 Kg/h.a. : S₁ = A/S and S₂ = C/A/N.

(2) 7 times of application : T₁ = Full dose at planting, T₂ = Full dose 14 days after planting, T₃ = Full dose 1 month after planting, T₄ = $\frac{1}{2}$ dose at planting + $\frac{1}{2}$ dose after one month, T₅ = $\frac{1}{2}$ dose after 14 days of planting + $\frac{1}{2}$ dose after one month, T₆ = $\frac{1}{2}$ at planting and $\frac{1}{2}$ one month after planting + $\frac{1}{2}$ one week before flowering and T₇ = $\frac{1}{2}$ after 14 days of planting + $\frac{1}{2}$ one month after planting + $\frac{1}{2}$ one week before flowering.

3. DESIGN :

(i) R.B.D. (ii) (a) 15. (b) 31.1 m. × 11.9 m. for 60(17), N.A. for 61(61). (iii) 3 for 60(17), 4 for 61(61). (iv) (a) 5.5 m. × 3.7 m. for 60(17), 5.2 m. × 4.9 m. for 61(61). (b) 5.0 m. × 3.4 m. for 60(17), 4.6 m. × 4.6 m. for 61(61). (v) 23 cm. × 15 cm. for 60(17), 30 cm. × 15 cm. for 61(61). (vi) Yes.

4. GENERAL :

(i) Good for 60(17). Fair for 61(61). (ii) Endrine was sprayed to prevent attack by pests for 60(17), Attack of Gall-fly and stem borer for 61(61). (iii) Grain yield. (iv) (a) 1958-1962. (b) Yes. (c) Results of combined analysis are given under 5. (v) Parampur. (vi) Nil. (vii) Results of expt. nos. 58(7) and 59(10) have also been included for giving combined results. Expt. for the year 1962 failed due to severe pest attack. Error variances are heterogeneous and Treatments × years interaction is present.

5. RESULTS :

(i) 2505 Kg/ha. (ii) 476.6 Kg/ha. (42 d.f. made up of all components of Treatments × years interaction). (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control = 2684 Kg/ha.

	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	Mean
S ₁	2393	2775	2371	2367	2330	2341	2523	2443
S ₂	2571	2611	2378	2340	2371	2719	2794	2541
Mean	2482	2693	2375	2354	2350	2530	2658	2492

Crop :- Paddy (Kharif).

Ref :- Or. 60(1).

Site :- Agri. Res. Stn., Sambalpur.

Type :- 'M'.

Object :- To study the comparative effect of different types of compost on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 1121 Kg/ha. of G.M. + 89.7 Kg/ha. of Super + 89.7 Kg/ha. of A/S. (ii) Sandy loam. (iii) 13.7.60/8.8.1960. (iv) (a) N.A. (b) Japanese method. (c) 17 Kg/ha. (d) 23 cm. x 23 cm. (e) 2. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) Gap filling, one hand weeding and one weeding by Japanese weeder. (ix) N.A. (x) 16.12.1960.

2. TREATMENTS :

6 compost treatments : C_0 = No compost, C_1 = 125.5 Kg/ha. of compost, C_2 = Compost reinforced with Super, C_3 = Compost reinforced with B.M., C_4 = Compost + Super and C_5 = Compost + B.M.

Super and B.M. applied at 280 Kg/ha. Compost applied at 125.5 Q/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 12.8 m x 18.9 m. (iii) 4. (iv) (a) 6.4 m. x 5.5 m. (b) 5.5 m. x 4.6 m. (v) 46 cm. x 46 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Spraying with Endrin and folidol. (iii) Biometric observations and grain yield. (iv) (a) 1960 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1073 Kg/ha. (ii) 100.9 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	C_0	C_1	C_2	C_3	C_4	C_5
Av. yield	892	940	975	1291	1156	1184

C.D. = 151.9 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 60(4).

Site :- Agri. Res. Stn., Sambalpur.

Type :- 'M'.

Object :- To study the effect of growing G.M. crops mixed with broadcast paddy and incorporating green matter eight weeks later at the time of bushening.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 112.1 Kg/ha. of A/S. (ii) Clay. (iii) 8.6.1960. (iv) (a) 6 ploughings with *desi* plough at 15 cm. depth. (b) Broadcasting. (c) 90 Kg/ha. for paddy, G.M. at 17 Kg/ha. (d) N.A. (e) N.A. (v) 140 Kg/ha. of P_2O_5 as Super. (vi) T-141 (medium). (vii) Unirrigated. (viii) Bushening, one weeding and roguing. (ix) N.A. (x) 29, 30.11.1960.

2. TREATMENTS :

4 G.M. crops grown with Paddy : G_0 = No G.M. crop, G_1 = *S. aculeata*, G_2 = *S. speciosa* and G_3 = *A. Americana*.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) 8.5 m. x 4.9 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height, no. of tillers, length of earhead and grain yield. (iv) (a) 1960 only. (b) No. (c) Nil. (v) to (vii) Nil.

5 RESULTS :

(i) 4196 Kg/ha. (ii) 306.9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	G ₀	G ₁	G ₂	G ₃
Av. yield	4230	4267	4107	4174

Crop :- Paddy (Kharif).

Ref :- Or. 60(5).

Site :- Agri. Res. Stn., Sambalpur.

Type :- 'M'.

Object :- To study the relative effects of different G.M. crops grown in situ under low land.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Mung. (c) Nil. (ii) Clayey. (iii) 28.6.60. (iv) (a) 3 ploughings. (b) Transplanting. (c) 35 Kg/ha. (d) 23 cm. x 15 cm. (e) 2 to 3. (v) 140.1 Kg/ha. of Super. (vi) T₃₀ (late). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 18, 19.8.60.

2. TREATMENTS :

6 G.M. crops : G₀=No G.M., G₁=*Sesbania speciosa*, G₂=*Sesbania macrocarpa*, G₃=*Sesbania aculeate*, G₄=*Sesbania sericia* and G₅=*Aeschynomene americana*.

[These G.M. crops were grown in situ and ploughed in as manure to the succeeding paddy crop.]

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 7.3 m. x 5.5 m. (b) 6.9 m. x 5.2 m. (v) 23 cm. x 15 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Spraying of endrine to prevent case worm, (iii) Grain yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2782 Kg/ha. (ii) 380.0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	G ₀	G ₁	G ₂	G ₃	G ₄	G ₅
Av. yield	2726	2427	2742	3189	2814	2795

Crop :- Paddy (Kharif).

Ref :- Or. 60(14).

Site :- Agri. Res. Stn., Sambalpur.

Type :- 'M'.

Object :- To study the crop response to lime dressing in acid soils on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Mung. (b) Mung. (c) Nil. (ii) Clayey. (iii) 8.8.60. (iv) (a) to (c) Japanese method of cultivation. (v) Nil. (vi) T-141 (medium). (vii) Unirrigated. (viii) 1 weeding. (ix) 126 cm. (x) 4.12.60.

2. TREATMENTS :

Main-plot treatments :

3 levels of lime : L₀=0, L₁=1121 and L₂=1681 Kg/ha.

Sub-plot treatments :

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

(1) 2 levels of N as A/S : N₀=0 and N₁=33.6 Kg/ha.

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

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

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 8 sub-plots/main-plot. (b) 28.4 m.×18.3 m. (iii) 4. (iv) (a) 4.1 m.×4.1 m. (b) 3.9 m.×4.0 m. (v) 11 cm.×7 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1959—60. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 4509 Kg/ha. (ii) (a) 376.8 Kg/ha. (b) 427.4 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	N ₀	N ₁	P ₀	P ₁	K ₀	K ₁	Mean
L ₀	4592	4521	4447	4666	4485	4628	4556
L ₁	4406	4531	4472	4464	4470	4466	4468
L ₂	4498	4507	4495	4510	4457	4548	4502
Mean	4499	4520	4471	4547	4471	4547	4509
K ₀	4483	4459	4397	4545			
K ₁	4515	4581	4546	4549			
P ₀	4432	4510					
P ₁	4565	4529					

Crop :- Paddy (Kharif).

Ref :- Or. 60(15).

Site :- Agri. Res. Stn., Sambalpur.

Type :- 'M'.

Object :- To study the effect of soil testing recommendation on Paddy as compared to other practices.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) 2242 Kg/ha. of G.M.+92.2 Kg/ha. of A/S+92.2 Kg/ha. of Super. (b) Sandy loam reddish yellow. (iii) 13.7.60/11.8.60. (iv) (a) N.A. (b) Japanese method. (c) 11.0 Kg/ha. (d) 23 cm.×15 cm. (e) 2. (v) Nil. (vi) T—141 (medium). (vii) Irrigated. (viii) One weeding with Japanese weeder. one hand weeding and ploughing. (ix) N.A. (x) 20.11.60.

2. TREATMENTS :

4 manurial treatments :- M₀=Control, M₁=Soil testing recommendation—5604 Kg/ha. of G.M.+224.2 Kg/ha. of A/S+196.1 Kg/ha. of Super, M₂=Departmental dose—168.1 Kg/ha. of A/S+140.1 Kg/ha. of Super+5604 Kg/ha. of G.M. and M₃=Cultivators dose—12.3 C.L./ha. of F.Y.M.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 15.2 m.×9.8 m. (iii) 6. (iv) (a) 7.3 m.×4.6 m. (b) 6.4 m.×4.0 m. (v) 45 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Spraying of endrine and folidol. (iii) Height, panicle length, no. of effective tillers, straw and grain yield. (iv) (a) 1960—only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 652 Kg/ha. (ii) 160.3 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M ₀	M ₁	M ₂	M ₃
Av. yield	56	1250	996	309

C.D. = 197.1 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 60(16).

Site :- Agri. Res. Stn., Sambalpur.

Type :- 'M'.

Object :- To study the suitable time of application of N as A/S and C/A/N, for Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) 22.4 Kg/ha. of P₂O₅ as super before transplanting + 44.8 Kg/ha. of N as A/S top dressed by broadcasting. (ii) Sandy loam. (iii) 24.6.60 ; 23.7.60. (iv) (a) 3 ploughings and laddering. (b) Transplanting. (c) 44.0 Kg/ha. (d) 23 cm. × 15 cm. (e) 2 to 3. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) Bunding, weeding and roging. (ix) N.A. (x) 7, 11 and 14.12.60.

2. TREATMENTS :

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

(1) 2 sources of N : S₁ = A/S and S₂ = C/A/N.

(2) 7 times of application of N : T₁ = Full dose at planting, T₂ = Full dose 14 days after planting, T₃ = Full dose one month after planting, T₄ = $\frac{1}{2}$ dose at planting + $\frac{1}{2}$ dose after one month, T₅ = $\frac{1}{2}$ dose after 14 days of planting + $\frac{1}{2}$ dose after one month, T₆ = $\frac{1}{2}$ at planting + $\frac{1}{2}$ one month after planting + $\frac{1}{2}$ one week before flowering and T₇ = $\frac{1}{2}$ dose 14 days after planting + $\frac{1}{2}$ one month after planting + $\frac{1}{2}$ one week before flowering.

N applied at 44.8 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) 5.2 m. × 4.9 m. (b) 4.3 m. × 4.1 m. (v) 46 cm. × 38 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Spraying of endrine as preventive measure. (iii) Height, tillers, length of earhead, straw and grain yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2054 Kg/ha. (ii) 301.6 Kg/ha. (iii) Main effects of T and S, and control vs. others' are highly significant. (iv) Av. yield of grain in Kg/ha.

Control = 1404 Kg/ha.

	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	Mean
S ₁	1981	1985	2421	2651	2430	2421	2407	2328
S ₂	1602	1828	2121	2062	1626	1943	1932	1873
Mean	1791	1906	2271	2356	2028	2182	2169	2100

C.D. for S marginal means = 162.7 Kg/ha.
 C.D. for T marginal means = 304.3 Kg/ha.
 C.D. for control vs. others = 430.5 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 60, 61, 62, 63(MAE).

Site :- M.A.E. Centre, Barpali.

Type :- 'M'.

Object :-Type II—To study the cumulative, direct and residual effect of manuring on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Paddy. (b) Paddy. (c) As per treatments. (ii) Clay to clay loam. (iii) N.A./23 to 25.7.60 ; 15.6.62/13 to 15.7.61 ; 13.7.62/10 to 13.8.62 ; 5.6.63/11 to 13.7.63. (iv) (a) 4 to 6 ploughings and 1 harrowing. (b) Transplanting. (c) 22 Kg/ha. (d) 23 cm. × 15 cm. (e) N.A. (v) Nil. (vi) T-141 (medium). (vii) Irrigated. (viii) Weeding and hoeing. (ix) 124 cm., N.A., 81 cm., N.A. (x) 19, 22, 23.12.60 ; 28 to 30.12.61 ; 27 to 30.11.62 ; 2.12.63.

2. TREATMENTS :

All combinations (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 : $P_0=0$, $P_1=36.6$ and $P_2=67.2$ Kg/ha.

(3) 3 levels of K_2O 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 $F_1=5600$ Kg/ha.

Manures broadcast at the time of puddling.

3. DESIGN :

(i) $3^3 \times 2$. (ii) (a) 9 plots/block, 3 blocks each under F_0 and F_1 . (b) N.A. (iii) 1. (iv) (a) 1/198 ha. (b) 1/247 ha. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Rice hipa and milly bugs attack. (iii) Grain yield. (iv) (a) 1957—66 (data for 64 and 65 N.A.) (b) Yes. (c) Nil. (v) Kendrapara, Tirtol. (vi) Excessive rainfall and heavy winds fro 60, 61, Nil for 62, 63. (vii) Nil.

5. RESULTS :

1960

Cumulative Phase

(i) 3393 Kg/ha. (ii) 836.7 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	2721	3283	3477	3265	3228	2987	2804	3597	3079	3160
F_1	3287	3769	3821	3487	3542	3850	3426	3529	3924	3626
Mean	3004	3526	3649	3376	3385	3419	3115	3563	3502	3393
K_0	2905	3182	3258	3044	3256	3044				
K_1	2850	3782	4057	3634	3496	3560				
K_2	3257	3615	3633	3450	3403	3653				
P_0	2481	3791	3855							
P_1	3127	3394	3634							
P_2	3403	3394	3459							

1960

Residual Phase

(i) 3039 Kg/ha. (ii) 1207.1 Kg/ha. (iii) Interaction $F \times K$ is highly significant and interaction $F \times P$ 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	2647	2878	2684	3440	2693	2075	2942	3246	2020	2736
F ₁	3109	3044	3870	3232	3037	3755	2604	3196	4024	3341
Mean	2878	2961	3277	3336	2865	2915	2773	3521	3022	3039
K ₀	2924	2426	2970	3412	2859	2048				
K ₁	2795	3256	3911	3745	2813	3405				
K ₂	2915	3201	2950	2851	2923	3292				
P ₀	3163	3173	3671							
P ₁	2712	2702	3182							
P ₂	2758	3007	2979							

C.D. for body of F × K or F × P table = 1407.3 Kg/ha

1960

Direct Phase

(i) 3524 Kg/ha. (ii) 921.8 Kg/ha. (iii) Main effect of N is highly significant. Interaction of F × K 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	2370	3173	3938	3606	3044	3830	3034	3615	2821	3160
F ₁	3650	3831	4184	3564	3872	4228	3798	3475	4392	3888
Mean	3010	3502	4061	3585	3458	3529	3416	3545	3612	3524
K ₀	3007	3339	3901	3358	3726	3163				
K ₁	2762	3514	4418	3671	3246	3718				
K ₂	3321	3652	3864	2726	3402	3707				
P ₀	2813	3837	4104							
P ₁	2914	3698	3763							
P ₂	3302	2970	4316							

C.D. for N marginal means = 519.1 Kg/ha.

C.D. for body of F × K table = 1129.1 Kg/ha.

1961

Cumulative Phase

(i) 3193 Kg/ha. (ii) 602.6 Kg/ha. (iii) Interaction F × P 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	3413	3127	3071	3283	3413	2916	3136	3080	3396	3204
F ₁	3043	3027	3477	3155	2827	3564	3456	2810	3280	3182
Mean	3228	3077	3274	3219	3120	3240	3296	2945	3338	3193
K ₀	3625	3080	3182	3330	3431	3127				
K ₁	2693	3071	3071	2693	3034	3108				
K ₂	3366	3080	3569	3634	2895	3485				
P ₀	2924	3080	3652							
P ₁	3210	3034	3117							
P ₂	3550	3117	3053							

C.D. for body of F × P table = 587.8 Kg/ha.

1961

Residual Phase

(i) 3311 Kg/ha. (ii) 574.7 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	3173	3044	3560	2979	3708	3090	3127	3376	3274	3259
F ₁	3333	3406	3352	3268	3430	3393	3472	3178	3441	3364
Mean	3253	3225	3456	3123	3469	3241	3299	3277	3357	3311
K ₀	3376	3246	3274	3293	3597	3007				
K ₁	2961	3191	3680	2942	3413	3476				
K ₂	3422	3237	3413	3134	3697	3240				
P ₀	2868	3339	3163							
P ₁	3689	3311	3708							
P ₂	3202	3025	3497							

1961

Direct Phase

(i) 3230 Kg/ha. (ii) 628.7 Kg/ha. (iii) Interaction F×P 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	3127	3219	3283	3597	3311	2722	3127	3274	3229	3210
F ₁	3299	3089	3363	3215	3003	3532	3329	3102	3319	3250
Mean	3213	3154	3323	3406	3157	3127	3228	3188	3274	3230
K ₀	3228	3219	3237	3689	3163	2832				
K ₁	3173	3136	3256	3339	3099	3126				
K ₂	3237	3108	3477	3190	3209	3423				
P ₀	3210	3246	3763							
P ₁	3256	3080	3136							
P ₂	3173	3136	3071							

C.D. for body of F×P table=613.3 Kg/ha.

1962

Cumulative Phase

(i) 1667 Kg/ha. (ii) 357.9 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	1502	1619	1868	1559	1814	1616	1584	1729	1676	1663
F ₁	1654	1707	1647	1562	1795	1651	1559	1723	1726	1669
Mean	1579	1664	1758	1561	1806	1634	1572	1726	1707	1667
K ₀	1536	1555	1626	1413	1791	1513				
K ₁	1508	1801	1872	1559	1862	1758				
K ₂	1692	1635	1777	1711	1763	1630				
P ₀	1555	1446	1682							
P ₁	1555	1910	1952							
P ₂	1626	1635	1640							

1962

Residual Phase

(i) 1557 Kg/ha. (ii) 293.3 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	1540	1392	1480	1471	1521	1421	1480	1562	1373	1472
F ₁	1625	1531	1773	1660	1455	1814	1682	1540	1707	1643
Mean	1583	1442	1627	1566	1489	1618	1582	1550	1541	1557
K ₀	1758	1380	1607	1512	1612	1621				
K ₁	1413	1517	1720	1692	1385	1574				
K ₂	1578	1489	1555	1493	1470	1659				
P ₀	1564	1356	1777							
P ₁	1442	1366	1659							
P ₂	1744	1664	1446							

1962

Direct Phase

(i) 1694 Kg/ha. (ii) 310.9 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	1572	1650	1777	1565	1742	1692	1581	1861	1556	1666
F ₁	1616	1808	1742	1613	1843	1710	1827	1670	1669	1722
Mean	1594	1730	1760	1589	1793	1701	1705	1766	1613	1694
K ₀	1593	1867	1654	1626	1763	1725				
K ₁	1697	1748	1853	1593	1891	1815				
K ₂	1493	1574	1772	1550	1725	1564				
P ₀	1436	1607	1725							
P ₁	1569	1999	1810							
P ₂	1777	1583	1744							

1963

Cumulative Phase

(i) 3496 Kg/ha. (ii) 493.7 Kg/ha. (iii) Interaction F × K 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	3250	3546	3398	3223	3525	3443	3135	3404	3653	3398
F ₁	3433	3647	3702	3352	3667	3762	3871	3438	3472	3594
Mean	3341	3596	3550	3287	3596	3603	3503	3421	3562	3496
K ₀	3413	3633	3464	3312	3552	3645				
K ₁	3078	3532	3653	3128	3633	3502				
K ₂	3532	3623	3532	3421	3603	3663				
P ₀	2969	3199	3694							
P ₁	3583	3795	3411							
P ₂	3472	3795	3544							

C.D. for body of F × K table = 481.6 Kg/ha.

1963

Residual Phase

(i) 3354 Kg/ha. (ii) 491.8 Kg/ha. (iii) Main effect of F and interaction N×P and N×K are highly significant. Main effect of N 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	2819	3209	3202	2951	3165	3115	3011	2983	3236	3077
F ₁	3377	3700	3815	3465	3768	3660	3640	3559	3694	3631
Mean	3098	3455	3509	3208	3466	3387	3326	3271	3465	3354
K ₀	3114	3502	3361	3377	3310	3290				
K ₁	2577	3300	3986	3048	3284	3482				
K ₂	3603	3562	3229	3199	3805	3391				
P ₀	2721	3199	3704							
P ₁	2951	3906	3542							
P ₂	3623	3260	3280							

C.D. for F marginal means = 276.9 Kg/ha.

C.D. for N marginal means = 339.1 Kg/ha.

C.D. for body of N×P or N×K table = 587.5 Kg/ha.

1963

Direct Phase

(i) 362.5 Kg/ha. (ii) 476.6 Kg/ha. (iii) Main effect of N is highly significant. Main effect of P 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	3142	3869	3667	3425	3559	3694	3472	3667	3539	3559
F ₁	3458	3822	3795	3525	3505	4044	3754	3586	3734	3691
Mean	3300	3845	3731	3475	3532	3869	3613	3626	3636	3625
K ₀	3340	4027	3472	3542	3754	3542				
K ₁	3078	3835	3966	3451	3451	3976				
K ₂	3482	3673	3754	3431	3391	4087				
P ₀	3007	3482	3936							
P ₁	3209	3956	3431							
P ₂	3684	4097	3825							

C.D. for N or P marginal means = 268.4 Kg/ha.

Crop :- Paddy (Kharif).

Site :- M.A.E. Centre, Barpali,

Ref :- Or. 60(MAE).

Type :- 'M'.

Object :—Type IV—To study the effect of direct and indirect manuring of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red loam. (iii) N.A./10, 11.7.1960. (iv) (a) to (c) N.A. (v) N.A. (vi) B.A.K.-12 (early). (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 10, 11.11.60.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2) + one control (L_0P_0)

(1) 2 leguminous crops : L_1 =Pea and L_2 =Gram.

(2) 3 levels of P_2O_5 as Super to legumes : $P_0=0$, $P_1=44.8$ and $P_2=89.7$ Kg/ha.

Sub-plot treatments :

3 dates of N as A/S given to Paddy : $N_0=0$, $N_1=16.8$ and $N_2=33.6$ Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 7 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 1/198 ha. (b) 1/247 ha. (v) and (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1957-1960. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3467 Kg/ha. (ii) (a) 391.1 Kg/ha. (b) 549.7 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	L_0P_0	L_1P_0	L_1P_1	L_1P_2	L_2P_0	L_2P_1	L_2P_2	Mean
N_0	3320	3588	3366	3329	3477	3136	3625	3406
N_1	3366	3551	3477	3920	3210	3551	3293	3481
N_2	3551	3588	3846	3505	3357	3025	3735	3515
Mean	3412	3576	3563	3585	3348	3237	3551	3467

Crop :- Paddy.

Site :- M.A.E. Centre, Kendrapara.

Ref :- Or. 60, 61(MAE).

Type :- 'M'.

Object :- Type IV : To study the effect of direct and indirect manuring of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Legume. (b) Legume. (c) As per treatments. (ii) Mahanadi alluvium. (iii) N.A./18.7.60 ; 19.6.61/21.7.61. (iv) (a) 3 ploughings, puddling and laddering. (b) Transplanting. (c) 56 Kg/ha. (d) 23 cm. x 15 cm. (e) N.A. (v) Nil. (vi) T-141. (vii) Irrigated. (viii) 1 weeding. (ix) N.A., 165 cm. (x) 30.11.60 ; 6.12.61.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2) + a control (L_0P_0).

(1) 2 legumes crops : L_1 =Moong and L_2 =Biri.

(2) 3 levels of P_2O_5 applied to legumes : $P_0=0$, $P_1=44.3$ and $P_2=89.7$ Kg/ha.

Sub-plot treatments :

3 levels of N as A/S : $N_0=0$, $N_1=16.8$ and $N_2=33.6$ Kg/ha.

N applied to the previous crop.

3. DESIGN :

(i) Split-plot. (ii) (a) 7 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) 10.1 m. x 5.0 m. (b) 9.1 m. x 4.4 m. (v) 46 cm. x 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1957-1951. (b) No. (c) N.A. (v) and (vi) Nil. (vii) Pooled results from 1957 to 61 are given.

5. RESULTS :

(i) 3075 Kg/ha. (ii) (a) 303.4 Kg/ha. (with 60 d.f. made up of pooled error). (b) 405.8 Kg/ha. (with 140 d.f. made up of pooled error). (iii) Main effect of N alone is significant. (iv) Av. yield of grain in Kg/ha.

	L ₀ P ₀	L ₁ P ₀	L ₁ P ₁	L ₁ P ₂	L ₂ P ₀	L ₂ P ₁	L ₂ P ₂	Mean
N ₀	2963	2935	2914	2917	2881	2932	2908	2921
N ₁	3180	3225	3027	3036	2967	3146	3119	3100
N ₂	3167	3296	3218	3083	3173	3229	3252	3203
Mean	3103	3152	3053	3012	3007	3102	3093	3075

C.D. for N marginal means=110.0 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 63(MAE).

Site :- M.A.E. Centre, Tirtol.

Type :- 'M'.

Object :-Type IV : To study the effect of direct and indirect manuring of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Legume. (b) Legumes. (c) As per treatments. (ii) (a) Recent alluvium. (b) N.A. (iii) 7.6.63/31.7.63. (iv) (a) 2 ploughings and puddling. (b) Transplanted. (c) 28 Kg/ha. (d) 23 cm. x 15 cm. (e) N.A. (v) Nil. (vi) T-141 (150 days). (vii) Irrigated. (viii) 2 hand weedings. (ix) 112 cm. (x) 25, 26.11.63.

2. TREATMENTS and 3 DESIGN :

Same as in expt. no. 61 (MAE) type IV conducted at Kendrapara onp page 26.
N top dressed on 7.8.1963.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) 1962-contd. [data for other years N.A.] (b) No. (c) Nil. (v) Kendrapara. (vi) and (vii) Nil.

5. RESULTS :

(i) 1842 Kg/ha. (ii) (a) 301.3 Kg/ha. (b) 223.8 Kg/ha. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in Kg/ha.

	L ₀ P ₀	L ₁ P ₀	L ₁ P ₁	L ₁ P ₂	L ₂ P ₀	L ₂ P ₁	L ₂ P ₂	Mean
N ₀	1836	1639	1729	1861	1647	1729	1738	1740
N ₁	1630	1853	1952	1836	1548	2001	1935	1822
N ₂	2116	1878	1993	2059	1820	1894	1993	1965
Mean	1861	1790	1891	1919	1672	1875	1889	1842

C.D. for N marginal means=141.5 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 63(MAE).

Site :- M.A.E. Centre, Barpali.

Type :- 'M'.

Object :-Type V (a) : To study the effect of method of application of N on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Legume. (b) Moong. (c) Nil. (ii) Clay loam. (iii) 5.6.63/24.7.63. (iv) (a) 5 ploughings followed by patta. (b) Transplanting in lines. (c) N.A. (d) 23 cm. x 15 cm. (e) 3. (v) 5600 Kg/ha. of F.Y.M. + 33.6 Kg/ha. of P₂O₅ as Super. (vi) T-141 (150 days). (vii) Unirrigated. (viii) 1 weeding and 1 hoeing (ix) N.A. (x) 22.11.63.

2. TREATMENTS :

All combinations of (1) and (2)+one 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 a month after planting and M_4 =Applied in the form of pellets about three weeks after planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 4. (iv) (a) 1/198 ha. (b) 1/247 ha. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Incidence of stemborer. Folidol sprayed once. (iii) Grain yield. (iv) (a) 1963 only. (b) No. (c) N.A. (v) (a) Tirtol. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 3085 Kg/ha. (ii) 318.6 Kg/ha. (iii) "Control vs. others" is highly significant. Main effect of M is significant. (iv) Av. yield of grain in Kg/ha.

Control=2634 Kg/ha.

	M_1	M_2	M_3	M_4	Mean
N_1	2858	3055	3419	2844	3044
N_2	2999	2956	3195	3377	3132
N_3	2830	3097	3335	3503	3191
Mean	2896	3036	3316	3241	3122

C.D. for M marginal means=264.0 Kg/ha.

C.D. for control vs. others =366.6 Kg/ha.

Crop :- Paddy.

Ref :- Or. 62, 63(MAE).

Site :- M.A.E. Centre, Tirtol.

Type :- 'M'.

Object :- Type V (a) : To study the effect of method of application of N on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Pulse for 61, Paddy-Fallow for 63. (b) Moong for 62, Fallow in 63. (c) N.A. (ii) Recent alluvium. (iii) N.A., 7.6.63/23.7.63. (iv) (a) 5 ploughings, puddling and laddering. (b) Transplanting. (c) 56 Kg/ha., 28 Kg/ha. (d) 23 cm. x 15 cm. (e) N.A. (v) Nil. (vi) T-90 (late). (vii) Irrigated for 62, Unirrigated for 63. (viii) 1 weeding. (ix) 125 cm. ; 112 cm. (x) 17.12.62, 24.12.63

2. TREATMENTS :

Same as in expt. no. 63 (MAE) type V (a) conducted at Barpali on page 27.

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 4. (iv) (a) 9.8 m. x 5.0 m. (b) 11 m. x 4.4 m. (v) 33 cm. x 33 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Attack of rice hispa. Dusting of Gammaxane. (iii) Grain yield. (iv) (a) 1962-66 (data for 64 and 65 N.A.). (b) No. (c) Nil. (v) Barpali. (vi) and (vii) Nil.

5. RESULTS :

1962

(i) 1571 Kg/ha. (ii) 189.5 Kg/ha. (iii) Main effects of N, M and 'Control vs. others' are highly significant. (iv) Av. yield of grain in Kg/ha.

Control=1050 Kg/ha.

	M ₁	M ₂	M ₃	M ₄	Mean
N ₁	1510	1488	1572	1308	1470
N ₂	1832	1578	1790	1368	1642
N ₃	1885	1768	1745	1528	1731
Mean	1742	1611	1702	1401	1614

C.D. for N marginal means=136.0 Kg/ha.

C.D. for M marginal means=157.0 Kg/ha.

C.D. for control vs. others=200.2 Kg/ha.

1963

(i) 2485 Kg/ha. (ii) 157.0 Kg/ha. (iii) Interaction N×M is significant. (iv) Av. yield of grain in Kg/ha.

Control=2409 Kg/ha.

	M ₁	M ₂	M ₃	M ₄	Mean
N ₁	2532	2588	2267	2409	2449
N ₂	2600	2545	2637	2390	2543
N ₃	2366	2446	2551	2563	2481
Mean	2499	2526	2485	2454	2491

C.D. for body of N×M table=225.4 Kg/ha.

Crop :- Paddy.**Ref :- Or. 60(MAE).****Site :- M.A.E. Centre, Kendrapara.****Type :- 'M'.**

Object :- Type VII—To study the effect of manures and cultural practices on Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Recent alluvium. (b) N.A. (iii) N.A./As per treatments. (iv) (a) 2 ploughings, 2 ladderings and 1 roughing. (b) Transplanting. (c) —. (d) and (e) As per treatments. (v) F.Y.M. at 1065 Q/ha. (vi) B.A.M-9 (late—sarada, 170 days). (vii) Irrigated. (viii) 1 weeding. (ix) 119 cm. (x) 5.12.1960.

2. TREATMENTS :**Main-plot treatments :**

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

(1) 3 dates of planting : D₁=15 days before normal, D₂ = Normal and D₃=15 days after normal.(2) 3 spacings : S₁=15.2 cm. × 15.2 cm. S₂=20.3 cm. × 20.3 cm. and S₃=25.4 cm. × 25.4 cm.(3) 3 rates of planting : R₁=2, R₂=4 and R₃=6 seedlings/hole.**Sub-plot treatments :**

All combinations of (1) and (2)

(1) 2 levels of N : N₀=0 and N₁=44.8 Kg/ha.(2) 2 levels of P₂O₅ : P₀=0 and P₁=44.8 Kg/ha.Dates of planting are D₁=10.7.1960, D₂=25.7.1960, and D₃=10.8.1960.**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 blocks/replication, 9 main-plots/block and 4 sub-plots/main-plot. (b) N.A. (iii) 1. (iv) (a) 10.1 m. × 5.0 m. (b) 9.1 m. × 4.4 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Incidence of smut. (iii) Grain yield. (iv) 1955-1956. (b) No. (c) N.A. (v) Tirtol. (vi) and (vii) Nil.

5. RESULTS :

(i) 2924 Kg/ha. (ii) (a) 417.1 Kg/ha. (b) 345.3 Kg/ha. (iii) Main effect of D and interactions $D \times S$ and $D \times N$ are significant. (iv) Av. yield of grain in Kg/ha.

	R ₁	R ₂	R ₃	N ₀	N ₁	P	P ₁	S ₁	S ₂	S ₃	Mean
D ₁	2795	2831	2536	2831	2611	2850	2592	2333	2988	2842	2721
D ₂	3090	2905	3062	2979	3059	2970	3068	3219	2924	2914	3019
D ₃	3127	3008	2961	2878	3186	3182	2882	3108	3127	2861	3032
Mean	3004	2914	2853	2896	2952	3001	2847	2387	3013	2872	2924
S ₁	2979	3062	2620	2804	2970	3044	2730				
S ₂	3127	2915	2997	3044	2982	2997	3029				
S ₃	2906	2766	2943	2840	2904	2962	2782				
P ₀	3127	3062	2814	2970	3033						
P ₁	2882	2766	2892	2822	2871						
N ₀	3007	2831	2850								
N ₁	3001	2997	2857								

C.D. for D marginal means = 240.6 Kg/ha.
 C.D. for N means at the same level of D = 241.8 Kg/ha.
 C.D. for D means at the same level of N = 294.2 Kg/ha.
 C.D. for body of $D \times S$ table = 481.0 Kg/ha.

Crop :- Paddy (Kharif).

Site :- M.A.E. Centre, Kendrapara.

Ref :- Or. 61(MAE).

Type :- 'M'.

Object :- Type VII--To study the effect of manures and cultural practices on Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) (a) Recent alluvium. (b) N.A. (iii) 19.6.61/As per treatments. (iv) (a) 3 ploughings, puddling and laddering, (b) Transplanting in lines. (c) 56 Kg/ha. (d) and (e) As per treatments. (v) 5304 Kg/ha. of F.Y.M. (vi) B.A.M. → (late sarad, 170 days). (vii) Irrigated. (viii) 1 weeding. (ix) 165 cm. (x) 19.12.1961.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 60(MAE) type VII conducted at Kendrapara on page 29.

Dates of transplanting are D₁ → 20.7.1961, D₂ → 4.8.1961, and D₃ → 19.8.1961.

Manures applied in three equal doses on 19.7.1961 and 3, 18.8.1961.

4. GENERAL :

(i) Satisfactory Crop lodged. (ii) Mild attack of false smut. (iii) Grain yield. (iv) (a) 1956-1961. (b) No. (c) N.A. (v) Tirtol. (vi) and (viii) Nil.

5. RESULTS :

(i) 3122 Kg/ha. (ii) (a) 569.8 Kg/ha. (b) 349.6 Kg/ha. (iii) Main effects of D and N are highly significant. (iv) Av. yield of grain in Kg/ha.

	R ₁	R ₂	R ₃	N ₀	N ₁	P ₀	P ₁	S ₁	S ₂	S ₃	Mean
D ₁	3357	3459	3514	3348	3538	3440	3446	3514	3440	3375	3443
D ₂	3320	3182	3117	3034	3378	3154	3258	3394	3163	3061	3206
D ₃	2509	2905	2739	2518	2918	2684	2752	2878	2776	2500	2718
Mean	3062	3182	3123	2967	3278	3093	3152	3262	3126	2979	3122
S ₁	3256	3311	3219	3191	3333	3228	3296				
S ₂	2951	3237	3190	2905	3347	3127	3125				
S ₃	2979	2998	2960	2805	3153	2924	3034				
P ₀	3034	3154	3091	2914	3272						
P ₁	3090	3210	3155	3020	3284						
N ₀	2841	2988	3072								
N ₁	3283	3376	3174								

C.D. for D marginal means = 328.6 Kg/ha.

C.D. for N marginal means = 135.2 Kg/ha.

Crop :- Paddy (Kharif).

Site :- M.A.E. Centre, Tirtol.

Ref :- Or. 63(MAE).

Type :- 'M'.

Object :—Type VII—To study the effect of manures and cultural practices on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Fallow. (b) Fallow. (c) Nil. (ii) (a) Recent alluvium. (b) N.A. (iii) N.A./As per treatments. (iv) (a) 4 ploughings and 2 ladderings. (b) Transplanting. (c) 28 Kg/ha. (d) and (e) As per treatments. (v) 5000 Kg/ha. of F.Y.M. (vi) BAM—9 (late). (vii) Unirrigated. (viii) 1 weeding. (ix) 112 cm. (x) 15.12.63.

2. TREATMENTS :

Same as in expt. no. 60(MAE) type VII conducted at Kendrapara on page 29.

Dates of planting are : D₁=7.6.63/19.7.63, D₂=22.6.63/4.8.63, D₃ and 13.7.63/19.8.63. Manures applied just before final puddling.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 blocks/replication, 9 main-plots/block and 4 sub-plots/main-plot. (b) N.A. (iii) 1. (iv) (a) 10.1 m.×5.0 m. (b) S₁=9.5 m.×4.4 m., S₂=9.2 m.×4.2 m., S₃=9.0 m.×4.0 m. (v) N A (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Spraying with Gammexane was done on 9.9.1963 in D₃ plots against grass hopper attack. (iii) Grain yield. (iv) (a) 1963 only. (b) No. (c) N.A. (v) Kendrapara. (vi) and (vii) Nil.

5. RESULTS:

(i) 2315 Kg/ha. (ii) (a) 477.7 Kg/ha. (b) 262.9 Kg/ha. (iii) Main effects of D, N and P and interaction D×N are highly significant. Interaction R×S×N is significant. (iv) Av. yield of grain in Kg/ha.

	R ₁	R ₂	R ₃	N ₀	N ₁	P ₀	P ₁	S ₁	S ₂	S ₃	Mean
D ₁	2680	2569	2658	2354	2917	2571	2700	2618	2803	2486	2636
D ₂	2005	2273	2257	2055	2301	2138	2218	2282	2103	2149	2178
D ₃	2183	2147	2065	2037	2226	2028	2236	2089	2275	2032	2132
Mean	2289	2330	2327	2149	2482	2246	2385	2330	2394	2222	2315
S ₁	2338	2316	2334	2181	2478	2219	2441				
S ₂	2332	2474	2375	2176	2611	2317	2470				
S ₃	2197	2199	2271	2089	2355	2201	2244				
P ₀	2209	2258	2270	2104	2388						
P ₁	2370	2401	2384	2194	2575						
N ₀	2122	2113	2212								
N ₁	2456	2547	2441								

C.D. for D marginal means = 275.5 Kg/ha.
 C.D. for N or P marginal means = 106.3 Kg/ha.
 C.D. for N means at the same level of D = 184.1 Kg/ha.
 C.D. for D means at the same level of N = 304.0 Kg/ha.

Crop :- Paddy (Kharif)

Ref :- Or. 61, 62, 63(MAE).

Site :- M.A.E. Centre, Barpali.

Type :- 'M'.

Object :- Type IX—To study the effect of N and method of application of P₂O₅ on Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. for 61, Paddy—Fallow for 62, 63. (b) Wheat for 61, Fallow for 62, 63. (c) N.A. for 61, Nil for 62, 63. (ii) Clay to clay-loam. (iii) 11/12.7.61, 8.7.62 and 1/2.8.62, N.A. (iv) (a) 5 to 6 ploughings each followed by pata. (b) Transplanting in lines. (c) 22.4 Kg/ha. for 61, 62, N.A. for 63. (d) 23 cm. × 15 cm. (e) 3. (v) 5604 Kg/ha. of F.Y.M. for 61, Nil for 62, 63. (vi) B.A.M—12 (early). (vii) Irrigated for 61, 62, Unirrigated for 63. (viii) Hoeing with Japanese weeder and hand weeding for 61, Hand weeding for 62, Nil for 63. (ix) N.A. for 61, 63 ; 81 cm. for 62. (x) 31.11.61 to 2.12.61, 6.12.62, N.A.

2. TREATMENTS :

All combinations of (1), (2) and (3) = 4 extra treatments per block

(1) 3 resources of P₂O₅ : P₁ = Super, P₂ = ODDA (20-20-0) and P₃ = PEC (16-14-0).

(2) 3 levels of P₂O₅ : L₁ = 11.8, L₂ = 23.6, and L₃ = 47.2 Kg/ha.

(3) 3 methods of application of P₂O₅ : Broadcast at puddling, M₁ = Dipping in mud-slush and M₂ = In pellet form.

4 extra treatments : N₀ = 0, N₁ = 12.5, N₂ = 27.0 and N₃ = 54.0 Kg/ha.

3. DESIGN :

(i) 3³ confd. (ii) (a) 3 blocks/replication, 13 plots/block. (b) N.A. (iii) 2. (iv) (a) 10.1 m. × 5.3 m. for 61 and 10.3 m. × 4.9 m. for 62, 63. (b) 9.1 m. × 4.4 m. for 61 and 9.4 m. × 4.3 m. for 62, 63. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Incidence of gal fly, Endrine sprayed twice for 62, Nil for 61 and 63. (iii) Grain yield. (iv) (a) 1961 to 63. (b) No. (c) Nil. (v) N.A. (vi) Heavy rain after transplanting for 61, Nil for 62, 63. (vii) Error variances are heterogeneous and Treatments × years interaction is absent.

5. RESULTS :

1961

(i) 2412 Kg/ha. (ii) 632.7 Kg/ha. (iii) Interaction $P \times L$, N_0 v/s N and extra treatments v/s others are significant. (iv) Av. yield of grain in Kg/ha.

$N_0=1411$ Kg/ha, $N_1=1992$ Kg/ha, $N_2=2499$ Kg/ha. and $N_3=2047$ Kg/ha.

	P ₁	P ₂	P ₃	L ₁	L ₂	L ₃	Mean
M ₁	2315	2380	2361	2250	2656	2150	2352
M ₂	2453	2713	2830	2712	2739	2544	2665
M ₃	2370	2896	3090	2905	2287	3163	2785
Mean	2379	2663	2760	2622	2561	2619	2601
L ₁	2131	2546	3189				
L ₂	2776	2748	2159				
L ₃	2230	2695	2932				

C.D. for body of $P \times L$ table = 737.5 Kg/ha.

C.D. for N_0 v/s N = 602.2 Kg/ha.

C.D. for extra Treatments v/s others = 483.8 Kg/ha.

1962

(i) 2407 Kg/ha. (ii) 418.2 Kg/ha. (iii) Main effects of M and N are significant. (iv) Av. yield of grain in Kg/ha.

$N_0=1978$ Kg/ha., $N_1=2145$ Kg/ha., $N_2=2475$ Kg/ha. and $N_3=2613$ Kg/ha.

	P ₁	P ₂	P ₃	L ₁	L ₂	L ₃	Mean
M ₁	2347	2322	2243	2230	2343	2338	2304
M ₂	2542	2272	2343	2523	2310	2324	2386
M ₃	2992	2361	2667	2765	2690	2565	2673
Mean	2627	2318	2418	2506	2448	2409	2454
L ₁	2730	2430	2358				
L ₂	2482	2235	2627				
L ₃	2668	2290	2268				

C.D. for N marginal means = 487.5 Kg/ha.

C.D. for M marginal means = 281.4 Kg/ha.

1963

(i) 3113 Kg/ha. (ii) 426.4 Kg/ha. (iii) Main effect of P alone is significant. (iv) Av yield of grain in Kg/ha.

$N_0=2869$ Kg/ha., $N_1=3033$ Kg/ha., $N_2=3146$ Kg/ha. and $N_3=3371$ Kg/ha.

	P ₁	P ₂	P ₃	L ₁	L ₂	L ₃	Mean
M ₁	3533	2833	3094	3113	3146	3202	3154
M ₂	3248	3258	2825	3221	3004	3107	3111
M ₃	3265	2977	3017	3084	3044	3132	3086
Mean	3349	3023	2979	3139	3065	3147	3117
L ₁	3300	3342	2775				
L ₂	3265	2812	3117				
L ₃	3482	2915	3044				

C.D. for P marginal means = 286.9 Kg/ha.

Crop :- Paddy (Kharif).
Site :- M.A.E. Centre, Kendrapara.

Ref :- Or. 61(MAE).
Type :- 'M'.

Object :- Type IX—To study the effect of N and methods of application of P_2O_5 on Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Recent alluvium. (iii) 14.6.1961/7.8.1961. (iv) (a) 3 ploughings, puddling and laddering. (b) Transplanting in lines. (c) 56 Kg/ha. (d) 23 cm. × 15 cm. (e) N.A. (v) Nil. (vi) T-141 (150 days). (vii) Irrigated. (viii) 1 weeding. (ix) 165 cm. (x) 10.12.1961.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 61 (MAE) type IX conducted at Barpali on page 32.
 N applied at transplanting.

4. GENERAL :

(i) Satisfactory. Crop lodged. (ii) Mild attack of false smut. (iii) Grain yield. (iv) (a) to (c) No. (v) Barpali and Tirtol. (vi) Heavy rains during September caused high floods. (vii) Nil.

5. RESULTS :

(i) 2911 Kg/ha. (ii) 219.8 Kg/ha. (iii) Main effects of P and L and effect of N are highly significant. Interaction $P \times M$ is significant. (iv) Av. yield of grain in Kg/ha.

$N_0 = 2693$ Kg/ha., $N_1 = 2730$ Kg/ha., $N_2 = 2933$ Kg/ha., $N_3 = 3348$ Kg/ha.

	P_1	P_2	P_3	L_1	L_2	L_3	Mean
M_1	3071	2712	2767	2665	2693	3192	2850
M_2	2822	2795	2776	2730	2693	2970	2798
M_3	2924	3090	3182	2942	3026	3228	3065
Mean	2939	2866	2908	2779	2804	3130	2904
L_1	2924	2702	2712				
L_2	2822	2795	2794				
L_3	3071	3101	3218				

C.D. for P or L marginal means = 147.9 Kg/ha.

C.D. for N marginal means = 209.3 Kg/ha.

C.D. for body of $P \times M$ table = 256.1 Kg/ha.

Crop :- Paddy (Kharif).
Site :- M.A.E. Centre, Tirtol,

Ref :- Or. 63(MAE).
Type :- 'M'.

Object — Type IX—To study the residual effect of N and method of application of P_2O_5 on Paddy.

1. BASAL CONDITIONS ;

(i) (a) Paddy--Paddy. (b) Paddy. (c) As per treatments. (ii) Recent alluvium. (iii) 7.6.1963/6.8.1963. (iv) (a) 4 ploughings and 2 laddering. (b) Transplanted. (c) 28 Kg/ha. (d) 23 cm. × 15 cm. (e) N.A. (v) Nil. (vi) T-141 (150 days). (vii) Unirrigated. (viii) 2 weedings. (ix) 112 cm. (x) 27.11.1963.

2. TREATMENTS :

Same as in expt. no. 61 (MAE) type IX conducted at Barpali on page 32.

Manures applied in Kharif 1962.

3. DESIGN :

(i) $3^3 + 4$ confd. (ii) (a) 13 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 9.8 m. × 5.0 m. (b) 8.8 m. × 4.4 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1962 only. (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 2130 Kg/ha. (ii) 153.9 Kg/ha. (iii) Main effect of N and interactions $L \times M$ and $P \times L \times M$ are highly significant. Interaction $P \times L$ is significant. (iv) Av. yield of grain in Kg/ha.

$N_0=2257$ Kg/ha., $N_1=2014$ Kg/ha., $N_2=1950$ Kg/ha. and $N_3=2022$ Kg/ha.

	P ₁	P ₂	P ₃	L ₁	L ₂	L ₃	Mean
M ₁	2167	2197	2137	2184	2133	2184	2167
M ₂	2197	2120	2197	2270	2189	2056	2171
M ₃	2223	2222	1988	1950	2299	2184	2144
Mean	2196	2180	2107	2134	2207	2142	2161
L ₁	2167	2180	2056				
L ₂	2133	2312	2176				
L ₃	2287	2048	2090				

C.D. for means in the body of $L \times M$ or $P \times L$ table or N means = 179.3 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 62(MAE).

Site :- M. A.E. Centre, Barpali.

Type :- 'M'.

Object :- Type X—To study the effect of N, P and G.M. on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-G.M. (b) G.M. (c) Nil. (ii) Clay to clay loam. (iii) 11.7.1962/17, 18.8.1962. (iv) (a) 4 ploughings each followed by pata. (b) Transplanted in lines. (c) 22.4 Kg/ha. (d) 15 cm. \times 23 cm. (e) 3. (v) Nil. (vi) T-141 (150 days). (vii) Irrigated. (viii) 2 weedings and 1 hoeing. (ix) 81 cm. (x) 1, 2.12.1962.

2. TREATMENTS :

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

(1) 3 levels of G.M. : G_0 =No G.M., G_1 =G.M. raised and ploughed in situ and G_2 =G.M. raised with application of 35 Kg/ha. of P_2O_5 and ploughed in situ.

(2) 3 levels of N as A/S : $N_0=0$, $N_1=17.5$ and $N_2=35$ Kg/ha.

(3) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=35$ and $P_2=70$ Kg/ha.

Extra treatment : T=NPK through artificial fertilizers equivalent to those obtained from G.M. N and P_2O_5 applied at final puddling. G.M. incorporated on 31.7.1962.

3. DESIGN :

(i) 3^3+1 confd. (ii) (a) 10 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 11.9 m. \times 7.0 m. (b) 11.0 m. \times 6.4 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Incidence of gally. Endrine sprayed twice. (iii) Grain yield. (iv) to (vii) Nil.

5. RESULTS :

(i) 1626 Kg/ha. (ii) 421.5 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

T = 1946 Kg/ha.

	N ₀	N ₁	N ₂	P ₀	P ₁	P ₂	Mean
G ₀	1434	1757	1475	1550	1690	1426	1555
G ₁	1552	1588	1787	1439	1663	1824	1642
G ₂	1736	1431	1553	1561	1520	1639	1573
Mean	1574	1592	1605	1517	1624	1630	1590
P ₀	1544	1490	1515				
P ₁	1442	1612	1819				
P ₂	1735	1674	1480				

Crop :- Paddy (Kharif).**Ref :- Or. 63(MAE).****Site :- M.A.E. Centre, Barpali.****Type :- 'M'.**

Object :- Type XI—To study the effect of method of application of micronutrients on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Paddy. (b) Paddy. (c) Nil. (ii) Clay loam. (iii) 5.6.63.16, 17.7.63. (iv) (a) 4 ploughings each followed by pata. (b) Transplanting. (c) N.A. (d) 23 cm. × 15 cm. (e) 3. (v) Nil. (vi) T—141 (150 days) (vii) Unirrigated. (viii) 1 hoeing. (ix) N.A. (x) 2, 3.12.63

2. TREATMENTS :

All combinations of (1) and (2)—3 extra treatments

(1) 6 sources of micronutrients : S₁=Mn. Sul., S₂=Zn. Sul., S₃=Cu. Sul., S₄=Borax, S₅=Sodium Molyb. and S₆=S₁+S₂+S₃+S₄+S₅.(2) 2 methods of application : M₁=Soil application and M₂=Foliar application.Extra treatments : T₀=Control, T₁=35 Kg/ha. each of N, P₂O₅ and K₂O and T₂=Spartin at 395 kg/ha.T₁ is also applied to 12 plots receiving micronutrients and to T₂ plot. Optimum dose of each micronutrient for the two methods has been tried. T₁ and T₂ applied to soil.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) 10.1 m. × 5.0 m. (v) 9.1 m. × 4.4 m. (vi) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Incidence of stemborer. Folidol sprayed once. (iii) Grain yic d. (iv) to (vii) Nil.

5. RESULTS :

(i) 3271 Kg/ha. (ii) 353.4 Kg/ha. (iii) Main effect of S alone is significant. (iv) Av. yield of grain in Kg/ha.

T₀=3385 Kg/ha., T₁=3286 Kg/ha., and T₂=3169 Kg/ha.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	Mean
M ₁	3434	3527	2792	3366	3422	3280	3304
M ₂	2977	3354	3002	3243	3638	3187	3234
Mean	3206	3441	2897	3305	3530	3234	3269

C.D. for S marginal means = 356.0 Kg/ha.

Crop :- Paddy.

**Ref :- Or. 64(S.F.T.) for Ganjam, 64, 65
(S.F.T.) for Cuttack, 65(S.F.T.) for
Mayurbhanj and Sambalpur.**

**Site :- (District) : Ganjam, Cuttack,
Mayurbhanj and Sambalpur.**

Type :- 'M'.

Object :-To study the response curves of important cereal, cash and oilseed crops to nitrogen applied singly and in combination with other nutrients (Type A₁)

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red and yellow for Puri, Mayurbhanj and Sambalpur, Red loam for Ganjam and Cuttack. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manūrial 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+70 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. of 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) 1962—only for Puri. 1964—only for Ganjam, 1964 to 1965 for Cuttack and 1965—only for Mayurbhanj and Sambalpur, (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Ganjam

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.	365	583	383	627	854	825	921	161.3

Control yield=1457 Kg/ha. ; No. of trials=3.

Cuttack

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.	256	367	444	615	810	1008	1245	56.4

Control yield=2075 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.	366	566	200	533	633	966	1200	106.3

Control yield=1866 Kg/ha. ; No. of trials=3.

Mayurbhanj

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.	140	292	138	100	330	280	368	109.9

Control yield=269 Kg/ha. ; No. of trials= 3.

Sambalpur

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	434	350	533	558	634	908	134.0

Control yield=1399 Kg/ha. ; No. of trials=3.

Crop :- Paddy.

Ref :- Or. 62, 63, 64, 65 (S.F.T.) for Balasore, Cuttack, Puri and Mayurbhanj and 64, 65(S.F.T.) for Ganjam.

Site :- (District) :- Balasore, Cuttack, Puri, Mayurbhanj and Ganjam.

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. (Type A₁)

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red loamy for Balasore, Cuttack and Ganjam; Red and yellow for Puri and Mayurbhanj. (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 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 = 70 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. of Pot.**3. DESIGN :**Same as in type A₁ (irrigated) above.**4. GENERAL :**

(i) to (iii) N.A. (iv) (a) 1964 to 1965 for Ganjam and 1962 to 1965 for others. (b) and (c) N.A. (v) to (vii) N.A.

Balasore

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.	261	384	169	372	402	704	939	65.8

Control yield=1541 Kg/ha. ; No. of trials=11.

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.	210	406	286	370	339	520	588	89.2

Control yield=2172 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 grain in Kg/ha.	376	288	234	582	385	526	593	215.8

Control yield= 3278Kg/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.	269	324	228	349	551	471	973	99.2

Control yield=3351 Kg/ha. ; No. of trials=9.

Cuttack

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.	771	684	429	988	1062	1169	1028	393.2

Control yield=3168 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.	279	268	324	563	592	701	831	116.8

Control yield=1711 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.	506	848	261	833	959	1091	1449	85.5

Control yield=2600 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.	757	1173	384	1055	1490	1741	2097	82.1

Control yield=2203 Kg/ha. ; No. of trials=9.

Puri

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.	675	931	605	1104	1185	1483	1656	101.3

Control yield=1956 Kg/ha. ; No. of trials=10.

63 (S.F.T.) [Kharif]

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.	620	1155	525	840	1142	1434	1613	266.1

Control yield=2387 Kg/ha. ; No. of trials=3.

64 (S.F.T.) [Rabi]

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.	775	906	-85	857	1295	1687	1858	97.8

Control yield=1881 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.	625	1002	638	1221	1679	2021	2054	341.9

Control yield=1975 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.	338	624	255	1076	1316	1751	2157	139.9

Control yield=2072 Kg/ha. ;No. of trials=8.

Mayurbhanj**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.	9	125	168	243	-98	44	92	259.5

Control yield=1577 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.	363	621	189	707	825	1135	1295	100.0

Control yield=1283 Kg/ha. ; No. of trials=12.

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.	371	740	310	904	1122	1488	1560	94.5

Control yield=1697 Kg/ha. ; No. of trials=12.

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.	575	597	177	871	972	1480	1663	133.6

Control yield=1940 Kg/ha. No. of trials=9.

Ganjam**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.	751	1594	678	1983	1706	2167	3143	716.4

Control yield=3228 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.	603	760	760	484	816	946	1325	255.4

Control yield=1169 Kg/ha. ; No. of trials=6.

Crop :- Paddy.

**Ref :- Or. 64(S.F.T.) for cuttack and
Ganjam 65(S.F.T) for Sambalpur.**

**Site :- (District) : Cuttack, Ganjam,
and Sambalpur.**

Type :- 'M'.

Object :—To study response curves of important cereal, cash and oilseed crops to Phosphorus applied singly and in combination with other nutrients. (Type A₂)

1. BASAL CONDITIONS :

(i) N.A. (ii) Red and yellow for Sambalpur, Red loamy for Cuttack and Ganjam. (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

N₂P₂K₁=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. of Pot.

3. DESIGN :

Same as in Type A₁ (Irrigated) above.

4. GENERAL :

(i) to (iii) N.A. (iv) to (vii) N.A.

5. RESULTS :

Cuttack

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.	227	385	494	721	948	1097	1294	30.9

Control yield=2144 Kg/ha. ; No. of trials=2

Ganjam

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.	243	286	299	299	355	520	747	274.2

Control yield=994 Kg/ha. ; No. of trials=4.

Sambalpur

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.	442	92	341	283	533	483	783	101.5

Control yield= 1557 Kg/ha. ; No. of trials=3

Crop :- Paddy.

**Ref :- Or. 62, 63, 64, 65(S.F.T.) for Cuttack,
Puri Balasore and Mayurbhanj,
64, 65(S.F.T.) for Ganjam.**

**Site :- (District) : Cuttack, Puri,
Mayurbhanj, Balasore and
Ganjam.**

Type :- 'M'.

Object :—To study response curves of important cereal, cash and oilseed crops to phosphorus applied singly and in combination with other nutrients (Type A₂).

1. BASAL CONDITIONS :

(i) N.A. (ii) Red loamy for cuttack, Balasore and Ganjam, Red and yellow for Puri and Mayurbhanj.
(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.
N₂P₂K₂ =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) above.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1965 for Cuttack, Puri, Mayurbhanj and Balasore 1964 and 1965 for Ganjam.
(b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Cuttack

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.	719	195	119	779	629	690	1016	229.3

Control yield=3051 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.	452	453	744	774	910	996	1096	156.3

Control yield=2130 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 grain in Kg/ha.	775	460	636	873	973	1401	1865	97.2

Control yield=2595 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 Pods in Kg/ha.	748	478	618	1060	1259	1554	1896	84.0

Control yield=2400 Kg/ha. ; No. trials=11.

Puri**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.	834	454	721	1009	1104	1384	1729	130.6

Control yield=1845 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.	943	537	667	1246	1471	1987	2193	342.2

Control yield=2859 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.	656	501	987	1361	1424	2045	2447	122.5

Control yield=1617 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 grain in Kg/ha.	655	365	685	1201	1253	1697	2044	107.9

Control yield=1711 Kg/ha. ; No. of trials=9.

Mayurbanj**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.	112	103	326	321	204	243	255	121.8

Control yield=1871 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.	495	338	732	856	910	1140	1305	87.5

Control yield=1297 Kg/ha. ; No. of trials=11

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.	431	259	528	892	937	1391	1459	122.8

Control yield=1513 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.	329	649	224	1033	888	1163	1541	213.8

Control yield=2784 Kg/ha. ; No. of trials=3.

Balasore**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.	277	146	539	511	513	732	987	95.3

Control yield 1526 Kg/ha. ; No. of trials - 12.

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.	247	215	394	395	432	564	713	78.9

Control yield - 2118 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 grain in Kg/ha.	264	-20	123	426	439	421	398	124.4

Control yield=3559 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.	329	137	399	434	451	546	951	76.9

Control yield=3242 Kg/ha. ; No. of trials =8.

Ganjam**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.	1515	860	1176	1114	1650	2969	2834	412.3

Control yield=2812 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.	586	245	846	651	700	1446	1253	178.8

Control yield=1429 Kg/ha. ; No. of trials=6.

Crop :- Paddy**Ref :- Or. 64, 65 (S.F.T.) for Cuttack, 64 (S.F.T.) for Ganjam and 65 (S.F.T.) for Sambalpur.****Site :- (District) : Cuttack, Ganjam, and Sambalpur. Type :- 'M'.**Object :-- To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients (Type : A₃)**1. BASAL CONDITIONS :**

(i) N.A. (ii) Red loamy for Cuttack and Ganjam; Red and yellow for others. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

O=Control (no manure).

N₁=35 Kg/ha. of NK₁=35 Kg/ha. of K₂OK₂=70 Kg/ha. of K₂ON₁K₁=35 Kg/ha. of N+35 Kg/ha. of K₂ON₁K₂=35 Kg/ha. of N+70 Kg/ha. of K₂ON₂K₂=70 Kg/ha. of N+70 Kg/ha. of K₂ON₁P₁K₁=35 Kg/ha. of N+35 Kg/ha. of P₂O₅+35 Kg/ha. of K₂OK applied as A/S, P₂O₅ as Super and K₂O as Mur. of Pot.

3. DESIGN

Same as in type A₁ (Irrigated) above

4. GENERAL

(i) to (iii) Nil. (iv) (a) 1964 to 1965 for Cuttack, 1962—only for Puri, 1964—only for Ganjam, 1965—only for Sambalpur. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS

Cuttack

64 (S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	266	434	612	879	1089	1275	1373	71.2

Control yield=2006 Kg/ha. ; No. of trials=2.

65 (S.F.T.)

Treatments	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	400	233	460	666	866	1100	1266	121.9

Control yield=1666 Kg/ha. ; No. of trials=3.

Ganjam

64 (S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	489	202	481	691	523	548	444	178.6

Control yield=1368 Kg/ha. ; No. of trials=3.

Sambalpur

65 (S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₂	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	132	282	299	300	324	499	741	104.9

Control yield=1183 Kg/ha. ; No. of trials=3.

Crop :- Paddy.**Ref :- Or. 64, 65(S.F.T.) for Ganjam and 62, 63, 64, 65(S.F.T.) for others.****Site :- (District) :- Ganjam, Cuttack, Puri, Mayurbhanj and Balasore.****Type :- 'M'.**Object :—To study the response curves of important cereal, cash and oil seed crops to Potash applied singly and in combination with other nutrients (Type : A₃).

1. BASAL CONDITIONS :

(i) N.A. (ii) Red loamy for Ganjam, Cuttack and Balasore ; Red and yellow for 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=35 Kg/ha. of P₂O₅.

K₂=70 Kg/ha. P₂O₅.

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 K₂O.

N₁P₁K₁=35 Kg/ha. of N+35 Kg/ha. of P₂O₅+35 Kg/ha. of K₂O.

3. DESIGN :

Same as in type A₃ (Irrigated) on page 44.

4. GENERAL :

(i) to (iii) N.A. (iv (a) 1964 to 1965 for Ganjam and 1962 to 1965 for others. (b) N.A. (c) Nil. (v) to (vii) N.A..

5. RESULTS :

Ganjam

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.	981	513	1067	1186	1166	1620	1548	307.4

Control yield=2754 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.	1066	346	688	486	726	1155	817	177.6

Control yield=1373 Kg/ha. ; No. of trials=6.

Cuttack

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.	896	405	583	983	1177	1593	1519	279.8

Control yield=2307 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.T.
Av. response of grain in Kg/ha.	485	306	456	689	673	738	827	86.8

Control yield=1888 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.	701	433	569	836	932	1184	1351	84.1

Control yield=2476 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.	857	340	478	983	1175	1737	1731	120.6

Control yield=2145 Kg/ha. ; No. of trials=9.

Puri**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.	443	76	191	623	694	871	1134	113.6

Control yield=1884 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 PIK ₁	S.E.
Av. response of grain in Kg/ha.	1014	308	305	1222	1360	1858	1621	228.7

Control yield=2511 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.	679	514	810	1278	1386	2244	1942	187.8

Control yield=1741 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.	641	382	569	994	1293	1622	1746	109.7

Control yield=1510 Kg/ha. ; No. of trials=9.

Mayurbhanj**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.	142	305	112	578	385	288	556	115.7

Control yield=1814 Kg/ha. ; No. of trials=7.

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.	348	223	438	563	587	890	984	110.0

Control yield=1399 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.	454	210	465	514	699	1243	1200	166.4

Control yield=1327 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.	473	175	196	560	716	548	828	554.0

Control yield=1789 Kg/ha. ; No. of trials=4.

Balasore**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.	205	98	243	468	424	644	733	65.1

Control yield = 1389 Kg/ha. ; No. of trials = 12.

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.	179	100	286	372	364	584	522	89.4

Control yield = 1896 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.	451	457	243	695	622	1066	1158	112.5

Control yield = 4072 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.	175	166	260	430	489	490	683	103.5

Control yield = 3167 Kg/ha. ; No. of trials = 8.

Crop :- Paddy.**Ref :- Or. 60(SFT).****Site :- As per results.****Type :- 'M'.**

Object :- To investigate the relative efficiency of different nitrogenous fertilizers at different doses.
(Type : B)

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) As per results. (iii) to (vi) N.A. (vi) 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'' = 44.8 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 :**

(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 oilseed crop and 3 on a leguminous crop. Half the number of trials conducted are of type A and the the circle/thana is changed once in two years within the same zone. Each field assistant is required to conduct 31 trials in year, 8 on kharif cereal, 8 on a rabi cereal, 8 on cash crop, 3 on other half of type B on crop 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) 1/80 ac. (b) 1/40 ac. (iv) Yes.

4. GENERAL :

(i) to (vii) N.A.

Av. yield of grain in Kg/ha.

District	Soil type	No. of soil	O	n ₁	n ₂	n ₁ '	n ₂ '	n ₁ ''	n ₂ ''	n ₁ '''	n ₂ '''	G.M.	S.E./mean
Balasore	Saline	6	2700	2880	3300	3000	3420	---	---	2980	3380	3094	70.7
Cuttack	Red alluvium	3	2020	2480	3090	2490	3190	---	---	2560	3270	2729	83.4
Ganjam	Red	8	3440	4530	4870	4910	5330	---	---	5480	6000	4937	132.9
Kalahandi	Red	4	1880	2100	2290	2260	2340	---	---	2470	2790	2304	41.7
Mayurbhanj	Red	7	1650	2450	3800	2200	3350	---	---	2610	3470	2790	205.8
Puri	costal alluvium	16	2490	3260	3470	3020	3340	---	---	3170	3430	3169	97.6
Cuttack	Red alluvium	4	2710	3300	3480	3390	3510	3520	3630	---	---	3163	44.5
Kalahandi	Red	2	2930	3210	3610	---	---	3390	4720	3050	3800	3530	557.9
Balsore	Saline	4	1600	---	---	2140	2440	2250	2440	2260	2490	2231	56.6
Bolangir	Red	8	1820	---	---	2460	2760	2720	3040	2720	2970	2641	60.1
Cuttack	Red alluvium	4	2620	---	---	3620	3880	3500	3870	3450	3300	3463	130.8
Dhenkanal	Red and black	7	3500	---	---	4210	4690	4300	4540	4150	4250	4234	152.7
Mayurbhanj	Red	2	2340	---	---	2360	2840	2610	2890	2520	2780	2620	155.6
Sambalpur	Red and black	4	1610	---	---	2630	2640	2690	2670	2830	2880	2564	76.4

Crop :- Paddy.
Site :- As per results.

Ref :- Or. 61(SFT),
Type :- 'M'.

Object :- To investigate the relative efficiency of different nitrogenous fertilizers at different doses.
(Type : B).

1. BASAL CONDITIONS :

(i) N.A. (ii) Saline for Balasore ; Red and black for Dhankanal and Sambalpur ; Red alluvial for Puri and Cuttack and Red soil for others. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

Same as in 60(S.F.T.) on page 48.

3. DESIGN :

Same as on page Type B Irrigated on page 48.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

District	No. of trials	Av. yield of grain in Kg/ha. (Kharif).										G.M.	S.E./mean
		O	n ₁	n ₂	n ₁ '	n ₂ '	n ₁ ''	n ₂ ''	n ₁ '''	n ₂ '''			
Balasore	7	2190	2370	2690	2390	2690	—	—	2400	2800	2504	50.9	
Bolangir	8	1530	2220	2450	1880	2630	—	—	2230	2770	2244	127.3	
Dhenkanal	5	1470	1620	1680	1660	1760	—	—	2090	1690	1710	65.8	
Ganjam	6	1630	2200	2440	2280	2590	—	—	2540	2790	2353	184.6	
Kalahandi	8	2090	2980	2920	2680	2680	—	—	2800	2780	2704	156.3	
Mayurbhanj	3	950	970	1040	1370	1570	—	—	1500	1660	1294	163.3	
Puri	10	2030	2560	2740	2240	2660	—	—	2420	2630	2469	50.2	
Sambalpur	12	2060	2780	2910	2880	2980	—	—	2820	3230	2809	84.9	
Kalahandi	4	1920	2430	2930	—	—	2300	2870	2550	2830	2547	138.6	
Mayurbhanj	8	1240	2220	2720	—	—	2240	2610	2110	2580	2246	79.9	
Cuttack	4	2190	—	—	2500	2780	2310	2740	2430	3090	2577	109.6	
RABI.													
Balasore	3	1170	1210	1580	1410	1700	—	—	1290	1750	1444	77.8	

Crop :- Paddy (Kharif).**Ref :- Or 61(42).****Site :- Rice Res. Stn., Berhampur.****Type :- 'MV'.**

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 12.3 C.L./ha. of F.Y.M. + 44.8 Kg/ha. of N. (ii) N.A. (iii) 25.6.61/21.7.61. (iv) (a) 3 ploughings and 2 ladderings. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. × 15 cm. (e) 1. (v) 12.3 C.L./ha. of F.Y.M. + puddling with average growth of *Dhaincha* + 33.6 Kg/ha. of P_2O_5 as Super. (vi) Early group, as per treatments. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 23.10.61.

2. TREATMENTS :**Main-plot treatments :**3 levels of N as A/S : $N_1=22.4$, $N_2=44.8$ and $N_3=67.2$ Kg/ha.**Sub-plot treatments :**7 varieties : $V_1=ADR-36$, $V_2=G-S-362$, $V_3=Co. 21$, $V_4=FH 42-12$, $V_5=FH 58-83$, $V_6=B-76$ and $V_7=J-16$.N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$ th, 15 days before flowering**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 7 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 5.8 m. × 1.5 m. (b) 5.5 m. × 1.2 m. (v) 15 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Height, tiller count, panicle length and yield of grain and straw. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 2335 Kg/ha. (ii) (a) 388.0 Kg/ha. (b) 213.0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain is Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7	Mean
N_1	2402	1540	2035	2840	2077	1851	2600	2192
N_2	2134	1682	2289	2953	2473	2275	2939	2392
N_3	2346	1371	2402	3010	2303	2388	3137	2422
Mean	2294	1531	2242	2934	2284	2171	2892	2335

C.D. for V marginal means = 203.8 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 61(43).****Site :- Rice Res. Stn., Berhampur.****Type :- 'MV'.**

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

Same as in expt. no. 61(42) above But date of planting is 24.7.61.

2. TREATMENTS :**Main-plot treatments :**3 levels of N as A/S : $N_1=22.4$, $N_2=44.8$ and $N_3=67.2$ Kg/ha.**Sub-plot treatments :**B varieties : $V_1=PLA-I$, $V_2=Marich\ beti$, $V_3=FH 196-22$, $V_4=FH 7-40$, $V_5=B-76$ and $V_6=J-10$.N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 6 sub-plots/main plot. (b) N.A. (iii) 3. (iv) (a) 5.8 m. \times 1.5 m. (b) 5.5 m. \times 1.2 m. (v) 15 cm. \times 15 cm. (vi) Yes.

4. GENERAL :

Same as in expt. no. 61 (42) on page 51.

5. RESULTS :

(i) 2343 Kg/ha. (ii) (a) 325.0 Kg/ha. (b) 571.0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	Mean
N ₁	2812	1441	1611	2572	1964	3052	2242
N ₂	2600	1625	1780	2430	2614	3081	2355
N ₃	2402	2247	1851	2741	2120	3236	2433
Mean	2605	1771	1747	2581	2233	3123	2343

C.D. for V marginal means = 549.7 Kg ha.

Crop :- Paddy (Kharif).

Ref :- Or. 61(45).

Site :- Rice Res. Stn., Berhampur.

Type :- 'MV'.

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 12.3 C.L./ha. of F.Y.M. = 44.8 Kg/ha. of N. (ii) N.A. (iii) 25.6.6. 25.7.61. (iv) (a) 3 ploughings and 2 laddering. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. \times 15 cm. (e) 1. (v) 12.3 C.L./ha. of F.Y.M. and puddling with average growth of *Dhaincha* = 33.6 Kg/ha. of P₂O₅ as Super applied before puddling. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 13.11.61.

2. TREATMENTS :

Main-plot treatments :

3 levels of N as A/S : N₁=22.4, N₂=44.8 and N₃=67.2 Kg/ha.

Sub-plot treatments :

9 varieties : V₁=FH-94, V₂=FH-43, V₃=FH-61, V₄=FH-365, V₅=V-7, V₆=FH-52, V₇=FH-220, V₈=T-442, and V₉=BAM-12.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 9 sub-plots/main plot. (b) N.A. (iii) 4. (iv) (a) 5.8 m. \times 1.5 m. (b) 5.5 m. \times 1.2 m. (v) 15 cm. \times 15 cm. (vi) Yes.

4. GENERAL :

Same as in expt. no. 61 (42) on page 51.

5. RESULTS :

(i) 2201 Kg/ha. (ii) (a) 1164.0 Kg/ha. (b) 438.0 Kg/ha. (iii) Main effect of V alone is highly 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	V ₉	Mean
N ₁	2141	1886	1812	2957	2967	2067	2342	1929	1643	2194
N ₂	2363	2014	1621	2777	2936	2151	2098	2204	1293	2162
N ₃	2279	1982	1823	3275	2787	2098	2247	2575	1155	2247
Mean	2261	1961	1752	3003	2897	2105	2229	2236	1364	2201

C.D. for V marginal means=356.9 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 61(47).

Site :- Rice Res. Stn., Berhampur.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 12.3 C.L./ha. of F.Y.M. + 44.8 Kg/ha. of N. (ii) N.A. (iii) 25.6.61/26.7.61. (iv) (a) 3 ploughings and 2 ladderings. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. × 23 cm. (e) 1. (v) 12.3 C.L./ha. of F.Y.M. and Puddling with average growth of *Dhaincha* + 33.6 Kg/ha. of P₂O₅ as Super. applied before puddling. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 16.11.61.

2. TREATMENTS :

Main-plot treatments :

3 levels of N as A/S : N₁=22.4, N₂=44.8 and N₃=67.2 Kg/ha.

Sub-plot treatments :

10 varieties : V₁=FH-122, V₂=FH-415, V₃=FH-39, V₄=FH-19, V₅=FH-44, V₆=FH-60, V₇=FH-25, V₈=FH-28, V₉=BAM-11 and V₁₀=T-141.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 10 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 5.8 m. × 1.5 m. (b) 5.5 m. × 1.2 m. (v) 15 cm. × 15 cm. (vi) Yes.

4. GENERAL :

Same as in expt. no. 61 (42) on page 51.

5. RESULTS :

(i) 2856 Kg/ha. (ii) (a) 975.0 Kg/ha. (b) 545.0 Kg/ha. (iii) Main effect of V alone is highly 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	V ₉	V ₁₀	Mean
N ₁	2346	2515	2445	3080	2869	2473	3264	2360	3222	2967	2754
N ₂	2388	2699	2402	3377	2770	2346	3448	2105	4268	3236	2904
N ₃	2473	2148	2487	3264	2685	2473	3589	2176	3872	3928	2909
Mean	2402	2454	2445	3240	2775	2431	3434	2214	3787	3377	2856

C.D. for V marginal means=515.6 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 61(49).****Site :- Rice Res. Stn., Berhampur.****Type :- 'MV'.**

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 12.3 C.L./ha. of F.Y.M.—44.8 Kg/ha. of N. (ii) N.A. (iii) 25.6.61, 28.7.61. (iv) (a) 3 ploughings and 2 ladderings. (b) Transplanting. (c) 37 Kg/ha. (d) 23 cm. × 23 cm. (e) 1 (v) 12.3 C.L./ha. of F.Y.M. and puddling with average growth of *Dhaincha*—33.6 Kg/ha. of P_2O_5 as Super before puddling. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) and (x) N.A.

2. TREATMENTS :**Main-plot treatments :**3 levels of N as A/S : $N_1=22.4$, $N_2=44.8$ and $N_3=67.2$ Kg/ha.**Sub-plot treatments :**10 varieties : $V_1=$ FH—430, $V_2=$ FH—118, $V_3=$ FH—82, $V_4=$ FH—80, $V_5=$ FH—35, $V_6=$ FH—19, $V_7=$ FH—14, $V_8=$ FH—A, $V_9=$ FH—B and $V_{10}=$ BAM—9.N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main—plots replication, 10 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 5.8 m. × 1.5 m. (b) 15.5 m. × 1.2 m. (v) 15 cm. × 15 cm. (vi) Yes.

4. GENERAL :

Same as in expt. no. 61(43) on page 51.

5. RESULTS :

(i) 2582 Kg/ha. (ii) (a) 451.0 Kg/ha. (b) 492.0 Kg/ha. (iii) Main effect of V alone is highly 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	V_9	V_{10}	Mean
N_1	2925	1643	1982	1876	2374	2861	1653	2819	2766	4886	2679
N_2	2893	1696	2067	2194	2109	2999	1537	2554	3031	4303	2538
N_3	2491	2162	2257	2109	2321	3116	1791	2914	2808	4313	2628
Mean	2770	1834	2102	2060	2268	2992	1660	2762	2868	4501	2582

C.D. for V marginal means=400.2 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 62(61).****Site :- Rice Res. Stn., Berhampur.****Type :- 'MV'.**

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 12.3 C.L./ha. of F.Y.M.—44.8 Kg/ha. of N. (ii) N.A. (iii) 12.6.62/22.7.62. (iv) (a) 3 ploughings and 2 ladderings. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. × 15 cm. (e) 1. (v) Compost+*Dhaincha*+33.6 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 13 and 30.10.62.

2. TREATMENTS :**Main-plot treatments :**3 levels of N as A/S : $N_1=22.4$, $N_2=44.8$ and $N_3=67.2$ Kg/ha.**Sub-plot treatments :**7 varieties : $V_1=$ Co. 21, $V_2=$ B-76 (Std.), $V_3=$ AC—2150, $V_4=$ Masch beti, $V_5=$ ADR—36, $V_6=$ PLA-1 and $V_7=$ GS—362.N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$ 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 7 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 5.5 m. × 2.6 m. (b) 5.2 m. × 2.3 m. (v) 15 cm. × 15 cm. (vi) Yes.

4. GENERAL :

Same as in expt. no. 62(60) on page 64.

5. RESULTS :

(i) 1619 Kg/ha. (ii) (a) 282.0 Kg/ha. (b) 253.0 Kg/ha. (iii) Main effect of V is highly significant. Main effect of N and interaction N × V are significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	Mean
N ₁	935	1678	1550	1947	1109	1534	1061	1402
N ₂	1374	1758	1702	1866	1871	1744	1522	1691
N ₃	1838	1710	2022	2200	1455	2001	1131	1765
Mean	1382	1715	1758	2004	1478	1760	1238	1619

C.D. for N marginal means = 241.5 Kg/ha.

C.D. for V marginal means = 242.2 Kg/ha.

C.D. for V means at the same level of N = 419.4 Kg/ha.

C.D. for N means at the same level of V = 453.2 Kg/ha.

Crop :- Paddy (Kharif).

Site :- Rice Res. Stn., Berhampur.

Ref :- Or. 61(50).

Type :- 'MV'.

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 12.3 C.L./ha. of F.Y.M. + 44.8 Kg/ha. of N. (ii) N.A. (iii) 25.6.61/26.7.61. (iv) (a) 3 ploughings and 2 ladderings. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. × 23 cm. (e) 1 (v) 12.3 C.L./ha. of F.Y.M. + Dhaincha + 33.6 Kg/ha. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 19.11.61.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : N₁ = 22.4 and N₂ = 67.2 Kg/ha.

Sub-plot treatments :

18 varieties : V₁ = FH-41, V₂ = FH-295, V₃ = FH-16, V₄ = FH-339, V₅ = FH-341, V₆ = FH-381, V₇ = FH-337, V₈ = FH-18, V₉ = FH-106, V₁₀ = FH-116, V₁₁ = FH-269, V₁₂ = FH-247, V₁₃ = FH-238, V₁₄ = FH-240, V₁₅ = FH-245, V₁₆ = FH-13, V₁₇ = FH-15 and V₁₈ = T-141.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 18 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 5.8 m. × 1.5 m. (b) 5.5 m. × 1.2 m. (v) 15 cm. × 15 cm. (vi) Yes.

4. GENERAL :

Same as in expt. no. 61(42) on page

5. RESULTS :

(i) 2486 Kg/ha. (ii) (a) 434.0 Kg/ha. (b) 518.0 Kg/ha. (iii) Main effect of N and interaction N × V are significant and main effect of V is highly 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	V ₉	V ₁₀
N ₁	2854	1441	2303	1455	1696	2105	2826	1512	1455	1738
N ₂	3024	1667	2346	2713	3462	2798	3759	2840	1936	2219
Mean	2939	1554	2324	2084	2579	2451	3292	2176	1696	1979

	V ₁₁	V ₁₂	V ₁₃	V ₁₄	V ₁₅	V ₁₆	V ₁₇	V ₁₈	Mean
N ₁	1682	1201	2219	1187	1809	4169	3123	3109	2105
N ₂	2459	1823	3123	1865	2275	4381	5596	3335	2868
Mean	2070	1512	2671	1526	2042	4275	4359	3222	2486

C.D. for N marginal means = 359.3 Kg/ha.
 C.D. for V marginal means = 597.3 Kg/ha.
 C.D. for V means at the same level of N = 844.5 Kg/ha.
 C.D. for N means at the same level of V = 875.7 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 61(51).

Site :- Rice Res. Stn., Berhampur.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 12.3 C.L./ha. of F.Y.M. + 44.8 Kg/ha. of N. (ii) N.A. (iii) 25.6, 61, 27.7, 61. (iv) (a) 3 ploughings and 2 laddering. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. × 23 cm. (e) One (v) 12.3 C.L./ha. of compost + *Dhaincha* (G.M.) + 33.6 Kg/ha. of P₂O₅ as Super before puddling. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 17.11.61.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : N₁=22.4 and N₂=67.2 Kg/ha.

Sub-plot treatments :

17 varieties : V₁=FH-30, V₂=FH-414, V₃=FH-102, V₄=FH-361, V₅=FH-364, V₆=FH-281, V₇=FH-287, V₈=FH-225, V₉=FH-4, V₁₀=FH-23, V₁₁=FH-55, V₁₂=FH-11, V₁₃=FH-14, V₁₄=FH-58, V₁₅=FH-83, V₁₆=FH-99 and V₁₇=BAM-11.

N broadcast $\frac{1}{2}$ at planting $\frac{1}{2}$ at one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 17 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 5.2 m. × 1.5 m. (b) 4.9 m. × 1.2 m. (v) 15 cm. × 15 cm. (vi) Yes.

4. GENERAL :

Same as in expt. no. 61(42) on page 51.

5. RESULTS :

(i) 2847 Kg/ha. (ii) (a) 1389.0 Kg/ha. (b) 470.0 Kg/ha. (iii) Main effect of V alone is highly 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		
N ₁	3433	2337	3290	1892	2639	2003	1621	1878		
N ₂	3799	2925	3624	2480	2988	2432	1748	2623		
	3616	2631	3457	2186	2813	2218	1684	2226		
	V ₉	V ₁₀	V ₁₁	V ₁₂	V ₁₃	V ₁₄	V ₁₅	V ₁₆	V ₁₇	Mean
N ₁	1256	4085	3561	1955	3274	3783	2003	2909	4244	2712
N ₂	1907	4769	3449	1653	3926	3068	1892	2782	4626	2982
Mean	1582	4427	3505	1804	3600	3426	1948	2846	4435	2847

C.D. for V marginal means=540.2 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 61(52).

Site :- Rice Res. Stn., Berhampur.

Type :- 'MV'.

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

1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Paddy. (c) 12.3 C.L./ha. of F.Y.M.+44.8 Kg/ha. of N. (ii) N.A. (iii) 25.6.61/26.7.61.
 (iv) (a) 3 ploughings and 2 laddering. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm.×23 cm. (e) 1.
 (v) 12.3 C.L./ha. of F.Y.M.+ Dhaincha (G.M.)+33.6 Kg/ha. of P₂O₅ as Super. (vi) As per treatments.
 (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 16.11.61.

2. TREATMENTS :

Main-plot treatments:

2 levels of N as A/S : N₁=22.4 and N₂=67.2 Kg/ha.

Sub-plot treatments :

16 varieties : V₁=V-26, V₂=V-12, V₃=V-27, V₄=FH-5, V₅=FH-21, V₆=FH-198, V₇=FH-134
 V₈=FH-138, V₉=FH-140, V₁₀=FH-141, V₁₁=FH-2, V₁₂=FH-29, V₁₃=FH-8,
 V₁₄=FH-24, V₁₅=V-13 and V₁₆=T-141.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

- (i) Split-plot. (ii) 2 main-plots/replication ; 16 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 5.2 m. ×1.6 m. (b) 4.9 m.×1.2 m. (v) 15 cm.×15 cm. (vi) Yes.

4. GENERAL :

- (i) All varieties lodged except V₆ and V₁₀. (ii) N.A. (iii) Height, tiller count, panicle length, yield of grain and straw, (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

- (i) 2395 Kg/ha. (ii) (a) 111.0 Kg/ha. (b) 363.0 Kg/ha. (iii) Main effects of N and V are highly 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	V ₉
N ₁	1812	1892	1971	1605	2941	2480	2798	2066	2082
N ₂	2448	3147	2416	1764	3767	2718	3227	2798	2559
Mean	2130	2520	2193	1685	3354	2599	3013	2432	2320

	V ₁₀	V ₁₁	V ₁₂	V ₁₃	V ₁₄	V ₁₅	V ₁₆	Mean
N ₁	2559	1399	2003	1542	1144	1939	2655	2055
N ₂	3481	2511	2718	2670	1907	2337	3274	2734
Mean	3020	1955	2360	2106	1526	2.38	2964	2395

C.D. for N marginal means = 97.2 Kg/ha.

C.D. for V marginal means = 419.2 Kg/ha

Crop :- Paddy (Kharif).

Site :- Rice Res. Stn., Berhampur.

Ref :- Or. 61(53).

Type :- 'MV'.

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 12.3 C.L./ha. of F.Y.M. + 44.8 Kg/ha. of N. (ii) N.A. (iii) 25.6 61/26.7.61. (iv) (a) 3 ploughings and 2 ladderings. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. × 23 cm. (e) 1. (v) 12.3 C.L./ha. of F.Y.M. + *Dhaincha* (G.M.) + 33.6 Kg/ha. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 14.11.61.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : N₁ = 22.4 and N₂ = 67.2 Kg/ha.

Sub-plot treatments :

17 varieties : V₁ = FH-116, V₂ = FH-96, V₃ = FH-133, V₄ = FH-18, V₅ = FH-102, V₆ = FH-22, V₇ = FH-201, V₈ = FH-128, V₉ = FH-36, V₁₀ = FH-69, V₁₁ = FH-64, V₁₂ = FH-58, V₁₃ = FH-136, V₁₄ = FH-180, V₁₅ = FH-8, V₁₆ = FH-9 and V₁₇ = FH-20.

N broadcast $\frac{1}{2}$ at planting and $\frac{1}{2}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 17 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) 5.5 m. × 1.5 m. (v) 5.2 m. × 1.2 m. (vi) 15 cm. × 15 cm. (vii) Yes.

4. GENERAL :

(i) Lodging. (ii) N.A. (iii) Height, tiller count, panicle, length and yield of grain and straw. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 2533 Kg/ha. (ii) (a) 493.0 Kg/ha. (b) 412.0 Kg/ha. (iii) Main effect of N is significant and that of V is highly 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
N ₁	1601	1795	3037	3530	1810	3201	2663	2498
N ₂	2094	2364	3261	3695	1870	3545	3067	3036
Mean	1848	2079	3149	3613	1840	3373	2865	2902

	V ₉	V ₁₀	V ₁₁	V ₁₂	V ₁₃	V ₁₄	V ₁₅	V ₁₆	V ₁₇	Mean
N ₁	2049	1885	1376	2394	2708	2139	1436	1945	2543	2271
N ₂	2379	2932	1900	3186	3201	2663	1690	2872	3471	2794
Mean	2214	2408	1638	2790	2955	2401	1563	2409	3007	2533

C.D. for N marginal means=420.0 Kg/ha.

C.D. for V marginal means=475.6 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 61(54).

Site :- Rice Res. Stn., Berhampur.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 12.3 C.L./ha. of F.Y.M. + 44.8 Kg/ha. of N. (ii) N.A. (iii) 25.6.61/24.7.61.
 (iv) (a) 3 ploughings and 2 ladderings. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. × 15 cm. (e) 1. (v)
 12.3 C.L./ha. of F.Y.M. + *Dhaincha* (G.M.) + 33.6 Kg/ha. of Super. (vi) As per treatments. (vii) Irrigated.
 (viii) Weeding. (ix) N.A. (x) 15.11.61.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : N₁=22.4 and N₂=67.2 Kg/ha.

Sub-plot treatments :

16 varieties : V₁=FH-248, V₂=FH-359, V₃=FH-302, V₄=FH-93, V₅=FH-217, V₆=FH-103,
 V₇=FH-64, V₈=FH-10, V₉=FH-34, V₁₀=FH-37, V₁₁=FH-152, V₁₂=FH-38,
 V₁₃=FH-154, V₁₄=V-16, V₁₅=B.A.M.-12 and V₁₆=T-442.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 16 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 5.5 m. × 1.5 m. (b) 5.2 m. × 1.2 m. (v) 15 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Few plants lodged under all the treatments. (ii) N.A. (iv) Height, tillers count, panicle length and yield of grain and straw. (iv) (a) and (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 2052 Kg/ha. (ii) (a) 208.0 Kg/ha. (b) 337.0 Kg/ha. (iii) Main effect of N is significant and that of V is highly significant. (iv) Av. yield of gran in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈	V ₉
N ₁	1541	2304	2109	1197	1915	1586	1825	1720	1376
N ₂	2064	2573	2274	1301	2498	2154	1900	1990	1915
Mean	1802	2439	2191	1249	2207	1870	1862	1855	1646

	V ₁₀	V ₁₁	V ₁₂	V ₁₃	V ₁₄	V ₁₅	V ₁₆	Mean
N ₁	1870	1137	1870	2109	2872	2423	1646	1844
N ₂	2229	1810	2199	2409	3590	2708	2558	2261
Mean	2050	1473	2035	2259	3231	2566	2102	2052

C.D. for N marginal means=182.7 Kg/ha.

C.D. for V marginal means=389.2 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 61(55).

Site :- Rice Res. Stn., Berhampur.

Type :- 'MV'.

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

1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Paddy. (c) 12.3 C.L./ha. of F.Y.M. + 44.8 Kg/ha. of N. (ii) N.A. (iii) 25.6.61/27.7.61. (iv) (a) 2 ploughings and 3 ladderings. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. × 15 cm. (e) 1. (v) 12.3 C.L./ha. of F.Y.M. + *Dhaincha* (G.M.) + 33.6 Kg/ha. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 24.12.61.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : N₁=22.4 and N₂=67.2 Kg/ha.

Sub-plot treatments :

12 varieties : V₁=FH-1, V₂=FH-5, V₃=FH-6, V₄=FH-228, V₅=FH-354, V₆=FH-256, V₇=FH-33, V₈=FH-169, V₉=FH-184, V₁₀=FH-185, V₁₁=FH-20 and V₁₂ BAM-9.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

- (i) Split-plot. (ii) (a) 2 main-plots/replication ; 12 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 5.8 m. × 1.5 m. (b) 5.5 m. × 1.2 m. (v) 15 cm. × 15 cm. (vi) Yes.

4. GENERAL :

- (i) and (ii) N.A. (iii) Height, tiller count, panicle length and yield of grain and straw. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

- (i) 3115 Kg/ha. (ii) (a) 368.0 Kg/ha. (b) 512.0 Kg/ha. (iii) Main effect of N is significant and that of V is highly 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	V ₉	V ₁₀	V ₁₁	V ₁₂	Mean
N ₁	3731	2642	2275	2459	2713	2657	2798	2529	2657	2374	3448	3985	2856
N ₂	3999	3066	2798	2953	3434	3236	2982	2883	3533	3179	3632	4790	3374
Mean	3865	2854	2537	2706	3074	2946	2890	2705	3095	2777	3540	4388	3115

C.D. for N marginal means=373.1 Kg/ha.

C.D. for V marginal means=596.2 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 62(62).

Site :- Rice Res. Stn., Berhampur.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 12.3 C.L./ha. of F.Y.M.+44.8 Kg/ha. of N. (ii) N.A. (iii) 18.6.62/23.7.62. (iv) (a) 3 ploughings and 2 ladderings. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm.×23 cm. (e) 1. (v) 12.3 C.L./ha. of compost+G.M. with *Dhaincha*+33.6 Kg/ha. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 1 and 10.11.62.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : N₁=22.4 and N₂=67.2 Kg/ha.

Sub-plot treatments :

10 varieties : V₁=FH-43, V₂=FH-61, V₃=FH-94, V₄=FH-52, V₅=FH-154, V₆=FH-302, V₇=FH7-40, V₈=FH 58-83, V₉=FH 196-22 and V₁₀=T-442 (Std.).

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 10 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 5.5 m.×2.1 m. (b) 5.2 m.×1.6 m. (v) 15 cm.×23 cm. (vi) Yes.

4. GENERAL :

(i) Slight lodged. (ii) N.A. (iii) Height, tiller count, panicle length and yield of grain and straw. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 1110 Kg/ha. (ii) (a) 568.0 Kg/ha. (b) 309.0 Kg/ha. (iii) Main effect of V alone is highly 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	V ₉	V ₁₀	Mean
N ₁	1079	959	1676	2091	1479	1596	852	992	502	1765	1299
N ₂	502	1065	1378	1427	1307	716	337	631	322	1512	920
Mean	791	1012	1527	1759	1393	1156	594	811	412	1638	1109

C.D. for V marginal means=357.7 Kg/ha.

Crop :- Paddy (Kharif).
Site :- Rice Res. Stn., Berhampur.

Ref :- Or. 61(44).
Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 12.3 C.L./ha. of F.Y.M. + 44.8 Kg/ha. of N. (ii) N.A. (iii) 25.6.61:23.7.61. (iv) (a) 3 ploughings and 2 ladderings. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. 15 cm. (e) 1. (v) 12.3 C.L./ha. of F.Y.M. + puddling with average growth of *Dhaincha* + 33.5 Kg/ha. of P_2O_5 as Super applied before puddling. (vi) As per treatments. (vii) Irrigated. (viii) weeding. (ix) N.A. (x) 18.11.61.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S : $N_1=22.4$, $N_2=44.8$, $N_3=67.2$ and $N_4=89.6$ Kg/ha.

Sub-plot treatments :

7 varieties : $V_1=$ FH-258, $V_2=$ FH-365, $V_3=$ FH-89, $V_4=$ V-3, $V_5=$ V-14, $V_6=$ SP-1 and $V_7=$ T-442.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots replication ; 7 sub-plots, main-plot. (b) N.A. (iii) 4. (iv) (a) 5.8 m. \times 1.5 m. (b) 18' \times 4' = 5.5 m. \times 1.2 m. (v) 15 cm. \times 15 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Height, tiller count, panicle length and yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2461 Kg/ha. (ii) (a) 754.0 Kg/ha. (b) 640.0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7	Mean
N_1	2565	2226	2406	3847	3031	2141	1855	2582
N_2	1749	2692	2872	3550	2215	1812	2003	2413
N_3	2702	1897	2819	3307	2936	1473	1600	2391
N_4	3116	2416	2120	3084	3042	1780	1653	2459
Mean	2533	2308	2554	3447	2806	1802	1778	2461

C.D. for V marginal means = 451.7 Kg/ha.

Crop :- Paddy (Kharif).
Site :- Rice Res. Stn., Berhampur.

Ref :- Or. 61(46).
Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 12.4 C.L./ha. of F.Y.M. + 44.8 Kg/ha. of N. (ii) N.A. (iii) 25.6.61:28.7.61. (iv) (a) 3 ploughings and 2 ladderings. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. \times 23 cm. (e) 1. (v) 12.3 C.L./ha. of F.Y.M. + puddling with average growth of *Dhaincha* + 33.6 Kg/ha. of P_2O_5 as Super applied before puddling. (vi) As per treatments. (vii) Irrigated. (viii) weeding. (ix) N.A. (x) 19.11.61.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S : $N_1=22.4$, $N_2=44.8$, $N_3=67.2$ and $N_4=89.7$ Kg/ha.

Sub-plot treatments :

6 varieties : $V_1=$ FH—366, $V_2=$ FH—32, $V_3=$ FH—19, $V_4=$ FH—24, $V_5=$ FH—4 and $V_6=$ T—141.
N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 5.8 m. \times 1.5 m. (b) 5.5 m. \times 1.2 m. (v) 15 cm. \times 15 cm. (vi) Yes.

4. GENERAL :

Same as in expt. no. 61 (44), on page 62.

5. RESULTS :

(i) 2380 Kg/ha. (ii) (a) 761.0 Kg/ha. (b) 773.0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	Mean
N_1	1325	2130	1939	2522	2162	1812	1982
N_2	1929	2226	2215	2787	1918	2999	2346
N_3	2024	2692	2374	2967	2353	2851	2543
N_4	2798	2777	2109	2766	2448	2999	2649
Mean	2019	2456	2159	2761	2220	2665	2380

Crop :- Paddy (Kharif).

Ref :- Or. 61(48).

Site :- Rice Res. Stn., Berhampur.

Type :- 'MV'.

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 12.3 C.L./ha. of F.Y.M. + 44.8 Kg/ha. of N. (ii) N.A. (iii) 25.6.61/28.7.61. (iv) (a) 3 ploughings and 2 ladderings. (b) Transplanting. (c) 37 Kg/ha. (d) 23 cm. \times 23 cm. (e) 1. (v) 12.3 C.L./ha. of F.Y.M. + puddling with average growth of Dhaincha + 33.6 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weedings. (ix) N.A. (x) 10.12.61.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S : $N_1=22.4$, $N_2=44.8$, $N_3=67.2$ and $N_4=89.7$ Kg/ha.

Sub-plot treatments :

6 varieties : $V_1=$ FH—191, $V_2=$ FH—239, $V_3=$ FH—188, $V_4=$ FH—34, $V_5=$ ACB—362 and $V_6=$ BAM—9.
N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 5.8 m. \times 1.5 m. (b) 5.5 m. \times 1.2 m. (v) 15 cm. \times 15 cm. (vi) Yes.

GENERAL :

Same as in expt. no. 61 (44) on page 62.

5. RESULTS :

(i) 3135 Kg/ha. (ii) (a) 755.0 Kg/ha. (b) 556.0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	Mean
N ₁	3073	2501	2999	2310	2946	4812	3107
N ₂	3540	2310	2989	2501	2925	4504	3128
N ₃	3868	2257	3042	2692	2872	4695	3238
N ₄	3402	2173	2946	2554	3158	4176	3068
Mean	3471	2310	2994	2514	2975	4547	3135

C.D. for V marginal means=393.2 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 62(60).

Site :- Rice Res. Stn., Berhampur.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 12.3 C.L./ha. of F.Y.M+44.8 Kg/ha. of N. (ii) N.A. (iii) 18.6.62/24.7.62. (iv) (a) 3 ploughings and 2 ladderings. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. × 23 cm. (e) 1 (v) Compost+G.M. *Dhaincha* : 33.6 Kg/ha. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 2 and 9.11.62.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S : N₁=22.4, N₂=44.8, N₃=67.2 and N₄=89.7 Kg/ha.

Sub-plot treatments :

5 varieties : V₁=SP-1, V₂=FH-42-12, V₃=V-1, V₄=V-2 and V₅=Γ-442 (std).

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 5.5 m. × 2.7 m. (b) 5.2 m. × 2.3 m. (v) 23 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Height, tiller count, panicle length and yield of grain and straw. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 1737 Kg/ha. (ii) (a) 449.0 Kg/ha. (b) 335.0 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	Mean
N ₁	1564	1805	1548	1950	1680	1709
N ₂	2226	2352	1819	2020	1778	2039
N ₃	1488	2054	1230	1815	2026	1721
N ₄	1369	1445	1300	1815	1466	1479
Mean	1662	1914	1474	1900	1737	1737

C.D. for V marginal means=278.8 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 63(41).****Site :- Rice. Res. Stn., Berhampur.****Type :- 'MV'.**

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 12.3 C.L./ha. of F.Y.M.+44.8 Kg/ha. of N. (ii) N.A. (iii) 18.6.63/31.7.63. (iv) (a) 3 ploughings and 2 laddering. (b) Transplanting. (c) 37 Kg/ha. (d) 23 cm.×23 cm. (v) 33.6 Kg/ha. of P₂O₅. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 9 to 11.12.63.

2. TREATMENTS :**Main-plot treatments :**4 levels of N as A/S : N₁=22.4, N₂=44.8, N₃=67.2 and N₄=89.7 Kg/ha.**Sub-plot treatments :**12 varieties : V₁=BH-51, V₂=BH-183, V₃=BH-189, V₄=FH-849, V₅=FH 60-124, V₆=ACB-362, V₇=V-28, V₈=B-316, V₉=Khashi Champa. V₁₀=T-90, V₁₁=T-1242 and V₁₂=BAM-9.N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication, 12 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 4.6 m.×4.1 m. (b) 4.1 m.×3.6 m. (v) 23 cm.×23 cm. (vi) Yes.

4. GENERAL :

Same as in expt. no. 62(60) on page .

5. RESULTS :

(i) 2291 Kg/ha. (ii) (a) 416.0 Kg/ha. (b) 342.0 Kg/ha. (iii) Main effects of N and V are highly 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	V ₉	V ₁₀	V ₁₁	V ₁₂	Mean
N ₁	2314	2482	2736	2722	3233	3242	2450	2888	2772	2208	2695	2852	2716
N ₂	2533	2491	2500	2615	2815	3027	2489	2553	2558	2199	2169	2297	2520
N ₃	1284	1931	2518	1889	2681	2511	1952	2038	2015	1608	1949	2103	2040
N ₄	1229	1929	2290	1932	1873	1929	1643	2022	2186	1805	1548	2244	1886
Mean	1840	2208	2511	2290	2651	2677	2134	2375	2383	1955	2090	2374	2291

C.D. for N marginal means=239.8 Kg/ha.

C.D. for V marginal means=277.8 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 63(42).****Site :- Rice. Res. Stn., Berhampur (Ganjam).****Type :- 'MV'.**

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 12.3 C.L./ha. of F.Y.M.+44.8 Kg/ha. of N. (ii) N.A. (iii) 5.6.63. (iv) (a) 3 ploughings and 2 laddering. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm.×23 cm. (e) 1. (v) 33.6 Kg/ha. of P₂O₅. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 8 and 9.11.63.

2. TREATMENTS :

(1) $N_0 = 0$ (ii) $N_1 = 14.2$

Main-plot treatments :

4 levels of N as C.A.N. : $N_0 = 0$, $N_1 = 14.2$, $N_2 = 27.2$ and $N_3 = 40.2$ Kg/ha.

Sub-plot treatments :

6 varieties : $V_1 = FH-42-12$, $V_2 = SP-1$, $V_3 = FHV-2$, $V_4 = FH-147$, $V_5 = FH-158$ and $V_6 = FH-442$ (Std).

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 6 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 4.3 m. \times 2.7 m. (b) 4.0 m. \times 2.3 m. (v) 23 cm. \times 15 cm. (vi) Yes.

4. GENERAL :

(i) Lodged in all plots. (ii) N.A. (iii) Height, no. of tillers, panicle length and yield of grain and Straw. (iv) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 2174 Kg/ha. (ii) (a) 456.0 Kg/ha. (b) 372.0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	Mean
N_1	2675	2250	2051	2122	1759	2225	2280
N_2	2846	2277	2045	2669	1916	2153	2318
N_3	2214	2170	2200	1982	2462	2048	2179
N_4	1811	1891	1797	2007	1918	2087	1918
Mean	2386	2147	2023	2345	2014	2128	2174

Crop :- Paddy (Kharif).

Ref :- Or. 65(43).

Site :- Rice. Res. Stn., Berhampur.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Mung-Fallow. (b) Fallow. (c) Nil. (ii) Loamy soil. (iii) 29.7.65/26.8.65. (iv) (a) 5 summer ploughings, 2 ploughings before transplanting and puddling. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. \times 15 cm. (e) 2. (v) Dhaincha as G.M. at 2242 Kg/ha. 16.4 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Two hand weeding, weeding by Japanese weeder. (ix) 76.0 cm. (x) 7 and 8.12.65.

2. TREATMENTS :

Main-plot treatments :

3 levels of N as C.A.N. : $N_0 = 0$, $N_1 = 14.2$ and $N_2 = 27.2$ Kg/ha.

Sub-plot treatments :

5 varieties : $V_1 = CR-2002$, $V_2 = W-166$, $V_3 = BB-87$, $V_4 = W-140$ and $V_5 = T-141$.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 1.6 m. \times 5.7 m. (b) 1.2 m. \times 5.4 m. (v) 18 cm. \times 15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) yield of grain. (iv) (a) 49651 only. (v) to (vii) Nil.

5. RESULTS :

(i) 4462 Kg/ha. (ii) (a) 1042 Kg/ha. (b) 668 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₀	4095	4764	3981	4419	4424	4337
N ₁	4504	5171	4383	4756	4822	4727
N ₂	3445	4852	4906	4197	4210	4322
Mean	4015	4929	4423	4457	4485	4462

Crop :- Paddy (Kharif).

Ref :- Or. 65(44).

Site :- Rice. Res. Stn., Berhampur.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Mung-Fallow. (b) Fallow. (c) Nil. (ii) Loamy soil. (iii) 29.7.65/26.8.65. (iv) (a) 5 summer ploughings, 2 ploughings before transplanting and puddling. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. × 15 cm. (e) 2. (v) *Dhaincha* (G.M.) at 2242 Kg/ha. + 15.3 Kg/ha. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) 2 hand weedings and weeding by Japanese weeder. (ix) 75.9 cm. (x) 1 and 11.12.65.

2. TREATMENTS :

Main-plot treatments :

3 levels of N as C/A/N : N₀=0, N₁=22.4 and N₂=33.6 Kg/ha.

Sub-plot treatments :

7 varieties : V₁=CR-906, V₂=CR-907. V₃=CR-204, V₄=FH-1147, V₅=FH 42-12, V₆=T-442 and V₇=MTU-9.

N applied $\frac{1}{2}$ at planting, $\frac{1}{2}$ broadcast just before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 7 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 1.7 m. × 5.4 m. (b) 1.4 m. × 5.1 m. (v) 15 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height, tillers count, panicle length and yield of grain. (iv) (a) 1965 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 4397 Kg/ha. (ii) (a) 392 Kg/ha. (b) 683 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	Mean
N ₀	4227	5000	4306	3569	4154	3892	4786	4276
N ₁	3573	3907	4539	4161	4513	4662	4640	4285
N ₂	4815	5443	4535	4005	3892	4078	5643	4630
Mean	4205	4783	4460	3912	4186	4211	5023	4397

Crop :- Paddy (Kharif).**Ref :- Or. 65(46).****Site :- Rice. Res. Stn., Berhampur.****Type :- 'MV'.**

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Mung-Fallow. (b) Fallow. (c) Nil. (ii) Loamy soil. (iii) 29.7.65/28.8.65. (iv) (a) 5 summer ploughings, 2 ploughings before transplanting and puddling. (b) Transplanting. (c) 37 Kg/ha. (d) 20 cm. \times 20 cm. (e) 2. (v) *Dhaincha* (G.M.) at 2242 Kg/ha. \pm 16.4 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) 2 hand weeding and weeding by Japanese weeder. (ix) 76 cm. (x) 26.12.65.

2. TREATMENTS :**Main-plot treatments :**3 levels of N as C/A/N : $N_0=0$, $N_1=92.0$ and $N_2=101.3$ Kg/ha.**Sub-plot treatments :**8 varieties : $V_1=CR-1004$, $V_2=BAM-9$, $V_3=CR-2001$, $V_4=I-90$, $V_5=CR-1014$, $V_6=FH-60-9$, $V_7=H_1$ and $V_8=FH-60-124$.N as C/A/N applied $\frac{1}{2}$ at planting and remaining $\frac{1}{2}$ just before planting (broadcast).**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots, replication, 8 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 1.5 m. \times 5.4 m. (b) 1.2 m. \times 5.1 m. (v) 15 cm. \times 15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height, tiller count and panicle length and grain yield. (iv) (a) 1965 only. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 4231 Kg/ha. (ii) (a) 1010 Kg/ha. (b) 714 Kg/ha. (iii) Main effect of V alone is highly 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	Mean
N_0	3423	5008	3944	3870	3799	4556	3913	5039	4.94
N_1	3927	4063	4017	3935	3960	5022	577	4666	4420
N_2	4011	3200	4053	3542	4166	3788	4904	4977	4080
Mean	3787	4090	4005	3782	3975	4455	4863	4894	4231

C.D. for V marginal means = 680.0 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 63(17), 64(10).****Site :- Agri. Res. Stn., Bhubaneswar.****Type :- 'MV'.**

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

1. BASAL CONDITIONS :

(i) (a) Paddy-Fallow-Paddy. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 31.7.1963/1.9.1963 ; N.A./29.7.1964. (iv) (a) 2 to 3 ploughings and 3 puddlings. (b) Transplanting. (c) 25 Kg/ha. for 63(17), 12 Kg/ha. for 64(10). (d) 23 cm. \times 15 cm. (e) 2. (v) Nil. (vi) As per treatments. (vii) Un-irrigated. (viii) 1 hand weeding and weeding by Japanese weeder. (ix) 103 cm, 79 cm. (x) 31.12.1963, 1st week of Dec. 1964.

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 P_2O_5 as Super : $P_0=0$, $P_1=22.4$ and $P_2=44.8$ Kg/ha.

Sub-plot treatments :

5 varieties : $V_1=BAM-11$, $V_2=T-141$, $V_3=J-5$, $V_4=BBS-871$ and $V_5=BBS-873$. P_2O_5 broadcast at planting. N broadcast $\frac{1}{2}$ at planting and $\frac{1}{2}$ one month after. V_1 , V_2 and V_3 are standard while V_4 and V_5 are mutants.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication, 5 sub-plots/main plots. (b) N.A. (iii) 2. (iv) (a) 6.1 m. \times 5.0 m. (b) 5.8 m. \times 4.6 m. (v) 23 cm. \times 15 cm.

4. GENERAL :

(i) Normal. (ii) Nil for 63(17). Mild attack of paddy gallfly for 64(10). (iii) Grain yield. (iv) (a) 1963 contd. (modified in 1965). (b) Yes. (v) N.A. (vi) Nil. (vii) Sub-plot error variances are homogeneous.

5. RESULTS :

(i) 2484 Kg/ha. (ii) (a) 376.3 Kg/ha. (24 d.f. made up of pooled error and various components of Treatments \times years interaction). (b) 554.4 Kg/ha. (20 d.f. made of various components of Treatments \times years interaction). (iii) Main effect of N is highly significant and that of P is significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	P_0	P_1	P_2	Mean
N_0	2494	2216	2228	2314	2304	2202	2374	2358	2311
N_1	2512	2663	2474	2458	2644	2482	2559	2610	2550
N_2	2680	2490	2474	2554	2761	2442	2795	2538	2592
Mean	2562	2456	2392	2442	2570	2375	2576	2502	2484
P_0	2434	2412	2260	2389	2382				
P_1	2630	2531	2630	2600	2488				
P_2	2622	2426	2286	2337	2839				

C.D. for N or P marginal means=141.8 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 65(23).

Site :- Agri. Res. Stn., Bhubaneswar.

Type :- 'MV'.

Object :- To study the effect of fertilizers on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam of laterite origin. (iii) 29.7.65/3.9.65. (iv) (a) 3 to 4 summer ploughing, 2 puddlings and laddering. (b) Transplanting. (c) 37 Kg/ha. (d) 20 cm. \times 15 cm. (e) 2:3. (v) G.M. with *Dhaincha*. (vi) As per treatments. (vii) Irrigated. (viii) Two hand weedings and one weeding by Japanese weeder. (ix) 62.4 cm. (x) 14.12.65.

2. TREATMENTS :

Main-plot treatments :

3 levels of fertilizers : $L_1=30$ Kg/ha. of N+20 Kg/ha. of P, $L_2=60$ Kg/ha. of N+40 Kg/ha. of P and $L_3=90$ Kg/ha. of N+60 Kg/ha. of P.

Sub-plot treatments :

6 varieties : $V_1=PN-19$, $V_2=CR 2002$, $V_3=W 166$, $V_4=BBS 873$, $V_5=W 140$ and $V_6=T 141$.

P as basal as Super. N applied in 3 splits; $\frac{1}{2}$ at puddlings, $\frac{1}{4}$ one month after and $\frac{1}{4}$ th just before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 6.4 m. \times 0.6 m. (b) 6.0 m. \times 0.6 m. (v) 20 cm. on each side along length. (vi) Yes.

4. GENERAL :

(i) Good, partial lodging. (ii) Nil. (iii) Height, tillers count panicle length and grain yield. (iv) (a) 1965-1966. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2414 Kglha. (ii) (a) 476 Kg/ha. (b) 409 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	Mean
L_1	2037	2185	1556	2926	2889	2593	2364
L_2	2593	2593	1852	2593	2918	2704	2542
L_3	2222	2481	1741	2296	2867	2407	2336
Mean	2284	2420	1716	2605	2891	2568	2414

C.D. for V marginal means=394.1 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 65(24).

Site :- Agri. Res. Stn., Bhubaneswar.

Type :- 'MV'.

Object : To study the effect of fertilizers on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 29.7.65 ; 3.9.65. (iv) (a) 2 to 4 summer ploughings and 2 puddlings and laddering. (b) Transplanting. (c) 37 Kg ha. (d) 15 \times 15 cm. (e) 2-3. (v) G.M. with *Dhaincha* (dose N.A.). (vi) As per treatment. (vii) Irrigated. (viii) 2 hand weedings, weeding by Japanese weeder once. (ix) 61.7 cm. (x) 25.11.65.

2. TREATMENTS :

Main-plot treatments :

3 fertilizers : $F_1=30$ Kg/ha. of N+20 Kg/ha. of P., $F_2=60$ Kg/ha. of N+40 Kg/ha. of P, $F_3=90$ Kg/ha. of N+62 Kg/ha. of P.

Sub-plot treatments :

8 varieties : $V_1=CR906$, $V_2=CR907$, $V_3=CR203$, $V_4=CR204$, $V_5=FH1147$, $V_6=FH42-12$, $V_7=T442$ and $V_8=MTU 9$.

N as C/A/N in three splits, $\frac{1}{2}$ at puddling, $\frac{1}{4}$ one month after, $\frac{1}{4}$ just before flowering. P applied as basal as Super.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 8 sub-plots/main-plot. (b) N.A. (iii) 3 (iv) (a) 0.6 m. \times 6.2 m. (b) 0.6 m. \times 5.9 m. (v) 15 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Good ; partially lodged. (ii) Nil. (iii) yield of grain. (iv) (a) 1965-66. (b) No. (c) Nil.(v) to (vii) Nil.

5. RESULTS :

(i) 1719 Kg/ha. (ii) (a) 402 Kg/ha. (b) 590 Kg/ha. (iii) Main effect of V alone is highly 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	Mean
F ₁	2137	3086	1187	864	1491	1709	1823	1424	1715
F ₂	2631	2583	1159	1016	1519	1662	1538	1519	1703
F ₃	2384	2659	997	874	2184	1472	1700	1633	1738
Mean	2384	2776	1114	918	1731	1614	1687	1525	1719

C.D. for V marginal means = 562.5 Kg/ha.

Crop :- Paddy (Kharif).

Site :- Agri. Res. Stn., Bhubaneswar.

Ref :- Or. 60(31)

Type :- 'MV'.

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 6.6.60 ; 5 to 7.7.60. (iv) (a) 3 ploughings and one laddering. (b) Line planting. (c) 49 Kg/ha. (d) 23 cm. × 23 cm. (e) 3. (v) Nil, (vi) As per treatments. (vii) Irrigated. (viii) Weeding by Japanese weeder. (ix) 108 cm. (x) 6.11.60 ; 24.11.60 ; and 51.2.60.

2. TREATMENTS :

Main-plot treatments :

5 varieties : V₁=T 58-904, V₂=T-1145, V₃=T-812, V₄=T 58-1034 and V₅=T 58-860.

Sub-plot treatments :

All combinations of (1) and (2)

(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.

N applied in two doses, first at puddling and second on 6.8.1960 and P₂O₅ applied at puddling.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A.. (iii) 2. (iv) (a) 8.8 m. × 4.6m. (b) 8.4 m. × 4.1 m. (v) 23 cm × 23 cm. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Mealy bugs and stemborer attack in V₄ plot in Rep. I. The symptoms of iron toxicity were seen on the following plots and the intensity of attack noted in V₃N₂P₁, V₄, N₁, P₁, V₄N₀P₂, V₄N₁P₂ and in V₄N₂, P₁ plots was severe and in V₄N₁P₂, V₃N₁P₂ plots was slight. (iii) yield of grain. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2039 Kg/ha. (ii) (a) 832.0 Kg/ha. (b) 139.0 Kg/ha. (iii) Main effect of P is significant. Main effect of N and interactions $N \times V$, $P \times V$ and $N \times P \times V$ are highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	P ₀	P ₁	P ₂	Mean
N ₀	2623	2019	1970	1800	2227	2118	2178	2088	2128
N ₁	2114	1769	1975	1763	2487	2043	1993	2028	2022
N ₂	2274	1482	1977	1735	2372	2016	1723	2165	1968
Mean	2337	1757	1974	1766	2362	2059	1965	2093	2039
P ₀	2307	1863	1982	1826	2320				
P ₁	2428	1433	1992	1650	2320				
P ₂	2276	1974	1949	1822	2446				

C.D. for N or P marginal means = 72.6 Kg/ha.
 C.D. for N or P means at the same level of V = 162.1 Kg/ha.
 C.D. for V means at the same level of N or P = 779.7 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 61(26).

Site :- Agri. Res. Stn., Bhubaneswar.

Type :- 'MV'.

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 6.7.61 ; 10.8.61. (iv) (a) 3 ploughings with iron hand plough and laddering. (b) Transplanting. (c) 22 Kg/ha. (d) 23 cm. x 15 cm. (e) 2. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) Hand-weeding. (ix) 127 cm. (x) 27.10.61.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N₀=0, N₁=44.8 and N₂=89.7 Kg/ha

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

Sub-plot treatments :

6 varieties : V₁=I G-73, V₂=1C-22, V₃=170-5, V₄=B-76, V₅=M-136 and V₆=PTB-0.
 P₂O₅ was given fully at planting and A/S ½ at planting and ½ after 1 month of planting.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 1. (iv) (a) 5.1 m. x 4.6 m. (b) 4.6 cm. x 4.3 m. (v) 25 cm. x 15 cm. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Biometric observations and yield of grain. (iv) (a) 1951—contd. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Since there is only one replication the Expt. has been analysed as R.B.D.

5. RESULTS :

(i) 1319 Kg/ha. (ii) 254.0 Kg/ha. (iii) Main effects of V and N are highly significant. Main effect of P and interaction $N \times P$ are significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	P ₀	P ₁	P ₂	Mean
N ₀	1453	1376	1404	597	455	969	1393	949	785	1042
N ₁	1899	1608	1453	949	997	1362	1392	1217	1525	1378
N ₂	1850	1617	1898	1221	1046	1592	1644	1593	1375	1537
Mean	1734	1534	1585	922	833	1307	1476	1253	1228	1319
P ₀	2054	1647	1559	1112	1104	1381				
P ₁	1559	1666	1520	895	600	1279				
P ₂	1589	1288	1675	759	794	1262				

C.D. for N or P marginal means =176.7 Kg/ha.
 C.D. for V marginal means =249.9 Kg/ha.
 C.D. for means in the body of N×P table=305.9 Kg/ha.

Crop :- Paddy (Kharif).

Ref. :- Or. 63(21).

Site :- Agri. Res. Stn., Bhubaneswar.

Type :- 'MV'.

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

1. BASAL CONDITIONS :

(i) (a) Paddy-Fallow. (b) Fallow. (c) Nitrogenous manuring, dose ; N.A. (ii) Loamy sand. (iii) 26.6.63 ; 13 and 14.8.63. (iv) (a) 2 to 3 ploughings and 2 puddings. (b) Transplanting. (c) 25 Kg/ha. (d) 23 cm. × 15 cm. (e) 2. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) One hand-weeding. (ix) 135 cm. (x) 20.12.63.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N₀=0, N₁=44.8 and N₂=89.7 Kg/ha.

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

Sub-plot treatments :

6 varieties : V₁=BAM-6, V₂=T1242, V₃=FH-850, V₄=BAM-3, V₅=FH-849 and V₆=FH-875.

P₂O₅ broadcast at planting. N broadcast $\frac{1}{2}$ at planting and $\frac{1}{2}$ one month after planting.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 7.3 m. × 4.1 m. (b) 6.9 m. × 3.8 m. (v) 23 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil ; proteletic spraying of Endrex at 28 gm in 27 litres of water. (iii) Yield of grain. (iv) (a) 1962—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2299 Kg/ha. (ii) (a) 261.0 Kg/ha. (b) 520.0 Kg/ha. (iii) Main effect of N and interaction N×P is significant and main effect of V is highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	P ₀	P ₁	P ₂	Mean
N ₀	1958	2402	2736	2277	2564	2191	2307	2626	2132	2355
N ₁	1684	2006	2385	2312	2336	2339	2120	2201	2210	2177
N ₂	1990	2150	2527	2309	2374	2846	2429	2339	2331	2366
Mean	1877	2186	2549	2299	2425	2459	2285	2389	2224	2299
P ₀	1827	2328	2519	2306	2338	2393				
P ₁	1853	2083	2729	2392	2460	2814				
P ₂	1952	2147	2400	2201	2477	2169				

C.D. for N marginal means = 141.4 Kg/ha.
 C.D. for V marginal means = 349.3 Kg/ha.
 C.D. of body of N × P table = 244.9 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 64(11).

Site :- Agri. Res. Stn., Bhubaneswar.

Type :- 'MV'.

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

1. BASAL CONDITIONS :

(i) (a) Paddy-Fallow-Paddy. (b) Fallow. (c) As per treatments. (ii) Clays loam. (iii) 26.6.64/23.8.64. (iv) (a) 2 summer ploughings and 3 puddlings. (b) Transplanting. (c) 17 to 25 Kg/ha. (d) 23 cm. × 15 cm. (e) 2. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding by Japanese weeder and one hand weeding. (ix) 138 cm. (x) Last week of Dec., 64.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N₀=0, N₁=44.8 and N₂=89.7 Kg/ha.

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

Sub-plot treatments :

6 varieties : V₁=FH-875, V₂=FH-850, V₃=FH-849, V₄=BAM-3, V₅=BAM-9 and V₆=T-1242. P₂O₅ broadcast all at planting, N broadcast ½ at planting and ½ one month after planting.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (i-i) 2. (iv) (a) 7.3 m. × 4.1 m. (b) 6.9 m. × 3.8 m. (v) 23 cm. × 15 cm, (vi) Yes.

4. GENERAL :

(i) Good ; lodged, dates N.A. (ii) Mild attack of stem borer. (iii) Height, tiller count, panicle-length and yield of grain and straw. (iv) (a) 1962-contd. (modified in 1964). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2412 Kg/ha. (ii) (a) 906.0 Kg/ha. (b) 461.0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	P ₀	P ₁	P ₂	Mean
N ₀	2412	2292	2718	2309	2240	1926	2107	2222	2620	2316
N ₁	2403	2629	2388	2768	2412	2630	2420	2609	2586	2538
N ₂	2442	2542	2469	2605	2119	2116	2308	2415	2423	2382
Mean	2419	2488	2525	2561	2257	2224	2279	2415	2543	2412
P ₀	2208	2340	2173	2298	2227	2428				
P ₁	2329	2738	2683	2678	2266	1797				
P ₂	2720	2386	2720	2706	2278	2446				

Crop :- Paddy (Kharif).

Ref :- Or. 65(28).

Site :- Agri. Res. Stn., Bhubaneswar.

Type :- 'MV'.

Object :—To find out the response of medium duration Paddy varieties to manuring.

1. BASAL CONDITIONS :

(i) Nil. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 25.7.65/19.8.65. (iv) (a) 3 ploughings and levelling. (b) Transplanting, (c) 22.4 Kg/ha. (d) 15 cm. × 23 cm. (e) 2. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) Two hand weedings. (ix) 73.0 cm. (x) 7.12.65.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N₀=0, N₁=50.4 and N₂=100.9 Kg/ha.

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

Sub-plot treatments :

5 varieties : V₁=T-141, V₂=BAM-11, V₃=T-5, V₄=BBS-871 and V₅=BBS-873.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 6.1 m. × 5.0 m. (b) 5.8 m. × 4.6 m. (v) 15 cm. × 23 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height, tiller count panicle-length and yield of grain. (iv) (a) 1961-contd. (modified every year). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2201 Kg/ha. (ii) (a) 559 Kg/ha. (b) 578 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	P ₀	P ₁	P ₂	Mean
N ₀	2335	2096	1611	1901	2254	2092	2024	2002	2039
N ₁	2581	1851	2247	2021	2392	2096	2221	2338	2218
N ₂	2046	2581	2228	2468	2411	2032	2523	2485	2347
Mean	2321	2176	2029	2130	2352	2073	2256	2275	2201
P ₀	2096	1920	1788	2335	2228				
P ₁	2424	2040	2279	2077	2461				
P ₂	2442	2568	2021	1977	2367				

Crop :- Paddy (Rabi).
Site :- Agri. Res. Stn., Bhubaneswar.

Ref :- Or. 64(30).
Type :- 'MV'.

Object :- To study the effect of different methods of application of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) Clay loam. (iii) 6.1.65. (iv) (a) 3 puddlings. (b) Broadcast. (c) 49 Kg/ha. (d) and (e) N.A. (v) 37 C.L./ha. of F.Y.M. and 148 Kg/ha. of Super. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings. (ix) 11.2 cm. (x) 1st week and 3rd week of April, '65.

2. TREATMENTS :

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

(1) 3 varieties : $V_1 = \text{M.T.U. 15}$, $V_2 = \text{N-136}$ and $V_3 = \text{PTB-10}$.

(2) 3 levels of N as Urea : $N_1 = 22.4$, $N_2 = 44.8$ and $N_3 = 67.2$ Kg/ha.

(3) 3 methods of application of N : $M_1 = \text{All N applied to the soil}$, $M_2 = \text{All N sprayed}$ and $M_3 = \frac{1}{2}$ N applied to the soil + $\frac{1}{2}$ N sprayed.

Extra treatments : 3 varieties without manure : $E_1 = \text{M.T.U.-15}$, $E_2 = \text{N-136}$ and $E_3 = \text{PTB-10}$.

3. DESIGN :

(i) $3^3 + 3$ confd. (ii) (a) 12 plots/block ; 3 blocks, replication. (b) N.A. (iii) 2. (iv) (a) 3.4 m. \times 5.7 m. (b) 3.1 m. \times 6.4 m. (v) 15 cm. \times 15 cm. (vi) Yes.

4. GENERAL :

(i) Not good. (ii) Mild attack of stem borer. (iii) Height, tiller count, panicle length and yield of grain and straw. (iv) (a) 1964-contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2183 Kg/ha. (ii) 521.0 Kg/ha. (iii) Main effects of V, E and interaction E vs. others are highly significant. The interaction $N \times V$ is significant. (iv) Av. yield of grain in Kg/ha.

$E_1 = 2016$, $E_2 = 1153$ and $E_3 = 2153$ Kg/ha.

	N_1	N_2	N_3	V_1	V_2	V_3	Mean
M_1	2802	1982	2093	2315	1896	2665	2292
M_2	2563	2187	2324	2614	1384	3075	2358
M_3	2204	2349	2375	2511	1529	2887	2309
Mean	2523	2173	2264	2480	1603	2876	2320
V_1	2716	2289	2435				
V_2	1452	1871	1486				
V_3	3400	2358	2870				

C.D. of V marginal mean = 352.2 Kg/ha.
 C.D. of E means = 610.0 Kg/ha.
 C.D. of 'E vs. others' = 287.4 Kg/ha.
 C.D. for means in the body of $V \times N$ table = 610.0 Kg/ha.

Crop :- Paddy (Kharif).
Site :- Agri. Res. Stn., Bhubaneswar.

Ref :- Or. 61(19).
Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Basal dose of 12.3 C.L./ha. of F.Y.M. and 44.8 Kg/ha. of N as A/S. (ii) Sandy loam. (iii) 23.6.61/27.7.61. (iv) (a) Ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 23 cm. × 15 cm. (e) 1 to 2. (v) 12.3 C.L./ha. of F.Y.M. + G.M. to produce 5604 Kg/ha. of green matter + 33.6 Kg/ha. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

3 levels of N as A/S : N₁=44.8, N₂=67.2 and N₃=89.7 Kg/ha.

Sub-plot treatments

3 varieties : V₁=MUT-871, V₂=MUT-873 and V₃=T-141.

N broadcast $\frac{1}{2}$ at final puddling and $\frac{1}{2}$ one month after transplanting.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 5.0 m. × 3.8 m. (b) 4.6 m. × 3.5 m. (v) 23 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Lodging on 18, 20.9.61. (ii) N.A. (iii) Flowering dates, height and earbearing tillers count, 1961 only grain and straw yield. (iv) (a) 1961 only. (b) to (e) No. (v) Nil. (vi) Heavy rain. (vii) Nil.

5. RESULTS :

(i) 2889 Kg/ha. (ii) (a) 781.0 Kg/ha. (b) 739.0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	N ₁	N ₂	N ₃	Mean
V ₁	1500	1778	1982	1753
V ₂	4359	4621	4258	4413
V ₃	2768	2554	2182	2501
Mean	2876	2984	2807	2889

C.D. for V marginal means=758.9 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 65(22).

Site :- Agri. Res. Stn., Bhubaneswar.

Type :- 'MV'.

Object :—To study the effect of different levels of fertilizers on different varieties of paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow; (c) Nil. (ii) Sandy loam. (iii) 29.7.65/3.9.65. (iv) (a) 3 to 4 summer ploughings 2 laddering. (b) Transplanting. (c) 37 Kg/ha. (d) 20 cm. × 20 cm. (e) 2 to 3. (iv) G.M. *Dhaincea* dose N.A. (vi) As per treatments. (vii) Irrigated. (viii) 2 hand weedings and weeding by Japanese weeder. (ix) 62.4 cm. (x) 25.12.65.

2. TREATMENTS :

Main-plot treatments :

3 fertilizer treatments : F₁=30 Kg/ha. of N+20 Kg/ha. of P, F₂=60 Kg/ha. of N+30 Kg/ha. of P and F₃=90 Kg/ha. of N+60 Kg/ha. of P.

Sub-plot treatments :

8 varieties : V₁=H₄, V₂=CR 1014, V₃=CR 2001, V₄=CR 1004, V₅=FH 60-124, V₆=FH 60-9, V₇=T 90 and V₈=BAM 9.

N as C/A/N applied in 3 splits : $\frac{1}{2}$ at puddling, $\frac{1}{4}$ after one month and $\frac{1}{4}$ just before flowering. P applied as basal as Super.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 8 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 6.4 m. \times 0.8 m. (b) 6.0 m. \times 0.8 m. (v) 20 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Partially lodged. (ii) Nil. (iii) Height, tillers count panicle length and yield of grain. (iv) (a) 1965-1966. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1648 Kg/ha. (ii) (a) 279 Kg/ha. (b) 425 Kg/ha. (iii) Main effects of F and V are highly 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	Mean
F ₁	2430	2430	681	2028	1785	1889	2326	1701	1909
F ₂	2639	1840	521	1910	1805	1215	2108	1146	1648
F ₃	2187	2292	257	1646	1354	569	1944	854	1388
Mean	2419	2187	486	1861	1648	1224	2126	1234	1648

C.D. for F marginal means=223.5 Kg/ha.

C.D. for V marginal means=404.4 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 61(13).

Site :- Agri. Res. Stn. Bhubaneswar.

Type :- 'MV'.

Object :- To study the effect of different level of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Basal dose of 12.3 C.L./ha. of F.Y.M. and 44.8 Kg/ha. of N as A/S. (ii) Sandy loam. (iii) 11.6.61/14.7.61. (iv) (a) ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. \times 15 cm. (e) 1. (v) 12.3 C.L./ha. of F.Y.M. + G.M. to produce 5604 Kg/ha. of green matter + 33.6 Kg/ha. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 levels of N : N₁=22.4 and N₂=67.8 Kg/ha.

Sub-plot treatments :

14 varieties : V₁=ADT-15, V₂=Mo₂, V₃=Sathika, V₄=O.S. 122, V₅=FH 42-12, V₆=FH-90, V₇=FH 61-53, V₈=FH 70-42, V₉=FH 60-99, V₁₀=FH 60-100, V₁₁=FH 161-9, V₁₂=B 76 (std), V₁₃=PTB 10 (std) and V₁₄=J 10 (std). (v) Yes.

N broadcast $\frac{1}{2}$ at final puddling and $\frac{1}{2}$ one month after transplanting.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 14 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 6.6 m. \times 1.8 m, (b) 6.2 m. \times 1.8 m. (v) 15 cm. on either side along length.

4. GENERAL :

(i) Lodging from 8.10.61 to 19.9.61. (ii) N.A. (iii) Flowering dates, height and effective No. of tillers, grain and straw yield. (iv) (a) to (c) Nil. (v) (a) and (b) Nil. (vi) Heavy rains. (vii) Nil.

5. RESULTS :

(i) 1436 Kg/ha, (ii) (a) 739.0 Kg/ha. (b) 506.0 Kg/ha. (iii) Main effect of V is significant. (iv) Av yield of grain in Kg/ha.

	V ₁	V ₂ V	V ₃ V	V ₄ V	V ₅ V	V ₆ V	V ₇ V	
N ₁	1275	1535.01	1006.05	1093.55	1978.31	1428.8	1512	11
N	1074	1358.18	951.85	1078.01	2061.01	1531.51	1255	11
Mean	1174	1446.24	978.85	1086.09	2019.11	1489.01	1383	1163M

	V ₈ V	V ₉ V	V ₁₀ V	V ₁₁ V	V ₁₂ V	V ₁₃ V	V ₁₄ V	Mean
N ₁	1667.05	2034.98	1727.81	1228.55	1841.05	1313.55	1830.55	1538
N ₂	1108.55	1389.24	1086.05	1046.55	1674.15	978.15	2087.55	1335
Mean	1392.55	1736.80	1408.01	1137.55	1757.85	1146.55	1938.55	1436.55

C.D. for V marginal means = 586.8 Kg/ha.
 C.D. for N marginal means = 107.8 Kg/ha.
 C.D. for N x V interaction = 107.8 Kg/ha.

Crop: Paddy (Kharif).

(Ref: Cr-61(14)A)

Site: Agri. Res. Stn., Bhubaneswar.

Experiment: M.Y.

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

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Paddy. (c) Basal dose of 12.3 C.L./ha. of F.Y.M. and 44.8 Kg/ha. of N as A/S. (ii) Sandy loam. (iii) 12.6:61:15:7.61. (iv) (a) Ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 29 cm. x 15 cm. (e) 1 to 2. (v) 12.3 C.L./ha. of F.Y.M. + G.M. to produce 3604 Kg/ha. of green matter + 33.6 Kg/ha. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding (ix) and (x) N.A.

2. TREATMENTS:

Main-plot treatments:

2 levels of N: N₁=22.4 and N₂=67.2 Kg/ha.

Sub-plot treatments:

12 varieties: V₁=T 1024, V₂=RDR-7, V₃=HRJ 104, V₄=FH-170-45, V₅=FH 173-22, V₆=FH 1150, V₇=FH 60-11, V₈=FH 60-11, V₉=FH 1194, V₁₀=FH 1161-71, V₁₁=FH 60-17 and V₁₂=T 442 (std).
 N broadcast 1/2 at final puddling and 1/2 one month after transplanting.

3. GENERAL:

(i) Split-plot. (ii) (a) 2 main-plots/replication, 12 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 6.4 m. x 1.1 m. (b) 6.1 m. x 1.1 m. (v) 15 chr. on each side along length. (vi) Yes.

4. GENERAL:

(i) Lodging on 5.10.61. (ii) N.A. (iii) Flowering dates, height and earbearing tillers, count grain and straw yield. (iv) (a) 1961-62 (Treatments modified). (b) No. (c) Nil. (v) Nil. (vi) Heavy rains. (vii) Nil.

5. RESULTS:

(i) 2472 Kg/ha. (ii) (a) 431.0 Kg/ha, (b) 429.0 Kg/ha. (iii) Main effect of N is highly significant and interaction N x V is significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	
N ₁	3329	805	1866	2358	2932	3101	
N ₂	3225	1297	1689	1671	2834	3813	
Mean	3277	1051	1777	2014	2883	3457	

	V ₇	V ₈	V ₉	V ₁₀	V ₁₁	V ₁₂	Mean
N ₁	2414	2778	2975	2268	1861	2891	2466
N ₂	2327	3714	2189	2432	2071	2486	2479
Mean	2370	3246	2582	2350	1966	2688	2472

C.D. for V marginal means = 500.1 Kg/ha.
 C.D. for V means at the same level of N = 707.2 Kg/ha.
 C.D. for N means at the same level of V = 796.8 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 61(15).

Site :- Agri. Res. Stn. Bhubaneswar.

Type :- 'MV'.

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Basal dose of 12.3 C.L./ha. of F.Y.M. and 44.8 Kg/ha. of N as A/S. (ii) Sandy loam. (iii) 23.6.61/19.7.61. (iv) (a) Ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 23 cm. × 15 cm. (e) 1. (v) 12.3 C.L./ha. of F.Y.M. + G.M. to produce 5604 Kg/ha. of green matter; 33.6 Kg/ha. of P₂O₅ as Super. (vi) As per treatments, (vii) Irrigated. (viii) Weeding. (ix) 142 cm. (x) 19.12.61.

2. TREATMENTS :

Main-plot treatments :

2 levels of N : N₁=22.4 and N₂=67.2 Kg/ha.

Sub-plot treatments :

18 varieties : V₁=FH 60-2, V₂=FH 60-3, V₃=FH 60-4, V₄=FH 60-5, V₅=FH 60-6, V₆=FH 60-7, V₇=FH 60-8, V₈=FA 60-9, V₉=FH 60-22, V₁₀=FH 60-23, V₁₁=FH 60-25, V₁₂=FH 60-37, V₁₃=FH 60-67, V₁₄=FH 60-71, V₁₅=FH 60-79, V₁₆=BAM-11, V₁₇=T 141 and V₁₈=T-1145.

N broadcast $\frac{1}{2}$ at final puddling and $\frac{1}{2}$ one month after transplanting.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 18 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 5.0 m. × 1.6 m. (b) 4.6 m. × 1.5 m. (v) 23 cm. on each side lengthwise. (vi) Yes.

4. GENERAL :

(i) Lodging on 6.11.61. (ii) N.A. (iii) Flowering dates, height tiller, grain and straw yield. (iv) (a) 1961-62 (treatments modified. (b) No. (c) Nil. (v) Nil. (vi) Heavy rain. (vii) Nit.

5. RESULTS :

(i) 2505 Kg/ha. (ii) (a) 966.0 Kg/ha. (b) 555.0 Kg/ha. (iii) Main effect of V alone is highly 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	V ₉	V ₁₀
N ₁	2851	3322	2478	2177	2124	2923	1957	3215	1617	1622
N ₂	3186	3086	3497	2526	2526	3153	3210	3698	1612	2110
Mean	3018	3204	2987	2351	2325	3038	2583	3456	1617	1866

	V ₁₁	V ₁₂	V ₁₃	V ₁₄	V ₁₅	V ₁₆	V ₁₇	V ₁₈	Mean
N ₁	1617	1866	1732	1875	2239	2492	2751	1676	2252
N ₂	2071	2559	2588	3119	2363	3626	2818	1904	2759
Mean	1844	2212	2160	2497	2301	2784	1789	1790	2505

C.D. for V marginal means=640.2 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 61(16).

Site :: Agri. Res. Stn., Bhubaneswar.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Basal dose of 12.3 C.L./ha. of F.Y.M. + 44.8 Kg/ha. of N as A/S. (ii) Sandy loam. (iii) 23.6.61/21.7.61. (iv) (a) ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 23 cm. x 15 cm. (e) 1. (v) 12.3 C.L./ha. of F.Y.M. + G.M. 5604 Kg/ha. of green matter + 33.6 Kg/ha. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) 142 cm. (x) 28.12.61.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : N₁=22.4 and N₂=67.2 Kg/ha.

Sub-plot treatments :

18 varieties : V₁=FH 60-127, V₂=FH 60-80, V₃=FH 60-88, V₄=FH 60-93, V₅=FH 60-96, V₇=FH 1198, V₈=FH 60-109, V₉=FH 60-149, V₁₀=FH 60-128, V₁₁=FH 60-129, V₁₂=FH 60-123, V₁₃=FH 60-114, V₁₄=FH 60-119, V₁₅=FH 60-122, V₁₆=T-141, V₁₇=BAM 11, and V₁₈=T 1145.

N broadcast $\frac{1}{2}$ at final puddling and $\frac{1}{2}$ one month after transplanting.

3. DESIGN and 4. GENERAL :

Same as in expt. no 61(15) on page 80.

Lodging on 14.10.61 and 29.10.61

5. RESULTS :

(i) G.M.=1939 Kg/ha. (ii) (a) 425.0 Kg/ha. (b) 264.0 Kg/ha. (iii) Main effect of V alone is highly 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	V ₉	V ₁₀
N ₁	1488	1670	1282	2349	2138	1272	1449	1909	1502	2454
N ₂	1803	1837	1703	2612	2076	1380	1464	2009	1765	2425
Mean	1645	1753	1492	2480	2107	1326	1456	1959	1633	2439

	V ₁₁	V ₁₂	V ₁₃	V ₁₄	V ₁₅	V ₁₆	V ₁₇	V ₁₈	Mean
N ₁	2258	2033	2186	1435	1115	2622	2071	1689	1829
N ₂	2007	2550	2650	2024	1507	2674	2794	1613	2050
Mean	2132	2291	2418	1729	1311	2648	2432	1651	1939

C.D. for V marginal means—304.5 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 61(17).

Site :- Agri. Res. Stn., Bhubaneswar.

Type :- 'MV'.

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Basal dose of 12.3 C.L./ha. of F.Y.M. and 44.8 Kg/ha. of N as A.S. (ii) Sandy loam. (iii) N.A. (iv) (a) ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 23 cm. × 15 cm. (e) 1 to 2. (v) 12.3 C.L./ha. of F.Y.M. G.M. to produce 5604 Kg/ha. green matter + 33.6 Kg/ha. of P₂O₅ as Super. (vi) As per treatments (vii) Irrigated. (viii) Weeding. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : N₁ = 22.4 and N₂ = 67.2 Kg/ha.

Sub-plot treatments :

16 varieties : V₁ = FH—922, V₂ = FH—865, V₃ = FH—881, V₄ = FH—898, V₅ = FH—896, V₆ = FH—872, V₇ = FH—908, V₈ = FH—894, V₉ = FH—887, V₁₀ = FH—927, V₁₁ = FH—925, V₁₂ = FH—867, V₁₃ = B. bank × Luc 4, V₁₄ = T141, V₁₅ = BAM—11 and V₁₆ = T 1145.

N broadcast $\frac{1}{2}$ at final puddling and $\frac{1}{2}$ one month after transplanting.

3. DESIGN:

(i) Split-plot. (ii) (a) 2 main-plots/replicaton, 16 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 5.3 m. × 1.7 m. (b) 4.8 m. × 1.7 m. (v) 23 cm. of each side length wise. (vi) Yes.

4. GENERAL :

(i) Lodging in V₁₂ plots on 15.10.61. (ii) N.A. (iii) Flowering dates, height and tiller count, straw and grain yield. (iv) (a) 1961—62 (treatments modified). (b) No. (c) Nil. (v) Nil. (vi) Heavy rain. (vii) Nil.

5. RESULTS :

(i) 1859 Kg/ha. (ii) (a) 972.2 Kg/ha. (b) 476.0 Kg/ha. (iii) Main effect of V alone is highly 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	V ₉
N ₁	1479	2071	1624	2332	1632	1429	2050	1458	1077
N ₂	2183	1445	1516	2282	2067	2141	2216	2112	1221
Mean	1831	1758	1570	2307	1850	1785	2133	1785	1199

	V ₁₀	V ₁₁	V ₁₂	V ₁₃	V ₁₄	V ₁₅	V ₁₆	Mean
N ₁	1814	1450	1756	1495	2456	2746	1412	1768
N ₂	2195	1827	1491	1557	2498	2609	1735	1950
Mean	2005	1639	1624	1526	2477	2678	1574	1859

C.D. for V marginal mean=549.6 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 61(18).

Site :- Agri. Res. Stn., Bhubaneswar.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Basal dose of 12.3 C.L./ha. of F.Y.M. and 44.8 Kg/ha. of N as A/S. (ii) Sandy loam. (iii) 23.6.61/26.7.61. (iv) (a) Ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 23 cm. × 23 cm. (e) 1 to 2. (v) 12.3 C.L./ha. of F.Y.M.+G.M. to produce 5604 Kg/ha. of green matter+33.6 Kg/ha. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : N₁=22.4 and N₂=67.2 Kg/ha.

Sub-plot treatments :

16 varieties : V₁=FH 60-51, V₂=FH 60-52, V₃=FH 60-115, V₄=FH 60-113, V₅=FH 60-124, V₆=FH 60-130, V₇=FH-860, V₈=51-G, V₉=Sodamota, V₁₀=Dhusura, V₁₁=76-C, V₁₂=FH-901, V₁₃=FH-920, V₁₄=BAM-9, V₁₅=T-1242 and V₁₆=T-90.

N broadcast $\frac{1}{2}$ at final puddling and $\frac{1}{2}$ one month after transplanting.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication. 16 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 5.26 m. × 1.6 m. (b) 4.8 m. × 1.6 m. (v) 23 cm. on each side lengthwise. (vi) Yes.

4. GENERAL :

(i) Lodging, dates N.A. (ii) N.A. (iii) Flowering dates, height and tillers count grain and straw yield. (iv) (a) 1961-62 (treatments modified). (b) No. (c) Nil. (v) Nil. (vi) Heavy rain. (vii) Nil.

5. RESULTS :

(i) 2506 Kg/ha. (ii) (a) 1375.0 Kg/ha. (b) 302.0 Kg/ha. (iii) Main effect of V is highly significant. (iv) Interaction N × V is significant. (v) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈	V ₉
N ₁	2230	2209	2460	2603	2959	2430	1861	2547	2643
N ₂	2174	2747	2426	2515	2794	2742	1887	3107	2777
Mean	2202	2478	2483	2559	2877	2586	1874	2827	2710

	V ₁₀	V ₁₁	V ₁₂	V ₁₃	V ₁₄	V ₁₅	V ₁₆	Mean
N ₁	2465	2330	1710	2018	3211	2651	2755	2443
N ₂	2812	2200	2406	2382	2977	2959	2187	2568
Mean	2639	2265	2058	2200	3094	2805	2471	2506

C.D. for V marginal means — 348.8 Kg/ha.

C.D. for V means at the same level of N— 493.2 Kg/ha.

C.D. for N means at the same level of V— 1274.3 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 62(35).

Site :- Agri. Res. Stn., Bhubaneswar.

Type :- 'MV'.

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 22.4 C.L./ha. of F.Y.M. + 33.6 Kg/ha. of P₂O₅ as Super. (ii) Sandy loam. (iii) 19.6.62/2.8.62. (iv) (a) Ploughings both hot weatooer and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 23 cm. × 15 cm. (e) 1. *Dhaincha* at 4483 of green matter + 33.6 Kg/ha. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding, (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : 22.4 and N₂=67.2 Kg/ha.

Sub-plot treatments :

14 varieties : V₁=FH 58—83, V₂=ADR—10, V₃ Charnock, V₄=FH 60—11, V₅=T 1024, V₆=FH 42.2, V₇=FH 90, V₈=FH 60—53, V₉=T 442, V₁₀=FH 923, V₁₁=FH 928, V₁₂=FH 1198, V₁₃=FH 173—22 and V₁₄=T—1145.

N broadcast $\frac{1}{2}$ at final puddling and $\frac{1}{2}$ one month after transplanting.

3. DESIGN :

(i) Split-plot (ii) (a) 2 main-plots/replication, 14 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 6.7 m. × 1.8 m. (b) 6.6 m. × 1.4 m. (v) 23 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Fully lodged, dates N.A. (ii) N.A. (iii) Flowering dates, height, earbearing tillers count grain and straw yield. (iv) to (vii) Nil.

5. RESULTS :

(i) 1602 Kg/ha. (ii) (a) 532.0 Kg/ha. (b) 372.0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	
N ₁	1289	1202	1199	1703	941	1898	1649	
N ₂	1030	1097	1024	2047	1396	1481	1489	
Mean	1160	1150	1112	1875	1169	1690	1569	

	V ₈	V ₉	V ₁₀	V ₁₁	V ₁₂	V ₁₃	V ₁₄	Mean
N ₁	1596	1886	1903	1759	1718	2193	2352	1663
N ₂	1449	1966	1700	1738	1639	1763	1739	1540
Mean	1523	1926	1802	1749	1679	1978	3046	1602

C.D. for V marginal means=431.5 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 62(36).

Site :- Agri. Res. Stn., Bhubaneswar.

Type :- 'MV'.

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 24.7 C.L./ha. of F.Y.M. + 33.6 Kg/ha. of P₂O₅ as Super. (ii) Sandy loam. (iii) 24.6.62, 12.8.62. (iv) (a) Ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 23 cm. × 15 cm. (e) 1. (v) Dhanicha at 44.8 Kg/ha. as green matter. (vi) As per treatment. (vii) Irrigated. (viii) weeding. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments

2 levels of N as A/S : N₁=22.4 and N₂=67.2 Kg/ha.

Sub-plot treatments

9 varieties : V₁=FH - 60-114, V₂=FH—60-128, V₃=FH—60-123, V₄=FH—898, V₅=FH—60-93, V₆=FH—60-129, V₇=FH—45-5, V₈=BAM—11 (std.) and V₉=V—141 (std.).

N broadcast $\frac{1}{2}$ at final puddling and $\frac{1}{2}$ one month after transplanting.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 10.3 m. × 1.5 m. (b) 9.8 m. × 1.2 m. (v) 23 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) No lodging. (ii) N.A. (iii) Dates of flowering, height, earbearing tillers count, panicle length and yield (iv) 1961-62 (treatments modified). (v) to (vii) Nil.

5. RESULTS :

(i) 2161 Kg/ha. (ii) (a) 536.0 Kg/ha. (b) 217.0 Kg/ha. (iii) Main effect of V alone is highly significant. of grain (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈	V ₉	Mean
N ₁	2318	2068	2186	2182	2639	2222	1236	2151	2550	2172
N ₂	2215	2172	2125	1851	2500	2313	1302	2482	2385	2149
Mean	2267	2120	2156	2017	2570	2268	1269	2317	2468	2161

C.D. for V marginal means=255.3 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 62(37).****Site :- Agri. Res. Stn., Bhubaneswar.****Type :- 'MV'.**

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 24.7 C.L./ha. of F.Y.M.- 33.6 Kg/ha. of P_2O_5 as Super (ii) Sandy loam. (iii) 19.6.62, 3.8.62. (iv) (a) Ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha (d) 23 cm. \times 15 cm. (e) 1 to 2. (v) 44.8 Kg/ha. of Dhaincha + 33.6 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) and (x) N.A.

2. TREATMENTS :**Main-plot treatments**2 levels of N as A/S : $N_1=22.4$ and $N_2=67.2$ Kg/ha.**Sub-plot treatments**

12 varieties : $V_1=HR-113$, $V_2=FH-1154$, $V_3=FH-911$, $V_4=PTB-13$, $V_5=FH-916$, $V_6=T-1145$ (std.) $V_7=FH-1190$, $V_8=FH-60-173$, $V_9=M.O.1$, $V_{10}=T-3$, $V_{11}=BJ-110$ and $V_{12}=T-442$ (std.).

N broadcast $\frac{1}{2}$ at final puddling and $\frac{1}{2}$ one month after transplanting.**3. DESIGN :**

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 12 sub-plots/main-plot. (b) N.A. (ii) 3. (iv) (a) 6.9 m. \times 1.6 m. (b) 6.6 m. \times 1.1 m. (v) 23 cm. \times 15 cm. (vi) Yes.

4. GENERAL :

(i) No lodging. (ii) N.A. (iii) Flowering dates, height, earbearing, tillers count, earhead length and yield of grain. (iv) 1961-61 (treatments modified). (v) to (vii) Nil.

5. RESULTS :

(i) 2080 Kg/ha. (ii) (a) 252.0 Kg/ha. (b) 328.0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	
N_1	2057	2347	2007	1412	2371	2412	
N_2	2084	2381	2121	2368	2456	2597	
Mean	2071	2364	2064	1890	2414	2505	
	V_7	V_8	V_9	V_{10}	V_{11}	V_{12}	Mean
N_1	2444	2403	1440	1585	2320	1539	2028
N_2	2202	2170	1986	1244	2449	1517	2131
Mean	2323	2287	1713	1415	2385	1528	2080

C.D. for V marginal means=382.0 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 62(38).****Site :- Agri. Res. Stn., Bhubaneswar.****Type :- 'MV'.**

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 24.7 C.L./ha. of F.Y.M.+33.6 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 25.6.62, 14.8.62. (iv) (a) Ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 23 cm. \times 15 cm. (e) 1 to 2. (v) 44.8 Kg/ha. of green matter from Dhanicha+33.6 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments

2 levels of N as A/S : $N_1=22.4$ and $N_2=67.2$ Kg/ha.

Sub-plot treatments

13 varieties : $V_1=$ FH—1195, $V_2=$ GS—378, $V_3=$ FH—1183, $V_4=$ FH—1192, $V_5=$ T—1850, $V_6=$ AC—2705, $V_7=$ BAM—11 (std.) $V_8=$ T—141 (std.) $V_9=$ FH 60—71, $V_{10}=$ FH 60—6, $V_{11}=$ FH—1179, $V_{12}=$ FH 60—157 and $V_{13}=$ FH 63—108.

N broadcast $\frac{1}{2}$ at final puddling and $\frac{1}{2}$ one month after transplanting.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 13 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 10.5 m. \times 1.1 m. (b) 10.1 m. \times 0.8 m. (v) 23 cm. \times 15 cm. (vi) Yas.

4. GENERAL :

(i) No lodging. (ii) N.A. (iii) Dates of flowering, height, earbearing tillers count, earhead height and grain and straw yield, (iv) 1961-62 (treatments modified). (v) to (vii) Nil.

5. RESULTS :

(i) 2137 Kg/ha. (ii) (a) 1151.0 Kg/ha. (b) 164.0 Kg/ha. (iii) Main effect of V is highly significant and interaction $V \times N$ is significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7
N_1	1306	1847	1836	1927	2666	2465	2068
N_2	1308	1818	2298	2440	2732	2798	2627
Mean	1307	1832	2067	2183	2699	2631	2346

	V_8	V_9	V_{10}	V_{11}	V_{12}	V_{13}	Mean
N_1	2166	1787	2004	1764	1713	1881	1956
N_2	2530	2394	2481	2322	2054	2329	2318
Mean	2348	2090	2242	2043	1883	2105	2137

C.D. for V marginal means =190.6 Kg/ha.

C.D. for V means at the the same level of $N=269.5$ Kg/ha.

C.D. for N means at the same level of V =1120.0 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 61(5).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'MV'.

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Basal dose of 12.3 C.L./ha. of F.Y.M.+44.8 Kg/ha. of N as A/S. (ii) Sandy loam. (iii) 11.6.61/8.7.61. (iv) (a) Ploughings both hot weather and seasonal, (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. \times 15 cm. (e) 1 to 2. (v) 12.3 C.L./ha. of F.Y.M.+G.M. from 5604 Kg/ha. of Green matter. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) 144 cm. (x) Sept. and Oct. 61.

2. TREATMENTS :

Main-plot treatments :

3 levels of N as A/S : $N_1=22.4$, $N_2=44.8$, and $N_3=67.2$ Kg/ha.

Sub-plot treatments :

7 varieties : $V_1=ADR-36$, $V_2=GS-362$, $V_3=Co. 21$, $V_4=PH 42-22$, $V_5=58-83$, $V_6=1376$ and $V_7=J-10$.

N broadcast $\frac{1}{2}$ at final puddling and $\frac{1}{2}$ one month after transplanting.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 7 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 8.4 m. \times 2.0 m. (b) 8.1 m. \times 1.7 m. (v) 15 cm. \times 15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Ear. bearing, tillers count yield of grain and straw. (iv) (a) to (c) Nil. (v) Nil. (vi) Heavy rain. (vii) In Rep. I plots, $N_2 V_3$, $N_2 V_4$, and $N_2 V_7$; Rep. II $N_2 V_3$, $N_2 V_5$, $N_3 V_6$ and in Rep. III plots. $N_3 V_2$ were damaged.

5. RESULTS :

(i) 2071 Kg/ha. (ii) (a) 877.0 Kg/ha. (b) 537.0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7	Mean
N_1	2160	2087	2000	2747	2245	1985	2186	2201
N_2	2099	2272	1367	2167	1927	1796	1876	1929
N_3	2681	2192	1761	2109	1881	1543	2405	2082
Mean	2313	2184	1709	2341	2018	1775	2156	2071

Crop :- Paddy (Kharif).

Ref :- Or. 61(6).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'MV'.

Object :--To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Basal dose of 12.3 C.L./ha. of F.M.Y. = 44.8 Kg/ha. of N as A/S. (ii) Sandy loamy. (iii) 16.6/19.7/61. (iv) (a) 1 ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. \times 15 cm. (e) 1. (v) 123 C.L./ha. F.Y.M. = G.M. from 5604 Kg/ha. of green matter. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) and N.A.

2. TREATMENTS :

Main-plot treatments :

3 levels of N as A/S : $N_1=22.4$, $N_2=44.8$ and $N_3=67.2$ Kg/ha.

Sub-plot treatments :

7 varieties : $V_1=PLA-1$, $V_2=Marich beti$, $V_3=AC 2150$, $V_4=PH196-22$, $V_5=PH 7-40$, $V_6=B76$ (Std.) and $V_7=J-10$ (Std.).

$\frac{1}{2}$ N broadcast at final puddling and $\frac{1}{2}$ one month after transplanting

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 7 sub-plots main-plot. (b) N.A. (iii) 3. (iv) (a) 9.1 m. \times 1.4 m. (b) 8.8 m. \times 1.1 m. (v) 15 cm. \times 15 cm. (vi) Yes.

4. GENERAL :

(i) Lodging dates are N.A. (ii) N.A. (iii) Dates of flowering height and effective no. of tillers ear bearing tillers grain and straw yield. (iv) (a) to (c) No. (v) Nil. (vi) Heavy rain. (vii) Crop was damaged by birds.

5. RESULTS :

(i) 2422 Kg/ha. (ii) (a) 381.0 Kg/ha. (b) 718.0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	Mean
N ₁	2109	1832	2671	2589	3017	1559	2952	2390
N ₂	2462	2425	1989	3150	3095	1614	3080	2545
N ₃	2218	2998	2663	2068	1410	2261	2708	2332
Mean	2263	2418	2441	2602	2507	1811	2913	2422

Crop :- Paddy. (Kharif).

Ref :- Or. 61(8).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'MV'.

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Basal dose of 12.3 C.L./ha. of F.Y.M. + 44.8 Kg/ha. of N as A/S. (ii) Sandy loam. (iii) 12.6.61. 11.7.61. (iv) (a) Ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 23 cm. × 15 cm. (e) 1. (v) 12.3 C.L./ha. of F.Y.M. + G.M. crop to produce 5604 Kg/ha. of green matter + 33.6 Kg/ha. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) 144 cm. (x) 4.11.61.

2. TREATMENTS :

Main-plot treatments :

3 levels of N as A/S : N₁=22.4, N₂=44.8 and N₃=67.2 Kg/ha.

Sub-plot treatments :

7 varieties : V₁=A.R.D—2, V₂=Charnuck, V₃=FH—1160, V₄=FH—1147, V₅=FH 45—5, V₆=SP—1 and V₇=T—442 (std.)

N broadcast $\frac{1}{2}$ at final puddling and $\frac{1}{2}$ one month after transplanting.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 7 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 8.8 m. × 1.1 m. (b) 8.5 m × 1.1 m. (v) 15 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Lodging on 5.10.61. (ii) N.A. (iii) Flowering dates, height and ear-bearing, tillers count, grain and straw yield. (iv) (a) to (c) No. (v) Nil. (vi) Heavy rain. (vii) Nil.

5. RESULTS :

(i) 2388 Kg/ha. (ii) (a) 525.0 Kg/ha. (b) 543.0 Kg/ha. (iii) Main effect of N is significant and that of V is highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	Mean
N ₁	1662	1710	3116	3567	3086	3141	2837	2731
N ₂	1633	1516	3108	2365	2208	2361	1644	2119
N ₃	2116	1347	3138	2837	2577	2369	1805	2313
Mean	1804	1524	3121	2923	2624	2624	2095	2388

C.D. for N marginal means = 449.7 Kg/ha.

C.D. for V marginal means = 519.7 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 61(10).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'MV'.**

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Basal dose of 12.3 C.L./ha. of F.Y.M. = 44.8 Kg/ha. of N as A/S. (ii) Sandy loam. (iii) N.A. (iv) (a) ploughings both hot weather and seasonal. (b) Transplanting. (c) 27 Kg/ha. (d) 23 cm. x 15 cm. (e) 1. (v) 12.3 C.L./ha. of F.Y.M. - G.M. crop to produce 5604 Kg/ha. of green matter : 33.6 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) and (x) N.A.

2. TREATMENTS :**Main-plot treatments :**3 levels of N as A/S : $N_1 = 22.4$ Kg/ha. $N_2 = 44.8$ and $N_3 = 67.2$ Kg/ha**Sub-plot treatments :**7 varieties : $V_1 = FH-923$, $V_2 = FA-928$, $V_3 = FH-919$, $V_4 = FH-852$, $V_5 = FH-892$, $V_6 = T-141$ and $V_7 = J-5$.N broadcast $\frac{1}{2}$ at final puddling and $\frac{1}{2}$ one month after transplanting.**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 7 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 5.8 m. x 3.0 m. (b) 5.5 m. x 3.0 m. (v) 15 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Lodging on 18.10.61. (ii) N.A. (iii) Flowering dates, height, earbearing tillers count, grain and straw yield. (iv) (a) to (c) No. (v) Nil. (vi) Heavy rain. (vii) Nil.

5. RESULTS :

(i) 2175 Kg/ha. (ii) (a) 1074.0 Kg/ha. (b) 427.0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7	Mean
N_1	1586	2140	1660	2053	2032	2748	2701	2131
N_2	1449	1517	2271	2566	2067	2547	2733	2164
N_3	1881	1633	2341	1854	1969	3126	2799	2229
Mean	1639	1763	2091	2158	2023	2807	2744	2175

C.D. for V marginal means = 408.6 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 61(12).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'MV'.**

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Basal dose of 12.3 C.L./ha. of F.Y.M. : 44.8 Kg/ha. of N as A/S. (ii) Sandy loam. (iii) 23.6.61/22.7.61. (iv) (a) Ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 23 cm. x 23 cm. (e) 1. (v) 12.3 C.L./ha. of F.Y.M. 33.6 Kg/ha. of P_2O_5 as Super + G.M. crop to produce 5604 Kg/ha. of green matter. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) 142 cm. (x) 4.1.62.

2. TREATMENTS :

Main-plot treatments :

3 levels of N as A/S : $N_1=22.4$, $N_2=44.8$ and $N_3=67.2$ Kg/ha.

Sub-plot treatments :

7 varieties : $V_1=GS-744$, $V_2=FH-875$, $V_3=FH-850$, $V_4=FH-1179$, $V_5=BAM-9$, $V_6=BAM-6$ and $V_7=T-1242$.

N broadcast $\frac{1}{2}$ at final puddling and $\frac{1}{2}$ after one month of transplanting.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main plots/replication ; 7 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 5.7 m. \times 3.0 m. (b) 5.3 m. \times 3.0 m. (v) 23 cm. on each side of plot along length. (vi) Yes.

4. GENERAL :

(i) Crop badly lodged in all the plots. (ii) N.A. (iii) Dates of flowering, height and effective, no. of tillers, grain and straw yield. (iv) and (v) No. (vi) Heavy rain. (vii) Nil.

5. RESULTS :

(i) 2377 Kg/ha. (ii) (a) 596.0 Kg/ha. (b) 337.0 Kg/ha. (iii) Main effect of V is highly significant and interaction $V \times N$ is significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7	Mean
N_1	2560	2581	2101	1807	3021	2312	2848	2461
N_2	2276	2233	2617	1807	2699	2837	2643	2445
N_3	1988	2647	1604	1745	2283	2948	2357	2225
Mean	2275	2487	2107	1786	2668	2699	2616	2377

C.D. for V marginal means = 322.6 Kg/ha.

C.D. for V means at the same level of $N=558.6$ Kg/ha.

C.D. for N means at the same level of $V=718.2$ Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 62(31).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'MV'.

Object : To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 24.7 C.L./ha. of F.Y.M.+33.6 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 24.6.62. (iv) (a) Ploughings both hot weather and seasonal. (b) Direct sowing. (c) 37 Kg/ha. (d) 15 cm. \times 15 cm. (e) 1 to 2. (v) 24.7 C.L./ha. of F.Y.M.+33.6 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) and (x) N.A.

2. TREATMENTS :

Main-plots treatments

3 levels of N as A/S : $N_1=22.4$, $N_2=44.8$ and $N_3=67.2$ Kg/ha.

Sub-plot treatments

5 varieties : $V_1=Marich\ beti$, $V_2=Co-21$, $V_3=B-76$, $V_4=G.S.-362$ and $V_5=AC-2150$.
A/S broadcast $\frac{1}{2}$ at final puddling and $\frac{1}{2}$ one month after transplanting.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 9.1 m. × 1.8 m. (b) 8.8 m. × 1.5 m. (v) 15 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Height, tiller count and yield of grain. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 188 Kg/ha. (ii) (a) 155.0 Kg/ha. (b) 106.0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₁	122	190	361	67	49	158
N ₂	139	87	386	152	158	184
N ₃	219	168	455	101	171	223
Mean	160	148	401	107	126	188

C.D. for V marginal means = 103.2 Kg/ha.

Crop :- Paddy (Kharif).

Site :- State Agri. Res. Stn., Bhubaneswar.

Ref :- Or. 63(14).

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 24.7 C.L./ha. of F.Y.M. + 33.6 Kg/ha. of P₂O₅ as Super. (ii) Sandy loam. (iii) 5.6.63/6.7.63. (iv) (a) Ploughings both hot weather and seasonal. (b) Transplanting, (c) 49 Kg/ha. (d) 15 cm. × 15 cm. (e) 1. (v) 4483 Kg/ha. of green matter + 33.6 Kg/ha. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) 102 cm. (x) 25.9.63.

2. TREATMENTS :

Main-plot treatments :

3 levels of N as A, S : N₁=22.4, N₂=44.8 and N₃=67.2 Kg/ha.

Sub-plot treatments :

6 varieties : V₁=GS—362, V₂=AC—2150, V₃=Marich beti, V₄=Co—21, V₅=B—76 and V₆=PTB—10. N broadcast $\frac{1}{2}$ at final puddling, $\frac{1}{4}$ th one month after transplanting and $\frac{1}{4}$ th at pre-flowering stage.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (a) 5.8 m. × 2.6 m. (b) 5.5 m. × 2.3 m. (v) 15 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Lodged dates are N.A. (ii) N.A. (iii) Stand, height, earbearing, tillers count, panicle length and yield of grain. (iv) to (vii) Nil.

5. RESULTS :

(i) 1463 Kg/ha. (ii) (a) 339.0 Kg/ha. (b) 339.0 Kg/ha. (iii) Main effect of N is significant and that of V is highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	Mean
N ₁	1685	1462	2254	1520	1789	1717	1738
N ₂	1369	843	1523	1318	1603	2016	1445
N ₃	1076	1067	1624	682	1547	1233	1205
Mean	1377	1124	1800	1173	1646	1655	1463

C.D. for N marginal means=313.7 Kg/ha.

C.D. for V marginal means=326.7 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 61(7).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Basal dose of 12.3 C.L./ha. of F.Y.M. and 44.8 Kg/ha. of N as A/S. (ii) Sandy loam. (iii) 12.6.61/12.7.61. (iv) (a) Ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 23 cm. × 15 cm. (e) 1 to 2. (v) 12.3 C.L./ha. of F.Y.M.+G.M. from 5604 Kg/ha. of green matter+33.6 Kg/ha. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S : N₁=22.4, N₂=44.8, N₃=67.2 and N₄=89.7 Kg/ha.

Sub-plot treatments :

6 varieties : V₁=ADR-10, V₂=FH-1198, V₃=FH-1163, V₄=FH-1199, V₅=FH-1161 and V₆=T-442(std.)

N broadcast $\frac{1}{2}$ at final puddling and $\frac{1}{2}$ one month after transplanting.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 6.1 m. × 1.1 m. (b) 6.1 m. × 1.1 m. (v) 15 cm. on each side of the plot. (vi) Yes.

4. GENERAL :

(i) Lodging on 18.9.61. (ii) N.A. (iii) Flowering dates, height and effective no. of tillers, grain and straw yield. (iv) (a) to (c) No. (v) Nil. (vi) Heavy rain. (vii) Nil.

5. RESULTS :

(i) 3511 Kg/ha. (ii) (a) 1164.0 Kg/ha. (b) 661.0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	Mean
N ₁	2107	3204	2812	2386	3455	3496	2910
N ₂	2934	2860	3250	2558	4346	3739	3281
N ₃	3139	4003	4306	2950	4513	4675	3931
N ₄	3658	3658	4024	3398	4769	4024	3922
Mean	2959	3431	3598	2823	4271	3983	3511

C.D. for V marginal means=545.2 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 61(9).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'MV'.**

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Basal dose of 12.3 C.L. ha. of F.Y.M. + 44.8 Kg/ha. of N as A/S (ii) Sandy loam. (iii) 23.6.61/19.7.61. (iv) (a) Ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 23 cm. × 15 cm. (e) 2. (v) 12.3 C.L. ha. of F.Y.M. + G.M. crop to produce 5604 Kg/ha. of green matter + 33.6 Kg/ha. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) and (x) N.A.

2. TREATMENTS :**Main-plot-treatments :**4 levels of N as A/S : N₁ = 22.4, N₂ = 44.8, N₃ = 67.2 and N₄ = 89.7 Kg/ha.**Sub-plot treatments :**7 varieties : V₁ = FH—929, V₂ = FH—921, V₃ = FH—889, V₄ = Mut. No. 871, V₅ = Mut No. 873, V₆ = T—141 (Std.) and V₇ = J-25(Std.)N broadcast $\frac{1}{2}$ at final puddling and $\frac{1}{2}$ one month after transplanting.**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 7 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 8.7 m. × 1.8 m. (b) 8.4 m. × 1.8 m. (v) One row on each side lengthwise. (vi) Yes.

4. GENERAL :

(i) Lodging on 18.9.61. (ii) N.A. (iii) Flowering dates, height, earbearing, tillers grain and straw yield. (iv) (a) to (c) No. (v) Nil. (vi) Heavy rain. (vii) Crop was damaged by birds.

5. RESULTS :

(i) 1854 Kg/ha. (ii) (a) 918.0 Kg/ha. (b) 497.0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	Mean
N ₁	1574	1070	1133	1979	2510	2203	1596	1724
N ₂	1394	1105	1472	2168	2622	2305	2411	1925
N ₃	1202	1072	1618	2003	2575	1796	2072	1762
N ₄	1518	1105	1727	2490	2765	2411	2014	2004
Mean	1422	1088	1488	2160	2618	2179	2023	1854

C.D. for V marginal means = 408.4 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 61(11).****Site :- Agri. Res. Stn., Bhubaneswar.****Type :- 'MV'.**

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Basal dose of 12.3 C.L./ha. of F.Y.M. + 44.8 Kg/ha. of N as A/S. (ii) Sandy loam. (iii) N.A. (iv) (a) ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 23 cm. × 23 cm. (e) 1. (v) 12.3 C.L. ha. of F.Y.M. + G.M. crop to produce of green matter + 33.6 Kg/ha. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S : $N_1=22.4$, $N_2=44.8$, $N_3=67.2$ and $N_4=89.7$ Kg/ha.

Sub-plot treatments :

7 varieties : $V_1=AC\ 1176-6$, $V_2=54-A$, $V_3=FH-849$, $V_4=FH-1168$, $V_5=BAM-9$, $V_6=BAM-6$ and $V_7=T-1242$.

N broadcast $\frac{1}{2}$ at final puddling and $\frac{1}{2}$ one month after transplanting.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 7 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 5.0 m. \times 3.0 m. (b) 4.6 m. \times 3.0 m. (v) 23 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Lodging on 31.10.61. and 24.11.65. (ii) N.A. (iii) Flowering dates, height and ear-bearing tiller count, grain and straw yield. (iv) (a) to (c) Nil. (v) Nil. (vi) Heavy rain. (vii) Nil.

5. RESULTS :

(i) 2796 Kg/ha. (ii) (a) 1350.0 Kg/ha. (b) 520.0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7	Mean
N_1	2856	2654	3661	3063	3592	3062	3381	3181
N_2	2711	2582	3090	2517	3209	2689	2794	2799
N_3	2176	2488	3057	2241	2954	2634	2472	2574
N_4	2630	2389	2944	2149	2868	2695	2738	2630
Mean	2593	2528	3188	2492	3156	2770	2846	2796

C.D. for V marginal means=427.4 Kg/ha.

Orop :- Paddy (Kharif).

Ref :- Or. 62(32).

Site :- Agri. Res. Sta., Bhubaneswar.

Type :- 'MV'.

Object :-To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 24.1 C.L./ha. of F.Y.M.+33.6 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 16.6.62/29.7.62. (iv) (a) Ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 23 cm. \times 15 cm. (e) 1. (v) *Dhaincha* at 4483 Kg/ha. of green matter+33.6 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

4 levels of N : $N_1=22.4$, $N_2=44.8$, $N_3=67.2$ and $N_4=89.7$ Kg/ha.

Sub-plot treatments :

10 varieties : $V_1=ADR-36$, $V_2=FH\ 42-12$, $V_3=FHV-2$, $V_4=FH\ 196-22$, $V_5=FH\ 7-40$, $V_6=S.P-1$, $V_7=FH-1147$, $V_8=FHV-1$, $V_9=J-442$ (std) and $V_{10}=J-10$ (std).

N broadcast $\frac{1}{2}$ at final puddling and $\frac{1}{2}$ one month after transplanting.

8. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 10 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 6.9 m. \times 2.1 m. (b) 6.6 m. \times 1.6 m. (v) 23 cm. \times 15 cm. (vi) Yes.

4. GENERAL :

(i) Lodging, dates N.A. (ii) N.A. (iii) Flowering dates, height and earbearing tiller, count earhead length and yield of grain. (iv) to (vii) Nil.

5. RESULTS :

(i) 1755 Kg/ha. (ii) (a) 897.0 Kg/ha. (b) 385.0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₀	V ₄	V ₅	V ₆	V ₇	V ₈	V ₉	V ₁₀	Mean
N ₁	1455	2138	1877	2098	2181	2162	2186	2121	1972	1536	1973
N ₂	1533	2206	1442	1803	1906	1671	2226	1596	2091	1634	1811
N ₃	1275	1604	1602	1976	1840	2063	1984	1710	1804	1638	1750
N ₄	1449	1511	1042	1523	1514	2026	1536	1568	1328	1362	1486
Mean	1428	1865	1491	1850	1860	1980	1983	1749	1799	1547	1755

C.D. for V marginal means=313.8 Kg/ha.

Crop :- Paddy (Kharif).

Site :- Agri. Res. Stn., Bhubaneswar.

Ref :- Or. 62(33).

Type :- 'MV'.

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 24.7 C.L./ha. of F.Y.M. 33.6 Kg/ha. of P₂O₅ as Super. (ii) Sand loam. (iii) 19.6/42/7.8/62. (iv) (a) ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 23 cm. × 15 cm. (e) 1. (v) 224 Kg/ha. of Super. (vi) As per treatments (vii) Irrigated. (viii) Weeding. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S : N₁=22.4, N₂=44.8, N₃=67.2 and N₄=89.7 Kg/ha.

Sub-plot treatments :

10 varieties : V₁=FH-1199, V₂=FH-1160, V₃=No. 2, V₄=FH-1150, V₅=FH-929, V₆=FH-921, V₇=FH-889, V₈=FH-872, V₉=FH-927 and V₁₀=Γ₁₁₁₃ (std).

N broadcast $\frac{1}{2}$ at final puddlings and $\frac{1}{2}$ one month after transplanting.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots, replication, 10 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 6.1 m. × 2.3 m. (b) 5.8 m. × 1.8 m. (v) 23 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Flowering dates, height and earbearing tiller, count earhead length and yield of grain (iv) to (vii) Nil.

5. RESULTS :

(i) 1636 Kg/ha. (ii) (a) 768.0 Kg/ha. (b) 383.0 Kg/ha. (iii) Main effect of V is highly 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	V ₉	V ₁₀	Mean
N ₁	1031	1158	952	1702	1646	1426	1368	1367	1031	1341	1302
N ₂	1909	1772	1118	2219	1936	1438	1906	1692	1777	1883	1773
N ₃	2027	1781	1405	2022	2137	1750	1910	2291	1917	1851	1909
N ₄	1515	1441	1254	1934	1539	1452	1838	1652	1574	1389	1559
Mean	1621	1538	1200	1969	1815	1517	1756	1751	1575	1619	1636

C.D. for V marginal means=312.0 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 62(34).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'MV'.

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

1. BASAL CONDITIONS :

(i) (a) Nil, (b) Paddy. (c) 24.7 C.L./ha. of F.Y.M.+33.6 Kg/ha. of P₂O₅ as Super. (ii) Sandy loam. (iii) 25.6.62/17.8.62. (iv) (a) Ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 23 cm.×23 cm. (e) 1. (v) 2242 Kg/ha. of G.M. *Dhaincha*+33.6 Kg/ha. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S : N₁=22.4, N₂=44.8, N₃=67.2 and N₄=89.7 Kg/ha.

Sub-plot treatments :

9 varieties : V₁=FH-849, V₂=FH.60-124, V₃=FH 60-9, V₄=FH 60-3, V₅=BAM-9, V₆=T90, V₇=T-1242, V₈=SR-26 B and V₉=FR-43 B.

N broadcast $\frac{1}{2}$ at final puddling and $\frac{1}{2}$ after one month of transplanting.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 9 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 4.8 m.×3.9 m. (b) 4.3 m.×3.4 m. (v) 23 cm.×23 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Flowering dates, height, earbearing, tillers count, earhead length and yield of grain. (iv) to (vii) Nil.

5. RESULTS :

(i) 1754 Kg/ha. (ii) (a) 732.0 Kg/ha. (b) 393.0 Kg/ha. (iii) Main effect of V alone is highly 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	V ₉	Mean
N ₁	1736	2247	1666	2010	1922	1834	1257	811	1420	1656
N ₂	1869	2707	1492	1838	1480	2297	1794	957	1241	1742
N ₃	1812	2651	1582	1547	1784	2189	1927	1178	1298	1774
N ₄	1728	2641	1633	1944	1438	2226	1949	1441	1624	1847
Mean	1786	2561	1593	1835	1656	2136	1732	1097	1396	1755

C.D. for V marginal means=318.2 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 62(39).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'MV'.**

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 24.7 C.L./ha. of F.Y.M. + 33.6 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 25.6.62/11.8.62. (iv) (a) Ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 23 cm. \times 15 cm. (e) 1 to 2. (v) G.M. crop to supply 4483 Kg/ha. of green matter + 33.6 Kg/ha. of P_2O_5 as Super. (vi) As per treatments (vii) Irrigated. (viii) Weeding. (ix) and (x) N.A.

2. TREATMENTS :**Main-plot treatments :**4 levels of N as A/S : $N_1=22.4$, $N_2=44.8$, $N_3=67.2$ and $N_4=89.7$ Kg/ha.**Sub-plot treatments :**8 varieties : $V_1=$ FH-1168, $V_2=$ FH-1161, $V_3=$ BBS-871, $V_4=$ BBS-873, $V_5=$ Dhusura, $V_6=$ AC-1177, $V_7=$ T-141 and $V_8=$ J-5.N broadcast $\frac{1}{2}$ at final puddling and $\frac{1}{2}$ one month after transplanting.**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 8 sub-plots main-plot. (b) N.A. (iii) 3. (iv) (a) 4.9 m. \times 3.2 m. (b) 4.6 m. \times 2.7 m. (v) 15 cm. \times 23 cm. (vi) Yes.

4. GENERAL :

(i) Lodging, dates N.A. (ii) N.A. (iii) Stand, height, ear-bearing tillers count, panicle length and yield of grain. (iv) to (vii) Nil

5. RESULTS :

(i) 2341 Kg/ha. (ii) (a) 698.0 Kg/ha. (b) 430.0 Kg/ha. (iii) Main effect of V alone is highly 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	Mean
N_1	1790	2136	1796	3189	2092	2241	2562	1933	2217
N_2	2311	2198	1735	3281	2738	2543	1987	2093	2361
N_3	2373	2228	1925	3008	2051	2434	2356	2443	2352
N_4	1997	1740	1801	3736	2492	2554	2677	2467	2433
Mean	2118	2075	1814	3303	2343	2443	2395	2234	2341

C.D. for V marginal means = 351.9 Kg/ha.

Crop : Paddy (Kharif).**Ref :- Or. 63(15).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'MV'.**

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 24.7 C.L./ha. of F.Y.M. + 33.6 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 31.5.63, 6 and 7.7.63. (iv) (a) Ploughings both hot weather and seasonal. (b) Raised bed (c) 49 Kg/ha. (d) 23 cm. \times 15 cm. (e) 1. (v) 4483 Kg/ha. of green matter from *Dhanicha* + 33.6 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) 130.4 cm. (x) 19.10.63.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S : $N_1=22.4$, $N_2=44.8$, $N_3=67.2$ and $N_4=89.7$ Kg/ha.

Sub-plot treatments :

8 varieties : $V_1=$ FH 42-12, -1, $V_2=$ FH 196-22, $V_3=$ FH 7-40, $V_4=$ FH-1147, $V_5=$ FHV₁,
 $V_6=$ FHV₂, $V_7=$ SP-8 and $V_8=$ T₄-442.

N applied $\frac{1}{2}$ at final puddling, $\frac{1}{4}$ one month after transplanting and $\frac{1}{4}$ at preflowering stage.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 8 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 6.4 m. \times 2.5 m. (b) 6.1 m \times 2.0 m. (v) 23 cm. \times 15 cm. (vi) Yes.

4. GENERAL :

(i) Lodged, dates N.A. (ii) N.A. (iii) Stand, height, earbearing tillers count, panicle length and grain yield. (iv) to (vii) Nil.

5. RESULTS :

(i) 2000 Kg/ha. (ii) (a) 1036.0 Kg/ha. (b) 555.0 Kg/ha. (iii) Main effect of V alone is highly 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	Mean
N ₁	2248	2206	2153	3101	1770	2344	2278	2243	2293
N ₂	2929	2551	2166	2405	1520	2466	1499	2134	2209
N ₃	1789	1807	1462	2368	1770	2216	1318	1151	1735
N ₄	1834	1913	1164	2503	1688	2355	1735	925	1765
Mean	2200	2119	1736	2594	1687	2345	1707	1613	2000

C.D. for V marginal means=454.3 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 63(24).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'MV'.

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 12.3 C.L./ha. of F.Y.M.+44.8 Kg/ha. of N as A/S. (ii) Sandy loam. (iii) 13.6.63/15.7.63. (iv) (a) Ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 23 cm. \times 23 cm. (e) 1 to 2. (v) Green matter from *Dhanicha* at 4383 Kg/ha.+43.6 Kg/ha. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) 142 cm. (x) 21 and 22.12.63.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S : $N_1=22.4$, $N_2=44.8$, $N_3=67.2$ and $N_4=89.7$ Kg/ha.

Sub-plot treatments :

8 varieties : $V_1=$ FH 60-125, $V_2=$ FH 60-3, $V_3=$ FH-849, $V_4=$ FH 60-9, $V_5=$ FR-43B, $V_6=$ BAM
-9, $V_7=$ T-90 and $V_8=$ T-1242.

N applied $\frac{1}{2}$ at final puddling, $\frac{1}{4}$ at one month after transplanting and $\frac{1}{4}$ in the preflowering stage.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 8 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 5.5 m. \times 3.4 m. (b) 5.0 m. \times 3.0 m. (v) 23 cm. \times 23 cm. (vi) Yes.

4. GENEYAL :

(i) Lodged ; dates N.A. (ii) Nil. (iii) Flowering dates, stand, height and effective no. of tillers, grain and straw yield. (iv) to (vii) Nil.

5. RESULTS :

(i) 2719 Kg/ha. (ii) (a) 334.0 Kg/ha. (iii) Main effect of V alone is highly 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	Mean
N ₁	2906	2542	2866	3035	2139	3205	2638	2424	2719
N ₂	3140	3044	2968	3455	2163	2761	2694	2571	2849
N ₃	3211	2783	2705	2817	2342	2752	2616	2832	2762
N ₄	2665	2382	2638	2955	1945	3000	2230	2565	2547
Mean	2980	2688	2794	3065	2147	2939	2544	2598	2719

C.D. for V marginal means—371.5 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 63(25).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'MV',

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Basal dose of 12.3 C.L. ha. of F.Y.M. 44.8 Kg/ha. of N as A.S (ii) Sandy loam. (iii) 31.5, 63/7.7, 63. (iv) (a) Ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. × 23 cm. (e) 1 to 2. (v) Green matter *Dhanicha* at 448.3 Kg/ha. + 33.6 Kg/ha. of P₂O₅ as Super (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) 145 cm. (x) 7.12.63.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A.S : N₁=22.4, N₂=44.8, N₃=67.2 and N₄=89.7 Kg/ha.

Sub-plot treatments :

9 varieties ; V₁=FH—1150, V₂=FH—929, V₃=FH—889, V₄=FH—872, V₅=FH—1199, V₆=FH—927, V₇=FH—1160, V₈=FH—158 and V₉=T—1145 (Std.)

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots replication ; 9 sub-plots, main-plot. (b) N.A. (iii) 3. (iv) (a, 4.0 m. × 3.2 m. (b) 3.7 m. × 2.7 m. (v) 23 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Lodging ; dates : N.A. (ii) N.A. (iii) Dates of flowering, height, earbearing tillers count, panicle length and grain yield. (iv) to (vii) Nil.

5. RESULTS :

(i) 1317 Kg/ha. (ii) (a) 1038.0 Kg/ha. (b) 371.0 Kg/ha. (iii) Main effect of V alone is highly 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	V ₉	Mean
N ₁	2279	1113	1522	1488	1322	1528	1611	718	1462	1449
N ₂	1555	1372	1445	1369	1023	1518	1349	741	1927	1366
N ₃	1761	1229	1259	983	1017	1129	1199	741	1551	1208
N ₄	2116	1475	1113	1242	854	1625	1073	728	997	1247
Mean	1928	1297	1335	1270	1054	1450	1308	732	1484	1317

C.D. for V marginal means=302.6 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 63(26).****Site :- Agri. Res. Stn., Bhubaneswar.****Type :- 'MV'.**

Object : -To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Basal dose of 12.3 C.L./ha. of F.Y.M.+44.8 Kg./ha. of N as A/S. (ii) Sandy loam. (iii) 4.6.63/12.7.63. (iv) (a) Ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg./ha. (d) 15 cm.×23 cm. (e) 1 to 2. (v) 33.6 Kg./ha. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) 143 cm. (x) 13.12.63.

2. TREATMENTS :**Main-plot treatments :**4 levels of N : N₁=22.4, N₂=44.8, N₃=67.2 and N₄=89.7 Kg./ha.**Sub-plot treatments :**6 varieties : V₁=FH 60-93, V₂=FH 60-114, V₃=FH 1150, V₄=BBS-873, V₅=AC 1177-6 and V₆=T-I 41.N applied $\frac{1}{2}$ at final puddling, $\frac{1}{4}$ one month after transplanting and $\frac{1}{4}$ at preflowering stage.**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication, 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 8.2 m.×3.0 m. (b) 7.9 m.×2.5 m. (v) 15 cm.×23 cm. (vi) Yes.

4. GENERAL :

(i) Fully lodged, dates N.A. (ii) N.A. (iii) Dates of flowering, height, earbearing tillers count, panicle length and grain yield. (iv) to (vii) Nil.

5. RESULTS :

(i) 1779 Kg./ha. (ii) (a) 700.0 Kg./ha. (b) 437.0 Kg./ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg./ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₇	Mean
N ₁	1952	1920	1530	3479	2402	1706	2165
N ₂	1676	1385	1279	1883	1500	1575	1550
N ₃	1692	1582	1253	2358	1947	1706	1756
N ₄	1465	1420	1137	2626	1647	1575	1645
Mean	1696	1577	1300	2586	1874	1640	1779

C.D. for V marginal means=360.5 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 65(35).****Site :- Agri. Res. Stn., Bhubaneswar.****Type :- 'MV'.**

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 29 and 30.7.65. (iv) (a) 4 ploughings. (b) Transplanting. (c) 22.4 Kg/ha. (d) 23 cm.×23 cm. (e) 2. (v) 6000 Kg/ha. of F.Y.M. (vi) As per treatments. (vii) Unirrigated. (viii) One hand weeding. (ix) 63.0 cm. (x) 10 to 12.12.65.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : $N_0 = 0$, $N_1 = 30$ and $N_2 = 60$ Kg/ha.(2) 3 levels of P_2O_5 as Super : $P_0 = 0$, $P_1 = 22$ and $P_2 = 45$ Kg/ha

Sub-plot treatments :

6 varieties : $V_1 = T-999$, $V_2 = FH. 60-124$, $V_3 = FH 60-123 B$, $V_4 = FH 849$, $V_5 = BAM 9$ and $V_6 = T-1242$.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication, 6 sub-plots main-plot (b) N.A. (iii) 2. (iv) (a) 8.0 m. \times 4.0 m. (b) 7.6 m. \times 3.6 m. (v) 23 cm. \times 23 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) One spraying of Endrin. (iii) Height, tillers count, number of leaves/plant and yield of grain, (iv) (a) No. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2889 Kg/ha. (ii) (a) 148.9 Kg/ha. (b) 25.4 Kg/ha. (iii) Main effect of V and interaction $V \times N$ are significant. (iv) Av. yield of grain in Kg./ha.

	V_1	V_2	V_3	V_4	V_5	V_6	P_0	P_1	P_2	Mean
N_0	2099	2448	2537	2651	2323	2203	2239	2398	2492	2377
N_1	2755	2880	2994	2984	2781	2953	2773	2919	2982	2891
N_2	3125	3364	3557	3677	3411	3266	3258	3482	3461	3400
Mean	2660	2897	3029	3104	2838	2807	2757	2933	2978	2889
P_0	2542	2786	2859	2932	2724	2698				
P_1	2687	2927	3094	3156	2906	2828				
P_2	2750	2979	3135	3224	2885	2896				

C.D. for V marginal means = 17.1 Kg./ha.

C.D. for V means at the same level of N = 29.6 Kg./ha.

C.D. for N means at the same level of V = 85.1 Kg./ha.

Crop :- Paddy (Kharif).**Site :- Rice Res. Stn., Jeypore.****Ref :- Or. 60(13).****Type :- 'MV'.**

Object :- To study the effect of minor elements and different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Loamy soil. (iii) 25.6.1960, 20.8.1960. (v) (a) 4 ploughings and ladderings with *desi* plough to 15 cm. depth. (b) Transplanting. (c) 46 Kg/ha. (d) 23 cm. \times 15 cm. (e) 3 to 4. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and hoeing with J.W. twice. (x) 49.8 cm. (x) 16.12.1960.

2. TREATMENTS :

Main-plot treatments :

3 levels of N as A/S : $N_1 = 67.2$, $N_2 = 100.9$ and $N_3 = 134.5$ Kg./ha.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 varieties : $V_1 = T-141$ (medium), $V_2 = T-90$ (late) and $V_3 = T-812$ (late).(2) 3 minor elements : $E_0 = \text{Control}$, $E_1 = \text{CuSO}_4$ and $E_2 = \text{MgSO}_4$. $\frac{1}{2}$ dose applied at transplanting before final ladderings and $\frac{1}{2}$ dose after 15 days by broadcasting.

Doses of minor elements are N.A.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 9 sub-plots/main-plot. (b) 25.2 m. × 4.6 m. (iii) 2. (iv) (a) 3.7 m. × 2.3 m. (b) 3.4 m. × 1.8 m. (v) 23 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Not good, lodging in V₂ and V₃ with lesser dose of N occurred on 6.10.1960. (ii) Attack of stem borer, Endrex sprayed. (iii) Yield of grain. (iv) (a) 1960—N.A. (b) Nil. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2933 Kg./ha. (ii) (a) 789.6 Kg./ha. (b) 497.4 Kg./ha. (iii) Interaction N × V is significant and N × E is highly significant. (iv) Av. yield of grain in Kg./ha.

	V ₁	V ₂	V ₃	E ₀	E ₁	E ₂	Mean
N ₁	2882	2820	2782	3221	2235	3028	2828
N ₂	2512	3144	3537	2643	3591	2959	3064
N ₃	2836	3136	2751	2836	3082	2805	2908
Mean	2743	3033	3023	2900	2969	2931	2933
E ₀	2759	3036	2905				
E ₁	2828	3159	2920				
E ₂	2643	2905	3244				

C.D. for V or E means at the same level of N = 592.8 Kg/ha.

C.D. for two N means at the same level of V or E = 1167.5 Kg/ha.

Group :- Paddy (Kharif).

Ref :- Or. 61(27).

Site :- Rice Res. Stn., Jeypore.

Type :- 'MV'.

Object ;—To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N + 33.6 Kg/ha. of P₂O₅ + 12.3 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (ii) Loamy. (iii) 12.6.61/15.7.61. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm. × 15 cm. (e) 1 to 2. (v) 3.7 C.L./ha. of F.Y.M. + 33.6 Kg/ha. of P₂O₅ as Super + G.M. (*Dhaincha*). (vi) As per treatments. (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) 28.10.61.

2. TREATMENTS :

Main-plot treatments :

3 levels of N as A/S : N₁=22.4, N₂=44.8 and N₃=67.2 Kg/ha.

Sub-plot treatments :

6 varieties : V₁=J-10, V₂=V-4, V₃=V-1, V₄=V-2, V₅=T-442 and V₆=JNS 941-8.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 4.9 m. × 3.1 m. (b) 4.6 m. × 2.7 m. (v) 15 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Except V_3 which is lodged, other varieties were in good condition (i) V_2 plots attacked by leaf roller. (iii) Height, tiller count, growth, panicle length and yield of grain. (iv) (a) No. (b) No (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2600 Kg./ha. (ii) (a) 469.0 Kg/ha. (b) 386.0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	Mean
N_1	3464	1571	2690	3255	2690	2221	2649
N_2	3357	2057	2860	3368	2402	2187	2705
N_3	2566	1972	2577	3097	2328	2131	2445
Mean	3129	1867	2709	3240	2473	2180	2600

C.D. for V marginal means=317.7 Kg. ha.

Crop :- Paddy (Kharif).

Ref :- Or. 61(28).

Site :- Rice Res. Stn., Jeypore.

Type :- 'MV'.

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P_2O_5 + 12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (ii) Loamy. (iii) 15.6.61 30.7.61. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm. × 23 cm. (e) 2. (v) 21 C.L./ha. of F.Y.M.+ 29 Kg/ha. of B.M. and 12329 Kg/ha. of G.M. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : $N_1=22.4$ and $N_2=67.2$ Kg/ha.

Sub-plot treatments :

15 varieties : $V_1=$ FH 17—A, $V_2=$ FH 20—A, $V_3=$ FH 1—A, $V_4=$ FH—45, $V_5=$ FH—48, $V_6=$ T—442, $V_7=$ FH 11—A, $V_8=$ FH 13—A, $V_9=$ FH—51, $V_{10}=$ FH—44, $V_{11}=$ FH—43, $V_{12}=$ FH—19 A, $V_{13}=$ FH—84, $V_{14}=$ FH—40 and $V_{15}=$ FH—38.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 15 sub-plots, main-plot. (b) N.A. (iii) 2. (iv) (a) 3.1 m. × 3.7 m. (b) 2.7 m. × 3.7 m. (v) 15 cm. on each side along breadth. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Leaf roller attack. (iii) Height, panicle length, yield of grain tiller, counts and dates of flowering. (iv) (a) No. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3092 Kg/ha. (ii) (a) 66.0 Kg/ha. (b) 470.0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	
N ₁	3503	4323	3193	3164	2628	3730	3193	
N ₂	3136	3899	2995	2684	3221	3080	3475	
	3319	4111	3094	2924	2924	3405	3334	

	V ₈	V ₉	V ₁₀	V ₁₁	V ₁₂	V ₁₃	V ₁₄	V ₁₅	Mean
N ₁	2373	2953	2938	2331	2995	2670	2825	3701	3101
N ₂	2317	2712	3051	2797	2571	3390	3221	3687	3082
Mean	2345	2832	2994	2564	2783	3030	3023	3694	3092

C.D. for V marginal means=680.5 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 61(29).

Site :- Rice Res. Stn., Jeypore.

Type :- 'MV'.

Object :-To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P₂O₅+12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (ii) Loamy. (iii) 15.6.61/14.8.61. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm.×15 cm. (e) 1 to 2. (v) 12 C.L./ha. of F.Y.M.+31.4 Kg/ha. of B.M.+8967 Kg/ha. of green matter by G.M. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) N.A.

2. TREATMENTS :

Main-plot treatments:

2 levels of N as A/S : N₁=22.4 and N₂=67.2 Kg/ha.

Sub-plot treatments :

12 varieties : V₁=BBS-59, V₂=V-15, V₃=C-183, V₄=C-312, V₅=MUT-20, V₆=C-225, V₇=T-442, V₈=C-220, V₉=C-147, V₁₀=C-348, V₁₁=T-1145 and V₁₂=C-132.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 12 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 4.9 m. ×2.7 m. (b) 4.6 m.×2.4 m. (v) 15 cm.×15 cm. (vi) Yes.

4. GENERAL :

(i) Normal in V₃, V₁₁ and V₄ plots, good in V₆, V₇ and V₈ Plots and poor in V₅, V₁₀, V₁₂ and V₁ plots. (ii) Nil. (iii) Height, tillers count, panicle length, flowering dates and yield of grain. (iv) (a) No. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2958 Kg/ha. (ii) (a) 606.0 Kg/ha. (b) 468.0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	
N ₁	2696	2899	3561	2492	2543	3052	
N ₂	3154	2543	3688	2213	2264	2950	
Mean	2925	2721	3624	2352	2403	3001	

	V ₇	V ₈	V ₉	V ₁₀	V ₁₁	V ₁₂	Mean
N ₁	2772	3459	3255	3561	3128	2950	3031
N ₂	3154	3052	2899	2492	3650	2798	2905
Mean	2963	3255	3077	3026	3389	2874	2968

C.D. for V marginal means=686.3 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 61(30).

Site :- Rice Res. Stn., Jeypore.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil, (b) Paddy, (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P₂O₅ + 12 C.L. ha. of F.Y.M. or *Dhaincha* (G.M.)
(ii) Loamy, (iii) 14.6,61, 20.7,61. (iv) (a) 2 ploughings, (b) Transplanting, (c) 34 Kg/ha. (d) 15 cm, × 23 cm. (e) 1 to 2. (v) 12 C.L./ha. of F.Y.M. + 67.2 Kg/ha. of Bone Meal + *Dhaincha* (G.M.). (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 24.11.61.

2. TREATMENTS :

Main-plot treatments :

3 levels of N as A, S : N₁=33.6, N₂=56.0 and N₃=89.7 Kg/ha.

Sub-plot treatments :

9 varieties : V₁=BBS-16, V₂=BBS-23, V₃=BBS-82, V₄=V-7, V₅=J-4, V₆=T-141, V₇=V-11, V₈=V-14 and V₉=Hyb-7.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 9 sub-plots, main-plot. (b) N.A. (iii) 4. (iv) (a) 6.4 m. × 2.0 m. (b) 5.9 m. × 1.7 m. (v) 23 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attacked by leaf roller. (iii) Height, tiller count, panicle length and yield of grain (iv) (a) No. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3325 Kg/ha. (ii) (a) 417.0 Kg/ha. (b) 635.0 Kg/ha. (iii) Main effect of V alone is highly 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	V ₉	Mean
N ₁	4162	3671	3273	2575	3472	4098	2390	3152	3372	3352
N ₂	3671	3557	3311	2077	3970	4020	2590	2647	3443	3253
N ₃	4084	4354	3344	2504	3472	3699	2375	2817	3685	3370
Mean	3972	3861	3306	2385	3638	3939	2452	2872	3500	3325

C.D. for V marginal means=517.4 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 61(31).****Site :- Rice Res. Stn., Jeypore.****Type :- 'MV'.**

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P_2O_5 +12 C.L./ha. of F.Y.M. or *Dhanicha* (G.M.). (ii) Loamy. (iii) 12.6.61/20.7.61. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm. × 15 cm. (e) 1 to 2. (v) 4 C.L./ha. of F.Y.M.+*Dhanicha* (G.M.)+33.6 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 10.11.61.

2. TREATMENTS :**Main-plot treatments :**4 levels of N as A/S : $N_1=22.4$, $N_2=44.8$, $N_3=67.2$ and $N_4=89.7$ Kg/ha.**Sub-plot treatments :**6 varieties : $V_1=BBS-1$, $V_2=T-442$, $V_3=V-16$, $V_4=My1-2$, $V_5=V-8$ and $V_6=SP-1$.
N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 4.9 m. × 3.1 m. (b) 4.6 m. × 2.7 m. (v) 15 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Leaf roller attack to certain plots and varieties Viz V_1 and V_4 . (iii) Height, tiller count, panicle length and yield of grain. (iv) (a) No. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2499 Kg/ha. (ii) (a) 1117.0 Kg/ha. (b) 649.0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	Mean
N_1	2735	2984	2735	1831	2893	2464	2607
N_2	3170	2441	2227	2198	2283	2266	2431
N_3	2893	2509	2012	2317	2854	2215	2467
N_4	2984	2967	2170	2379	2419	2034	2492
Mean	2945	2725	2286	2181	2612	2245	2499

C.D. for V marginal means=458.8 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 61(32).****Site :- Rice Res. Stn., Jeypore.****Type :- 'MV'.**

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

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P_2O_5 +12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (ii) Loamy. (iii) 15.6.61/5.8.61. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 23 cm. × 23 cm. (e) 1 to 2. (v) 12 C.L./ha. of F.Y.M. or G.M. (vi) As per treatments (late). (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) N.A.

2. TREATMENTS :**Main-plot treatments :**2 levels of N as A/S : $N_1=22.4$ and $N_2=67.2$ Kg./ha.**Sub-plot treatments :**14 varieties : $V_1=T-1242$, $V_2=BAM-3$, $V_3=J-7$, $V_4=FH-4A$, $V_5=FH-37A$, $V_6=FH-50A$, $V_7=FH-44A$, $V_8=FH-46A$, $V_9=FH-12A$, $V_{10}=FH-41A$, $V_{11}=FH-23A$, $V_{12}=FH-6A$, $V_{13}=FH-27A$ and $V_{14}=T-90$.N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 14 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 3.7 m. × 3.2 m. (b) 2.7 m. × 2.7 m. (v) 46 cm. × 23 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Leaf roller attack. (iii) Height, tiller count, panicle length, flowering dates and yield of grain. (iv) (a) No. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 4312 Kg./ha. (ii) (a) 614.0 Kg./ha. (b) 477.0 Kg./ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg./ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	
N ₁	4616	4898	3655	3278	3184	5426	3617	
N ₂	5275	5953	3617	3655	3466	5388	3919	
Mean	4945	5425	3636	3466	3325	5407	3768	
	V ₈	V ₉	V ₁₀	V ₁₁	V ₁₂	V ₁₃	V ₁₄	Mean
N ₁	4446	3090	4521	4448	4917	4145	3843	4077
N ₂	3881	3617	5200	3768	5614	4220	6066	4546
Mean	4163	3353	4860	3608	5265	4182	4954	4312

C.D. for V marginal means = 693.3 Kg./ha.

Crop :- Paddy (Kharif).

Site :- Rice Res. Stn., Jeypore.

Ref :- Or. 61(33).

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg./ha. of N + 33.6 Kg./ha. of P₂O₅ + 12 C.L./ha. of F.Y.M. or *Dhanicha* (G.M.). (ii) Loamy. (iii) N.A. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg./ha. (d) 15 cm. × 23 cm. (e) 1 to 2. (v) *Dhanicha* (G.M.) : 1 C.L./ha. of F.Y.M. + 33.6 Kg./ha. of P₂O₅ as B.M. (v) As per treatments. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) N.A.

2. TREATMENTS :

Main-plot treatments :

3 levels of N as A/S : N₁ = 33.6, N₂ = 56.0 and N₃ = 89.7 Kg./ha.

Sub-plot treatments :

8 varieties : V₁ = RDR-4, V₂ = T-141, V₃ = BBS-55, V₄ = CR-227, V₅ = JNS 973-17, V₆ = J-4, V₇ = 109-A and V₈ = JNS 931-30.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 8 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 7.5 m. × 2.1 m. (b) 7.1 m. × 1.8 m. (v) 23 cm. × 15 cm. (vi) Yes.

4. GENERAL :

Same as in Expt. No. 61(32) on page 107.

5. RESULTS :

(i) 3704 Kg./ha. (ii) (a) 1231.0 Kg./ha. (b) 919.0 Kg./ha. (iii) None of the effects 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	Mean
N ₁	3817	3904	3937	3401	3516	3620	3652	3817	3708
N ₂	4068	3904	3948	3029	3581	3292	3729	3827	3672
N ₃	3598	3991	4002	3237	3598	3866	3620	3936	3731
Mean	3828	3933	3962	3222	3565	3593	3667	3860	3704

Crop :- Paddy. (Kharif).

Ref :- Or. 61(34).

Site :- Rice Res. Stn., Jeypore.

Type :- 'MV'.

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P₂O₅+12 C.L./ha. of F.Y.M. or 4 *Dhanicha* (G.M). (ii) Loamy. (iii) 12.6.61. 26.7.61. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm. × 23 cm. (e) 1 to 2. (v) 12 C.L/ha. of F.Y.M.+33.6 Kg/ha. of P₂O₅ as B.M.+174.8 Kg/ha. of green matter. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 31.11.61.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S : N₁=22.4, N₂=44.8, N₃=67.2 and N₄=89.7 Kg/ha.

Sub-plot treatments :

6 varieties : V₁=V-28, V₂=BAM-3, V₃=J-7. V₄=V-37, V₅=T-1242 and V₆=V-33.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 4.8 m. × 3.2 m. (b) 4.3 m. × 3.2 m. (v) 23 cm. on each side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Leaf roller attack. (iii) Height, tiller, count, panicle length and yield of grain. (iv) (a) No, (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2362 Kg/ha. (ii) (a) 292.0 Kg/ha. (b) 281.0 Kg/ha. (iii) Main effects of N and V are highly significant. and interaction N × V is significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	Mean
N ₁	2550	2560	2376	2478	2672	2142	2463
N ₂	2917	2907	2346	1979	2535	2453	2523
N ₃	2550	2427	1989	2473	2142	2198	2296
N ₄	2325	2366	1866	2162	2167	2101	2164
Mean	2586	2565	2144	2273	2379	2224	2362

C.D. for N marginal means = 190.7 Kg/ha.

C.D. for V marginal means = 198.6 Kg/ha.

C.D. for V means at the same level of N=397.4 Kg/ha.

C.D. for N means at the same level of V=409.2 Kg/ha.

Crop :- Paddy. (Kharif).**Ref :- Or. 61(35).****Site :- Rice Res. Stn., Jeypore.****Type :- 'MV'.**

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N + 33.6 Kg/ha. of P_2O_5 + 12 C.L/ha. of F.Y.M. or *Dhanicha* (G.M.). (ii) Loamy. (iii) 15.6.61, 17.7.61. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm. x 15 cm. (e) 1 to 2, (v) 12 C.L/ha. of F.Y.M. + 31.4 Kg/ha. of B.M + 15692 Kg/ha. of green matter. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and hoeing, (ix) N.A. (x) 13.11.61.

2. TREATMENTS :**Main-plot treatments :**2 levels of N as A, S : $N_1=22.4$ and $N_2=67.2$ Kg/ha.**Sub-plot treatments :**

18 varieties : $V_1=J-1$, $V_2=J-2$, $V_3=N-136$, $V_4=JH-21A$, $V_5=JH-49$, $V_6=JH-2A$, $V_7=JH-16$, $V_8=JH-58A$, $V_9=JH-56A$, $V_{10}=JH-51A$, $V_{11}=JH-53A$, $V_{12}=JH-33A$, $V_{13}=JH-9A$, $V_{14}=JH-15A$, $V_{15}=CR-210$, $V_{16}=JH-3A$, $V_{17}=JH-16A$ and $V_{18}=JH-55A$.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$ 15 days before flowering.**3. DESIGN :**

(i) Split-plot. (ii) (a) 2 main-plots replication, 18 sub-plots main-plot. (c) N.A. (iii) 2. (iv) (a) 4.3 m. x 3.4 m. (b) 4.0 m. x 3.1 m. (v) 15 cm. x 15 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Leaf roller attack. (iii) Height, yield of grain, tiller count and panicle length. (iv) (a) No. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2669 Kg/ha. (ii) (a) 830.0 Kg/ha. (b) 458.0 Kg/ha. (iii) Main effect of V alone is highly 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	V_9	V_{10}
N_1	1632	1808	2301	1784	2406	2958	2254	3240	3521	3122
N_2	1491	2136	1596	2113	2782	2817	1972	3099	3920	3944
Mean	1562	1972	1949	1949	2594	2888	2113	3170	3721	3533

	V_{11}	V_{12}	V_{13}	V_{14}	V_{15}	V_{16}	V_{17}	V_{18}	Mean
N_1	2805	2958	3357	2629	2019	2723	3380	2254	2619
N_2	2958	2430	3756	2864	2676	2770	3474	2136	2719
Mean	2882	2694	3557	2747	2348	2747	3427	2195	2659

C.D. for V marginal mean = 658.6 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 61(36).****Site :- Rice Res. Stn., Jeypore.****Type :- 'MV'.**

Object : To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P_2O_5 +12 C.L./ha. of F.Y.M. or Dhaincha (G.M.). (ii) Loamy. (iii) 16.6.61, 21.7.61. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm.×23 cm. (e) 1 to 2. (v) 12 C.L./ha. of F.Y.M.+31.4 Kg/ha. of B.M.+6725 Kg/ha. of green matter. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 12.11.61.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : $N_1=22.4$ and $N_2=67.2$ Kg/ha.

Sub-plot treatments :

15 varieties : $V_1=$ FH—6, $V_2=$ FH—19, $V_3=$ T—442, $V_4=$ FH—11, $V_5=$ FH—25, $V_6=$ FH—21, $V_7=$ FH—8, $V_8=$ FH—7, $V_9=$ FH—20, $V_{10}=$ FH—18, $V_{11}=$ FH—13, $V_{12}=$ FH—4, $V_{13}=$ FH—5, $V_{14}=$ FH—1 and $V_{15}=$ FH—17.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 15 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 4.3 m. × 3.1 m. (b) 4.3 m.×2.7 m. (v) 15 cm. on each side along breadth. (vi) Yes.

4. GENERAL :

Same as in expt. no. 61 (32) on page 107.

5. RESULTS :

(i) 2176 Kg/ha. (ii) (a) 556 Kg/ha. (b) 356 Kg/ha. (iii) Main effect of V is highly significant and interaction $V \times N$ 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
N_1	1623	3004	1514	2567	1732	2737	1853	2531
N_2	3112	2652	2265	2325	3463	3052	1841	2471
Mean	2368	2828	1889	2446	2598	2895	1847	2501

	V_9	V_{10}	V_{11}	V_{12}	V_{13}	V_{14}	V_{15}	Mean
N_1	1344	2628	3016	1150	1417	1647	1453	2014
N_2	2289	1635	2713	2010	2047	1744	1441	2337
Mean	1817	2132	2865	1580	1732	1696	1447	2176

C.D. for V marginal means = 515.8 Kg/ha.

C.D. for V means at the same level of N = 729.1 Kg/ha.

C.D. for N means at the same level of V = 1352.5 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 61(37).

Site :- Rice Res. Stn., Jeypore.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P_2O_5 +12 C.L./ha. of F.Y.M. or Dhaincha (G.M.). (ii) Loamy. (iii) 16.6.61, 29.7.61. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm.×23 cm. (e) 1 to 2. (v) 2 C.L./ha. of F.Y.M.+31.4 Kg/ha. of B.M.+10984 Kg/ha. of green matter. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 25.11.61.

2. TREATMENTS :

Main-plot treatments :2 levels of N as A/S : $N_1=22.4$ and $N_2=67.2$ Kg/ha.**Sub-plot treatments :**15 varieties : $V_1=$ FH--39, $V_2=$ FH--37, $V_3=$ T- 442, $V_4=$ FH--34, $V_5=$ FA 36, $V_6=$ FH--42, $V_7=$ FH--41, $V_8=$ FH--5A, $V_9=$ FH--26, $V_{10}=$ FH--33, $V_{11}=$ FH--46, $V_{12}=$ FH--47, $V_{13}=$ FH--50, $V_{14}=$ FH--28, and $V_{15}=$ FH--29.N broadcast $\frac{1}{2}$ at planting, $\frac{1}{2}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 15 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 4.0 m. \times 3.4 m. (b) 4.0 m. \times 3.1 m. (v) and (vi) Yes.

4. GENERAL :

Same as in expt. no. 61 (35) on page 110.

5. RESULTS :

(i) 2575 Kg/ha. (ii) (a) 848.0 Kg/ha. (b) 672.0 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	V_9
N_1	2019	3521	1291	3052	3005	3005	2981	2441	2160
N_2	2864	2723	1596	2770	2113	4038	2817	2019	2535
Mean	2442	3122	1444	2911	2559	3522	2864	2230	2348

	V_{10}	V_{11}	V_{12}	V_{13}	V_{14}	V_{15}	Mean
N_1	3005	2723	2887	2441	3427	3287	2745
N_2	1831	2207	2488	1315	2676	2066	2404
Mean	2418	2465	2688	1878	3052	2677	2575

C.D. for V marginal means=973.2 Kg/ha.

Crop :- Paddy (Kharif).**Site :- Rice Res. Stn., Jeypore.****Ref :- Or. 61(38).****Type :- 'MV'.**

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P_2O_5 +12 C.L./ha. of F.Y.M. or Dhanicha (G.M.). (ii) Loamy. (iii) 15.6.61/30.7.61. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm. \times 23 cm. (e) 1 to 2. (v) 12 C.L./ha. of F.Y.M. or Dhanicha (G.M.). (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and hoeing (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :2 levels of N as A/S : $N_1=22.4$ and $N_2=67.2$ Kg/ha.**Sub-plot treatments :**15 varieties : $V_1=$ FH--10A, $V_2=$ FH--40A, $V_3=$ FH--38A, $V_4=$ FH--57A, $V_5=$ T- 442, $V_6=$ FH--23A, $V_7=$ FH--49A, $V_8=$ FH--26A, $V_9=$ FH--36A, $V_{10}=$ FH--18A, $V_{11}=$ FH--31A, $V_{12}=$ FH--7A, $V_{13}=$ FH--28A, $V_{14}=$ FH--54A and $V_{15}=$ FH--14A.N broadcast $\frac{1}{2}$ at planting, $\frac{1}{2}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 15 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 3.7 m. \times 3.7 (b) 3.4 m. \times 3.7 m. (v) 15 cm. on each side along breath. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Height, panicle length, tillers, count, and yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3249 Kg/ha. (ii) (a) 66 Kg/ha. (b) 388 Kg/ha. (iii) Main effect of V is highly significant and the of N 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
N ₁	4207	3444	3351	2727	2727	2080	3640	2473
N ₂	3016	2935	3259	2473	2566	2011	3190	2519
Mean	3612	3190	3305	2600	2647	2046	3415	2496

	V ₉	V ₁₀	V ₁₁	V ₁₂	V ₁₃	V ₁₄	V ₁₅	Mean
N ₁	3490	3999	3721	3698	3814	4045	4137	3437
N ₂	3351	2774	3328	3328	3698	3698	3768	3061
Mean	3421	3387	3525	3513	3756	3872	4353	3249

C.D. for N marginal means=216.0 Kg/ha.

C.D. for V marginal means=562.0 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 61(39).

Site :- Rice Res. Stn., Jeypore.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha of N+33.6 Kg/ha. of P₂O₅+12 C.L./ha. of F.Y.M. or *Dhanicha* (G.M.). (ii) Loamy. (iii) 15.6,61/31.7,61. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm. \times 23 cm. (e) 1 to 2. (v) 12 C.L./ha. of F.Y.M.+33.6 Kg/ha. of P₂O₅ as B.M.+12553 Kg/ha. of G.M. from green matter. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : N₁=22.4 and N₂=67.2 Kg/ha.

Sub-plot treatments :

16 varieties : V₁=FH-3, V₂=FH-2, V₃=FH-35, V₄=FH-15, V₅=FH-22, V₆=FH-31, V₇=FH-12, V₈=FH-14, V₉=FH-9, V₁₀=FH-32, V₁₁=FH-30, V₁₂=FH-23, V₁₃=FH-10, V₁₄=T-141, V₁₅=FH-27, and V₁₆=J-4.

N broadcast, at planting, $\frac{1}{2}$ one month after planting and $\frac{1}{2}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot (ii) (a) 2 main-plots/replication ; 15 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 4.8 m. \times 2.6 m. (b) 4.8m. \times 2.3 m. (v) 15 cm. on each side along breadth. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Leaf roller attack. (iii) Height, tillers count, panicle length, dates of flowering and yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil

5. RESULTS :

(i) 3027 Kg/ha. (ii) (a) 326.0 Kg/ha. (b) 370.0 Kg/ha. (iii) Main effect of 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	V ₇	V ₈	
N ₁	2227	3100	2506	2079	3203	3875	2996	1963	
N ₂	2790	3823	3410	3720	3358	3229	2841	3513	
Mean	2505	3461	2958	2399	3280	3552	2918	2738	

	V ₉	V ₁₀	V ₁₁	V ₁₂	V ₁₃	V ₁₄	V ₁₅	V ₁₆	Mean
N ₁	2170	2996	3565	3978	2325	3358	2428	3100	2866
N ₂	2325	4236	2893	3513	2996	2635	2428	3306	3188
Mean	2248	3616	3229	3746	2661	2997	2428	3233	3027

C.D. for V marginal means = 534.2 Kg/ha.

C.D. for V means at the same level of N = 755.5 Kg/ha.

C.D. for N means at the same level of V = 943.1 Kg/ha.

Crop :- Paddy (Kharif).

Site :- Rice Res. Stn., Jeypore.

Ref :- Or. 61(40).

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N + 33.6 Kg/ha. of P₂O₅ + 12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (ii) (a) Loamy. (iii) 15.6/61/5.8/61. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm. × 23 cm. (e) 1 to 2. (v) 12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.) (vi) As per treatments. (vii) Unirrigated. (viii) Weeding. (ix) ann (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : N₁ = 22.4 and N₂ = 67.2 Kg/ha.

Sub-plot treatments :

16 varieties : V₁ = FH-39 A, V₂ = FH-42A, V₃ = V-7, V₄ = FH-43 A, V₅ = FH-45A, V₆ = FH-30 A, V₇ = V-24, V₈ = FH-24A, V₉ = V-21, V₁₀ = FH-32A, V₁₁ = FH-34 A, V₁₂ = FH-25A, V₁₃ = FH-22 A, V₁₄ = FH-35 A, V₁₅ = T-442 and V₁₆ = V-26.

N broadcast at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 16 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 3.7 m. × 3.2 m. (b) 3.7 m. × 2.9 m. (v) 15 cm. on each side along breadth. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Leaf roller attack. (iii) Height, tiller count, grain yield, panicle length and flowering dates. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2820 Kg/ha. (ii) (a) 1388.0 Kg/ha. (b) 479.0 Kg/ha. (iii) None of the effects 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
N ₁	2569	3104	2034	2141	3211	2516	3104	2730
N ₂	2890	2676	2462	2890	2582	2890	2596	3318
Mean	2730	2890	2248	2516	2896	2703	2853	3224

	V ₉	V ₁₀	V ₁₁	V ₁₂	V ₁₃	V ₁₄	V ₁₅	V ₁₆	Mean
N ₁	2783	2997	3265	2301	2569	2355	3051	2676	2713
N ₂	2623	3265	3158	2797	4014	3104	2890	2676	2927
Mean	2703	3113	3212	2549	3292	2729	2971	2676	2820

Crop :- Paddy (Kharif).

Ref :- Or. 62(42).

Site :- Rice Res. Stn., Jeypore.

Type :- 'MV'.

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

1. BASAL COKDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P₂O₅+12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (ii) (a) Loamy. (iii) 9.6.62/23.7.62. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) N.A. (e) 1 to 2. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) 5.11.62.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : N₁=22.4 and N₂=67.2 Kg/ha.

Sub-plot treatments :

4 varieties : V₁=AC-B68, V₂=B-76 (early), V₃=ADT-20 and V₄=FH-165.

N broadcast $\frac{1}{2}$ at planting $\frac{1}{4}$, one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 5.0 m. x 1.7 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Flowering dates, height, tiller count, panicle length and yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2289 Kg/ha. (ii) (a) 119.0 Kg/ha. (b) 516.0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	Mean
N ₁	1780	2729	1305	3085	2225
N ₂	1265	3203	1384	3559	2353
Mean	1523	2966	1345	3322	2289

C.D. for V marginal means=649.1 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 62(44).****Site :- Rice Res. Stn., Jyepore.****Type :- 'MV'.**

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P_2O_5 +12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (ii) Loamy. (iii) 12.6.62/4.8.62. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm. x 15 cm. (e) 2. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) 4th week of Nov. '62.

2. TREATMENTS :**Main-plot treatments :**2 levels of N as A/S : $N_1=22.4$ and $N_2=67.2$ Kg/ha.**Sub-plot treatments :**

16 varieties : $V_1=T-442$, $V_2=MFU-9$, $V_3=PH-155$, $V_4=PH-129$, $V_5=PH-153$, $V_6=SP-1$, $V_7=BBS-9$, $V_8=PH-163$, $V_9=PH-145$, $V_{10}=PH-152$, $V_{11}=V-15$, $V_{12}=PH-108$, $V_{13}=PH-162$, $V_{14}=PH-135$, $V_{15}=V-8$ and $V_{16}=PH-150$.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowerings.**3. DESIGN :**

(i) Split-plot. (ii) 2 main-plots/replication ; 16 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 3.7 m. x 2.6 m. (b) 3.4 m. x 2.3 m. (v) 15 cm. x 15 cm. (vi) Yes.

4. GENERAL :

Same as in Expt. no. 62(42) on page 115.

5. RESULTS :

(i) 2454 Kg/ha. (ii) (a) 1769.0 Kg/ha. (b) 451.0 Kg/ha. (iii) Main effect of V alone is highly 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
N_1	2261	1957	2696	2653	2435	1489	1870	2218
N_2	2348	2087	2740	2348	2479	1913	1870	2171
Mean	2304	2022	2718	2500	2457	1996	1870	2174

	V_9	V_{10}	V_{11}	V_{12}	V_{13}	V_{14}	V_{15}	V_{16}	Mean
M	2479	3088	2087	2827	2435	2653	2218	2609	2373
M_2	2914	2740	2131	3131	3088	3435	2305	2914	2536
Mean	2696	2914	2109	2979	2761	3044	2261	2761	2454

C.D. for V marginal means=520.8 Kg/ha

Crop :- Paddy (Kharif).**Ref :- Or. 62(43).****Site :- Rice Res. Stn., Jyepore.****Type :- 'MV'.**

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P_2O_5 +12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (ii) Loamy. (iii) 17.6.62/10.8.62. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 23 cm. x 23 cm. (e) 1 to 2. (v) N.A. (vi) As per treatments (latc). (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) 1st week of Dec., 1962.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S : $N_1=22.4$, $N_2=44.8$, $N_3=67.2$ and $N_4=89.7$ Kg/ha.

Sub-plot treatments :

8 varieties : $V_1=Hyb-7$, $V_2=V-28$, $V_3=BAM-3$, $V_4=BBS-16$, $V_5=BBS-23$, $V_6=J-7$, $V_7=$
 $FH-58$ and $V_8=FH-849$.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 8 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 6.2 m. \times 2.3 m. (b) 5.7 m. \times 1.8 m. (v) 23 cm. \times 23 cm. (vi) Yes.

4. GENERAL :

Same as in expt. no. 62(42) on page 115.

5. RESULTS :

(i) 2186 Kg/ha. (ii) (a) 634.0 Kg/ha. (b) 496.0 Kg/ha. (iii) None of the effects 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	Mean
N_1	2296	2041	2232	2424	2551	1594	2200	2009	2168
N_2	2519	2200	2168	2105	2264	1913	2200	2073	2180
N_3	2424	2009	2296	2328	1945	2583	2774	2200	2320
N_4	2137	1881	2105	2328	2009	2073	2137	1945	2077
Mean	2344	2033	2200	2296	2192	2041	2328	2057	2186

Crop :- Paddy (Kharif).

Ref :- Or. 62(45).

Site :- Rice Res. Stn., Jeypore.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P_2O_5 +12 C.L/ha. of F.Y.M. or *Dhanicha* (G.M.) (ii) Loamy. (iii) 14.6.62/5.8.62. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm. \times 15 cm. (e) 1 to 2. (v) N.A. (vi) As per treatments (medium). (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) 3rd week of Nov., 62.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S : $N_1=22.4$, $N_2=44.8$, $N_3=67.2$ and $N_4=89.7$ Kg/ha.

Sub-plot treatments :

7 varieties : $V_1=109-A$, $V_2=JNS 931-50$, $V_3=FH-72$, $V_4=J-4$, $V_5=RDR-4$, $V_6=V-16$ and $V_7=$
 $T-141$.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$, one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 7 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 5.3 m. \times 2.3 m. (b) 5.0 m. \times 2.3 m. (v) 15 cm. on each side along length, (vi) Yes.

4. GENERAL :

Same as in expt. no. 62(42) on page 115.

5. RESULTS :

(i) 4003 Kg/ha. (ii) (a) 1199.0 Kg/ha. (b) 987.0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	Mean
N ₁	3827	3653	5523	3893	4262	2607	3458	3889
N ₂	4414	3632	4915	4001	3936	2674	3371	3849
N ₃	3479	3893	5371	3588	3632	2892	5023	3982
N ₄	3653	4262	5436	5545	4045	2651	4458	4293
Mean	3843	3860	5311	4257	3969	2707	4077	4003

C.D. for V marginal means = 696.4 Kg/ha

Crop :- Paddy (Kharif).

Ref :- Or. 62(46).

Site :- Rice Res. Stn., Jeypore.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N + 33.6 Kg/ha. of P₂O₅ + 12 C.L./ha. of F.Y.M. and *Dhaincha* (G.M.) (ii) Loamy. (iii) 9.6.62/22.7.62. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm. x 23 cm. (e) 1 to 2. (v) F.Y.M. at 15 baskets/ha. to each main-treatment with 5 Kg/ha. of Super. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) 2nd week of Oct. 62.

2. TREATMENTS :

Main-plot treatments :

3 levels of N as A/S : N₁=22.4, N₂=44.8 and N₃=67.2 Kg/ha.

Sub-plot treatments :

4 varieties : V₁=V-4, V₂=T-6522, V₃=B-76 and V₄=CH-62.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{2}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 4.6 m. x 2.1 m. (b) 4.3 m. x 2.1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) N.A. (iii) Flowering dates, growth, leaf sheath, apicules, stigma, height, tiller and panicle length. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1407 Kg/ha. (ii) (a) 395.0 Kg/ha. (b) 310.0 Kg/ha. (iii) Main effect of N is significant and that of V is highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	Mean
N ₁	906	1043	1098	1620	1167
N ₂	1016	1235	1345	1812	1352
N ₃	1455	1757	1785	1812	1702
Mean	1126	1345	1409	1748	1407

C.D. for N marginal means = 341.6 Kg/ha.

C.D. for V marginal means = 259.8 Kg/ha.

Crop :- Paddy (Kharif).
Site :- Rice Res. Stn., Jeypore.

Ref :- Or. 62(47).
Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P_2O_5 +12 C.L/ha. of F.Y.M. or *Dhaincha* (G.M). (ii) Loamy. (iii) 12.6.62/25.7.62. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 23 cm. x 15 cm. (e) 2. (v) 12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M). (vi) As per treatments. (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) 1st week of Nov., 62.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S : $N_1=22.4$, $N_2=44.8$, $N_3=67.2$ and $N_4=89.7$ Kg/ha.

Sub-plot treatments :

7 varieties : $V_1=$ FH—158, $V_2=$ FH 42—12, $V_3=$ FH—43, $V_4=$ BBS—1, $V_5=$ V—1, $V_6=$ V—2 and $V_7=$ T—442.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 7 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 4.0 m. x 2.3 m. (b) 3.7 m. x 1.8 m. (v) 23 cm. x 15 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Flowering dates, leaf sheath, apiculus, stigma, height, tiller, count, panicle length and grain yield. (iv) (a) No. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3200 Kg/ha. (ii) (a) 871.0 Kg/ha. (b) 650.0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7	Mean
N_1	3774	2279	3139	3363	3251	2541	2391	2962
N_2	3811	2391	3213	3923	3027	3101	2653	3160
N_3	3886	3027	3251	3662	3475	2989	3213	3357
N_4	3998	2578	3400	3288	3363	2915	3699	3320
Mean	3867	2569	3251	3559	3279	2886	2989	3200

C.D. for V marginal means=458.7 Kg/ha.

Crop :- Paddy. (Kharif).
Site :- Rice Res. Stn., Jeypore.

Ref :- Or. 62(48).
Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P_2O_5 +12 C.L/ha. of F.Y.M. or *Dhaincha* (G.M). (ii) Loamy. (iii) 14.6.62/7.8.62 (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 23 cm. x 15 cm. (e) 1 to 2. (v) 12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M). (vi) As per treatments (medium). (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : $N_1 = 22.4$ and $N_2 = 67.2$ Kg/ha.

Sub-plot treatments :

15 varieties : $V_1 = \text{FH}-137$, $V_2 = \text{FH}-157$, $V_3 = \text{FH}-127$, $V_4 = \text{FH}-34$, $V_5 = \text{FH}-66$, $V_6 = \text{FH}-144$,
 $V_7 = \text{FH}-104$, $V_8 = \text{T}-141$, $V_9 = \text{J}-4$, $V_{10} = \text{FH}-23$, $V_{11} = \text{FH}-102$, $V_{12} = \text{FH}-141$, $V_{13} =$
 $\text{FH}-135$, $V_{14} = \text{FH}-61$ and $V_{15} = \text{FH}-134$.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 15 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 3.7 m. \times 2.7 m. (b) 3.4 m. \times 2.3 m. (v) 2.3 cm. \times 15 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Flowering dates, height, tiller count, panicle length and yield of grain and straw. (iv) (a) No. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3570 Kg/ha. (ii) (a) 583.0 Kg/ha. (b) 674.0 Kg/ha. (iii) Main effect of N is significant and that of V is highly 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
N_1	3131	3696	3957	2827	2566	4436	2783	3001
N_2	3957	4218	4610	3740	3218	5218	2174	4610
Mean	3544	3957	4283	3283	2892	4827	2478	3805

	V_9	V_{10}	V_{11}	V_{12}	V_{13}	V_{14}	V_{15}	Mean
N_1	4218	2870	3522	3349	2827	2522	2740	3230
N_2	4958	3435	3305	4001	3566	4001	3653	3911
Mean	4588	3152	3413	3675	3196	3261	3196	3570

C.D. for N marginal means = 528.8 Kg/ha.

C.D. for V marginal means = 780.0 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 62(49).

Site :- Rice. Res. Stn., Jeypore.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N + 33.6 Kg/ha. of P_2O_5 + 12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (iii) 14.6.62/2.8.62. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) N.A. (e) 2. (v) 12 C.L./ha. F.Y.M. or *Dhaincha* (G.M.) (vi) As per treatments. (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) 10.12.62.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : $N_1 = 22.4$ and $N_2 = 67.2$ Kg/ha.

Sub-plot treatments :

15 varieties : $V_1 = \text{FH}-101$, $V_2 = \text{FH}-40$, $V_3 = \text{FH}-88$, $V_4 = \text{J}-4$, $V_5 = \text{T}-141$, $V_6 = \text{FH}-106$, $V_7 = \text{FH}-114$, $V_8 = \text{FH}-62$, $V_9 = \text{TNS 973}-17$, $V_{10} = \text{FH}-70$, $V_{11} = \text{FH}-80$, $V_{12} = \text{FH}-147$, $V_{13} = \text{FH}-59$, $V_{14} = \text{FH}-111$ and $V_{15} = \text{FH}-45$.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot (ii) (a) 2 main-plots/replication ; 15 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 1/1186 ha. (v) Yes. (vi) Yes.

4. GENERAL :

Same as in expt. no. 62(48) on page 119.

5. RESULTS :

(i) 2933 Kg/ha. (ii) (a) 1806.0 Kg/ha. (b) 769.0 Kg/ha. (iii) None of the effects 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
N ₁	2807	2174	2214	2609	3084	2412	3202	2847
N ₂	2886	2095	2372	3558	4270	3479	3914	2807
Mean	2846	2134	2293	3083	3677	2945	3558	2827

	V ₉	V ₁₀	V ₁₁	V ₁₂	V ₁₃	V ₁₄	V ₁₅	Mean
N ₁	3202	3202	2609	2728	2293	2333	2135	2657
N ₂	3084	3321	3756	3242	3163	3084	3123	3210
Mean	3143	3261	3182	2985	2728	2708	2629	2933

Crop :- Rice. (Kharif).

Ref :- Or. 62(50).

Site :- Rice. Res. Stn., Jeypore.

Type :- 'MV'.

Object :-To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P₂O₅+12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.) (ii) Loamy. (iii) 14.6.62/6.8.62. (iv) (a) 2 Ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 23 cm. × 15 cm. (e) 2. (v) 12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.) (vi) As per treatments (medium) (vii) Unirrigated. (viii) Weeding. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : N₁=22.4 and N₂=67.2.

Sub-plot treatments :

15 varieties : V₁=FH-118, V₂=V-7, V₃=FH-148, V₄=T-141, V₅=FH-143, V₆=CR-227, V₇=FH-69, V₈=FH-63, V₉=FH-150, V₁₀=FH-60, V₁₁=J-4, V₁₂=V-14, V₁₃=FH-83, V₁₄=FH-53 and V₁₅=FH-188.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot- (ii) (a) 2 main-plots/replication, 15 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 3.0 m. × 2.7 m. (b) 2.7 m. × 2.3 m. (v) 23 cm. × 15 cm. (vi) Yes.

4. GENERAL :

Same as in expt. no. 62(48) on page 119.

5. RESULTS :

- (i) 4088 Kg/ha. (ii) (a) 1314.0 Kg/ha. (b) 575.0 Kg/ha. (iii) Main effect of V alone is highly 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
N ₁	3981	2605	4093	4146	4146	3296	2817	4093
N ₂	4997	2871	4944	4200	4572	4040	3934	5156
Mean	4492	2738	4518	4173	4359	3668	3375	4624

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	Mean
N ₁	3668	3615	3402	3721	4625	4146	3774	3742
N ₂	4040	4572	4518	3774	5635	4572	4678	4433
Mean	3854	4093	3960	3747	5130	4359	4226	4088

C.D. for V marginal means=665.7 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 62(51).

Site :- Rice Res. Stn., Jeypore.

Type :- 'MV'.

Object : -To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P₂O₅+12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (ii) Loamy. 12.6.62/4.8.62. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) N.A. (e) 2. (v) 12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (vi) As per treatments (early). (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : N₁=22.4 and N₂=67.2 Kg/ha.

Sub-plot treatments :

10 varieties : V₁=CR-116, V₂=PTB-3, V₃=FH-121, V₄=Γ-442, V₅=FH-45, V₆=ACB-349, V₇=FH-149, V₈=Mgl-2, V₉=FH-136 and V₁₀=FH-110.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

- (i) Split-plot. (ii) (a) 2 main-plots/replication ; 10 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 2.3 m. x 2.4 m. (v) and (vi) Yes.

4. GENERAL :

Same as in Expt. no. 62(48) on page 119.

5. RESULTS :

- (i) 2243 Kg/ha. (ii) (a) 474.0 Kg/ha. (b) 647.0 Kg/ha. (iii) None of the effects 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	V ₉	V ₁₀	Mean
N ₁	2751	2452	2213	2811	3110	2811	2153	2093	1376	2273	2404
N ₂	1914	2273	2213	2392	1794	2093	2273	2213	2333	1316	2081
Mean	2332	2362	2213	2601	2452	2452	2213	2153	1854	1794	2243

Crop :- Paddy (Kharif).

Ref :- Or. 62(52).

Site :- Rice Res. Stn. Jeypore.

Type :- (MV).

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P₂O₅+12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (ii) Loamy. (iii) 14.6.62/9.9.62. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 23 cm. × 15 cm. (e) 2. (v) 12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (vi) As per treatments (medium). (vii) Unirrigated. (viii) Weeding. (ix) and (x) N.A.

2. TREATMENTS

Main-plot treatments :

2 levels of N as A/S : N₁=22.4 and N₂=67.2 Kg/ha.

Sub-plot treatments :

15 varieties : V₁=FH-39 ; V₂=FH-128, V₃=FH-103, V₄=FH-139, V₅=FH-15, V₆=FH-131, V₇=T-141, V₈=J-4, V₉=BBS-59, V₁₀=EH-124, V₁₁=FH-61, V₁₂=FH-55, V₁₃=T-1145, V₁₄=FH-54 and V₁₅=FH-105.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 15 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 3.6 m. × 2.7 m. (b) 3.4 m. × 2.3 m. (v) 23 cm. × 15 cm. (vi) Yes.

4. GENERAL :

Same as in expt. no. 6(48) on page 119.

5. RESULTS :

(i) 3476 Kg/ha. (ii) (a) 854.0 Kg/ha. (b) 958.0 Kg/ha. (iii) None of the effects 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
N ₁	3696	3827	2522	4175	3870	4044	4262	4349
N ₂	2870	3305	2218	3305	3479	3566	3653	2696
Mean	3283	3566	2370	3740	3674	3805	3957	3522

	V ₉	V ₁₀	V ₁₁	V ₁₂	V ₁₃	V ₁₄	V ₁₅	Mean
N ₁	3392	4001	4001	3870	3522	3566	4349	3830
N ₂	3262	2870	3175	3957	2783	2522	3175	3122
Mean	3327	3435	3588	3913	3152	3044	3762	3476

Crop :- Paddy (Kharif):
Site :- Rice Res. Stn., Jeypore.

Ref :- Or. 62(53).
Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. **BASAL CONDITIONS :**

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N + 33.6 Kg/ha. of P_2O_5 + 12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (ii) Loamy. (iii) 14.6, 62/8.8.62. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 23 cm. x 15 cm. (e) 1 to 2. (v) 12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (vi) As per treatments (medium). (vii) Unirrigated. (viii) Weeding. (ix) and (x) N.A.

2. **TREATMENTS :**

Main-plot treatments :

2 levels of N as A/S : $N_1 = 22.4$ and $N_2 = 67.2$ Kg/ha.

Sub-plot treatments :

15 varieties : $V_1 = FH-112$, $V_2 = FH-161$, $V_3 = T-1145$, $V_4 = FH-86$, $V_5 = FH-97$, $V_6 = FH-76$, $V_7 = PH-130$, $V_8 = T-141$, $V_9 = V-14$, $V_{10} = FH-67$, $V_{11} = J-4$, $V_{12} = FH-84$, $V_{13} = FH-13$, $V_{14} = FH-99$ and $V_{15} = FH-114$.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. **DESIGN :** and 4. **GENERAL :**

Same as in Expt. no. 62(52) on page 123.

5. **RESULTS :**

(i) 3686 Kg/ha. (ii) (a) 1392.0 Kg/ha. (b) 677.0 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
N_1	4001	2870	3131	3783	3783	3349	2957	3349
N_2	4262	3435	4218	3957	4349	4175	4262	4218
Mean	4131	3152	3674	3870	4066	3762	3509	3783

	V_9	V_{10}	V_{11}	V_{12}	V_{13}	V_{14}	V_{15}	Mean
N_1	3435	2653	4001	3088	2870	3914	3827	3401
N_2	4131	3740	4914	3827	3001	3088	4001	3972
Mean	3782	3196	4457	3457	2935	3501	3914	3686

C.D. for V marginal means = 184.9 Kg/ha.

Crop :- Paddy (Kharif).
Site :- Rice Res. Stn., Jeypore.

Ref :- Or. 62(54).
Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. **BASAL CONDITIONS :**

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N + 33.6 Kg/ha. of P_2O_5 + 12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (ii) Loamy. (iii) 17.6, 62/10.8.62. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 23 cm. x 23 cm. (e) 1 to 2. (v) 12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (vi) As per treatments (late). (vii) Unirrigated. (viii) Weeding. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : $N_1=22.4$ and $N_2=67.2$ Kg/ha.

Sub-plot treatments :

6 varieties : $V_1=$ FH—74, $V_2=$ FH—167, $V_3=$ BAM—3, $V_4=$ FH—94, $V_5=$ FH—24 and $V_6=$ J—7.
N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 7.0 m. \times 2.1 m. (b) 6.6 m. \times 1.6 m. (v) 23 cm. \times 23 cm. (vi) Yes.

4. GENERAL :

Same as in Expt. no. 62(52) on page 123.

5. RESULTS :

(i) 3243 Kg/ha. (ii) (a) 1854.0 Kg/ha. (b) 713 Kg/ha. (iii) Main effect 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
N_1	3243	2829	3020	2257	3338	3751	3073
N_2	3529	2861	3751	2607	3783	3942	3412
Mean	3386	2845	3386	2432	3561	3847	3243

C.D. for V marginal means = 858.8 Kg/ha.

Crop :- Paddy. (Kharif).

Ref :- Or. 62(55).

Site :- Rice Res. Stn., Jeypore.

Type :- 'MV'.

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P_2O_5 +12 C.L/ha. of F.Y.M. or *Dhaincha* (G.M.). (ii) Loamy. (iii) N.A. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 23 cm. \times 23 cm. (e) 1 to 2. (v) 12 C.L/ha. of F.Y.M. or *Dhaincha* (G.M.) (vi) As per treatments (late). (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : $N_1=22.4$ and $N_2=67.2$ Kg/ha.

Sub-plot treatments :

13 varieties : $V_1=$ FH—154, $V_2=$ FH—102, $V_3=$ V—37, $V_4=$ FH—93, $V_5=$ BBB—82, $V_6=$ BAM—3, $V_7=$ FH—146, $V_8=$ J—7, $V_9=$ FH—98, $V_{10}=$ V—33, $V_{11}=$ Hyb. T—6, $V_{12}=$ FH—79 and $V_{13}=$ V—19.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 13 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 12.1 m. \times 4.6 m. (b) 1.6 m. \times 4.1 m. (v) 23 cm. \times 23 cm. (vi) Yes.

4. GENERAL :

Same as in Expt. No. 62(52) on page 123.

5. RESULTS :

(i) 3709 Kg/ha. (ii) (a) 1532.0 Kg/ha. (b) 743.0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇
N ₁	3949	4455	3797	3949	2987	3341	4151
N ₂	3848	5468	3493	3746	3240	3595	4708
Mean	3898	4961	3645	3847	3113	3463	4429

	V ₈	V ₉	V ₁₀	V ₁₁	V ₁₂	V ₁₃	Mean
N ₁	2683	3848	3088	4000	3746	3190	3629
N ₂	3341	4354	2278	4455	4151	2582	3789
Mean	3012	4101	2683	4227	3943	2886	3709

C.D. for V marginal means = 863.6 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 63(27).

Site :- Rice Res. Stn., Jeypore.

Type :- 'MV'.

Object : -To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P₂O₅+12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M). (ii) Loamy. (iii) 11.6.63/5.7.63. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm. x 23 cm. (e) 2. (v) 12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M). (vi) As per treatments. (vii) Un-irrigated. (viii) Weeding. (ix) N.A. (x) 6.11.63.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S : N₁=22.4, N₂=44.8, N₃=67.2 and N₄=89.7 Kg/ha.

Sub-plot treatments :

8 varieties : V₁=V-2, V₂=FH-43, V₃=FH-135, V₄=F1H-42-12, V₅=J-10, V₆=FH-158, V₇=T-442 and V₈=FH-103.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 8 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 4.7 m. x 3.0 m. (b) 4.4 m. x 3.0 m. (v) 15 cm. on each side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height, tiller, counts, panicle length and yield of grain. (iv) (a) No. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2392 Kg/ha. (ii) (a) 836.0 Kg/ha. (b) 613.0 Kg/ha. (iii) Main effect of V alone is highly 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	Mean
N ₁	2126	2676	1797	2163	1682	3209	2573	2196	2303
N ₂	2099	2114	2430	2562	1823	2775	2206	2693	2338
N ₃	2118	2223	2244	2278	2310	2927	3703	2472	2534
N ₄	2428	2301	2301	2053	1981	2655	2811	2603	2392
Mean	2193	2328	2193	2264	1949	2891	2823	2491	2392

C.D. for V marginal means=435.2 Kg/ha.

Crop :- Paddy. (Kharif).

Ref :- Or. 63(28).

Site :- Rice Res. Stn., Jeypore.

Type :- 'MV'.

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P₂O₅+12 C.L/ha. of F.Y.M. or *Dhaincha* (G.M). (ii) Loamy. (iii) 12.6,63/20.7.63. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm.×23 cm. (e) 2. (v) 12 C.L/ha. of F.Y.M. or *Dhaincha* (G.M). (vi) As per treatments (medium). (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) 29.11.63.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S : N₁=22.4, N₂=44.8, N₃=67.2 and N₄=89.7 Kg/ha.

Sub-plot treatments :

8 varieties : V₁=FH-148, V₂=FH-118, V₃=FH-83, V₄=J-4, V₅=FH-72, V₆=FH-63, V₇=T-141 and V₈=FH-144.

N broadcast $\frac{1}{2}$ at planting. $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 8 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 4.8 m.×5.6 m. (b) 4.8 m.×5.3 m. (v) 15 cm. on each side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height, tiller counts, panicle length and yield of grain. (iv) (a) No. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3080 Kg/ha. (ii) (a) 725.0 Kg/ha. (b) 344.0 Kg/ha. (iii) Main effect of V alone is highly 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	Mean
N ₁	3343	2171	3127	3104	2973	2866	3111	3146	2980
N ₂	3612	2401	2935	3195	3612	2890	3508	2838	3124
N ₃	3697	2499	3241	2356	3619	2821	3514	3176	3115
N ₄	3365	2616	2994	2812	3872	2645	3632	2877	3102
Mean	3504	2422	3074	2867	3519	2805	3441	3009	3080

C.D. for V marginal means=281.5 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 63(29).****Site :- Rice Res. Stn., Jeypore.****Type :- 'MV'.**

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P_2O_5 +12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (ii) Loamy. (iii) 18.6.63/22.7.63. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 23 cm.×23 cm. (e) 2. (v) 12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (vi) As per treatments (late). (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) 8.12.63.

2. TREATMENTS :**Main-plot treatments :**4 levels of N as A/S : $N_1=22.4$, $N_2=44.8$, $N_3=67.2$ and $N_4=89.7$ Kg/ha.**Sub-plot treatments :**9 varieties : $V_1=EH-158$, $V_2=BAM-9$, $V_3=Hyb-7$, $V_4=FH-60-124$, $V_5=FH-849$, $V_6=FH-102$, $V_7=BAM-3$, $V_8=FH-146$ and $V_9=BBS-16$.N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication, 9 sub-plots/main-plot. (b) 4. (iii) 3. (iv) (a) 6.6 m.×3.9 m. (b) 6.3 m.×3.9 m. (v) 15 cm. on each side along length. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height, tiller count, panicle length and yield of grain. (iv) (a) No. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2560 Kg/ha. (ii) (a) 771.0 Kg/ha. (b) 439.0 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	V_9	
G_0	2706	2149	2628	2448	2950	2570	2563	3729	2461	2689
G_1	2658	3336	2780	2767	2577	2509	2739	2726	2563	2739
G_2	1912	1824	2319	1912	2000	2299	2495	3373	2224	2262
G_3	2319	2550	2305	2611	2414	2455	2427	2901	2970	2550
Mean	2399	2465	2503	2435	2485	2458	2556	3183	2555	2560

C.D. for V marginal means = 440.0 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 63(30).****Site :- Rice Res. Stn., Jeypore.****Type :- 'MV'.**

Object :—To study the effect of different levels of N on different varieties of Paddy

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P_2O_5 +12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (ii) Loamy. (iii) 11.6.63/8.7.63. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm.×23 cm. (e) 2. (v) 12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (vi) As per treatments. (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) 2.11.63.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : $N_1=22.4$ and $N_2=67.2$ Kg/ha.

Sub-plot treatments

12 varieties : $V_1=T-442$, $V_2= FH-145$, $V_3= FH-155$, $V_4= FH-179$, $V_5= FH-152$, $V_6= FH-178$, $V_7= FH-129$, $V_8= FH-150$, $V_9= FH-46$, $V_{10}= J-10$, $V_{11}= FH-162$ and $V_{12}= FH-153$.N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 12 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b) $4.6\text{ m.} \times 2.0\text{ m.}$ (v) N.A. (vi) Yes.

4. GENERAL :

Same as in expt. no. 63 (29) on page 128.

5. RESULTS :

(i) 2599 Kg/ha. (ii) (a) 921.0 Kg/ha. (b) 567.0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6
N_1	2387	1700	1754	1747	2380	2205
N_2	2701	3034	3093	2409	2966	2755
Mean	2544	2367	2424	2078	2673	2480

	V_7	V_8	V_9	V_{10}	V_{11}	V_{12}	Mean
N_1	2213	2536	2480	2728	2527	2375	2253
N_2	2492	2630	3314	4035	2922	2995	2945
Mean	2353	2583	2897	3382	2725	2685	2599

Crop :- Paddy (*Khairif*).

Ref :- Or. 63(31).

Site :- Rice Res. Stn., Jeypore.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N + 33.6 Kg/ha. of P_2O_5 + 12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (ii) Loamy. (iii) 12.6.63/11.7.63. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) $15\text{ cm.} \times 22\text{ cm.}$ (e) 2. (v) 12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.) (vi) As. per treatments. (vii) Un-irrigated. (viii) Weeding. (ix) N.A. (x) 23.11.63.

2. TREATMENTS :

Main-plot treatments :

2 levels of N of as A/S : $N_1=22.4$ and $N_2=67.2$ Kg/ha.

Sub-plot treatments :

14 Varieties : $V_1= FH-127$, $V_2= FH-157$, $V_3= FH-137$, $V_4= FH-122$, $V_5= FH-104$, $V_6= FH-35$, $V_7= FH-34$, $V_8= FH-114$, $V_9= FH-106$, $V_{10}= FH-80$, $V_{11}= FH-143$, $V_{12}= JNS-913$, $V_{13}= T-141$, and $V_{14}= J-4$.N broadcast $\frac{1}{2}$ at planting, and $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 14 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 4.8 m. \times 3.5 m. (b) 4.5 m. \times 3.5 m. (v) 15 cm. on each side along length. (vi) Yes.

4. GENERAL :

Same as in expt. no. 63 (29) on page .

5. RESULTS :

(i) 2272 Kg/ha. (ii) (a) 115.0 Kg/ha. (b) 425.0 Kg/ha. (iii) Main effects of N and V are significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇
N ₁	2003	2614	2257	1893	2043	2278	2109
N ₂	2232	2534	2318	2210	1895	2213	2003
Mean	2118	2574	2288	2052	1969	2246	2056

	V ₁	V ₂	V ₁₀	V ₁₁	V ₁₂	V ₁₃	V ₁₄	Mean
N ₁	2530	2530	2458	2295	2255	2358	2234	2276
N ₂	2659	2659	2657	2464	2697	3522	2475	2467
Mean	2595	2595	2558	2380	2476	2940	2355	2372

C.D. for N marginal means=108.0 Kg/ha.

C.D. for V marginal means=493.0 Kg/ha.

Crop :- Paddy (Kharif).
Site :- Rice Res. Stn., Jeypore.

Ref :- Or. 63(32).
Type :- 'MV'.

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

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P₂O₅ +12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (d) Loamy. (iii) 17.6.63/24.7.63. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 23 cm. \times 23 cm. (e) 2. (v) 12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (vi) As per treatments. (vii) Un-irrigated. (viii) Weeding. (ix) N.A. (x) 5.12.63.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A S : N₁=22.4 and N₂=67.2 Kg/ha.

Sub-plot treatments :

8 varieties : V₁=FH-206, V₂=BAM-3, V₃=FH-24, V₄=FH-204, V₅=FH-215, V₆=FH-74, V₇=FH-207 and V₈=J-7.

N broadcast 1 at planting, 2 one month after planting and 3, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) 2 main-plots/replication ; 8 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 6.2 m. \times 2.3 m. (b) 5.7 m. \times 2.3 m. (v) 15 cm. on each side along length. (vi) Yes.

4. GENERAL :

Same as in expt. no. 63 (29) on page 128.

5. RESULTS :

(i) 2864 Kg/ha. (ii) (a) 288.0 Kg/ha. (b) 397.0 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	Mean
N ₁	2664	3526	3291	2926	2870	3072	3342	2625	3039
N ₂	2551	2858	2896	2181	2819	2768	2863	2577	2689
Mean	2608	3192	3094	2554	2845	2920	3103	2601	2864

C.D. for V marginal means = 469.4 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 63(33).

Site :- Rice Res. Sta., Jeypore.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N + 33.6 Kg/ha. of P₂O₅ + 12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (ii) Loamy. (iii) 13.6.63/9.7.63. (iv) (a) 2 ploughings. (b) Transplantings. (c) 34 Kg/ha. (d) 15 cm. × 15 cm. (e) 2. (v) 12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (vi) As per treatments (early). (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) 4.10.63 and 17.10.63.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : N₁ = 22.4 and N₂ = 67.2 Kg/ha.

Sub-plot treatments :

4 varieties : V₁ = B-76, V₂ = FH-168, V₃ = FH-175 and V₄ = FH-173.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{2}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 6.1 m. × 2.9 m. (b) 5.8 m. × 2.9 m. (v) 15 cm. on each side along length. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Flowering dates, height, tiller count, panicle length and yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1875 Kg/ha. (ii) (a) 157.0 Kg/ha. (b) 379.0 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	Mean
N ₁	1848	1878	1655	1461	1711
N ₂	2132	2087	1997	1938	2039
Mean	1990	1983	1826	1700	1875

C.D. for N marginal means = 176.6 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 63(34).

Site :- Rice Res. Stn., Jeypore.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P_2O_5 +12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (ii) Loamy. (iii) 12.6.63/19.7.63. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 23 cm.×15 cm. (e) 2. (v) 12 C.L./ha. of F.Y.M. or *Dhaincha*(G.M.). (vi) As per treatments (medium). (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) 12.11.63.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : $N_1=22.4$ and $N_2=67.2$ Kg/ha.

Sub-plot treatments :

22 varieties : $V_1=$ FH-183, $V_2=$ FH-55, $V_3=$ T-141, $V_4=$ J-4, $V_5=$ FH-213, $V_6=$ FH-211, $V_7=$ FH-105, $V_8=$ FH-194, $V_9=$ FH-205, $V_{10}=$ FH-131, $V_{11}=$ FH-208, $V_{12}=$ FH-191, $V_{13}=$ FH-68, $V_{14}=$ FH-199, $V_{15}=$ FH-182, $V_{16}=$ FH-151, $V_{17}=$ FH-139, $V_{18}=$ FH-181, $V_{19}=$ FH-112, $V_{20}=$ FH-86, $V_{21}=$ FH-103 and $V_{22}=$ FH-185.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 22 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 5.3 m.×1.8 m. (b) 5.0 m.×1.8 m. (v) 15 cm. on each side along length. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Flowering dates, height, tiller count, panicle length and yield of grain and straw (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2282 Kg/ha. (ii) (a) 621.0 Kg/ha. (b) 245.0 Kg/ha. (iii) Main effect of 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	V_7		
N_1	1555	1997	2432	2544	3675	2428	2287		
N_2	1819	2196	2722	3196	3182	2613	2587		
Mean	1687	2096	2577	2870	3428	2521	2437		
	V_8	V_9	V_{10}	V_{11}	V_{12}	V_{13}	V_{14}		
N_1	1500	2040	1779	1620	1558	2823	2366		
N_2	2254	2863	2069	1971	1870	2577	1852		
Mean	1877	2452	1924	1796	1714	2700	2109		
	V_{15}	V_{16}	V_{17}	V_{18}	V_{19}	V_{20}	V_{21}	V_{22}	Mean
N_1	2305	2185	2682	2211	2095	1874	1957	1537	2157
N_2	1681	2374	2613	2714	3196	2693	1935	1968	2407
Mean	1993	2279	2648	2463	2646	2284	1946	1753	2282

C.D. for V marginal means=281.7 Kg/ha.

C.D. for V means at the same level of N=398.4 Kg/ha.

C.D. for N means at the same level of V=565.4 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 61(41).****Site :- Rice Res. Stn., Teypore.****Type :- 'MV'.****Object :-** To study the effect of different levels of N on different varieties of Paddy.**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of N+33.6 Kg/ha. of P_2O_5 +12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (ii) Loamy. (iii) 15.6.61/7.8.61. (a) 2 ploughings. (b) Transplanting. (c) 34 cm. Kg/ha. (d) 15 cm. x 23 cm. (e) 1 to 2. (v) 12 C.L./ha. of F.Y.M. or *Dhaincha* (G.M.). (vi) As per treatments (medium). (vii) Unirrigated. (viii) Weeding. (ix) and (x) N.A.

2. TREATMENTS :**Main-plot treatments :**2 levels of N as A/S : $N_1=22.4$ and $N_2=67.2$ Kg/ha.**Sub-plot treatments :**

16 varieties : $V_1=$ FH-63A, $V_2=$ T-141, $V_3=$ FH-60A, $V_4=$ V-19, $V_5=$ V-36, $V_6=$ J-4, $V_7=$ FH-59A, $V_8=$ V-13, $V_9=$ FH-62A, $V_{10}=$ FH-61A, $V_{11}=$ FH-48A, $V_{12}=$ FH-52A, $V_{13}=$ V-35, $V_{14}=$ V-34, $V_{15}=$ T-442 and $V_{16}=$ FH-47A.

N broadcast $\frac{1}{2}$ at planting, $\frac{1}{4}$ one month after planting and $\frac{1}{4}$, 15 days before flowering.**3. DESIGN :**

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 16 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 5.0 m. x 3.0 m. (b) 4.7 m. x 3.0 m. (v) 15 cm. on each side along length. (vi) Yes.

4. GENERAL :

Same as in expt. no. 61(39) on page

5. RESULTS :

(i) 2799 Kg/ha. (ii) (a) 692.0 Kg/ha. (b) 357.0 Kg/ha. (iii) Main effect of V and interaction N x V are highly 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
N_1	2100	3271	2342	3009	2342	1413	3231	2262
N_2	2706	3715	3190	4160	2585	3150	3069	3150
Mean	2403	3493	2766	3584	2464	2282	3150	2706

	V_9	V_{10}	V_{11}	V_{12}	V_{13}	V_{14}	V_{15}	V_{16}	Mean
N_1	2504	3231	2191	2302	3049	2928	2423	3150	2609
N_2	3382	2060	1454	2908	3534	3392	2867	2484	2938
Mean	2943	2645	1823	2605	3292	3160	2645	2817	2799

C.D. for V marginal means = 515.4 Kg/ha.

C.D. for V means at the same level of N = 729.0 Kg/ha.

C.D. for N means at the same level of V = 1615.2 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 62(13).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'C'.****Object :-** To study the relative efficiency of hand weeding and Japanese method of weeding on growth and yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-fallow. (b) Paddy. (c) 4483 Kg/ha. of F.Y.M. (ii) Sandy loam. (iii) N.A. (iv) (a) 2 ploughings, 2 puddlings and 2 ladderings. (b) Transplanting. (c) N.A. (d) 23 cm.×23 cm. (e) 2. (v) 4483 Kg/ha. of F.Y.M. at the time of final ploughing. (vi) T-141(medium). (vii) Unirrigated. (viii) As per treatments. (ix) and (x) N.A

2. TREATMENTS :

8 cultural treatments : W_0 = No weeding, W_1 = One hand weeding, W_2 = One hand weeding + One Japanese weeding, W_3 = One hand weeding + 2 weedings by Japanese weeder, W_4 = 2 hand weedings, W_5 = One Japanese weeding, W_6 = 2 Japanese weedings and W_7 = 3 Japanese weedings.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 8.5 m.×4.6 m. (b) 8.1 m.×4.1 m. (v) 23 cm.×23 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Straw weight. (iv) (a) 1962 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2595 Kg/ha. (ii) 256.0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	W_0	W_1	W_2	W_3	W_4	W_5	W_6	W_7
Av. yield	2491	2781	2474	2593	2661	2627	2491	2644

Crop :- Paddy (Kharif).

Ref :- Or. 64(29).

Site :- State Agri. Res Stn., Bhubaneswar.

Type :- 'C'.

Object :- To study the physical efficiency and economics of various bullock drawn implements for sowing early Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) 21.6.64. (iv) (a) 5 ploughings. (b) As per treatments. (c) 75 Kg/ha. (d) N.A. (e) Nil. (v) Nil. (vi) B76(early). (vii) Unirrigated. (viii) One hand weeding. (ix) 131 cm. (x) 4.10.64.

2. TREATMENTS :

5 cultural treatments : C_0 = Local method(control), C_1 = Broadcast, C_2 = Dipping behind the plough with single seed tube, C_3 = Wooden seed drill and C_4 = Cultivator-cum-seed drill.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 3. (iv) (a) 12.2 m.×3.8 m. (b) 11.7 m.×3.4 m. (v) 23 cm.×23 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height, tiller and weight of grain and straw. (iv) (a) 1964 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1515 Kg/ha. (ii) 209.0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	C_0	C_1	C_2	C_3	C_4
Av. yield	1355	1559	1644	1578	1440

Crop :- Paddy (Kharif).

Ref :- Or. 62(12).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'C'.

Object :- To evaluate the comparative performance of some selected light iron ploughs and the country plough.

1. BASAL CONDITIONS :

(i) (a) Paddy-Fallow. (b) Paddy. (c) 5021 Kg/ha. of F.Y.M. (ii) Sandy loam. (iii) 21.6.62/3, 4.8.62. (iv) (a) As per treatments. (b) Transplanting. (c) N.A. (d) 23 cm. x 23 cm. (e) 2. (v) 5021 Kg/ha. of F.Y.M. just a few days before puddling. (vi) T-1242 (late). (vii) Irrigated. (viii) Weeding by Japanese weeder and one hand-weeding. (ix) 113 cm. (x) 23 and 24.12.62.

2. TREATMENTS :

6 types of ploughs : T₁=Country plough, T₂=Sabash plough, T₃=Wah-wah plough, T₄=Gurjar plough, T₅=Konkan plough and T₆=Bijayabhandar plough.
2 ploughings by each plough were done.

3. DESIGN :

(i) R.B.D. (ii) 6. (b) N.A. (iii) 4. (vi) (a) 12.2 m. x 10.1 m. (b) 11.7 m. x 9.6 m. (v) 23 cm. x 23 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Stem-borer attack. (iii) Weed population count and yield of grain. (iv) (a) 1962 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1547 Kg/ha. (ii) 372.0 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	T ₅	T ₆
Av. yield	1399	1374	1490	1897	1671	1454

Crop :- Paddy (Kharif).

Ref :- Or. 63(36).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'C'.

Object :- To study the effect of ploughing with deshi and sabash plough alone and in combination with cultivators, on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 9.6.63. (iv) (a) As per treatments. (b) Broadcast. (c) 50 Kg/ha. (d) and (e) N.A. (v) 4433 Kg/ha. of F.Y.M. + 22.4 Kg/ha. of P₂O₅ as super. (vi) T-90 (late). (vii) Unirrigated. (viii) Nil. (ix) 14.3 cm. (v) 6.12.63.

2. TREATMENTS :

12 cultural practices : T₁=4 ploughings with *desi* plough, T₂=6 ploughings with *desi* plough, T₃=8 ploughings with *desi* plough, T₄=2 ploughings with *desi* + 2 with cultivator, T₅=2 ploughings with *desi* + 4 with cultivator, T₆=2 ploughings with *desi* + 6 with cultivator, T₇=4 ploughings with Sabash plough, T₈=5 ploughings with Sabash plough, T₉=8 ploughings with Sabash plough, T₁₀=2 ploughings with Sabash + 2 with cultivator, T₁₁=2 ploughings with Sabash + 4 with cultivator and T₁₂=2 ploughings with Sabash + 6 with cultivator.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 4.4 m. x 10.7 m. (b) 4.0 m. x 10.2 m. (v) 23 cm. x 23 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Height, tiller count, panicle length and yield of grain and straw. (iv) (a) 1963 only. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2036 Kg/ha. (ii) 402.0 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	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂
Av. yield	1793	1849	1804	2116	1894	2295	2280	2141	2107	2045	1895	2212

Crop :- Paddy (Kharif).

Ref :- Or. 60(27).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'C'.

Object :- To compare the effect of deshi and mould board plough and to determine the best time and number of ploughings required by the Paddy crop for obtaining maximum yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) Sandy loam. (iii) 10.7.60. (iv) (a) N.A. (b) Line sowing. (c) 22 Kg/ha. (d) 23 cm. x 23 cm. (e) 2. (v) 5604 Kg/ha. of F.Y.M. + 22.4 Kg/ha. of P₂O₅ and top dressing with 22.4 Kg/ha. of N. (vi) T-1242, (late). (vii) Unirrigated. (viii) One weeding by Japanese weeder and one hand weeding. (ix) 74 cm. (x) 18 and 19.12.60.

2. TREATMENTS :

Main-plot treatments :

2 varieties of plough : A₁ Iron plough and A₂ Deshi plough.

Sub-plot treatments :

7 times of ploughing : T₁ Ploughing once in 1st week of every month, T₂ Ploughing in 1st week of every alternate month, T₃ Ploughing once in 1st week of every 3rd month, T₄ Ploughing once just after harvest and then broadcasting paddy after ploughing in June, T₅ No cultural practice till July puddling and transplanting, T₆ No cultural practice till August puddling and transplanting and T₇ Ploughing once just after harvest in July and transplanting (control).

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 7 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 7.3 m. x 5.5 m. (b) 6.9 m. x 5.0 m. (v) 23 cm. x 23 cm. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Slight attack of stem-borer. (iii) Tillers, height, growth and grain weight. (iv) (a) 1959-60. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3196 Kg/ha. (ii) (a) 147.0 Kg/ha. (b) 308.0 Kg/ha. (iii) Main effect of A is highly significant and that of T is significant. (iv) Av. yield of grain in Kg/ha.

	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	Mean
A ₁	2893	2942	2477	3435	3359	3321	2992	3060
A ₂	3079	3178	3384	3743	3446	3268	3222	3331
Mean	2986	3060	2931	3589	3403	3295	3107	3196

C.D. for A marginal means = 195.4 Kg/ha.

C.D. for T marginal means = 367.0 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 64(31).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'C'.**

Object :—To study the effect of some agronomic practices on the yield of late transplanted Paddy

1. BASAL CONDITIONS :

(i) (a) Paddy-Fallow-Paddy. (b) Paddy. (c) Nil. (ii) Sandy clay. (iii) As per treatments. (iv) (a) 2 summer ploughings and 3 puddlings. (b) Transplanting. (c) 25 Kg/ha. (d) As per treatments. (e) 2. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) Hand weeding and weeding by Japanese weeder. (ix) and (x) N.A.

2. TREATMENTS :**Main-plot treatments :**

All combinations of (1) and (2)

(1) 5 days of planting : $D_1=16$ th August, $D_2=31$ st August, $D_3=15$ th September, $D_4=30$ th September and $D_5=15$ th October.(2) 2 spacings : $S_1=15$ cm. \times 15 cm. and $S_2=15$ cm. \times 10 cm.**Sub-plot treatments :**

All combinations of (1) and (2)

(1) 3 ages of seedling : $A_1=21$, $A_2=42$ and $A_3=63$ days.(2) 2 types of seedling : $T_1=$ Unsplitted and $T_2=$ Splitted seedling.**3. DESIGN :**(i) Split-plot. (ii) (a) 10 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 7.4 m. \times 3.9 m. (b) 6.8 m. \times 3.3 m. (v) 30 cm. \times 30 cm. (vi) Yes.**4. GENERAL :**

(i) Normal. (ii) Attack of stem-borer spraying endrex 28 gm. in 67 litres of water/ha. (iii) Height, tiller no, panicle length, wt. of grain and straw. (iv) (a) 1964—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :(i) 2040 Kg/ha. (ii) (a) 144.0 Kg/ha. (b) 123.0 Kg/ha. (iii) Main effects of D, A and T are highly significant and that of S is significant. The interactions $D \times S$, $T \times D$ and $T \times A$ are highly significant. (iv) Av. yield of grain in Kg/ha.

	T_1	T_2	S_1	S_2	A_1	A_2	A_3	Mean
D_1	2830	3435	3292	2972	2736	3266	3395	3132
D_2	2450	3010	2912	2548	2325	2848	3016	2730
D_3	2291	2731	2508	2514	2189	2587	2758	2511
D_4	1141	1487	1150	1478	940	1374	1627	1314
D_5	429	598	501	527	202	505	835	514
Mean	1828	2252	2073	2008	1678	2116	2326	2040
A_1	1576	1780	1719	1637				
A_2	1873	2359	2139	2093				
A_3	2035	2617	2360	2293				
S_1	1853	2293						
S_2	1804	2212						

C.D. for D marginal means = 94.1 Kg/ha.

C.D. for S marginal means = 59.5 Kg/ha.

C.D. for A marginal means = 55.3 Kg/ha.

C.D. for T marginal means = 45.0 Kg/ha.

C.D. for T means at the same level of D = 100.9 Kg/ha.

C.D. for D means at the same level of T = 117.8 Kg/ha.

C.D. for body of $D \times S$ table = 133.0 Kg/ha.C.D. for body of $T \times A$ table = 55.2 Kg/ha.

Crop :- Paddy. (Kharif).

Ref :- Or. 64(40).

Site :- Agri. Res. Stn., Sambalpur.

Type :- 'C'.

Object :-To study the effect of different stages of harvesting of Jute crop on the yield of succeeding Paddy crop.

1. BASAL CONDITIONS :

(i) (a) As per treatments. (b) *Mung*. (c) Nil. (ii) Clay loam. (iii) 24 to 27.4.64 (Jute) and Paddy transplantation. (iv) (a) 3 ploughings laddering and levelling. (b) Line sowing for Jute and transplanted for Paddy. (c) 12 Kg/ha. for Jute, Paddy N.A. (d) 25 cm. between lines for Jute and 25 cm. x 25 cm. for Paddy. (e) 2 to 3 for Paddy. (v) 20 Kg/ha. of N as A/S + 20 Kg/ha. of P_2O_5 as Super + 35 Kg/ha. of K_2O in furrows and 20 Kg/ha. of N as A/S top dressed for Jute, 30 Kg/ha. of P_2O_5 as Super + 30 Kg/ha. of K_2O as KCl for Paddy. (vi) As per treatments. (vii) Irrigated. (viii) Hand weeding thrice. (ix) 159.9 cm. (x) Nil.

2. TREATMENTS :

All combinations of (1) and (2) + control (no Jute crop).

(1) 3 varieties of Jute crop: $V_1=D-154$, $V_2=Funduk$ and $V_3=JRC-212$

(2) 3 stages of harvesting of Jute crop: $S_1=$ at pre-flowering, $S_2=$ at flowering and $S_3=$ at post flowering. Paddy crop has been raised in all these 9 plots, $\frac{1}{2}$ the area of the plot is for Paddy T-90 and $\frac{1}{2}$ of the area for Paddy MTU-15.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 7.8 m. x 7.0 m. for Jute and 7.0 m. x 3.6 m. for Paddy. (b) 7.3 m. x 6.7 m. (v) 25 cm. x 15 cm. for Jute, N.A. for Paddy. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) 2 preventive spraying with Endrin against leaf eating caterpillars. (iii) Height, girth, percentage of flowering for Jute. (iv) (a) 1954 - contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

I. Jute Crop ;

(i) 1677 Kg/ha. (ii) 251.0 Kg/ha. (iii) Main effect of S alone is significant. (iv) Av. yield of Jute fibre in Kg/ha.

	S_1	S_2	S_3	Mean
V_1	1447	1680	1683	1603
V_2	1377	1655	2028	1687
V_3	1691	1724	1806	1740
Mean	1505	1686	1839	1677

C.D. for S marginal means = 211.6 Kg/ha.

II. Paddy (T-90)

(i) 1707 Kg/ha. (ii) 788.0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control = 2187 Kg/ha.

	S_1	S_2	S_3	Mean
V_1	2269	2122	1738	2043
V_2	2039	1448	1560	1682
V_3	1407	1013	1289	1236
Mean	1905	1528	1529	1654

II. Paddy (MTU-15)

(i) 1612 Kg/ha. (ii) 662.0 Kg/ha. (iii) Main effect of S, "Control vs others" and interaction V×S are highly significant. (iv) Av. yield of grain in Kg/ha.

Control=2579 Kg/ha.

	S ₁	S ₂	S ₃	Mean
V ₁	2796	1736	678	1737
V ₂	2348	848	1517	1571
V ₃	2041	597	985	1208
Mean	2395	1060	1060	1505

C.D. for S marginal means=554.4 Kg/ha.

C.D. for body of V×S table=960.5 Kg/ha.

C.D. for control vs others =718.8 Kg/ha.

Crop :- Paddy (Kharif).

Site :- Rice Res. Stn., Berhampur.

Ref :- Or. 65(45).

Type :- 'CV'.

Object :- To test the three different varieties in three different spacings and one ordinary transplanting in regard to their yield performances.

1. BASAL CONDITIONS :

(i) (a) Paddy-Mung-Fallow. (b) Fallow. (c) Nil. (ii) Loamy soll. (iii) 30.6.65/3.8.65. (iv) (a) 5 summer ploughings, 2 ploughings before transplanting and puddling. (b) Transplanting. (c) 37 Kg/ha. (d) As per treatments. (e) 2. (v) *Dhaincha* G.M. at 1681 Kg/ha. +15.3 Kg/ha. of P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) 2 hand weedings and weeding by Japanese weeder. (ix) N.A. (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 varieties : V₁=India-Sando-1, V₂=India-Sando-2, V₃=India-Sando-3 and V₄=BAM-9.

(2) 4 spacings : S₁=15 cm.×15 cm., S₂=15 cm.×12 cm., S₃=15 cm.×9 cm. and S₄=Ordinary transplanting (9 cm.×9cm.).

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 3. (iv) (a) and (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height, tiller, count, panicle length and yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3380 Kg/ha. (ii) 376 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	S ₁	S ₂	S ₃	S ₄	Mean
V ₁	3444	3125	3138	2966	3168
V ₂	3650	3594	3411	3676	3583
V ₃	2743	3254	2878	2955	2957
V ₄	3703	3710	4043	3792	3812
Mean	3385	3421	3367	3347	3380

C.D. for V marginal means=313.4 Kg/ha.

Crop :- Paddy (Kharif).
Site :- Agri. Res. Stn., Sambalpur.

Ref :- Or. 62(78),
Type :- 'CV'.

Object :—To study the effect of different dates of sowing on different varieties of Paddy

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Loamy. (iii) As per treatments, one month after each sowing. (iv) (a) 2 ploughings and puddling. (b) Transplanting. (c) 25 Kg/ha. (d) 23 cm. × 15 cm. (e) 2 to 3. (v) 25 C.L./ha. of F.Y.M. + 33.6 Kg/ha. of P_2O_5 as Super + 22.4 Kg/ha. of N as A/S and top dressing of A/S at 22.4 Kg/ha. of N. (vi) As per treatments. (vii) Irrigated. (viii) 3 hand-weedings. (ix) 136.9 cm. (x) 15. 20, 26, 30.11.62 and 6, 12, 20, 30.12.1962.

2. TREATMENTS :

Main-plot treatments :

6 dates of sowing : $D_1=1.6.62$, $D_2=15.6.62$, $D_3=1.7.62$, $D_4=15.7.62$, $D_5=1.8.62$ and $D_6=15.8.62$.

Sub-plot treatments :

3 varieties : $V_1=HR-12$, $V_2=T-1145$ and $V_3=T-1242$.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication, 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 3.1 m. × 4.1 m. (b) 2.7 m. × 4.1 m. (v) 15 cm. on each side along breadth. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Slight attack of gallfly and stem borer. (iii) Incidence and yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1460 Kg/ha. (ii) (a) 309.0 Kg/ha. (b) 539.0 Kg/ha. (iii) Main effects of D and V are highly significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	D_4	D_5	D_6	Mean
V_1	1607	1859	1497	904	804	201	1145
V_2	2090	2260	1678	1467	1005	804	1551
V_3	2391	2562	1869	1527	1206	553	1685
Mean	2029	2227	1681	1299	1005	519	1460

C.D. for D marginal means = 268.7 Kg/ha.

C.D. for V marginal means = 315.9 Kg/ha.

Crop :- Paddy (Kharif).
Site :- State Agri. Res. Stn., Bhubaneswar.

Ref :- Or. 64(13).
Type :- 'CM'.

Object :—To study the effect of number of splits in clonal multiplication on the growth and yield of Paddy at three levels of manuring.

1. BASAL CONDITIONS :

(i) (a) Paddy-Fallow. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 20.7.64. (iv) (a) 3 ploughings. (b) Transplanting. (c) 5 to 8 Kg/ha. (d) 50 cm. × 50 cm. (e) 1. (v) As per treatments. (vi) T—141 (medium). (vii) Unirrigated. (viii) One weeding by Japanese weeder and one hand weeding. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

3 levels of manures : L_1 =Basal dose (5000 Kg/ha. of F.Y.M. + 35 Kg/ha. of N as C/A/N + 25 Kg/ha. of P_2O_5 as Super, $L_2=L_1+17.5$ Kg/ha. of N + 25.0 Kg/ha. of P_2O_5 + 35.0 Kg/ha. of K_2O and $L_3+L_1=35.0$ Kg/ha. of N + 50.0 Kg/ha. of P_2O_5 + 70.0 Kg/ha. of K_2O .

Sub-plot treatments :

6 types of seedlings : S_1 =Normal, $S_2=1$, $S_3=2$, $S_4=4$, $S_5=6$ and $S_6=8$ splits.
N as C.A.N., P_2O_5 as Super and K_2O as Mur. Pot. were applied. P_2O_5 and K_2O were given as basal dressing. $\frac{1}{2}$ N was applied at planting + $\frac{1}{2}$ N one month after planting. The original seedlings from the nursery will be uprooted and split into two. (The clones of the seedlings will be separated out and will be again planted in the plots pertaining to the 1st Split treatment. The first splitting was done after 25 days from the date of sowing in the nursery. Again the seedlings which have been already split once and replanted again, they will be uprooted after 25 days and further split. This is known as second split. Subsequent splitting were done after 15, 10 and 9 days interval in case of four, six and eight splits. This progress will be done in the nursery only and seedlings related to 1st, 2nd splits etc. will be transplanted in the respective plots in the lay out.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 5.5 m. \times 5.5 m. (b) 5.0 m. \times 5.0 m. (v) 25 cm. \times 25 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height, tillers count and yield of grain. (iv) (a) 1964 only. (b) No (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 4616 Kg/ha. (ii) (a) 274.0 Kg/ha. (b) 397.0 Kg/ha. (iii) Main effect of L is significant and that of S is highly significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	S_3	S_4	S_5	S_6	Mean
L_1	3640	4475	4700	4885	4675	4520	4482
L_2	3675	4590	4970	5110	4750	4560	4609
L_3	3800	4670	4995	5290	4921	4861	4756
Mean	3705	4578	4888	5095	4782	4647	4616

C.D. for L marginal means=193.6 Kg/ha.

C.D. for S marginal means=326.8 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 60(37).

Site :- State Agri. Res. Sta., Bhubaneswar.

Type :- 'CM'.

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Ratoon and Dhaincha. (c) Nil. (ii) Sandy loam. (iii) 27.7.60. (iv) (a) 3 ploughings and one laddering. (b) Line sowing in raised bed. (c) 22 Kg/ha. (d) 23 cm. \times 23 cm. (e) 2. (v) Dhaincha, was incorporated on 6.7.60. 22.4 Kg/ha. of P_2O_5 as Super was applied before puddling + 33.6 Kg/ha. of K_2O as Mur. Pot. (vi) T—1242 (late). (vii) Unirrigated. (viii) Nil. (ix) 165. cm. (x) 22.12.60.

2. TREATMENTS :

Main-plot treatments

All combinations of (1) and (2).

(1) 2 levels of N : $N_1=22.4$ and $N_2=44.8$ Kg/ha.

(2) 4 levels of weeding . W_0 =No weeding, $W_1=1$, $W_2=2$ and $W_3=3$ weedings.

Sub-plot treatments

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

Weeding was done by Japanese weeder at 15 days interval starting from 27.8.1960. A/S and C/A/N were applied on 27.7. 1960.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 9.1 m. \times 4.9 m. (b) 8.7 m. \times 4.4 m. (v) 23 m. \times 23 m. (vi) Yes.

4. GENERAL :

(i) Lodging on 20, 25 and 30.10.60. (ii) Attack of hispa, hairy caterpillar and mealybug ; control measures N.A. (iii) Height, tillers and grain yield. (iv) (a) 1960 only. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Due to heavy and continuous rain from 31.12.60 to 2.1.61, threshing was delayed. Crop was damaged by birds.

5. RESULTS :

(i) 1821 Kg/ha. (ii) (a) 825.0 Kg/ha. (b) 969.0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	W_0	W_1	W_2	W_3	S_1	S_2	Mean
N_1	1269	1878	2375	2060	1906	1885	1895
N_2	1329	1986	2235	1438	1770	1723	1747
Mean	1299	1932	2305	1749	1838	1804	1821
S_1	1687	1491	2503	1671			
S_2	910	2373	2107	1827			

Crop :- Paddy (Kharif).

Ref :- Or. 62(20).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'CM'.

Object :- To study the residual effect of different crops with different manures on the yield of succeeding Paddy Crop.

1. BASAL CONDITIONS :

(i) (a) Black gram, Maize, Sesamum and Fallow Paddy. (b) Black gram, Maize, Sesamum, and Fallow. (c) As per treatments. (ii) Sandy loam. (iii) 15.7.62. (iv) (a) 2 plough ags. (b) Transplanting. (c) and (d) N.A. (e) 2. (v) Nil. (vi) N. 136 (early). (vii) Unirrigated. (viii) Weeding. (ix) 52 cm. (x) 5.10.62.

2. TREATMENTS :

All combinations of (1), (2) and (3) + Extra treatment fallow preceding paddy crop.

(1) 3 previous crops : C_1 =Black gram, C_2 =Maize and C_3 =Sesamum.

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

(3) 2 levels of P_2O_5 : $P_0=0$ and $P_1=22.4$ Kg/ha.

N and P_2O_5 were applied to previous crops.

3. DESIGN :

(i) Fact in R.B.D. (ii) (a) 13. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9.1 m. \times 5.0 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Nil. (iii) Grain and straw yields. (iv) (a) 1962 only. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Only 2 replications were taken into consideration while the other two could not be taken as they have been transplanted very late.

5. RESULTS :

(i) 799 Kg/ha. (ii) 208.0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Extra treatment=937 Kg/ha.

	N ₀	N ₁	P ₀	P ₁	Mean
C ₁	865	781	784	862	823
C ₂	765	785	897	653	775
C ₃	695	802	788	747	767
Mean	775	802	823	754	788
P ₀	758	888			
P ₁	792	916			

Crop :- Paddy.

Ref :- Or. 64(41) 65(4).

Site :- Agri. Res. Stn., Sambalpur.

Type :- 'CM'.

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. for 64 (41); As per treatments for 65(4). (ii) Sandy loam. (iii) 24.6.64, 26.6.65. (iv) (a) 4 ploughings and 2 ladderings. (b) Broadcasting. (c) As per treatments. (d) Nil. (e) Nil. (vi) S.P.-1 (early). (vii) Unirrigated. (viii) One beaushawing followed by hand weeding and cloucs were separated and placed in the gaps. (ix) 160 cm., 69 cm. (x) 5.11.64; 7.11.65.

2. TREATMENTS :

Main-plot treatments

4 manurial treatments : M₀=Control (No manure), M₁=20 Kg/ha. of N+10 Kg/ha. of P₂O₅+10 Kg/ha. of K₂O, M₂=40 Kg/ha. of N+20 Kg/ha. of P₂O₅+20 Kg/ha. of K₂O and M₃=60 Kg/ha. of N+30 Kg/ha. of P₂O₅+30 Kg/ha. of K₂O.

Sub-plot treatments

3 seed rates : R₁=40, R₂=60 and R₃=80 Kg/ha.

N, P₂O₅ and K₂O were applied as A/S, Super and Pot. chloride respectively.

N applied in two doses : $\frac{1}{2}$ before sowing and $\frac{1}{2}$ after one month of sowing.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 9.3 m. x 5.4 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good for 64 (41); fair for 65 (4). (ii) Attack of cutworm in noctuide for 64(41); Attack of Sirphis for 65 (4). Kerosene was mixed in water while irrigating for both the expts. (iii) Grain yield. (iv) (a) 1964-1965. (b) Yes. (c) Results of combined analysis are given under 5. (v) N.A. (vi) Nil. (vii) Main-plot and sub-plot error variances are homogeneous and Treatments x years interaction is absent for both.

5. RESULTS :

(i) 2197 Kg/ha. (ii) (a) 869.2 Kg/ha. (21 d. f. made up of pooled error and Treatments x years interaction). (b) 325.8 Kg/ha. (56 d.f. made up of pooled error and various components of Treatments x years interaction) (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	M ₀	M ₁	M ₂	M ₃	Mean
R ₁	2055	2322	2442	1729	2137
R ₂	2272	2525	2257	1794	2212
R ₃	2414	2500	2240	1814	2242
Mean	2247	2449	2313	1779	2197

Crop :- Paddy (Kharif)

Ref :- Or. 64(25).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'CMV'.

Object :- To study the effect of different varieties, manures and ages of seedlings on the yield of late planted Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Fallow. (b) Fallow. (c) Nil. (ii) Loamy soil. (iii) 15.9.64. (iv) (a) 3 puddings with laddering. (b) Transplanting. (c) 17 to 25 Kg/ha. (d) 15 cm. x 15 cm. (e) 1. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) One hand weeding. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments

All combinations of (1) and (2)

(1) 2 levels of manures : L₁=35.0 Kg/ha. of N+25.0 Kg/ha. of P₂O₅ and L₂=52.5 Kg/ha. of N+37.5 Kg/ha. of P₂O₅.

(2) 4 varieties : V₁-T-90, V₂-BAM-3 and V₃-BAM-9.

Sub-plot treatments

6 types of seedlings : T₁=21 days old seedlings, T₂=42 days old seedlings, T₃=63 days old seedlings, T₄=21 days old seedling+One split, T₅=42 days old seedling+2 splits (21 days interval) and T₆=63 days old seedling+3 splits (21 days interval).

For explanation of splits, refer expt. no 64 (13) on page 140.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) and (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Mild attack of stem borer and gallfly. (iii) Height, tiller count, panicle length, wt. of grain and straw. (iv) (a) 1964-contd. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Even though the Gross and net plot size were not available, the final yield data of grain is in Q/ha. So it was possible to analyse the Exp.

5. RESULTS :

(i) 1996 Kg/ha. (ii) (a) 252.0 Kg/ha. (b) 170.0 Kg/ha (iii) Main effects of L, V, T and the interaction T x V are highly significant. (iv) Av. yield of grain in Kg/ha.

	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	L ₁	L ₂	Mean
V ₁	1769	2158	2038	1914	2614	2730	1959	2449	2204
V ₂	1775	1922	2018	1925	2302	2558	1899	2268	2083
V ₃	1669	1661	1705	1497	1753	1925	1473	1931	1702
Mean	1738	1914	1920	1779	2223	2404	1777	2216	1996
K ₀	1534	1679	1756	1587	1986	2119			
K ₁	1942	2149	2085	1970	2461	2690			

C.D. for L marginal means	=108.0 Kg/ha.
C.D. for V marginal means	=132.3 Kg/ha.
C.D. for T marginal means	=113.0 Kg/ha.
C. D. for T means at the same level of V	=196.2 Kg/ha.
C.D. for V means at the same level of T	=222.5 Kg/ha.

Crop :- Paddy. (Kharif).

Ref :- 65(5).

Site :- Irrigation Res. Centre, Chakuli.

Type :- 'P'.

Object :- To study the necessity of standing water in Paddy fields at various stages of growth.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy Inam. (iii) 30.8.65, 4.9.65 and 10.9.65. (iv) (a) 6 ploughings and 2 ladderings. (b) Transplanting. (c) 38 Kg/ha. (d) 25 cm. × 10 cm. (e) 2 seedlings/hole. (v) A/S at 60 Kg/ha. of N, Super at 60 Kg/ha. of P₂O₅, K at 60 Kg/ha. of K₂O top dressing with 30 Kg/ha. of N as A/S after one month of transplanting. (vi) T 141 (Rep. I to IV), M.T.U 15 (Rep. V and VI). (vii) Irrigated. (viii) Weeding by Rotary weeder twice. (ix) and (x) N.A.

2. TREATMENTS :

16 irrigated treatments : T₁=S₁ (G₁, G₂, G₃, G₄), T₂=S₁ (G₁, G₂, G₃)+S₂ (G₄), T₃=S₁ (G₁, G₂)+S₂ (G₃, G₄), T₄=S₁ (G₁)+S₂ (G₂, G₃, G₄), T₅=S₁ (G₁, G₃, G₄)+S₂ (G₂), T₆=S₁ (G₁, G₄)+S₂ (G₂, G₃), T₇=S₁ (G₁, G₃)+S₂ (G₂, G₄), T₈=S₁ (G₂, G₃)+S₂ (G₁, G₄), T₉=S₁ (G₂, G₄)+S₂ (G₁, G₃), T₁₀=S₁ (G₃, G₄)+S₂ (G₁, G₂), T₁₁=S₁ (G₁, G₂, G₄)+S₂ (G₃), T₁₂=S₁ (G₂, G₃, G₄)+S₂ (G₁), T₁₃=S₁ (G₂)+S₂ (G₁, G₃, G₄), T₁₄=S₁ (G₃)+S₂ (G₁, G₂, G₄), T₁₅=S₁ (G₄)+S₂ (G₁, G₂, G₃), T₁₆=S₂ (G₁, G₂, G₃, G₄).

[S₁=Irrigating when soil cracks, S₂=5 cm. of standing water, G₁=From transplanting to 1st tillering, G₂=1st tillering to max. tillering stage, G₃=Max. Tillering to flowering, G₄=Flowering to grain hardening.

3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) Replications 4 for T 141 and 2 for MTU-15. (iv) (a) 7.5 m. × 3.0 m. (b) 7.3 m. × 3.0 m. (v) and (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Severe blast. (iii) Height, tiller count and yield of grain. (iv) (a) 1965-contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

T-141

(i) 752 Kg/ha. (ii) 294 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	822	586	937	960	874	580	661	621
Treatment	T ₉	T ₁₀	T ₁₁	T ₁₂	T ₁₃	T ₁₄	T ₁₅	T ₁₆
Av. yield	891	1138	333	672	753	540	1029	937

C.D.=338.6 Kg/ha.

MTU-15

(i) 247 Kg/ha. (ii) 121 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	T ₅	T ₆	T ₇	T ₈
Av. yield	161	471	276	172	195	333	207	207
Treatment	T ₉	T ₁₀	T ₁₁	T ₁₂	T ₁₃	T ₁₄	T ₁₅	T ₁₆
Av. yield	207	208	177	195	276	402	276	115

Crop :- Paddy. (Kharif).**Ref :- Or. 64(23).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'IM'.**

Object :- To find out the irrigation requirement of Paddy as influenced by manuring.

1. BASAL CONDITIONS :

(i) (a) Paddy-Fallow-Paddy. (b) Paddy. (c) Nil. (ii) (a) Sandy loam. (iii) 13.7 64. (iv) (a) 3 puddlings accompanied by laddering. (b) Transplanting. (c) 25 Kg/ha. (d) 40 cm. × 40 cm. (e) 2. (v) Nil. (vi) T 1242 (late). (vii) Irrigated. (viii) Hand-weeding and one weeding by Japanese weeder. (ix) 91 cm. (x) 20.12.64.

2. TREATMENTS :**Main-plot treatments :**

All combinations of (1) and (2)

(1) 3 intensities of irrigation : $I_1=2.8$ cm., $I_2=6.3$ cm. and $I_3=8.9$ cm acre inch.(2) 3 intervals of irrigations : $F_1=4$, $F_2=6$ and $F_3=8$ days interval.**Sub-plot treatments :**3 levels of manures : M_0 =No manure, $M_1=32.9$ Kg/ha. of N ; 22.9 Kg/ha. of P_2O_5 +87.8 Kg/ha. of F.Y.M. and $M_2=2 M_1$.**3. DESIGN :**

(i) Split-plot. (ii) (a) 9 main-plots/replication, 3 sub-plots/main-plot. (b) N A. (iii) 2, (iv) (a) 9.0 m. × 4.5 m. (b) 8.6 m. × 4.1 m. (v) 20 cm. × 20 cm. (vi) Yes.

4. GENERAL :

(i) Good, partial lodging. (ii) Nil. (iii) Height, tiller, panicle length, yield of grain and straw. (iv) (a) 1964 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :(i) 4095 Kg/ha. (ii) (a) 86.0 Kg/ha. (b) 67.0 Kg/ha. (iii) Main effects of I, F, M and interaction $I \times F$ are highly significant. (iv) Av. yield of grain in Kg/ha.

	F_1	F_2	F_3	M_0	M_1	M_2	Mean
I_1	4046	3469	3148	3044	3583	4036	3554
I_2	4651	4056	3488	3526	4103	4566	4065
I_3	5275	4670	4056	4112	4708	5181	4667
Mean	4657	4065	3564	3561	4131	4594	4095
M_0	4112	3517	3053				
M_1	4689	4103	3602				
M_2	5171	4575	4037				

C.D. for I of F marginal means = 61.8 Kg/ha.
 C.D. for M marginal means = 46.9 Kg/ha.
 C.D. for means on the body of $I \times F$ table = 104.2 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 60(32).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'IM'.**

Object :- To study the utilization of different phosphatic fertilizers under different levels of water in the field.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 6.6.60/15, 16.7.1960. (iv) (a) 4 ploughings. (b) Line sowing. (c) 22 Kg/ha. (d) 23 cm.×23 cm. (e) 2. (v) Nil. (vi) F.R. 43-B (late). (vii) Irrigated. (viii) Weeding by Japanese weeder and one hand weeding. (ix) 108 cm. (x) 28 and 29.12.60.

2. TREATMENTS :

Main-plot treatments :

5 levels of irrigation : I_0 =Normal, I_1 =8 cm., I_2 =15 cm., I_3 =23 cm. and I_4 =30 cm. depth.

Sub-plot treatments :

4 sources of P_2O_5 at 22.4 Kg/ha. : S_0 =No P_2O_5 , S_1 =Rock Phosphate, S_2 =Super and S_3 =B.M.

Irrigations were given whenever required and when the level fall below the required depth.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication, 4 sub-plots/main-plot. (b) Nil. (iii) 2. (iv) 6.4 m.×7.3 m. (v) 5.9 m.×6.9 m. (vi) 23 cm.×23 cm. (vii) Yes.

4. GENERAL :

(i) Lodging on 30 and 31.10.60. (ii) Slight attack of cash worm and rice hispa. (iii) Tiller, height, growth and yield of grain. (iv) (a) 1957-60. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2128 Kg/ha. (ii) (a) 376.0 Kg/ha. (b) 406.0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	I_2	I_3	I_4	Mean
S_0	1878	2187	2309	2337	1948	2132
S_1	2086	2031	1975	1728	1919	1948
S_2	1892	2337	2535	2503	2556	2365
S_3	2170	2031	1725	2107	2309	2068
Mean	2006	2146	2136	2169	2183	2128

Crop :- Paddy (Kharif).

Site :- State Agri. Res. Stn., Bhubaneswar.

Ref :- Or. 65(26),

Type :- 'D'.

Object :-To find out chemical control of gallfly, with some modern insecticides.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 3rd week of June, 65/21.7.65. (iv) (a) 8 ploughings, 2 ladderings. (b) Transplanted. (c) 25 Kg/ha. (d) 15 cm.×22 cm. (e) 2. (v) 224.1 Kg/ha. of N as C/A/N 168.1 Kg/ha. of P_2O_5 as Super, 112.1 Kg/ha. of K_2O as Mur. Pot. (vi) GEB-24. (vii) Irrigated. (viii) 2 hand weedings. (ix) and (x) N.A.

2. TREATMENTS :

5 insecticidal treatments : T_0 =Control, T_1 =Dimecron—100 (0.10%), T_2 =Folidol E—605 (0.06%), T_3 =Bidrin (0.09%) and T_4 =Sevin (0.25%).

Spraying fluid applied at 1123 litres/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) and (b) 4.8 m.×3.5 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Gallmidge mild attack. (iii) Tillers and incidence of gallmidge, and yield of grain. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) Plot-wise yield data N.A. Results are copied from the thesis.

5. RESULTS :

(i) 1953 Kg/ha. (ii) 195.2 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Av. yield	1534	2262	2240	1701	2020

C.D. = 193 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 64(7).

Site :- State Agri. Res. Stn., Jeypore.

Type :- 'D'.

Object :—To find out whether Paddy plants can be artificially infected or not.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 25 C.L./ha. of F.Y.M. (ii) Clay loam. (iii) 21.6.64/29.7.64. (iv) (a) 2 summer ploughings and 2 puddlings. (b) Transplanted. (c) 17 Kg/ha. (d) 23 cm × 15 cm. (e) 2. (v) 25 C.L./ha. of F.Y.M. + 44.8 Kg/ha. of P₂O₅ as Super. (vi) J₁ (medium). (vii) Unirrigated. (viii) 2 weedings by Japanese weeder. (ix) N.A. (x) 1st. week of Dec., 64.

2. TREATMENTS :

7 weedicidal treatments : W₀=Control, W₁=Dry seeds smeared with spore suspension of the pathogen and plants were bagged from the beginning, W₂=Germinated seeds smeared with spore suspension and plants were bagged from the beginning, W₃=Roots of the seedlings dipped in spore suspension of the pathogen at the time of transplanting and plants were bagged from the beginning, W₄=Inoculation of the plants with the spore suspension of the pathogen after one month of transplanting and plants were bagged from the beginning, W₅=Inoculation of the plants with the spore suspension of the pathogen at preflowering stage and plants were bagged from the beginning and W₆=Inoculation of the plants with the spore suspension of the pathogen at post flowering stage and plants were bagged from the beginning.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a) and (b) 3 1 m. × 2.3 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Stem-borer attack was negligible. (iii) Percentage of affected plants. (iv) (a) 1963-64. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Experiment was conducted by the mycology div of the State Agri. Res. Stn., Bhubaneswar. Expt. failed in 1963.

5. RESULTS :

(i) 3281 Kg/ha. (ii) 411.0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	W ₀	W ₁	W ₂	W ₃	W ₄	W ₅	W ₆
Av. yield	2846	3109	3373	3439	3645	3252	3301

Crop :- Paddy (Kharif).

Ref :- Or. 60(43).

Site :- State Agri. Res. Stn., Sambalpur.

Type :- 'D'.

Object :—To study the efficiency of different weedicides for controlling low land weeds in Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat and Gram. (c) N.A. (ii) Clay loam. (iii) 11.8.60. (iv) (a) 2 ploughings and puddlings. (b) Transplanting. (c) 25 Kg/ha. (d) 15 cm. × 23 cm. (e) 2 to 3. (v) 2 baskets of compost and 258 Kg/ha. of Super as basal ; top dressing with C/A/N. at 44.8 Kg/ha. of N. (vi) T 442(early). (vii) Unirrigated. (viii) As per treatments. (x) 100.2 cm. (x) 18.11.60.

2. TREATMENTS :

8 weedicidal treatments : W_0 =Control, W_1 =2, 4-D, W_2 =2, 4, 5-T, W_3 =M.C.P.A., W_4 =Taficide, W_5 =Tafosan, W_6 =Hedonal and W_7 =Hand weeding.

Quantity of weedicides used N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) 4.6 m. × 4.6 m. (b) 4.3 m. × 4.1 m. (v) 15 cm. × 23 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Spraying of endrin was done to kill the paddy skipper and paddy hispa. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) Data of weed-population is N.A.

5. RESULTS :

(i) 1759 Kg/ha. (ii) 236.0 Kg/ha. (iii) Treatments differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	W_0	W_1	W_2	W_3	W_4	W_5	W_6	W_7
Av. yield	1856	1593	1986	1549	2056	1458	1641	1937

Crop :- Paddy (Kharif).

Ref :- Or. 65(19).

Site :- State Agri. Res. Stn., Sambalpur.

Type :- 'D'.

Object :- To study the effect of some modern insecticides in controlling Gallmidge.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Sandy soil. (iii) 2nd week of Aug., 65/last week of Sept., 65. (iv) (a) 4 ploughings with alternate ladderings. (b) Transplanting. (c) 37.5 Kg/ha. (d) 15 cm. × 23 cm. (e) 2. (v) 56.0 Kg/ha. of N as A/S + 112.1 Kg/ha. of P_2O_5 as Super + 56.0 Kg/ha. of K_2O as Mur. Pot. (vi) T1242. (vii) Irrigated. (viii) One hand-weeding. (ix) 27.0 cm. (x) 24.12.65.

2. TREATMENTS :

Main-plot treatments :

10 insecticidal treatments : T_0 =Control (water spray), T_1 =Dimicron at 494 gm/ha., T_2 =D.D.T. at 2.2 Kg/ha., T_3 =Di-eldrin at 2.2 Kg/ha., T_4 =Folidol at 420 gm/ha. T_5 =Gamma B.H.C. at 22.4 Kg/ha., T_6 =Malathion at 420 gm/ha., T_7 =Rogor at 593 C.C./ha., T_8 =Sevin at 2.2 Kg/ha. and T_9 =Endrin at 700 gm/ha.

Sub-plot treatments :

2 spraying intervals : I_1 =7 and I_2 =15 days interval.

3. DESIGN :

(i) Split-plot. (ii) (a) 10 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) and (b) 10 m. × 1.3 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Moderate blast attack. (iii) Incidence and tillers counts and yield of grain. (iv) (a) 1964. to 1966. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 945 Kg/ha. (ii) (a) 245 Kg/ha. (b) 325 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	Mean
I ₁	878	916	797	843	1157	1231	1046	683	810	874	923
I ₂	773	1037	876	917	1027	1128	880	1202	639	1193	967
Mean	825	976	836	880	1092	1179	963	942	724	1034	945

Crop :- Paddy (Kharif).

Ref :- Or. 61(20).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'D'.

Object :- To study the efficiency of chemical weedicides with and without cultural practices for controlling weeds in wet-land Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 21.6,61/17.7,61. (iv) (a) 2 ploughings and puddling. (b) Transplanting. (c) 22 Kg/ha. (d) 23 cm. x 23 cm. (e) 2. (v) 24.1 C.L./ha. of F.Y.M. + 22.4 Kg/ha. of N as C/A/N was top dressed. (vi) T90(late). (vii) Irrigated. (viii) As per treatments. (ix) 145 cm. (x) 24 to 29.12.61.

2. TREATMENTS :

10 weedicidal treatments : T₀=Control, T₁=One hand weeding, T₂=One weeding by Japanese weeder, T₃=2 weedings by Japanese weeder, T₄=Single post planting spray of 2, 4-D at 2.2 Kg/ha., T₅=Single post planting spray of MCPA at 2.2 Kg/ha., T₆=2 post planting spray of 2, 4-D one at 2.2 Kg/ha. and 2nd at 1.1 Kg/ha., T₇=2 post planting spray of M.C.P.A. one at 2.2 Kg/ha. and 2nd at 1.1 Kg/ha., T₈=2 post planting sprays of 2, 4-D each at 2.2 Kg/ha. and T₉=2 post planting sprays of MCPA each at 2.2 Kg/ha.

1st spraying 2 weeks after transplanting and 2nd 3 weeks after 1st spraying.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 8.7 m. x 5.3 m. (b) 8.2 m. x 4.8 m. (v) 23 cm. x 23 cm. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Light attack of mealybugs. (iii) Weed population count and biometric observations. (iv) (a) 1961 only. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

1-Grain yield

(i) 1867 Kg/ha. (ii) 292.0 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	T ₈	T ₉
Av. yield	1751	1770	1897	1777	1818	2239	1784	1724	2030	1877

2-Weed yield

(i) 370 Kg/ha. (ii) 333.0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of weeds in Kg/ha.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉
Av. yield	1490	905	313	331	161	105	27	178	109	81

C.D.=571.0 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 61(21).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'D'.**

Object :—To study the efficiency of chemical weedicides with and without cultural practices for controlling weeds in wet-land Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 30.6.61. (iv) (a) 2 summer ploughings and one ploughing for cossing the seeds. (b) Broadcast. (c) 69 Kg/ha. (d) and (e) N.A. (v) 24.7 C.L./ha. of F.Y.M.+22.4 Kg/ha. of A/S top dressed. (vi) T 90. (vii) Unirrigated. (viii) One weeding. (ix) 144 cm. (x) 24 and 26.12.61.

2. TREATMENTS :

10 weedicidal treatments : T_0 =Control (no weeding), T_1 =Beaushening followed by one weeding, T_2 =Beaushening followed by two weedings, T_3 =Single post emergence spray at 1.1 Kg/ha. of 2, 4-D, T_4 =Single post emergence spray at 2.2 Kg/ha. of 2, 4-D, T_5 =Two post emergence sprays each at 1.1 Kg/ha. of 2, 4-D, T_6 =Two post emergence sprays each at 2.2 Kg/ha. of 2, 4-D, T_7 =2 post emergence sprays of 2, 4-D one at 2.2 Kg/ha. and 2nd at 1.1 Kg/ha., T_8 =Beaushening + one post emergence spray of 2, 4-D at 1.1 Kg/ha. and T_9 =Beaushening + 1 post emergence spray of 2, 4-D at 2.2 Kg/ha.

Beaushening on 19.7.61, 1st weeding on 22.7.1961 and sprayings were done on 19.7.1961 and 19.8.1961.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 7.6 m. × 5.3 m. (b) 7.2 m. × 4.8 m. (v) 23 cm. × 23 cm. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of Rice hispa mealybud was noticed. (iii) Plant population count, weed population count and biometric observations on plants. (iv) (a) 1961-only. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1892 Kg/ha. (ii) 265.0 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	T_8	T_9
Av. yield	1626	2089	2118	2138	1935	1632	1885	1506	2116	1877

Crop :- Paddy (Kharif).**Res :- Or. 64(28).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'D'.**

Object :—To study the relative efficiency of MCPA and Stam F—34 with and without cultural practices on weed control, growth and yield of broadcast Paddy and the residual effect on the succeeding crop.

1. BASAL CONDITIONS :

(i) (a) Paddy-Fallow-Paddy. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 3.6.64. (vi) (a) 4 ploughings. (b) Broadcasted. (c) 90 Kg/ha. (d) and (e) N.A. (v) 22.5 Q/ha. of F.Y.M.+22.5 Q/ha. of P_2O_5 . (vi) T1242 (late). (vii) Unirrigated. (viii) As per treatments. (ix) 142 cm. (x) 25.12.64.

2. TREATMENTS :

12 weedicidal treatments : T_0 =Control (unweeded), T_1 =One hand weeding, T_2 =One beushening + two hand weedings, T_3 =Two beushenings + 2 hand weedings, T_4 =MCPA (Hedonal 40% a.e.) 1.7 Kg/ha. a.e., T_5 =MCPA 2.0 Kg/ha. a.e., T_6 =Stam F—34 (35% a.e. of DPA) 3.4 Kg/ha. a.e. and T_7 =Stam F—34 at 5.6 Kg/ha. a.e., T_8 =One beushening + MCPA at 1.7 Kg/ha. a.e., T_9 =One beushening + MCPA at 2.0 Kg/ha. a.e., T_{10} =One beushening + stan F—34 at 3.4 Kg/ha. a.e. and T_{11} =One beushening + stan F—34 at 5.6 Kg/ha. a.e.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 8.7 m. \times 5.5 m. (b) 8.0 m. \times 5.0 m. (v) 37 cm \times 25 cm. (vi) Yes.

4. GENERAL :

(i) No lodging. (ii) Nil. (iii) Height, tiller no, yield of grain and straw. (iv) (a) 1964--contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3215 Kg/ha. (ii) 190.0 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	T_7	T_8	T_9	T_{10}	T_{11}
Av. yield	1937	2625	3437	3519	3000	3025	3331	3362	3594	3412	3825	3512

C.D.=273.4 Kg/ha.

Crop :- Paddy (Kharif).

Ref :- Or. 63(37).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'D'.

Object :—To study the effect of weedicides and cultural treatments on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Fallow-Paddy. (b) Paddy. (c) Nil. (ii) Sandy loam. (iii) 26.6.63. (iv) (a) 2 ploughings and one final ploughing. (b) Broadcasted. (c) 50 Kg/ha. (d) and (e) N.A. (v) 24.7 C.L. ha. of F.Y.M. (vi) T1242 (late). (vii) Unirrigated. (viii) As per treatments. (ix) 136 cr. (x) 25.12.63.

2. TREATMENTS :

12 weedicidal cum-cultural treatments : W_0 =Control, W_1 =Beushening + one hand weeding, W_2 =Beushening + 2 hand weedings, W_3 =2 beushenings + 2 hand weedings, W_4 =1.7 Kg/ha. of 2, 4-D, W_5 =2.2 Kg/ha. of 2, 4-D, W_6 =1.7 Kg/ha. of MCPA, W_7 =2.2 Kg/ha. of MCPA, W_8 =Beushening + 1.7 Kg/ha. of 2, 4-D, W_9 =Beushening + 2.2 Kg/ha. of 2, 4-D, W_{10} =Beushening + 1.7 Kg/ha. of MCPA and W_{11} =Beushening + 2.2 Kg/ha. of MCPA.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 2.0 m. \times 1.9 m. (b) 1.8 m. \times 1.7 m. (v) 9 cm \times 9 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Weed. count, height, tiller count, yield of grain and straw. (iv) (a) 1963 only. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1196 Kg/ha. (ii) 259.0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	W_0	W_1	W_2	W_3	W_4	W_5	W_6	W_7	W_8	W_9	W_{10}	W_{11}
Av. yield	1022	1337	1625	1253	1138	1095	1190	1138	1200	1106	1207	1041

Crop :- Paddy (Kharif).

Ref :- Or. 62(48).

Site :- Agri. Res. Stn., Sambalpur.

Type :- 'D'.

Object :—To study the efficiency of chemical weedicides with and without cultural practices in controlling weeds and their effect on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) *Mung-Paddy*. (b) *Muug*. (c) N.A. (ii) Loamy soil. (iii) 26.6.62. (iv) (a) 2 ploughings. (b) Broadcast. (c) 67 Kg/ha. (d) and (e) Nil. (v) 22.4 Kg/ha. of P_2O_5 Super + 22.4 Kg/ha. as KCl at the time of land preparation and 33.6 Kg/ha. of N as A/S topdressed at the time of besuhanding. (vi) T90. (vii) Irrigated. (viii) As per treatments. (ix) 121 cm. (x) 22.11.62.

2. TREATMENTS :

Same as in Expt. no. 63(37) conducted at Bhubaneswar on page 152.
Weedicides were sprayed on 3 and 18.8.1962.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 1/185 ha. (b) 1/247 ha. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Height, tiller count, panicle length and weed population. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 511 Kg/ha. (ii) 80.0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	W ₀	W ₁	W ₂	W ₃	W ₄	W ₅	W ₆	W ₇	W ₈	W ₉	W ₁₀	W ₁₁
Av. yield	394	549	566	506	461	454	525	507	541	536	528	567

Crop :- Wheat (*Rabi*).

Ref :- Or. 62(18).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :—To study the relative efficiency of A/S and C/A/N. for Wheat and to find out the proper time of application of fertilizer.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) Sandy loam. (iii) 28.11.62. (iv) (a) 3 ploughings. (b) Line sowing. (c) 47 Kg/ha. (d) 23 cm. × 23 cm. (e) Nil. (v) 2242 Kg/ha. of F.Y.M. and 22.2 Kg/ha. of P_2O_5 as Super. (vi) N.P. 718. (vii) Unirrigated. (viii) Nil. (ix) 1 cm. (x) 18.3.63.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 2 sources of 44.8 Kg/ha of N : S₁=A/S and S₂=C/A/N.

(2) 3 times of application : T₁=Full dose at sowing, T₂=½ at sowing+½ one month after sowing and T₃=½ at sowing+½ one month after sowing+½ one week before flowering.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 7.6 m. × 4.0 m. (b) 7.1 m. × 3.5 m. (v) 23 cm. × 23 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1962 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 646 Kg/ha. (ii) 202.0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T ₁	T ₂	T ₃	Mean
S ₁	548	864	553	655
S ₂	646	709	560	638
Mean	597	786	556	646

Crop :- Wheat (Rabi).**Ref :- Or. 62(71).****Site :- Agri. Res. Stn., Sambalpur.****Type :- 'M'.**

Object :- To study the effect of N and P on the yield of the Wheat.

1. BASAL CONDITIONS :

(i) (a) G.M.-Paddy-Wheat. (b) G.M.-Paddy. (c) 22.4 Kg/ha. of P_2O_5 as Super - 22.4 Kg ha. of N as A/S
 (ii) Clay loam. (iii) 2, 4, 12.61. (iv) (a) 6 ploughings. (b) Sowing in lines. (c) 112 Kg ha. (d) 23 cm. between lines. (e) Nil. (v) Nil. (vi) N.P. 718. (vii) Irrigated. (viii) Hand-weeding twice. (ix) and (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 3 levels of N as A/S : $N_0=0$, $N_1=22.4$ and $N_2=44.8$ Kg/ha.(2) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=33.6$ Kg/ha.Super and $\frac{1}{2}$ A/S applied in furrows at sowing and remaining $\frac{1}{2}$ A/S as top dressed after one month of sowing.**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 8.5 m. \times 6.4 m (b) 8.0 m. \times 6.0 m. (v) 30 cm. \times 23 cm. (vi) Yes

4. GENERAL :

(i) Poor. (ii) and (iii) Nil. (iv) 1960-62. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1182 Kg/ha. (ii) 116.0 Kg ha. (iii) Main effects of N and P are highly significant. (iv) Av yield of grain in Kg/ha.

	N_0	N_1	N_2	Mean
P_0	686	1266	1318	1090
P_1	823	1429	1568	1273
Mean	754	1348	1443	1182

C.D. for P marginal mean = 100.8 Kg/ha.

C.D. for N marginal mean = 123.6 Kg/ha.

Crop :- Wheat.**Ref :- Or. 63(MAE).****Site :- MAE Centre, Barpali.****Type :- 'M'.**

Object :- Type XII To study the efficiency of foliar spray of fertilisers compared to soil application on Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red and black. (iii) to (v) N.A. (vi) N.P.-718. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :**Main-plot treatments**

4 fertiliser treatments : $F_1=44.8$ Kg/ha. of N as A/S, $F_2=22.4$ Kg/ha. of P_2O_5 as Super, $F_3=44.8$ Kg/ha. of N + 22.4 Kg/ha. of P_2O_5 and $F_4=44.8$ Kg/ha. of N + 22.4 Kg/ha. of P_2O_5 + 22.4 Kg/ha. of K_2O .

Sub-plot treatments

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

(1) 3 methods of application : $M_1=$ Soil application ; $M_2=$ Foliar application and $M_3=$ Soil application and foliar application.(2) 2 levels of application : $L_1=\frac{1}{2}$ dose and $L_2=$ Full dose.Extra treatments : $C_1=$ Water spray and $C_2=$ Absolute control.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 8 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) N.A. (v) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963 only. (b) and (c) (v) to (vii) Nil.

5. RESULTS :

(i) 457 Kg/ha. (ii) (a) 211.6 Kg/ha. (b) 196.6 Kg/ha. (iii) Main effects of F and (LM) are significant. (iv) Av. yield of grain in Kg/ha.

$C_1=326$ Kg/ha. ; $C_2=326$ Kg/ha.

	L_1M_1	L_2M_1	L_1M_2	L_2M_2	L_1M_3	L_2M_3	Mean
F_1	315	490	324	310	515	253	368
F_2	368	384	538	360	268	573	414
F_3	594	802	337	401	413	710	543
F_4	773	793	523	410	694	879	679
Mean	512	617	429	370	473	604	501

C.D. for F marginal means =121 Kg/ha.

C.D. for (LM) marginal means=136 Kg/ha.

Crop :- Wheat.

Ref :- Or. 62, 63, 64, 65(S.F.T.) for Puri and Mayurbhanj, 62, 63, 64, (S.F.T.) for Balasore and 62 (S.F.T.) for Cuttack.

Site :- (District) : Puri, Mayurbhanj, Balasore and Cuttack.

Type :- 'M'.

Object :—(Type A_1) 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) N.A. (ii) Red and yellow for Puri and Mayurbhanj ; Red loamy for Balasore and Cuttack. (iii) to (vi) N.A. (vii) Irrigated . (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

O=Control (no manure)

$N_1=35$ Kg/ha. of N.

$N_2=70$ Kg/ha. of N

$P_1=35$ Kg/ha. P_2O_5 .

$N_1P_1=35$ Kg/ha. of N+35 Kg/ha. of P_2O_5 .

$N_2P_1=70$ Kg/ha. of N+35 Kg/ha. of P_2O_5 .

$N_2P_2=70$ Kg/ha. of N+70 Kg/ha. of P_2O_5 .

$N_2P_2K_1=70$ Kg/ha. of N+70 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. of 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 to 1966 for Puri, Mayurbhanj and Balasore and 1962—Only for Cuttack. 1965 N.A. for Balasore and 1962 N.A. for Mayurbhanj. (b) N.A. (e) Nil. (v) to (vii) N.A.

5. RESULTS :

Puri**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.	206	226	270	207	416	468	515	—

Control yield—577 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.	150	395	112	350	488	582	702	57.0

Control yield=429 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 grain in Kg/ha.	208	375	496	640	762	945	1096	123.6

Control yield=183 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.T.
Av. response of grain in Kg/ha.	472	798	630	938	1294	1707	2040	284.2

Control yield=461 Kg/ha. ; No. of trials = 2.

Mayurbhanj**63 (S.F.T.)**

Treatment	N ₁	P 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.	263	433	196	487	662	746	918	74.5

Control yield=681Kg/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.	99	191	82	210	319	303	409	49.7

Control yield=481 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.	80	120	59	155	202	247	340	31.5

Control yield=743 Kg/ha. ; No. of trials = 2

Balasore**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.	150	210	41	308	321	466	594	55.1

Control yield=643 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.	375	583	93	934	1373	1522	1838	257.2

Control yield=1719 Kg/ha. ; No. 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.	74	128	62	138	113	219	241	56.0

Control yield=1059 Kg/ha. ; No. of trials=3

Cuttack

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.	104	145	63	185	277	312	318	29.6

Control yield=253 Kg/ha. ; No. of trials=2

Crop :- Wheat (Rabi).**Ref :- Or. 62(S.F.T.) for Cuttak and 65 (S.F.T.) Balasore.****Site :- (District) : Cuttak and Balasore.****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 loamy. (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. of Pot.

3. DESIGN :

Same as in type A₁ (Irrigated) on page 155.

4. GENERAL :

(i) to (iii) N.A. (iv) 1962—only for Cuttak and 1965—only for Balasore, (b) N.A. (c) Nil. v) to (vii) N.A.

5. RESULTS :

Cuttack

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.	460	472	183	539	413	654	666	—

Control yield=923 Kg/ha. ; No. of trials=1.

Balasure**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.	189	293	-3	243	336	411	420	53.3

Control yield=634 Kg/ha. ; No. of trials =6.

Crop :- Wheat. (Rabi).**Ref :- Or. 62, 63, 64, 65 (S.F.T.) for Puri and Mayurbhanj 62, 63, 64 (S.F.T.) for Balasure and 62 (S.F.T.) for cuttack.****Site :- (District) : Puri, Mayurbhanj, Balasure, and Cuttack.****Type :- 'M'.**Object :--To study the response curves of important cereal cash and oilseed crops to phosphorus applied singly and in combination with other nutrients (Type : A₂)**1. BASAL CONDITIONS :**

(i) N.A. (ii) Red and yellow for puri, and Mayurbhanj Red loamy for Balasure ; and Cuttack. (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.
 - N₂P₂K₂ =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 155.**4. GENERAL :**

(i) to (iii) N.A. (iv) (a) 1962 for Cuttack, and 1962 to 1966 for others [1965 N.A. for Balasure]. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :**Puri****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.	197	88	102	340	399	755	847	-

Control yield=544 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.	149	129	170	303	400	595	696	54.7

Control yield= 321 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.	195	264	345	610	644	795	922	52.4

Control yield=219 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.	283	398	503	597	853	1079	1337	127.2

Control yield=371 Kg/ha. ; No. of trials=2.

Mayurbhanj

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	183	231	300	426	460	531	—

Control yield=415 Kg/ha. ; No. of trials=1.

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.	311	327	519	524	501	758	851	28.7

Control yield=995 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.	172	105	153	267	265	332	466	60.2

Control yield=503 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 grain in Kg/ha.	233	125	200	275	325	390	502	125.8

Control yield=825 Kg/ha. ; No. of trials=2.

Balosore

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.	112	-39	38	267	241	450	614	40.8

Control yield=674 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.	00	-59	59	197	217	494	691	—

Control yield=988 Kg/ha. ; No. of trials=1.

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.	113	13	116	521	429	561	717	32.4

Control yield=1234 Kg/ha. ; No. of trials=4.

Cuttack**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.	197	49	71	152	324	209	426	—

Control yield=355 Kg/ha. ; No. of trials=1.

Crop :- Wheat (Rabi).**Ref :- Or. 62, (S.F.T.) for Cuttack, 65
(S.F.T.) for Balasore.****Site :- (District) : Cuttack, Balasore. Type :- 'M'.**Object :- To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients (Type : A₂)**1. BASAL CONDITIONS :**

(i) N.A. (ii) Red loamy. (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 NP₁ = 35 Kg/ha. of P₂O₅P₂ = 70 Kg/ha. of P₂O₅N₁P₁ = 35 Kg/ha. of N + 35 Kg/ha. of P₂O₅N₁P₂ = 35 Kg/ha. of N + 70 Kg/ha. of P₂O₅N₂P₂ = 70 Kg/ha. of N + 70 Kg/ha. of P₂O₅N₂P₂K₂ = 70 Kg/ha. of N + 70 Kg/ha. of P₂O₅ + 70 Kg/ha. of K₂ON applied as A/S : P₂O₅ as Super and K₂O as Mur. of Pot.**3. DESIGN :**Same as in Type A₁ (Irrigated) on page 155.**4. GENERAL :**

(i) to (iii) N.A. (iv) (a) 1962—only for cuttack und 1965—only for Balasore. (b) N.A. (c) Nil. (v) to (viii) N.A.

5. RESULTS :**Cuttack****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.	551	—53	107	339	234	373	466	—

Control yield=658 Kg/ha. ; No. of trials = 2.

Balasore**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.	179	66	97	239	312	445	589	63.6

Control yield=648 Kg/ha. : No. of of trials=5.

Crop :- Wheat.

**Ref :- Or. 62, 63, 64, 65 (S.F.T.)
for Mayurbhanj, 62, 63,
65 (S.F.T.) for Puri and
62, 64 (S.F.T.) for Balasore.**

**Site :- (District) : Mayurbhanj, Puri and
Balasore.**

Type :- 'M'.

Object :-To study the response curves of important cereal, cash and oilseed crops to potash applied singly and in combination with other nutrients (Type A₃).

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red loamy for Balasore and Red and yellow for others. (iii) to (vi) N.A. (vi) 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 K₂O

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. of Pot.

3. DESIGN ;

Same as in Type A₁ (Irrigated) above.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1966 [1963 and 1965 N.A. for Balasore and 1964 N.A. for Puri]. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Mayurbhanj

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.	298	138	276	229	482	460	401	—

Control yield=369 Kg/ha. ; No. of trials=1.

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.	345	276	468	633	714	728	886	—

Control yield=1119 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.	257	87	150	256	302	346	397	55.1

Control yield=499 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.	162	90	134	204	308	276	322	—

Control yield=743 Kg/ha. ; No. of trials=3.

Puri**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.	185	26	24	198	164	405	475	54.4

Control yield = 542 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.	220	40	57	262	325	560	507	—

Control yield = 304 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.	816	492	748	1188	1328	1491	1960	—

Control yield = 488 Kg/ha. ; No. of trials = 1.

Balasore**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.	134	66	90	228	284	366	370	90.5

Control yield = 638 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.	77	1	49	72	120	255	194	58.1

Control yield = 861 Kg/ha. ; No. of trials = 4.

Crop :- Wheat.**Ref :- Or. 62, (S.F.T.) for Cuttack, and 65 (S.F.T.) for Balasore,****Site :- (District) : Cuttack, and Balasore.****Type :- 'M'.**

Object :- To study the response curves of important cereal, cash and pulse crops to nitrogen applied singly and in combination with other nutrients. (Type : A.)

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red loamy. (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 NK₁ = 35 Kg/ha. of K₂OK₂ = 70 Kg/ha. of K₂ON₁K₁ = 35 Kg/ha. of N + 35 Kg/ha. of K₂ON₁K₂ = 35 Kg/ha. of N + 70 Kg/ha. of K₂ON₂K₂ = 70 Kg/ha. of N + 70 Kg/ha. of K₂ON₂P₁K₁ = 35 Kg/ha. of N + 35 Kg/ha. of P₂O₅ + 35 Kg/ha. of K₂ON applied as A/S; P₂O₅ as Super and K₂O as Mur. of Pot.

3. DESIGN :

Same as in type A₁ (irrigated) above.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962—only for cuttack and 1965—only for Balasore. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Cuttack**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.	124	20	69	328	437	258	516	36.7

Control yield=614 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.	124	63	105	240	262	373	291	69.9

Control yield=672 Kg/ha. ; No. of trials=4.

Crop :- Wheat.

Ref :- Or. 60 (SFT), 61 (SFT) for Balasore, Bolangir, Cuttack and Mayurbhanj.

Site :- (District) : Balasore, Bolangir, Cuttack, Dhankanal, Kalahandi, Mayurbhanj and Sambalpur.

Type :- 'M'.

Object :-To study the response of Wheat to different levels of N, P₂O₅ and K₂O applied individually and in combination (Type : A).

(i) N.A. (ii) Saline for Balasore, Red and black for Dhankanal and Sambalpur and Red for others. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

Same as on page

3. DESIGN :

Same as page in type A₁ (Irrigated) above.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1960 to 1961 for Balasore, Bolangir, Cuttack and Mayurbhanj and 1960 only for others. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

60 (S.F.T.)

Av. response of grain in Kg/ha.

District	No. of trials	Control yield Kg/ha.	N	P	K	S.E.	N P	N K	PK	NPK	S.E.
Balasore	4	890	280	110	100	29.0	20	10	-20	10	30.0
Bolangir	4	1560	1230	450	300	132.0	210	50	-60	20	67.0
Cuttack	4	880	220	80	50	33.0	-10	-20	0	40	9.0
Dhankanal	8	770	160	140	190	55.0	-30	60	-20	10	40.0
Kalahandi	6	840	220	210	70	53.0	30	-10	-30	40	18.0
Mayurbhanj	13	430	260	230	180	37.0	0	-20	60	20	21.0
Sambalpur	2	760	180	140	90	59.0	-30	40	-60	110	43.0

61 (S.F.T.)

Balasore	3	1010	270	180	130	34.0	-30	0	10	0	29.0
Bolangir	2	830	710	120	-130	55.0	-70	-20	10	40	65.0
Cuttack	2	470	210	170	160	63.0	70	50	-10	10	40.0
Mayurbhanj	5	360	240	270	250	63.0	0	-20	50	-30	36.0

Crop :- Wheat.

Ref :- Or. 61(S.F.T.)

Site :- (District) : Balasore, Bolangir, Cuttack, Dhenkanal,
Ganjam, Kalahandi, Mayurbhanj, Puri and
Sambalpur.

Type :- 'M'.

Object :—To study the response of wheat to different levels of N, P₂O₅ and K₂O applied individually and in combination. (Type : A).

1. BASAL CONDITIONS :

(i) N.A. (ii) Saline for Balasore, Red and black for Dhenkanal and Sambalpur and Red for others.
(iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

O=Control (no manure)

n=22.4 Kg/ha. of N as A/S.

p=22.4 Kg/ha. of P₂O₅ as Super.k=22.4 Kg/ha. of K₂O as Mur. Pot.np=22.4 Kg/ha. of N as A/S+22.4 Kg/ha. of P₂O₅ as Super.nk=22.4 Kg/ha. of N as A/S+22.4 Kg/ha. of K₂O as Mur. Pot.pk=22.4 Kg/ha. of P₂O₅ as Super+22.4 Kg/ha. of K₂O as Mur. Pot.npk=22.4 Kg/ha. of N as A/S+22.4 Kg/ha. of P₂O₅ as Super+22.4 Kg/ha. of K₂O as Mur. Pot.

3. DESIGN :

Same as in type A₁ (Irrigated) on page

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1960 to 1961. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

60(S.F.T.)	District	No. of trials	Control yield	Av. response of grain in Kg/ha.							S.E.	
				N	P	K	S.E.	NP	NK	PK		NPK
	Balasore	14	2560	420	320	180	24.0	30	0	10	20	17.0
	Bolangir	8	2300	870	430	370	90.0	90	-50	-50	180	39.0
	Cuttack	10	2520	650	390	260	70.0	-80	70	0	140	42.0
	Dhenkanal	9	3910	760	560	180	28.0	-60	240	-60	10	85.0
	Ganjam	12	3240	590	500	160	46.0	-30	10	10	110	45.0
	Kalahandi	7	1950	570	590	440	169.0	-30	10	0	200	109.0
	Mayurbhanj	8	1970	700	630	650	56.0	-100	-110	280	180	81.0
	Puri	10	2580	650	280	140	53.0	-70	-70	-50	70	44.0
	Sambalpur	4	1570	350	260	230	76.0	-50	-60	-100	-100	42.0
60 (S.F.T.)	Balasore	10	2170	480	410	190	35.0	0	20	0	10	27.0
	Bolangir	8	1800	650	380	150	99.0	10	0	-60	70	40.0
	Cuttack	4	1840	440	170	330	173.0	90	-60	-50	160	160.0
	Dhenkanal	5	1710	180	100	100	37.0	0	40	10	-50	28.0
	Ganjam	8	1880	400	560	270	153.0	-190	-20	-180	80	28.0
	Kalahandi	9	1740	610	490	370	95.0	10	-100	-110	90	48.0
	Mayurbhanj	12	1340	370	400	380	35.0	-50	-20	0	-50	28.0
	Puri	9	1930	450	160	100	131.0	-20	-50	-30	40	90.0
	Sambalpur	14	2110	590	500	340	94.0	-20	-50	-80	130	59.0

Crop :- Paddy.**Ref :- Or. 60(SFT).****Site :- As per results.****Type :- 'M'.**

Object :- To investigate the relative efficiency of different nitrogenous fertilizers at different doses.
(Type : B)

1. BASAL CONDITIONS :

(i) N.A. (ii) Saline for Balasore, Red alluvial for Cuttack, Red and black (1) Dhanbari, Red soil for others. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

O = Control (No manure).

n_1 = 22.4 Kg/ha. of N as A.S.

n_1'' = 22.4 Kg/ha. of N as A/S/N

n_2 = 44.8 Kg/ha. of N as A.S.

n_2'' = 44.8 Kg/ha. of N as A/S/N

n_1 = 22.4 Kg/ha. of N as Urea.

n_1''' = 22.4 Kg/ha. of N as C/A/N

n_2 = 44.8 Kg/ha. of N as Urea.

n_2''' = 44.8 Kg/ha. of N as C/A/N

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 oilseed crop and 3 on a leguminous crop. Half the number of trials conducted are of type A 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 crop 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) 1/80 ac. (b) 1/40 ac. (v) Yes.

4. GENERAL :

(i) to (ii) N.A. (iii) (a) 1960 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

District	No. of trials	A: yield of grain in Kg/ha.										S.E. mean
		O	n_1	n_2	n_1''	n_2''	n_1'''	n_2'''	G.M.	n_1''''	n_2''''	
Balasore	4	930	1070	1480	1130	1490	—	—	1120	1380	1239	68.6
Cuttack	4	940	1110	1170	1220	1260	—	—	1020	1070	1113	23.3
Ganjam	2	900	1220	1260	1190	1250	—	—	1190	1340	1193	21.2
Kalahandi	9	620	800	970	800	920	—	—	870	1040	860	32.5
Mayurbhanj	2	280	330	390	350	390	—	—	450	350	363	29.7
Bolangir	3	1720	—	—	2020	2600	2140	2370	2870	3260	2426	161.2
Dhenkanal	6	640	—	—	670	910	930	1030	1000	1130	910	67.0
Mayurbhanj	3	650	740	1110	—	—	940	1000	1070	1230	963	82.0

Crop :- Wheat (Rabi).**Ref :- Or. 61(S.F.T).****Site :- As per results.****Type :- 'M'.**

Object :—To investigate the relative efficiency of different nitrogenous fertilizers at different doses (Type : B).

1. BASAL CONDITIONS :

(i) N.A. (ii) Saline for Balasore, Red and black for Sambalpur; Red soil for others. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in type B (Irrigated) on page 166.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1961—only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

District	Soil class	No. of trials	Av. yield in Kg/ha.								G.M.	S.E./Mean	
			Control	n ₁	n ₂	n ₁ '	n ₂ '	n ₁ ''	n ₂ ''	n ₁ '''			n ₂ '''
Balasore	Saline	3	930	940	1260	1140	1400	—	—	1150	1520	1191	48.1
Bolangir	Red	3	670	1240	1290	1040	1470	—	—	1340	1440	1213	50.9
Mayurbhanj	Red	4	470	780	1500	—	—	640	1370	900	1670	1047	91.9
Sambalpur	Red and black	2	450	—	—	510	600	730	750	640	650	612	101.8

Crop :- Wheat. (Rabi).**Ref :- Or. 61(66).****Site :- Agri. Res. Stn., Sambalpur.****Type :- 'C'.**

Object :—To study the effect of different dates of sowing on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Clay-loam. (iii) As per treatments. (iv) (a) 3 to 4 ploughings. (b) Line sowing. (c) 91 Kg/ha. (d) 23 cm. between row. (e) Nil. (v) 1255 Kg/ha. of F.Y.M.+17.9 Kg/ha. of P₂O₅+22.4 Kg/ha. of N as A/S. (vi) N.P. 718. (vii) Irrigated. (viii) One weeding and hoeing. (ix) and (x) N.A.

2. TREATMENTS :

6 dates of sowing : D₁=21.10.60, D₂=4.11.60, D₃=21.11.60, D₄=4.12.60, D₅=21.12.60 and D₆=4.1.61.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 4.9 m. × 4.6 m. (v) N.A. (vi) Yes.

4. GENERAL :

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

5. RESULTS :

(i) 1045 Kg/ha. (ii) 141.0 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	893	1532	1633	1144	788	279

C.D. = 212.5 Kg/ha.

Crop :- Wheat, (Rabi).**Ref :- Or. 60, 61, 63(MAE).****Site :- M.A.E. Centre. Barpali.****Type :- 'GM'.**

Object — type VIII : To study the effect of cultural practises along with levels of N and P on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Red loam. (iii) As per treatments. (iv) 6 ploughings, 2 hoeings and 6 bakharings. (v) 5600 Kg/ha. of F.Y.M. (vi) NP—718. (vii) Irrigated for 60 and 61. Unirrigated for 62. (viii) Nil. (ix) N.A., 43 cm., N.A. (x) N.A., 43 cm., 21.3.64.

2. TREATMENTS :**Main-plot treatments :**

All combinations of (1) and (2)

(1) 3 dates of sowing : D₁ = 20.11.60, D₂ = 5.12.60 and D₃ = 20.12.60.(2) 3 seed rates : S₁ = 56, S₂ = 84 and S₃ = 101 Kg/ha.**Sub-plot treatments :**

All combinations of (1) and (2)

(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.[D₁ = 20.11.61; D₂ = 5.12.61; D₃ = 20.12.61; D₄ = 18.11.63, D₅ = 5.12.63 and D₆ = 26.12.63].**3. DESIGN :**

(i) Split-plot. (ii) (a) 9 main-plots/replication, 9 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) and (v) N.A.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1959—1963 (1962—N.A.). (b) No. (v) Nil (vi) Slight damage due to heavy rains in 1961. (vii) Nil.

5. RESULTS :**1960**

(i) 243 Kg/ha. (ii) (a) 166.9 Kg/ha. (b) 149.4 Kg/ha. (iii) Main effect of P alone is significant. (iv) Av. yield of grain in Kg/ha.

	S ₁	S ₂	S ₃	N ₀	N ₁	N ₂	P ₀	P ₁	P ₂	Mean
D ₁	203	258	267	249	249	231	203	267	259	243
D ₂	277	221	286	203	295	285	194	295	294	261
D ₃	258	194	221	222	231	220	194	295	183	224
Mean	246	224	258	225	258	245	197	286	245	243
P ₀	194	194	202	203	194	194				
P ₁	295	277	287	258	341	259				
P ₂	250	201	284	214	239	282				
N ₀	231	212	232							
N ₁	249	258	267							
N ₂	258	202	275							

C.D. for P marginal means = 57.5 Kg/ha.

1961

- (i) 593 Kg/ha. (ii) (a) 385.2 Kg/ha. (b) 238.6 Kg/ha. (iii) Main effect of N and P are highly significant.
 (iv) Av. yield of grain in Kg/ha.

	S ₁	S ₂	S ₃	N ₀	N ₁	N ₂	P ₀	P ₁	P ₂	Mean
D ₁	535	719	570	489	701	634	424	682	718	608
D ₂	581	516	544	443	526	672	507	526	608	547
D ₃	672	544	659	406	645	824	563	655	657	625
Mean	596	593	591	446	624	710	498	621	661	593
P ₀	498	507	489	369	489	636				
P ₁	609	599	655	507	683	673				
P ₂	682	673	628	461	701	821				
N ₀	406	507	425							
N ₁	710	581	581							
N ₂	672	691	767							

C.D. for N or P marginal means=91.6 Kg/ha.

1963

- (i) 638 Kg/ha. (ii) (a) 342.2 Kg/ha. (b) 335.2 Kg/ha. (iii) Main effects of S, D, N and interactions S × D, S × N and S × P are highly significant. (iv) Av. yield of grain in Kg/ha.

	S ₁	S ₂	S ₃	D ₁	D ₂	D ₃	N ₀	N ₁	N ₂	Mean
P ₀	389	623	848	618	1000	243	468	427	965	620
P ₁	413	814	560	640	958	190	452	584	752	596
P ₂	470	614	1006	838	914	339	519	600	971	697
Mean	424	684	805	699	957	257	480	537	896	638
N ₀	426	467	547	522	694	223				
N ₁	329	737	546	543	897	172				
N ₂	518	848	1323	1031	1281	377				
D ₁	460	478	1158							
D ₂	656	1350	866							
D ₃	156	224	391							

C.D. for S or D marginal means = 152.0 Kg/ha.
 C.D. for N marginal means = 128.7 Kg/ha.
 C.D. for N means at the same level of S = 223.0 Kg/ha.
 C.D. for S means at the same level of N = 236.2 Kg/ha.
 C.D. for body of S × D table = 263.1 Kg/ha.
 C.D. for body of S × P table = 223.0 Kg/ha.

Crop :- Wheat (Rabi).**Ref :- Or. 60(41).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'IM'.**

Object : -To determine the optimum intensity and frequency of irrigation along with the optimum dose of N and P for Wheat crop.

1. BASAL CONDITIONS

(i) (a) Nil. (b) Sun hemp. (c) Nil. (ii) Sandy-loam. (iii) 20.11.60 and 2.12.60. (The plots were resowed with N.P. 718 as the seeds sown on 20.11.60 did not germinate satisfactorily). (iv) (a) 3 ploughings followed by ladderine levelling and breaking of clods. (b) Line sowing. (c) 112 Kg/ha. (d) 23 cm. x 23 cm. (e) N.A. (v) Nil. (vi) N.P. 718 (medium). (vii) Irrigated. (viii) Nil. (ix) 13 cm. (x) 26, 27.3.61.

2. TREATMENTS :**Main-plot treatments :**

All combinations of (1) and (2)

1. 3 intensities of irrigation : $I_1=2$, $I_2=3$ and $I_3=4$ acre inch.

2. 3 frequencies of irrigation : $F_1=3$, $F_2=4$ and $F_3=5$ irrigations.

Sub-plot treatments :

All combinations of (1) and (2)

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.

P_2O_5 was applied at the time of sowing on 19.11.1960.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication, 9 sub-plots/main-plot. (b) N.A. (i.i) 1. (iv) (a) 3.2 m. x 6.2 m. (b) 2.7 m. x 5.7 m. (v) 23 cm. x 23 cm. (vi) Yes.

4. GENERAL .

(i) All the plots were lodged due to heavy rains for 4 days from 31.12.60 to 3.1.61. (ii) Attack of loose smut. (iii) Nil. (iv) (a) 1960 only. (b) No. (c) Nil. (v) and (vi) Nil. (vii) The expt. was analysed as R.B.D. as all the main-plots treatments have been vitiated and therefore taken as replications.

5. RESULTS :

(i) 317 Kg/ha. (ii) 161.8 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	Mean
N_0	260	366	335	320
N_1	333	271	259	288
N_2	376	360	294	343
Mean	323	332	296	317

Crop :- Wheat (Rabi).**Ref :- Gr. 60(MAE).****Site :- M.A.E. Centre, Barpali.****Type :- 'IM'.**

Object : Type I :-To study the effect of different intensities and frequencies of irrigation along with different levels of N and P on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Red loam. (iii) to (x) N.A.

2. TREATMENTS :

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

(1) 3 intensities of irrigation : $I_1=5.1$, $I_2=7.6$ and $I_3=10.1$ cm. deep.

(2) 3 frequencies of irrigation : $F_1=4$, $F_2=5$ and $F_3=6$ irrigations.

(3) 3 levels of N as A/S : $N_0=0$, $N_1=33.6$ and $N_2=67.2$ Kg/ha.

(4) 2 levels of P_2O_5 as Super : $P_0=0$, $P_1=33.6$ and $P_2=67.2$ Kg/ha.

3. DESIGN :

(i) 3⁴ Fact. confd. (ii) (a) 9 plots/block and 9 blocks/replication. (b) N.A. (iii) 1. (iv) and (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) 754 Kg/ha. (ii) 374.5 Kg/ha. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in Kg/ha.

	I ₁	I ₂	I ₃	N ₀	N ₁	N ₂	P ₀	P ₁	P ₂	Mean
F ₁	821	839	683	646	793	904	617	968	757	781
F ₂	756	526	729	544	682	784	590	636	784	670
F ₃	1005	729	701	664	849	923	774	978	684	812
Mean	861	698	704	618	775	870	660	861	742	754
P ₀	729	701	550	636	683	661				
P ₁	1134	673	776	590	895	1098				
P ₂	720	720	786	627	747	851				
N ₀	673	590	591							
N ₁	996	692	637							
N ₂	914	812	884							

C.D. for N marginal means = 216.0 Kg/ha.

Crop :- Maize. (Rabi).

Ref :- Or. 61(23), 62(8).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :- To study the relative efficiency of A/S and C/A/N at different levels for Maize and to find their proper time of application.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Brinjal for 61(23), N.A. for 62(8). (c) N.A. (ii) Sandy loam. (iii) N.A., 24.6.1963. (iv) (a) 3 to 4 ploughings. (b) Sowing in furrows. (c) N.A. (d) 30 cm. x 15 cm. for 61(23), 68 cm. x 23 cm. for 62(8), (e) Nil. (v) 4483 Kg/ha. of F.Y.M. + 44.8 Kg/ha. of P₂O₅ and 44.8 Kg/ha. of K₂O applied in furrows at the time of sowing. (vi) Kanduguda (local). (vii) Unirrigated. (viii) Hoeing and earthing up for 61(23), weeding for 62(8). (ix) N.A., 75 cm. (x) 14.10.1961, 25.9.1962.

2. TREATMENTS :

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

(1) 2 sources of N : S₁ = A/S and S₂ = C/A/N.

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

(3) 2 times of application : T₁ = Full dose at sowing in furrows and T₂ = ½ at planting in furrows + ½ at earthing up.

3 DESIGN:

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) 5.9 m. x 4.7 m. for 61(23), 10.1 m. x 8.1 m. for 62(8) (b) 4.7 m. x 4.4 m. for 61(23), 9.6 m. x 6.7 m. for 62(8). (v) 61 cm. x 15 cm. for 61(23), 23 cm. x 69 cm. for 62(8). (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1961 to 1962. (b) No. (c) Results of combined analysis given under 5. (v) N.A. (vi) Nil. (vii) Error variances are homogeneous and Treatments \times years interaction is absent.

5. RESULTS :

(i) 2382 Kg/ha. (ii) 586.6 Kg/ha. (34 d.f. made up of pooled error and Treatments \times years interaction). (iii) Main effect of T alone is significant. (iv) Av. yield of grain in Kg/ha.

	N ₁	N ₂	T ₁	T ₂	Mean
S ₁	2245	2259	2082	2422	2252
S ₂	2365	2657	2220	2892	2511
Mean	2305	2458	2151	2612	2382
T ₁	2112	2190			
T ₂	2498	2725			

C.D. for T marginal means = 344.4 Kg/ha.

Crop :- Maize (Kharif).

Ref :- Or. 65(21).

Site :- State Agri. Res. Stn., Baubanewar.

Type :- 'M'.

Object :- To find out the relative efficiency of nitrogenous fertilizers on the yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Vegetables. (c) N.A. (ii) Sandy-loam. (iii) 6.7 65. (iv) (a) 4 to 5 ploughings. (b) Hand dibbling in line. (c) 15 Kg/ha. (d) 61 cm. \times 30 cm. (e) Nil. (v) 12554 Kg/ha. of F.Y.M. + 148.3 Kg/ha. K₂O of P₂O₅ + 148.3 Kg/ha. of K₂O (iii) Ganga Hyb. 101. (vii) Irrigated. (viii) One hoeing, weeding and earthing up. (ix) 89.2 cm. (x) 10.10.65.

2. TREATMENTS :

7 sources of N at 60 Kg/ha. : S₀ = Control (No N), S₁ = A/S, S₂ = A/C, S₃ = Factom phosphate, S₄ = C/A/N, S₅ = Urea, S₆ = Nitro phosphate.
C/A/N applied in two splits $\frac{1}{2}$ as basal and $\frac{1}{2}$ one month after.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a) 6.4 m \times 4.6 m. (b) 5.8 m. \times 3.4 m. (v) 30 cm. \times 61 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) No. of Cobs and grain yield. (iv) (a) and (b) No. (c) Nil. (v) to (vi) Nil.

5. RESULTS :

(i) 3671 Kg/ha. (ii) 693 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	S ₀	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆
Av. yield	2359	4649	4149	3150	4578	3310	3502

C.D. = 1232.6 Kg/ha.

Crop :- Maize (Kharif).

Ref :- Or. 62(16).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :- To study the manurial requirements for Maize.

1. BASAL CONDITIONS :

(i) (a) Maize-Fallow. (b) Fallow. (c) Nil. (d) Red laterite. (iii) 16, 17.7.62. (iv) (a) 2 ploughings followed by ladderings. (b) and (c) N.A. (d) 30 cm. × 15 cm. (e) Nil. (v) Nil. (vi) Kendugnde (medium). (vii) Unirrigated. (viii) Weeding and earthing up. (ix) 58 cm. (x) 20 to 24.10.62.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as C/A/N : $N_1=44.8$, $N_2=89.7$, $N_3=134.5$ and $N_4=179.4$ Kg/ha.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=44.8$ and $P_2=89.7$ Kg/ha.

(2) 3 levels of K_2O as KCl : $K_0=0$, $K_1=56.0$ and $K_2=112.1$ Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 9 sub-plots/main-plot. (iii) 4. (iv) (a) 6.7 m. × 5.5 m. (b) 6.1 cm. × 5.2 cm. (v) 30 bm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Some plants were destroyed by red and black ants. (iii) N.A. (iv) (a) 1962 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 812 Kg/ha. (ii) (a) 675.0 Kg/ha. (b) 427.0 Kg/ha. (iii) Main effect of N is significant. Main effects of P, K and interactions $N \times P$, $P \times K$ and $N \times P \times K$ 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_1	63	708	894	431	649	586	555
N_2	100	799	1031	269	619	1042	643
N_3	142	1176	1772	636	1120	1334	1030
N_4	55	1331	1667	637	1216	1201	1918
Mean	90	1004	1341	493	901	1041	812
K_0	46	687	746				
K_1	145	1126	1433				
K_2	80	1198	1844				

C.D. for N marginal means = 359.6 Kg/ha.

C.D. for P or K marginal means = 173.4 Kg/ha.

C.D. for P means at the same level of N = 346.5 Kg/ha.

C.D. for N means at the same level of P = 457.3 Kg/ha.

C.D. for means in the body of $P \times K$ table = 300.2 Kg/ha.

Crop :- Maize. (Kharif).

Site :- (District) Ganjam.

Ref :- Or. 64, 65(S.F.T.).

Type :- 'M'.

Object :- To study the response curves of important cereal, cash and oilseed crops to nitrogen applied singly and in combination with other nutrients (Type : A_1).

1. BASAL CONDITIONS :

(i) N.A. (ii) Red loamy. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

0=Control (no manure)

 $N_1=60$ Kg/ha. of N $P_1=35$ Kg/ha. of P $P_2=70$ 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 + 70 Kg/ha. of K_2O N applied as A/S, P_2O_5 as Super and K_2O as Mur. of 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 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 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) 1964 and 1965. (b) N.A. (c) Nil. (v) to (vii) N₂A.

5. RESULTS :

64 (S.F.T.) (*Rabi*)

Treatment	N_0	N_1	P_1	N_2P_2	N_2P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	689	1105	367	666	1219	875	1290	—

Control yield = 923 Kg/ha., No. of trials = 1.

65 (S.F.T.) (*Kharif*)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. yield of grain in Kg/ha.	260	425	55	155	345	375	455	93.2

Control yield = 445 Kg/ha., No. of trials = 2.

Crop :- Maize (*Kharif*).**Ref :- Or. 64, 65(S.F.T.).****Site :- (District) Ganjam.****Type :- 'M'.**

Object :- To study the response curves of important cereal, cash and oilseed crops to phosphorus applied singly and in combination with other nutrients (Type : A_2).

1. BASAL CONDITIONS :

(i) N.A. (ii) Red loamy. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

0=Control (no manure).

 $N_1=60$ Kg/ha. of 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 + 70 Kg/ha. of K_2O .N applied as A/S, P_2O_5 as Super and K_2O as Mur. of Pot.

3. DESIGN :

Same as in Type A₁ (Irrigated) above.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1964 to 1965 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

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 ₂
Av. response of grain in Kg/ha.	85	460	229	460	689	952	644

S.E.=—, Control yield=1199 Kg/ha., No. of trials=1.

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 ₁	S.E.
Av. response of grain in Kg/ha.	220	-56	33	80	216	533	573	122.6

Control yield=933 Kg/ha., No. of trials=3.

Crop :- Maize.

Site :- (District) Ganjam.

Ref :- Or. 64, 65(S.F.T.)

Type :- M.

Object :- To study the response curves of important cereal, cash and oil seed crops to potash applied singly and in combination with other nutrients (Type : A₃.)

1. BASAL CONDITIONS :

(i) N.A. (ii) Red loamy. (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 N.

K₁=35 Kg/ha. of K₂O.

K₂=70 Kg/ha. of K₂O.

N₂K₁=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. of Pot.

3. DESIGN :

Same as in type A₁ (Irrigated) above.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1964 to 1965. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

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	644	596	725	737	921	1429	—

Control yield=923 Kg/ha., No. of trials=1.

65(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.	383	—33	146	300	353	566	520	107.0

Control yield = 899 Kg/ha., No. of trials = 3.

Crop :- Maize (Kharif).**Ref :- Or :- 63(6).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'MV'.**

Object :- To study the effect of different levels of N on different varieties of Maize.

1. BASAL CONDITIONS :

(i) (a) Maize-Ragi-Maize. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 25.7.63. (iv) (a) 6 ploughings followed by ladderings. (b) Line sowing by dibbling. (c) 33.5 Kg/ha. (d) 61 cm × 30 cm. (e) —. (v) 25 C.L./ha. of F.Y.M. and 89.7 Kg/ha. of P₂O₅. (vi) As per treatments. (vii) Unirrigated. (viii) Hoeing weeding and earthing up. (ix) 75 cm. (x) Last week of Sept. ; 63.

2. TREATMENTS :**Main-plot treatments**3 levels of N : N₁ = 89.7, N₂ = 112.1 and N₃ = 134.5 Kg/ha.**Sub-plot treatments**9 varieties : V₁ = V.L.—54, V₂ = Deccan hybrid, V₃ = Rajit, V₄ = Hybrid—143, V₅ = Ganga 101, V₆ = Hybrid II, V₇ = Ganga—I, V₈ = Konduguda and V₉ = Ganga II.N as A/S applied in 2 equal doses, $\frac{1}{2}$ after 3 weeks of sowing and remaining $\frac{1}{2}$ after 15 days of the 1st application.**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication, 9 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 3.7 m × 3.1 m. (b) 3.1 m. × 1.8 m. (v) 30 cm. × 61 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Plant height, ear-height, no. of Cobs, no. of leaves, length of the tassel, Cob length Cob girth. (iv) (a) 1953 only. (b) N. (c) Nil. (v) to (vi) N.L.

5. RESULTS :

(i) 2568 Kg/ha. (ii) (a) 3032.0 Kg/ha. (b) 1555.0 Kg/ha. (iii) N₁ is the effects 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	V ₉	Mean
N ₁	2506	2960	2248	2607	2392	1734	1064	1692	2691	2210
N ₂	2189	3761	4168	2601	3151	2111	1154	1728	2105	2552
N ₃	3014	4652	2727	2781	2410	2912	2320	1662	3989	2941
Mean	2570	3791	3048	2663	2651	2252	1513	1694	2928	2568

Crop :- Maize (Rabi).**Ref :- Or. 64(15).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'IM'.**

Object :- To determine the frequency and intensity of irrigation in connection with different doses of N, P and K for Maize crop.

1. BASAL CONDITIONS :

(1) (a) Nil. (b) Cowpea. (c) 22.4 Kg/ha. of P_2O_5 and 16.8 Kg/ha. of N as C/A/N. (ii) Sandy loam. (iii) 29 and 30.12.64. (iv) (a) 3 to 4 ploughings. (b) Line sowing. (c) 15 Kg/ha. (d) 61 cm. \times 30 cm. (e) N.A. (v) Nil. (vi) Hybrid Ganga 101. (vii) Irrigated. (viii) Hoeing by wheel hoe and earthing up. (ix) 12 cm. (x) 14.4.65.

2. TREATMENTS :

Main-plot treatments

All combinations of (1) and (2)

(1) 2 intensities of irrigation : $I_1=2.5$ and $I_2=5$ cm.

(2) 3 frequencies of irrigation : $F_1=6$ irrigations at 10 days interval, $F_2=8$ irrigations at 8 days interval and $F_3=10$ irrigations at 6 days interval.

Sub-plot treatments

3 levels of manures : $M_1=89.7$ Kg/ha. of N+67.2 Kg/ha. of P_2O_5 +78.5 Kg/ha. of K_2O , $M_2=134.5$ Kg/ha. of N+89.7 Kg/ha. of P_2O_5 +112.1 Kg/ha. of K_2O and $M_3=179.3$ Kg/ha. of N+112.1 Kg/ha. of P_2O_5 +145.7 Kg/ha. of K_2O .

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 6.7 m. \times 3.4 m. (b) 5.5 m. \times 2.7 m. (v) 61 cm. \times 30 cm. (vi) Yes.

4. GENERAL :

(i) Lodged. (ii) Nil. (iii) Grain yield (iv) (a) 1964-contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3825 Kg/ha. (ii) (a) 1297.0 Kg/ha. (b) 563.0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	M_1	M_2	M_3	I_1	I_2	Mean
F_1	4043	3943	3754	3588	4238	3913
F_2	3468	3577	3821	3545	3699	3622
F_3	4375	3810	3633	3766	4113	3939
Mean	3962	3777	3736	3633	4017	3825
I_1	3958	3574	3367			
I_2	3966	3980	4105			

Crop :- Maize (Rabi).

Ref :- Or. 64(18).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'D'.

Object :- To study the effect of different weedicides on the growth and yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) G.M. crop. (c) Nil. (ii) Sandy loam. (iii) 17.12.64. (iv) (a) 3 ploughings followed by ladderings. (b) Line sowing. (c) N.A. (d) 61 cm. \times 30 cm. (e) 2. (v) 25 C.L./ha. of F.Y.M.+112.1 Kg/ha. of N as A/S+89.7 Kg/ha. of P_2O_5 as Super. (vi) Kenduguda (local). (vii) Irrigated. (viii) As per treatments. (ix) 12 cm. (x) 9.4.65.

2. TREATMENTS :

6 weedicidal treatments : W_0 =Unweeded (Control), W_1 =One hoeing and one earthing, W_2 =Pre-emergence spray of sodium salt of 2, 4-D at 1.7 Kg/ha. of a.e., W_3 =Pre-emergence spray of MCPA at 2.2 Kg/ha. $W_4=W_0$ +one earthing and W_5 =Pre-emergence spray of MCPA at 1.7 Kg/ha.+One earthing.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 4.6 m. × 5.5 m. (b) 4.0 m. × 4.3 m. (x) 30 cm. × 61 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) In early stage, there was attack of leaf-eating cater-piller, and stem-borer. Spraying of endrine. (iii) Height, no. of leaves, no. of cobs, Germination Count. (iv) (a) 1964-only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1435 Kg/ha. (ii) 297.0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	W ₀	W ₁	W ₂	W ₃	W ₄	W ₆
Av. yield	299	1750	1735	630	2538	1657

C.D. = 447.5 Kg/ha.

Crop :- Maize (Kharif).

Ref :- Or. 62(14), 63(38), 64(26).

Site :- State Agri. Res. Stn., Bhubaneswar. Type :- 'D'.

Object :- To study the effect of weedicides in controlling of weeds in Maize crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut, *Bhindi*, Wheat and Paddy etc. were grown in different pockets of the field for 62 (14); N.A. for 63 (38); Cotton for 64 (26). (c) Nil. for 62 (14); N.A. for others. (ii) Textural class for 62 (14), 63 (38); Sandy loam for 64 (26). (iii) 29.6.62; 18.6.63; 21, 22.6.64. (iv) (a) 3 ploughings with laddering. (b) Sowing in lines by dibbling (c) 15 Kg/ha. (d) 30 cm. × 15 cm. for 62 (14); 61 cm. × 30 cm. for others. (e) —. (v) 2329 Kg/ha. of F.Y.M. + 22.4 Kg/ha. of P₂O₅ as Super + 67.2 Kg/ha. of K₂O as Mur. Pot. for 62 (14); 44.8 Kg/ha. of N as A/S + 115.2 Kg/ha. of F.Y.M. + 67.2 Kg/ha. of Mur. Pot. for 63 (38). (vi) Kendruguda local (medium). (vii) Unirrigated. (viii) As per treatments. (ix) 75 cm., 108 cm., 131 cm. (x) 26.9.62; 4.10.63; 1st week of Oct., 1964.

2. TREATMENTS :

12 weedicidal treatments: W₀ = No weeding (Control), W₁ = Local practice, W₂ = 1.7 Kg/ha. of M.C.P.A. 3 days before sowing, W₃ = 1.1 Kg/ha. of M.C.P.A. 3 weeks after sowing, W₄ = W₂ + W₃, W₅ = 1.7 Kg/ha. of M.C.P.A. 3 days before sowing + 1 hand weeding, W₆ = 1.1 Kg/ha. of M.C.P.A. 3 weeks after sowing + 1 hand weeding, W₇ = 0.6 Kg/ha. of 2, 4-D 3 days before sowing, W₈ = 1.1 Kg/ha. of 2, 4-D 3 weeks after sowing, W₉ = W₇ + W₈, W₁₀ = 0.6 Kg/ha. of 2, 4-D 3 days before sowing + 1 hand weeding and W₁₁ = 1.1 Kg/ha. of 2, 4-D 3 weeks after sowing + 1 hand weeding.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) N.A. for 64 (26); 7.0 m. × 4.6 m. for others. (b) 1/476.8 Kg/ha. for 64 (26); 6.4 m. × 4.3 m. for others. (v) N.A. for 64 (26); 30 cm. × 15 cm. for others.

4. GENERAL :

(i) Good for 62 (14); Satisfactory for others. Lodging due to storms for 62 (14). (ii) Attack of birds for 62 (14) and 63 (38). No incidence for 64 (26). (iii) Grain yield. (iv) (a) 1962-1964. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Variances are heterogeneous and interaction is present.

5. RESULTS :

(i) 997 Kg/ha. (ii) 284.0 Kg/ha. (22 d.f. made up of Treatments × years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	W ₀	W ₁	W ₂	W ₃	W ₄	W ₅	W ₆	W ₇	W ₈	W ₉	W ₁₀	W ₁₁
Av. yield	587	1194	888	754	921	1188	1030	1007	858	1009	1382	1142

Crop :- Paddy (Kharif).**Ref :- Or. 65(25).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'D'.**

Object :- To compare the efficiency of two weedicides i.e. 2, 4-D and M.C.P.A. with and without hoeing and earthing up in controlling various weeds in Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Potato followed by cowpea in summer. (c) N.A. (ii) Sandy loam. (iii) 25.6.65. (iv) (a) 4 to 5 ploughings. (b) Hand-Dibbling in lines. (c) 15 Kg/ha. (d) 61 cm. × 30 cm. (e) Nil. (v) F.Y.M. at 49.4 C.L./ha. + 112.1 Kg/ha. of N as C.A.N. in two splits 56.0 Kg/ha. of P_2O_5 and 67.2 Kg/ha. of K_2O . (vi) Ganga Hyb. 101. (vii) Irrigated. (viii) As per treatments. (ix) 87.6 cm. (x) 1 to 4.10.65.

2. TREATMENTS :

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

(1) 2 types of weedicides : $W_1=2, 4-D$ and $W_2=M.C.P.A.$

(2) 3 times of application : $T_1=Pre-emergence$ spray at 1.7 Kg a.e./ha., $T_2=Post$ emergence spray at 1.1 Kg a.e./ha. and $T_3=T_1+T_2$.

(3) 2 cultural treatments : $C_0=No$ hoeing and earthing up and $C_1=Hoeing$ and earthing up.

Extra treatments are : $E_0=Unweeded$ control and $E_1=Cultivator's$ practice.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 14. (b) N.A. (iii) 3. (iv) (a) 10.1 m. × 4.0 m. (b) 8.8 m. × 3.4 m. (v) 61 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height, weed population and yield. (iv) (a) 1965 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2734 Kg/ha. (ii) 340 Kg/ha. (iii) Main effect of C is highly significant. Main effect of W is significant. (iv) Av. yield of grain in Kg/ha.

$E_0=1822$ and $E_1=3172$ Kg/ha.

	T_1	T_2	T_3	C_0	C_1	Mean
W_1	3170	2652	3002	2398	3485	2941
W_2	2619	2547	2653	2114	3099	2606
Mean	2894	2599	2828	2256	3292	2774
C_0	2451	1956	2362			
C_1	3339	3243	3293			

C.D. for W or C marginal means = 232.9 Kg/ha.

— 7 —

Crop :- Paddy (Kharif).**Ref :- Or. 62(10), 63(19).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'M'.**

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

1. BASAL CONDITIONS :

(i) (a) Ragi-Fallow for 62(10), Ragi-Mung-Maize for 63(19). (b) Ragi for 62(10); Maize for 63(19). (c) N as C/A/N at 0, 44.8 and 89.7 Kg/ha. + P and K as per treatments for 62(10); N.A. for 63(19). (ii) Loamy sand. (iii) 20.6.1962/30.7.1962 and 1.8.1962; N.A. 15.6.1963. (iv) (a) 3 to 4 ploughings. (b) Transplanting. (c) 9 Kg/ha. for 62(10); 5 Kg/ha. for 63(19). (d) 23 cm. × 15 cm. (e) 1. (v) Nil. (vi) AR-256-1-2(late). (vii) Unirrigated, (viii) Weeding for 62(10); one hoeing and one hand weeding for 63(19). (ix) 58 cm., 114 cm. (x) 17, 20.10.1962; 7.10.1963.

2. TREATMENTS :

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

(1) 3 levels of N as C/A/N : $N_1=33.6$, $N_2=67.2$ and $N_3=100.9$ 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. : $K_0=0$, $K_1=33.6$ and $K_2=67.2$ Kg/ha.

N was applied, $\frac{1}{2}$ at planting and $\frac{1}{2}$ one month after P and K were applied at planting.

3. DESIGN :

(i) 3^3 confd. (NP²K and N²PK were confd.) (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2.

(iv) (a) 6.6 m. × 4.3 m. (b) 5.7 m. × 3.7 m. (v) 46 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. Lodging observed in plots receiving N for 62(10). (ii) Nil. (iii) Grain yield. (iv) (a) 1962—1963. (b) Yes. (c) Results of combined analysis given under 5. (v) N.A. (vi) Nil. (vii) Variances are homogeneous and Treatments × years interaction is present.

5. RESULTS :

(i) 2186 Kg/ha. (ii) 424.4 Kg/ha. (18 d.f. made up of various components of Treatments × years interaction). (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_1	1740	1820	1789	1736	1807	1806	1783
N_2	2320	2262	2240	2176	2401	2245	2274
N_3	2495	2449	2562	2436	2497	2573	2502
Mean	2185	2177	2197	2116	2235	2208	2186
K_0	2059	2027	2262				
K_1	2213	2346	2146				
K_2	2283	2158	2183				

C.D. for N marginal means = 297.2 Kg/ha.

Crop :- Ragi (Kharif).

Ref :- Or. 63, 65(S.F.T.).

Site :- (District) : Cuttack.

Type :- 'M'.

Object :- Type A₃ : To study 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 loamy. (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.

N_2 = 70 Kg/ha. of N.

P_1 = 35 Kg/ha. of P_2O_5 .

N_1P_1 = 35 Kg/ha. of N + 35 Kg/ha. of P_2O_5 .

N_2P_1 = 70 Kg/ha. of N + 35 Kg/ha. of P_2O_5 .

N_1P_2 = 70 Kg/ha. of N + 70 Kg/ha. of P_2O_5 .

$N_1P_2K_1$ = 70 Kg/ha. of N + 70 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. of 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 to 1965 [1964 N.A.]. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

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.	644	766	662	689	1041	1055	1138	—

Control yield=1282 Kg/ha. ; No. of trials=1

65(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₂ P ₂	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of grain in Kg/ha.	1013	3386	-13	1326	2466	2653	3206	156.9

Control yield=1493 Kg/ha. ; No. of trials=3.

Crop :- Ragi (Rabi).

Ref :- Or. 65(S.F.T.).

Site :- (District) Ganjam

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) Red loamy. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manrial treatments

O = Control (no manure).

N₁ = 35 Kg/ha. of N.

P₂ = 35 Kg/ha. of P₂O₅.

P₁ = 70 Kg/ha. of P₂O₅.

N₁P₁ = 35 Kg/ha. of N + 35 Kg/ha. of P₂O₅.

N₂P₁ = 35 Kg/ha. of N + 70 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 + 70 Kg/ha. of K₂O.
N applied as A/S ; P₂O₅ as super and K₂O as Mur. of Pot.

3. DESIGN :

Same as in Type A₁ (unirrigated) on page 180.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1965 - only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Treatment	N ₁	P 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.	816	-6	383	1296	2996	2219	3536	168.2

Crop :- Ragi (Kharif).**Ref :- Or. 63(SFT).****Site :- (District) Cuttack.****Type :- 'M'.**

Object :- To study the response curves of important cereal, cash and oilseed crops to nitrogen applied singly and in combination with other nutrients (Type : A₂).

1. BASAL CONDITIONS :

(i) (a) N.A. (ii) Red loamy. (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.P₂ = 35 Kg/ha. of P₂O₅.P₁ = 70 Kg/ha. of P₂O₅.N₁P₁ = 35 Kg/ha. of N + 35 Kg/ha. of P₂O₅.N₂P₁ = 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 K₂ON applied as A/S, P₂O₅ as super and K₂O as Mur. of Pot.**3. DESIGN :**Same as in type A₂ (unirrigated) on page 180.**4. GENERAL :**

(i) to (iii) N.A. (iv) (a) 1962-only. (b) N.A. (c) Nil. (v) to (vi) N.A.

5. RESULTS :

Treatmen.	N ₁	P 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.	691	217	405	494	840	1087	1037	—

Control yield = 1433 Kg/ha. ; No. of trials = 1.

Crop :- Ragi.**Ref :- Or. 65(SFT).****Site :- (District) Ganjam.****Type :- 'M'.**

Object :- To study the response curves of important cereal, cash and oilseed crops to potash applied singly and in combination with other nutrients (Type : A₃).

1. BASAL CONDITIONS :

(i) N.A. (ii) Red loamy. (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.K₂ = 35 Kg/ha. of K₂O.K₁ = 70 Kg/ha. of K₂O.N₁K₂ = 35 Kg/ha. of N + 35 Kg/ha. of K₂O.N₂K₂ = 35 Kg/ha. of N + 70 Kg/ha. of K₂O.N₂K₁ = 70 Kg/ha. of N + 70 Kg/ha. of K₂O.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. of Pot.**3. DESIGN :**Same as in type A₃ (unirrigated) on page 180.**4. GENERAL :**

(i) to (iii) N.A. (iv) (a) 1965 to 1966. (b) N.A. (c) Nil. (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 grain in Kg/ha.	850	—73	590	1313	900	1146	1666	172.4

Control yield=1216 Kg/ha. ; No. of trials=3.

Crop :- Ragi.

Ref :- Or. 63(SFT).

Site :- (District) Cuttack.

Type :- 'M'.

Object :—To study the response curves of important cereal, cash and oilseed crops to potash applied singly and in combination with other nutrients (Type : A₃).

1. BASAL CONDITIONS :

(i) N.A. (ii) Red loamy. (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 N₂

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 K₂O.

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. of Pot.

3. DESIGN :

Same as in Type A₁ (unirrigated) on page 180.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1963-only. (b) N.A. (c) Nil. (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 grain in Kg/ha.	444	148	247	642	593	1235	648	—

Control yield=889 ; No. of trials=1.

Crop :- Ragi.

Ref :- Or. 60(SFT).

Site :- (District) Bolangir and Ganjam.

Type :- 'M'.

Object :—To study the response of Ragi to different levels of N, P₂O₅ and K₂O applied individually and in combination (Type : A).

1. BASAL CONDITIONS :

(i) N.A. (ii) Red soil. (iii) to (x) N.A.

2. TREATMENTS :

O=Control (no manure).

N=22.4 Kg/ha. of N as A/S.

P=22.4 Kg/ha. of P₂O₅ as Super.

K=22.4 Kg/ha. of K₂O as Mur. Pot.

NP=22.4 Kg/ha. of N as A/S+22.4 Kg/ha. of P₂O₅ as Super.

NK=22.4 Kg/ha. of N as A/S+22.2 Kg/ha. of K₂O as Mur. Pot.

PK=22.4 Kg/ha. of P₂O₅ as Super+22.4 Kg/ha. of K₂O as Mur. Pot.

NPK=22.4 Kg/ha. of N as A/S+22.4 Kg/ha. of P₂O₅ as Super+22.4 Kg/ha. of K₂O as Mur. Pot.

3. DESIGN :

Same as in type A₁ (unrigated) on page 180.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1960-only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

District	No. of trials	Control yield	Av. response in Kg/ha.								
			N	P	K	S.E.	NP	NK	PK	NPK	S.E.
Bolangir	2	290	280	210	160	30.0	0	0	60	120	25.0
Ganjam	3	800	70	140	-120	113.0	-10	-47	80	40	57.0

Crop :- Ragi (Kharif).

Ref :- Or. 62(23).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'MV'.

Object :- To study the effects of different levels of N on different varieties of Ragi.

1. BASAL CONDITIONS :

(i) (a) Maize-Ragi. (b) Maize. (c) 134.5 Kg/ha. of N as A/S and 89.7 Kg/ha. of P₂O₅. (ii) Sandy loam. (iii) 13.5.65, 13.6.62. (iv) (a) 6 ploughings followed by ladderings. (b) Traug-planting. (c) 9 Kg/ha. (d) 30 cm. × 15 cm. (e) N.A. (v) 12 C.L./ha of F.Y.M. + 44.8 Kg/ha. of P₂O₅. (vi) As per treatments (late). (vii) Irrigated. (viii) Hoeing and weeding. (ix) 97.4 cm. (x) Last week of Sept., 62.

2. TREATMENTS :

Main-plot treatments :

3 levels of N : N₁ = 22.4, N₂ = 44.8 and N₃ = 89.7 Kg/ha.

Sub-plot treatments :

7 varieties : V₁ = VZM-1, V₂ = AR 256-1-2, V₃ = R. No. 100, V₄ = P. r. naganpur, V₅ = CO-5, V₆ = AKP-6 and V₇ = Deogan.

N as A/S, $\frac{1}{2}$ as basal and remaining as top dressing 2 months after planting out in lines.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 7 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 3.7 m. × 2.4 m. (b) 3.4 m. × 1.8 m. (v) 30 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of gram. (iv) (a) 1962 only. (b) Yes. (c) Nil. (v) to (vii) Nil

5. RESULTS :

(i) 1046 Kg/ha. (ii) (a) 918.0 Kg/ha. (b) 1208.0 Kg/ha. (iii) Main effects of N and V are highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V	V ₇	Mean
N ₁	1460	1590	917	1419	746	1036	860	1147
N ₂	2014	1847	1223	1500	868	1668	1280	1486
N ₃	4493	3686	1447	2210	3105	1700	1496	2305
Mean	2656	2374	1196	1710	806	1468	1212	1646

C.D. for N marginal means = 600.2 Kg/ha.

C.D. for V marginal means = 989.6 Kg/ha.

Crop :- Ragi (Rabi).**Ref :- Or. 62(25).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'MV'.**

Object :—To study the effect of different levels of N on different varieties of Ragi.

1. BASAL CONDITIONS :

(i) (a) Ragi-Maize. (b) Maize. (c) 134.5 Kg/ha. of N as A/S+89.7 Kg/ha. of P_2O_5 . (ii) Sandy loam. (iii) 4.10.62/31.10.62. (iv) (a) 6 ploughings followed by laddering. (b) Transplanting. (c) 9 Kg/ha. (d) 30 cm. × 15 cm. (e) N.A. (v) 12 C.L./ha. of F.Y.M.+44.8 Kg/ha. of P_2O_5 . (vi) As per treatments ('ate). (vii) Irrigated. (viii) Hoeing and weeding. (ix) 28.5 cm. (x) Last week of Jan., 63.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 62 (23) on page 184.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height, tiller count, length of the panicle and yield of grain. (iv) (a) 1952 only. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2559 Kg/ha. (ii) (a) 352.0 Kg/ha. (b) 378.0 Kg/ha. (iii) Main effects of N and V are highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	Mean
N ₁	2120	2283	1769	1998	1345	1598	1721	1833
N ₂	3082	3099	2675	2854	1806	2316	2740	2653
N ₃	3604	3751	3201	3506	2357	2809	3119	3192
Mean	2935	3044	2548	2786	1836	2241	2527	2559

C.D. for N marginal means=230.2 Kg/ha.

C.D. for V marginal means=309.7 Kg/ha.

Crop :- Ragi (Rabi).**Ref :- Or. 62(26), 63(8).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'MV'.**

Object :—To study the effect of different levels of N on different varieties of Ragi.

1. BASAL CONDITIONS :

(i) (a) Nil for 62 (26) ; Ragi-Maize for 63 (8). (b) Fallow for 62 (26) ; Maize for 63 (8). (c) Nil for 62(26) ; 134.5 Kg/ha. of N as A/S+89.7 Kg/ha. of P_2O_5 for 63 (8). (ii) Sandy loam. (iii) 4.10.62/30.10.62 ; 4.11.63/24.11.63. (iv) (a) 6 ploughings followed by laddering. (b) Transplanting. (c) 9 Kg/ha. (d) 30 cm. × 15 cm. (e) —. (v) 12 C.L./ha. of F.Y.m.+44.8 Kg/ha. of P_2O_5 . (vi) As per treatments (medium). (vii) Irrigated. (viii) Hoeing and weeding. (ix) 28 cm., 2 cm. (x) Last week of January, 1963 ; 1st week of February, 1964.

2. TREATMENTS :**Main-plot treatments :**3 levels of N : N₁=22.4, N₂=44.8 and N₃=89.7 Kg/ha.**Sub-plot treatments :**6 varieties : V₁=Sodangi, V₂=NR-124, V₃=Paluria, V₄=AKP-3, V₅=AKP-7 and V₆=P. No. 1**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (c) 4. (iv) (a) 3.7 m. × 2.4 m. (b) 3.4 m. × 1.8 m. (v) 30 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain yield. (iv) (a) 1962-1963. (b) Yes. (c) Results of combined analysis given under 5. (v) N.A. (vi) Nil. (vii) Main-plot and sub-plot error variances are homogeneous and Treatments \times years interaction are present in both.

5. RESULTS :

(i) 2675 Kg/ha (ii) (a) 705.8 Kg/ha. (2 d.f. made up of treatments \times years interaction). (b) 415.9 Kg/ha. (15 d.f. made up of various components of Treatment \times years interaction). (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	Mean
N ₁	2188	2325	1566	2922	2765	2314	2347
N ₂	2476	2625	1880	3134	3470	2832	2736
N ₃	2742	3011	1920	3528	3413	3042	2943
Mean	2469	2654	1789	3195	3216	2729	2675

C.D. for of V marginal means = 511.7 Kg/ha.

Crop :- Ragi (Rabi).

Ref :- Or. 62(28), 63(10).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Ragi.

1. BASAL CONDITIONS :

(i) (a) Ragi-Maize. (b) Maize. (c) 134.5 Kg/ha. of N as A/S + 89.7 Kg/ha. of P₂O₅. (ii) Sandy loam. (iii) 4.10.62/30.10.62 ; 28.9.63/22.10.63. (iv) (a) 6 ploughings followed by laddering. (b) Transplanting. (c) 9 Kg/ha. (d) 23 cm. \times 15 cm. (e) -. (v) 12 C.L./ha. of F.Y.M. + 44.8 Kg/ha. of P₂O₅. (vi) As per treatments (late). (vii) Irrigated. (viii) Hoeing and weeding. (ix) 28 cm., 36 cm. (x) Last week of January, 1963 ; 3rd week of January, 1964.

2. TREATMENTS :

Main-plot treatments :

3 levels of N : N₁ = 22.4, N₂ = 44.8 and N₃ = 89.7 Kg/ha.

Sub-plot treatments :

5 varieties : V₁ = Sikiri, V₂ = Ankode, V₃ = AKP -I, V₄ = 55-136 -2 and V₅ = 55 -98 -4.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 3.7 m. \times 2.4 m. (b) 3.4 m. \times 1.8 m. (v) 30 cm. \times 15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) No incidence for 62 (28). Endrex 0.04% was sprayed to control stem borer for 63 (10). (iii) Grain yield. (iv) (a) 1962-1963. (b) Yes. (c) No. (v) N.A. (vi) Nil. (vii) Error variances for sub-plot treatments are heterogeneous.

5. RESULTS :

62(28)

(i) 4082 Kg/ha. (ii) (a) 282.0 Kg/ha. (b) 465.0 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₁	3470	3731	3678	3581	3245	3543
N ₂	4204	4440	4257	4183	3981	4214
N ₃	4301	4440	5003	4424	4273	4488
Mean	3992	4204	4313	4065	3835	4082

C.D. for of N marginal means = 218.3 Kg/ha.

63(10)

(i) 1699 Kg/ha. (ii) (a) 313.0 Kg/ha. (b) 272.0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₁	1321	1562	1594	1472	1659	1522
N ₂	1566	1769	1712	1631	1998	1735
N ₃	2104	1553	1847	1476	1774	1751
Mean	1664	1628	1718	1526	1810	1669

Crop :- Ragi (Kharif).

Ref :- Or. 62(24), 63(9).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Ragi.

1. BASAL CONDITIONS :

(i) (a) Ragi-Maize. (b) Maize. (c) 134.5 Kg/ha. of N as A/S+89.7 Kg/ha. of P₂O₅. (ii) Sandy loam. (iii) 16.5.1962. 10.6.1962/24.4.1963/21.5.1963. (iv) (a) 6 ploughings followed by laddering. (b) Transplanting. (c) 9 Kg/ha. (d) 30 cm. × 15 cm. (e) Nil. (v) 12 C.L/ha. of F.Y.M.+44.8 Kg/ha. of P₂O₅. (vi) As per treatments (medium). (vii) Irrigated. (viii) Hoeing and weeding. (ix) 92 cm. × 120 cm. (x) Middle of Sept., 1962; Middle of Sept., 1963.

2. TREATMENTS :

Main-plot treatments :

3 levels of N : N₁=22.4, N₂=44.8 and N₃=89.7 Kg/ha.

Sub-plot treatments :

6 varieties : V₁=Sodangi, V₂=NR-124, V₃=Paluria, V₄=AKP-3, V₅=AKP-7 and V₆=P. No. 1.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 3.7 m. × 2.4 m. (b) 3.4 m. × 1.8 m. (v) 30 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1962 to 1963. (b) Yes. (c) Nil. (v) N.A. (vi) Nil. (vii) Error variances for sub-plot treatments are heterogeneous.

5. RESULTS :

62(24)

(i) 1719 Kg/ha. (ii) (a) 338.0 Kg/ha. (b) 357.0 Kg/ha. (iii) Main effect of N 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
N ₁	1170	1382	1154	958	1382	1089	1189
N ₂	1643	1884	1297	2030	1859	1521	1706
N ₃	1981	2263	2230	2797	2389	9.6	2263
Mean	1598	1843	1560	1928	1877	1509	1719

C.D. for of N marginal means = 238.8 Kg/ha.

C.D. for of V marginal means = 293.7 Kg/ha.

63(9)

(i) 615 Kg/ha. (ii) (a) 65.0 Kg/ha. (b) 176.0 Kg/ha. (iii) Main effects of N and 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 ₁	444	583	257	587	644	318	472
N ₂	575	864	363	620	864	444	622
N ₃	775	954	440	636	1158	550	752
Mean	598	800	353	614	889	437	615

C.D. for of N marginal means = 46.0 Kg/ha.

C.D. for of V marginal means = 144.7 Kg/ha.

Crop :- Ragi. (Kharif).

Ref. - Or. 62(27), 63(11).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'MV'.

Object :- To study the effect of different levels of N on different varieties of Ragi.

1. BASAL CONDITIONS :

(i) (a) Ragi-Maize for 62(27), Ragi-Maize-Ragi for 63(11). (b) Maize. (c) 134.5 Kg/ha. of N as A.S+89.7 Kg/ha. of P₂O₅. (ii) Sandy loam. (iii) 13.5.1962/9.6.1962, 24.4.1963/18.5.1963. (iv) (a) 6 ploughings followed by laddering. (b) Transplanting. (c) 9 Kg/ha. (d) 30 cm. x 15 cm. (e) Nil. (v) 12 C.L./ha. of F.Y.M.+44.8 Kg/ha. of P₂O₅. (vi) As per treatments (early). (vii) Irrigated. (viii) Hoeing and weeding. (ix) 75 cm., 120 cm. (x) 1st week of Sept., 1962; 1st week of Sept., 1963.

2. TREATMENTS :

Main-plot treatments :

3 levels of N : N₁=22.4, N₂=44.8 and N₃=89.7 Kg/ha.

Sub-plot treatments :

5 varieties : V₁=Sikiri, V₂=Ankode, V₃=AKP-I, V₄=55-136-2 and V₅=55-98-4.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 3.7 m. x 2.4 m. (b) 3.4 m. x 1.8 m. (v) 30 cm. x 15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) No incidence for 62(27). Endrex 0.04% sprayed to control stem borer attack for 63(11). (iii) Grain yield. (iv) (a) 1962-1963. (b) Yes. (c) Nil. (v) N.A. (vi) Nil. (vii) Error variances for sub-plot treatments are heterogeneous, therefore individual years results are presented below.

5. RESULTS :

62(27)

- (i) 1399 Kg/ha. (ii) (a) 223.0 Kg/ha. (b) 489.0 Kg/ha. (iii) Main effect of N alone is highly significant.
 (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	Mean
N ₁	1109	889	754	897	1142	958
N ₂	1521	1350	1186	1137	1557	1350
N ₃	2193	1847	1769	1557	2087	1890
Mean	1608	1362	1236	1197	1595	1399

C.D. for of N marginal means=172.5 Kg/ha.

63(11)

- (i) 1861 Kg/ha. (ii) (a) 241.0 Kg/ha. (b) 238.0 Kg/ha. (iii) Main effects of N and V are highly significant.
 (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	Mean
N ₁	1786	1407	1778	1712	1653
N ₂	2104	1537	1900	1721	1820
N ₃	2393	1916	2283	1937	2110
Mean	2094	1620	1987	1790	1861

C.D. for of N marginal means=184.3 Kg/ha.

C.D. for of V marginal means=197.2 Kg/ha.

Crop :- Ragi. (Kharif).

Ref :- Or. 63(7).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'CV'.

Object :- To study the effect of different methods of sowing on the yield of different varieties of Ragi.

1. BASAL CONDITIONS :

- (i) Ragi-Vegetables. (b) Vegetables. (c) 44.8 Kg/ha. of N as A/S. (ii) Loamy-sand. (iii) 12.6.63/5.7.63.
 (iv) (a) 6 ploughings followed by laddering. (b) Transplanting. (c) 9 Kg/ha. (d) 30 cm. × 15 cm. (e) N.A
 (v) 12 C.L./ha. of F.Y.M.+44.8 Kg/ha. of P₂O₅ as Super. (vi) As per treatments. (vii) Unirrigated. (viii)
 Hoeing and weeding. (ix) 116.9 cm. (x) 28.8.63 for early ; 29.9.63 for medium ; 9.10.63 for late.

2. TREATMENTS :

Main-plot treatments :

3 methods of sowing : M₁=Broadcasting with *Beavsuni*, M₂=Transplanting and M₃=Broadcasting.

Sub-plot treatments :

7 varieties : V₁=55-98-4 (early), V₂=A.K.P.-1 (early), V₃=Mixture, V₄=A.K.P.-3 (medium), V₅=
 A.K.P.-7 (medium), V₆=V.Z.M.-1 (late) and V₇=A.R.-256-1-2 (late).

3. DESIGN :

- (i) Split-plot. (ii) (a) 3 main-plots/replication, 7 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 3.7 m. ×
 2.4 m. (b) 3.4 m. × 1.8 m. (v) 30 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Plant height, lengths of the panicle, length of the fingers, no. of tillers and fingers and yield of grain. (iv) (a) 1963 only. (b) No. (c) Nil. (v) to (vi) Nil.

5. RESULTS :

(i) 1282 Kg/ha. (ii) (a) 538.0 Kg/ha. (b) 329.0 Kg/ha. (iii) Main effects of M and V are highly significant. (iv) Av. yield of grain in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	Mean
M ₁	1203	1472	1398	1814	1386	1464	1574	1473
M ₂	550	807	885	730	889	750	1386	857
M ₃	1125	1598	1407	1378	1470	1941	1684	1515
Mean	960	1293	1230	1308	1248	1385	1548	1282

C.D. for M marginal means = 351.8 Kg/ha.

C.D. for V marginal means = 269.5 Kg/ha

Crop :- Ragi (Kharif).

Ref. :- Or. 63(12).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'CV'.

Object :- To find out the optimum time for transplanting different varieties of Ragi.

1. BASAL CONDITIONS :

(i) (a) Ragi-Maize. (b) Maize. (c) 134.5 Kg/ha. of N as A/S + 89.7 Kg/ha. of P₂O₅. (ii) Sandy loam. (iii) 10.5.63 to 20.7.63/as per treatments. (iv) (a) 6 ploughings followed by laddering. (b) Transplanting. (c) 9 Kg/ha. (d) 30 cm. × 15 cm. (e) N.A. (v) 12 C.L./ha. of F.Y.M. + 44.3 Kg/ha. of P₂O₅. (vi) As per treatments. (vii) Irrigated. (viii) Hoeing and weeding. (ix) 113.7 cm. (x) 1 : 3.62 for early and 1 : 5.63 for medium and late varieties.

2. TREATMENTS :

Main-plot treatments :

6 dates of planting : D₁ = 1st June, D₂ = 16th June, D₃ = 1st July, D₄ = 16th July, D₅ = 31st July and D₆ = 15th Aug.

Sub-plot treatments :

6 varieties : V₁ = A.K.P. - 1 (early), V₂ = 55-98-4 (early), V₃ = A.K.P. - 3 (medium), V₄ = A.K.P. - 7 (medium), V₅ = V.Z.M. - 1 (late) and V₆ = A.R. - 256-1-2 (late).

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots replication, 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 1.8 m. × 1.8 m. (b) 1.5 m. × 1.2. (v) 30 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Plant height, length of the panicle, length of fingers, no. of fingers and tillers and yield of grain. (iv) (a) 1963-contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 355 Kg/ha. (ii) (a) 125.0 Kg/ha. (b) 102.0 Kg/ha. (iii) Main effect of D and interaction D × V are highly significant. (iv) Av. yield of grain in Kg/ha.

	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	Mean
V ₁	693	560	191	215	221	89	328
V ₂	833	570	184	230	120	63	333
V ₃	572	622	278	394	198	153	370
V ₄	546	639	339	324	230	161	373
V ₅	653	657	269	316	221	128	374
V ₆	523	670	171	453	188	101	351
Mean	637	620	239	322	198	116	355

C.D. for D marginal means = 76.1 Kg/ha.

C.D. for V means at the same level of D=143.4 Kg/ha.

C.D. for D means at the same level of V=151.5 Kg/ha.

Crop :- Ragi (Kharif).

Ref :- Or. 64(3).

Site :- State Agri. Res. Stn., Bhubaneswar.

Typ :- 'CV'.

Object :- To find out the optimum time for transplanting different varieties of Ragi.

1. BASAL CONDITIONS :

(i) (a) Maize—Ragi. (b) Maize. (c) 134.5 Kg/ha. of N as A/S + 89.7 Kg/ha. of P₂O₅. (ii) Sandy loam. (iii) 15th and 25th of every month from May to July/as per treatments. (iv) (a) 6 ploughings followed by laddering. (b) Transplanting. (c) 9 Kg/ha. (d) 30 cm. × 15 cm. (e) N.A. (v) 12 C.L./ha. of F.Y.M. + 44.8 Kg/ha. of P₂O₅. (vi) As per treatments. (vii) Irrigated. (viii) Hoeing and weeding. (ix) 124.5 cm. (x) 25.7.64 for early ; 19.9.64 for medium and late.

2. TREATMENTS :

Main-plot treatments :

6 dates of planting : D₁=5.6.64, D₂=25.6.64, D₃=17.7.64, D₄=7.8.64, D₅=28.8.64 and D₆=18.9.64.

Sub-plot treatments :

6 varieties : V₁=55—98—4 (early), V₂=A.K.P—3 (medium), V₃=A.R.—256—1—2 (late), V₄=A.K.P—1 (early), V₅=A.K.P—7 (medium) and V₆=V.Z.M.—1 (late).

3. DESIGN and 4. GENERAL:

Same as in expt. no. 63(12) on page 190.

5. RESULTS :

(i) 2277 Kg/ha. (ii) (a) 365.0 Kg/ha. (b) 1679.0 Kg/ha. (iii) Main effect of D alone is highly significant. (iv) Av. yield of grain in Kg/ha:

	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	Mean
V ₁	2503	2610	1615	1292	915	1292	1705
V ₂	3310	2664	2126	2287	1453	1480	2320
V ₃	3794	3391	2637	2045	2072	1722	2610
V ₄	2745	2691	2799	1372	982	565	1859
V ₅	3579	3229	3633	2664	1884	1964	2826
V ₆	3552	3283	2328	2153	1547	1776	2440
Mean	3247	2978	2523	1969	1476	1467	2277

C.D. for D marginal means=224.6 Kg/ha.

Crop :- Bhindi (Kharif).**Ref :- Or. 62(59), 63(40).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'D'.**

Object :—To study the comparative toxicity of different insecticides to control Bhindi jassids.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Brinjal. (c) 37 C.L./ha. of F.Y.M. (ii) Sandy soil. (iii) 13.6.1962 ; 28.5.1963. (iv) (a) 2 ploughings. (b) Sowing in lines. (c) N.A. (d) 61 cm. × 30 cm. (e) — (v) 37 C.L./ha. of F.Y.M. + 224 Kg/ha. of A/S in 3 doses + 290 Kg/ha. of Super + 335 Kg/ha. of G.N.C. in two doses. (vi) Red wonder (medium). (vii) Irrigated. (viii) Weeding and interculturing. (ix) 90 cm, N.A. (x) 12.8.1962 to 15.10.1962 ; N.A.

2. TREATMENTS :

Insecticidal treatments : T₀ = Control, T₁ = Ekatim 0.1%, T₂ = Ekatim 0.2%, T₃ = Metasystox 0.1%, T₄ = Metasystox 0.2%, T₅ = Rogor 0.1%, T₆ = Rogor 0.2%, T₇ = Endrex 0.025% and T₈ = Endrex 0.05%.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 3.7 m. × 2.4 m. (b) 3.1 m. × 1.1 m. (v) 30 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of *bhindi* jassids. Control measures as per treatments. (iii) Yield of *bhendi*. (iv) (a) 1961—1963. (b) No. (c) As per results given under 5. (v) N.A. (vi) Nil. (vii) Expt. for 1961(56) failed. Variances are heterogeneous and Treatments × years interaction is absent

5. RESULTS:**62(59)**

(i) 2775 Kg/ha. (ii) 878.0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *bhindi* in Kg/ha.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	2391	2969	1817	2804	2684	2660	2514	3436	3697

63(40)

(i) 4852 Kg/ha. (ii) 1730.0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *bhindi* in Kg/ha.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	5764	5565	3888	4308	5479	5021	4326	4855	4423

Crop :- Potato (Rabi).**Ref :- Or. 64(12).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'M'.**

Object :— To study the effect of Urea and Super applied through spray and soil application on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhaincha* G.M. (c) Nil. (ii) Sandy loam. (iii) 12.11.64. (iv) (a) 4 ploughings. (b) Planted in lines. (c) Varies according to the size of the tuber. (d) 53 cm. × 23 cm. (e) 1. (v) 95.3 Kg/ha. of Pot. Sul. was applied before planting. (vi) Rep Patna. (vii) Irrigated. (viii) Hoeing and two earthings up. (ix) 3 cm. (x) 28.2.65.

2. TREATMENTS :

6 manurial treatments : M_0 =Control, M_1 =89.7 Kg/ha. of N +179.3 Kg/ha. of P_2O_5 applied to the soil, M_2 =89.7 Kg/ha. of N +179.3 Kg/ha. of P_2O_5 sprayed in 4 splits, M_3 =44.8 Kg/ha. of N+179.3 Kg/ha. of P_2O_5 sprayed in 2 splits, M_4 =44.8 Kg/ha. of N+89.7 Kg/ha. of P_2O_5 applied to the soil and 44.8 Kg/ha. of N +89.7 Kg/ha. of P_2O_5 sprayed in two splits and M_5 =44.8 Kg/ha. of N +44.8 Kg/ha. of P_2O_5 applied to the soil and 44.8 Kg/ha. of N+44.8 Kg/ha. of P_2O_5 sprayed in three splits.

N was applied as Urea and P_2O_5 as Super.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) 6.7 m. × 3.4 m. (b) 5.6 m. × 2.9 m. (v) 53 cm. × 23 cm. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) In the initial stage. mild attack of epilachna. (iii) Height, no. of tubers/plant, whole wt. and size of tubers. (iv) (a) 1964 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 23.9 Q/ha. (ii) 6.0 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in Q/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5
Av. yield	23.6	22.8	22.7	25.7	25.9	23.0

Crop :- Potato (Rabi).

Ref :- Or. 64(9).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :—To study the efficiency of nitrogenous fertilizers on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhaincha* (G.M.) (c) Nil. (ii) Sandy loam. (iii) 20.10.64. (iv) (a) 3 ploughings. (b) Tubers were planted in lines. (c) N.A. (d) 53 cm. × 23 cm. (e) 1. (v) 125 C.L./ha. of F.Y.M. +134.5 Kg/ha. of P_2O_5 as Super +67.2 Kg/ha. of K_2O as Mur. of Pot. (vi) Patna red. (vii) Irrigated. (viii) 2 hoeings and earthing up. (ix) 10 cm. (x) 15.2.65.

2. TREATMENTS :

7 sources of 67.2 Kg/ha. of N : S_0 =Control (No N), S_1 =A/S, S_2 =A/C, S_3 =Ammono. Phos., S_4 =C/A/N, S_5 =Urea and S_6 =Nitro. Phos.

$\frac{1}{2}$ of the fertilizers applied at planting and the remaining half one month after planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 6.7 m. × 3.5 m. (v) N.A. (vi) Yee.

4. GENERAL :

(i) Poor. (ii) Attack of epilachna, beetles grubs. (iii) Height, no. of tubers/plant. Whole wt. and size of tuber. (iv) (a) 1964—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 62.3 Q/ha. (ii) 6.9 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of tuber in Q/ha.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5	S_6
Av. yield	49.5	63.4	58.7	61.8	63.0	66.9	72.6

C.D.=12.3 Q/ha.

Crop :- Potato. (Rabi).

Ref :- Or. 60(38).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :- To study the N, P and K requirements of Potato.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) Sandy loam. (iii) 9, 10.11.60. (iv) (a) 3 ploughings, levelling and breaking the clods. (b) and (c) N.A. (d) 46 cm. x 23 cm. (e) Nil. (v) Nil. (vi) Patna-red. (vii) Irrigated. (viii) Nil. (ix) 4 cm. (x) 3 to 6.2.61.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : $N_0=0$, $N_1=84.1$ and $N_2=168.1$ Kg/ha.

(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=89.7$ and $P_2=179.3$ Kg/ha.

(3) 3 levels of K_2O as Mur. Pot : $K_0=0$, $K_1=89.7$ and $K_2=179.3$ Kg/ha.

Super and Mur. of Potash were applied in lines before planting on 9, 10.11.60 A.S top dressed on 9.12.60.

3. DESIGN :

(i) 3^3 confd. (ii) 9 plots/block and 3 blocks/replication. (iii) 2. (iv) (a) 6.7 m. x 4.6 m. (b) 5.8 m. x 4.1 m. (v) 45 cm. x 23 cm. (vi) Yes.

4. GENERAL :

(i) Crop was heavily damaged, especially in Rep. 1. (ii) Attack of *epilachna* beetle. Spraying of endrex on 10.12.60. Attack of withering and blight disease. Spraying of Bordo mixture 4:4:50 on 23.12.60. (iii) Height, growth and yield of tubers. (iv) (a) 1960-contd. (modified in 62 and 63 but 61 N.A.). (b) No. (c) Nil. (v) Nil. (vi) Heavy and continuous rains from 31.12.60 to 3.1.61. (vii) Due to heavy and continuous rains the irrigation was stopped after 2nd earthing. It also caused heavy damage to the crop.

5. RESULTS :

(i) 29.7 Q/ha. (ii) 6.2 Q/ha. (iii) Main effect of K is highly significant and that of P is significant (iv) Av. yield of tuber in Q/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	25.3	31.3	29.3	21.4	30.5	34.0	28.6
N_1	27.8	34.9	32.7	23.2	34.9	37.2	31.8
N_2	24.0	29.2	32.9	23.0	30.0	33.2	28.7
Mean	25.7	31.7	31.6	22.5	31.8	34.8	29.7
K_0	20.0	25.3	22.2				
K_1	27.2	32.8	35.4				
K_2	29.8	37.2	37.3				

C.D. for P or K marginal means = 4.3 Q/ha.

Crop :- Potato (Rabi).

Ref :- Or. 62(9).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :- To find out the optimum dose of N, P and K for Potato.

1. BASAL CONDITIONS :

(i) (a) G.M.—Potato. (b) *Dhaincha* (G.M.) (c) Nil. (ii) Sandy loam. (iii) 17.11.62. (iv) (a) 4 ploughings and 2 ladderings. (b) and (c) N.A. (d) 15 cm. x 46 cm. (e) Nil. (v) Nil. (vi) Patna-red (mediura). (vii) Irrigated. (viii) Weeding. (ix) Nil. (x) 16 and 17.2.63.

2. TREATMENTS :

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

- (1) 3 levels of N as A/S : $N_1=89.7$, $N_2=179.3$ and $N_3=269.0$ Kg/ha.
 (2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=89.7$ and $P_2=179.3$ Kg/ha.
 (3) 3 levels of K_2O as KCl : $K_0=0$, $K_1=89.7$ and $K_2=179.3$ Kg/ha.

3. DESIGN :

- (i) 3rd confd. (ii) (a) 9 plots/block, 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 7.3 m. × 3.7 m. (b) 6.7 m. × 2.7 m. (v) 30 cm. × 46 cm. (vi) Yes.

4. GENERAL :

- (i) Good. (ii) Nil. (iii) Height, shoots, tuber and helm yield. (iv) (a) 1960-contd. (modified in 1962, 63 and 61 N.A.). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

- (i) 53.9 Q/ha. (ii) 10.2 Q/ha. (iii) Main effect of P is highly significant and interaction P × K is significant. (iv) Av. yield of tuber in Q/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_1	37.6	55.9	66.1	50.1	49.7	59.8	53.2
N_2	45.5	66.0	53.6	56.5	55.4	53.2	55.0
N_3	38.0	60.5	62.3	44.5	53.0	63.3	53.6
Mean	40.4	60.8	60.7	50.4	52.7	58.8	53.9
K_0	45.7	54.9	50.5				
K_1	34.6	57.8	65.7				
K_2	40.7	69.9	65.7				

C.D. for P marginal means = 7.1 Q/ha.

C.D. for means in the body of P × K table = 12.2 Q/ha.

Crop :- Potato. (Rabi).

Site :- State Agri. Res. Stn., Bhubaneswar.

Ref :- Or. 63(20).

Type :- 'M'.

Object :—To find out the optimum dose of N, P and K for Potato.

1. BASAL CONDITIONS :

- (i) (a) Nil. (b) and (c) N.A. (ii) Sandy loam. (iii) 25, 26.11.63. (iv) (a) 5 ploughings and 2 levellings. (b) Tubers were planted in lines. (c) 13.8 Q/ha. (d) 61 cm. × 23 cm. (e) N.A. (v) 37 C.L./ha. of F.Y.M. (vi) Darjelling red round. (vii) Irrigated. (viii) 2 hoeings and earthing up. (ix) 3 cm. (x) 15.3.64.

2. TREATMENTS :

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

- (1) 3 levels of N as A/S : $N_0=0$, $N_1=89.7$ and $N_2=179.3$ Kg/ha.
 (2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=89.7$ and $P_2=179.3$ Kg/ha.
 (3) 3 levels of K_2O as KCl : $K_0=0$, $K_1=89.7$ and $K_2=179.3$ Kg/ha.

3. DESIGN :

- (i) 3rd partially confd. (ii) (a) 9 plots/block, 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 7.3 m. × 3.7 m. (b) 6.1 m. × 3.2 m. (v) 60 cm. × 23 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of *epilachna* beetle and blight, spraying of Bordeaux mixture (5 : 5 : 50) and endrex 28 gm. in 28 litres of water. (iii) Height: girth and yield of tuber. (iv) (a) 1960 contd. (modified in 1962 and 63). (b) No, (c) Nil, (v) to (vii) Nil.

5. RESULTS :

(i) 39.2 Q/ha. (ii) 11.9 Q/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of tuber is Q/ha.

	P ₀	P ₁	P ₂	K ₀	K ₁	K ₂	Mean
N ₀	29.9	24.1	28.3	30.7	24.2	27.4	27.4
N ₁	43.7	46.1	41.0	38.2	48.7	43.8	43.6
N ₂	50.3	44.9	44.3	43.4	44.5	51.7	46.5
Mean	41.3	38.4	37.9	37.4	39.1	41.0	39.2
K ₀	41.2	38.1	32.9				
K ₁	36.9	39.5	41.0				
K ₂	45.7	37.5	39.6				

C.D. for N marginal means=8.3 Q/ha.

Crop :- Potato. (Rabi).

Ref :- Or. 60(29).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :- To study the relative efficiency of C/A/N and A/S on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) Nil, (b) Sannhemp, (c) Nil, (ii) Sandy loam, (iii) 13.14.11.60, (iv) (a) 3 ploughings, 2 ladderings and breaking clods, (b) Line sowing, (c) N.A., (d) 46 cm. × 15 cm., (e) N.A., (v) 89.7 Kg/ha. of P₂O₅ as Super+89.7 Kg/ha. of K₂O as Mur. of Pot., (vi) Patna red., (vii) Irrigated, (viii) Gap-filling, (ix) 5 cm., (x) 3 to 6.2.61.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 sources of N at 89.7 Kg/ha. : S₁=A/S and S₂=C/A/N.

(2) 2 times of application of N : T₁=Full dose at first earthing and T₂=½ at first earthing and ½ at 2nd earthing.

3. DESIGN :

(i) Fact. in R.B.D., (ii) (a) 4, (b) N.A., (iii) 6, (iv) (a) 6.9 m. × 3.8 m., (b) 5.9 m. × 3.5 m., (v) 46 cm. × 15 cm., (vi) Yes.

4. GENERAL :

(i) Due to water logging condition many plants fell down from 5.1.61 onwards, (ii) Attack of *epilachna* beetle. Spraying of endrex 28 gm. in 18 litres of water on 15.12.60 and 2nd spraying on 6.1.61. Attack of wilting of plants disease, (iii) Height and yield of tubers, (iv) (a) 1960 only, (b) No, (c) Nil, (v) N.A., (vi) Heavy rainfall, (vii) Nil.

5. RESULTS :

(i) 52.5 Q/ha, (ii) 2.5 Q/ha, (iii) Main effects of S and T are highly significant and a interaction S × T is significant, (iv) Av. yield of tuber in Q/ha.

	T ₁	T ₂	Mean
S ₁	44.3	51.5	47.9
S ₂	51.1	63.2	57.1
Mean	47.7	57.3	52.5

C.D. for S or T marginal means = 2.2 Q/ha.

C.D. for body of S×T table = 3.1 Q/ha.

Crop :- Potato (Rabi).

Ref :- Or. 62(17).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :- To study the relative efficiency of A/S and C/A/N applied at different stages to Potato.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) Sandy loam. (iii) 16.11.62. (iv) (a) 3 ploughings. (b) N.A. (c) 13.7 Q/ha. (d) 46 cm. × 15 cm. (e) Nil. (v) 4483 Kg/ha. of F.Y.M. + 44.8 Kg/ha. of P₂O₅ as Super and 67.2 Kg/ha. of K₂O as Mur. of Pot. (vi) D.D.R. (vii) Unirrigated. (viii) Weeding. (ix) Nil. (x) 19.2.63.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 sources of N at 67.2 Kg/ha. : S₁=A/S and S₂=C/A/N.

(2) 2 times of application : T₁=Full at the time of planting and T₂=½ at planting + ½ one month after planting.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 5.9 m. × 4.6 m. (b) 5.0 m. × 3.7 m. (v) 46 cm. × 46 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of tubers. (iv) (a) 1962 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 58.8 Q/ha. (ii) 10.4 Q/ha. (iii) Main effect of S alone is significant. (iv) Av. yield of tuber in Q/ha.

	T ₁	T ₂	Mean
S ₁	51.8	55.0	53.4
S ₂	64.7	63.7	64.2
Mean	58.2	59.3	58.8

C.D. for S marginal means = 9.0 Q/ha.

Crop :- Potato (Rabi).

Ref :- Or. 60(30).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :- To study the effect of different times of application of C/A/N on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 30.11.60. (iv) (a) 3 ploughings, 2 ladderings and breaking of clods. (b) Line sowing. (c) N.A. (d) 46 cm. \times 13 cm. (e) 89.7 Kg/ha. of P_2O_5 as Super + 89.7 Kg/ha. of K_2O as Mur. of Pot. (vi) Patna red. (vii) Irrigated. (viii) Nil. (ix) 11 cm. (x) 10.2.61.

2. TREATMENTS :

4 times of application of 89.7 Kg/ha. of N as C/A/N : T_1 = Full dose at planting, T_2 = Full dose at first earthing, T_3 = $\frac{1}{2}$ at planting and $\frac{1}{2}$ at 2nd earthing and T_4 = $\frac{1}{2}$ at first earthing + $\frac{1}{2}$ at 2nd earthing.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 3. (iv) (a) 5.5 m. \times 2.9 m. (b) 4.6 m. \times 2.6 m. (v) 46 cm. \times 15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of epilachna beetle. Spraying of Endrex 28 gm. in 18 litres of water per ha. Attack of slight wilting disease. (iii) Tuber yield. (iv) (a) 1960 only. (b) No. (c) Nil. (v) Nil. (vi) Heavy rains from 31.12.60 to 2.1.61. (vii) Nil.

5. RESULTS :

(i) 45.7 Q/ha. (ii) 9.5 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	53.3	38.4	49.1	42.1

Crop :- Potato (Rabi).

Ref :- Or. 63(51).

Site :- Agri. Res. Stn., Sambalpur.

Type :- 'M'.

Object :—To study the effect of time of application of different sources of N on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 12.12.62. (iv) (a) 6 ploughings. (b) Planting. (c) N.A. (d) 61 cm. \times 15 cm. (e) N.A. (v) 89.7 Kg/ha. of P_2O_5 as Super + 89.7 Kg/ha. of K_2O as KC1 applied in lines at the time of planting. (vi) D.R.R. (vii) Irrigated. (viii) 2 hoeings and earthing up. (ix) 4.1 cm. (x) 13.4.63.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 sources of 134.5 Kg/ha. of N : S_1 = C/A/N and S_2 = A/S.

(2) 2 times of application : T_1 = Full dose at planting and T_2 = $\frac{1}{2}$ at planting + $\frac{1}{2}$ at first earthing up (35 days after planting).

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 6.7 m. \times 4.3 m. (b) 5.5 m. \times 4.0 m. (v) 61 cm. \times 15 cm. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Attack of early blight and 2 prophylactic sprays of endrine was given. (iii) Yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 35.3 Q/ha. (ii) 4.7 Q/ha. (iii) Main effects of T and interaction $T \times S$ are significant. (iv) Av. yield of tuber in Q/ha.

	S ₁	S ₂	Mean
T ₁	35.0	31.2	33.1
T ₂	34.8	40.1	37.5
Mean	34.9	35.6	35.3

C.D. for T marginal means = 4.2 Q/ha.
C.D. for the body of T × S table = 5.8 Q/ha.

Crop :- Potato (Rabi).

Ref :- Or. 62(77).

Site :- Agri. Res. Stn., Sambalpur.

Type :- 'M'.

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Potato. (c) 44.8 Kg/ha. of P₂O₅ as Super + 44.8 Kg/ha. of K₂O as Mur. Pot. + 67.2 Kg/ha. of N as A/S. (ii) Sandy loam. (iii) 16, 17.11.1961. (iv) (a) 5 ploughings. (b) 15 cm. tubers in furrows and then covered. (c) N.A. (d) 61 cm. × 15 cm. (e) 2. (v) Nil. (vi) Red patna. (vii) Irrigated. (viii) Earthing-up twice. (ix) 4 cm. (x) 1.3.62 and 8.3.62.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N₁=67.2, N₂=89.7 and N₃=112.1 Kg/ha.

(2) 3 levels of P₂O₅ as Super : P₁=22.4, P₂=44.8 and P₃=67.2 Kg/ha.

(3) 3 levels of K₂O as Mur. Pot. : K₁=22.4, K₂=44.8 and K₃=67.2 Kg/ha.

3. DESIGN :

(i) 3³ confd. with NP²K² and NPK² confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 5.6 m. × 4.6 m. (b) 5.2 m. × 3.7 m. (v) 20 cm. × 46 cm. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Slight attack of blight ; spraying of Cu-fungicide. (iii) Tuber yield. (iv) (a) 1962-contd. (modified). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 39.9 Q/ha. (ii) 2.1 Q/ha. (iii) All the main effects and two factor interactions are highly significant. (iv) Av. yield of tuber in Q/ha.

	K ₁	K ₂	K ₃	P ₁	P ₂	P ₃	Mean
N ₁	31.6	33.8	37.8	32.4	34.4	36.4	34.4
N ₂	41.7	41.1	46.0	41.2	44.7	42.9	42.9
N ₃	43.3	43.8	40.4	34.8	46.0	46.8	42.5
Mean	38.9	39.6	41.4	36.1	41.7	42.0	39.9
P ₁	33.1	38.6	36.7				
P ₂	41.9	40.9	42.2				
P ₃	41.7	39.2	45.2				

C.D. for N, P or K marginal means = 1.5 Q/ha.

C.D. for body of N × P, P × K or N × K table = 2.5 Q/ha.

Crop :- Potato (Rabi).
Site :- Agri. Res. Stn., Sambalpur.

Ref :- Or. 63(56).
Type :- 'M'.

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sannhemp* (G.M.). (c) Nil. (ii) Sandy loam. (iii) 21 to 25.11.62. (iv) (a) 6 ploughings. (b) Planting. (c) 5.5 Q/ha. (d) 61 cm. x 15 cm. (e) 2. (v) Nil. (vi) D.R.R. (vii) Irrigated. (viii) Earthing up twice. (ix) 2.1 cm. (x) 3, 4.3.1964.

2. TREATMENTS :

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

(1) 3 levels of N as C/A/N : $N_1=89.7$, $N_2=179.3$ and $N_3=269.0$ Kg/ha.

(2) 3 levels of P_2O_5 as Super : $P_1=44.8$, $P_2=89.7$ and $P_3=134.5$ Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : $K_1=44.8$, $K_2=89.7$ and $K_3=134.5$ Kg/ha

Manures applied at planting.

3. DESIGN :

(i) 3³ confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 3. (iv) (a) 5.5 m. x 4.6 m. (b) 4.3 m. x 4.3 m. (v) 61 cm. x 15 cm. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Slight attack of blight - endrex was sprayed as a prophylactic spray. (iii) Yield of tuber. (iv) (a) 1962—contd. with modification. (b) No. (c) Nil. (v) and (vi) Nil. (vii) One replication was rejected due to poor germination.

5. RESULTS :

(i) 40.1 Q/ha. (ii) 1.0 Q/ha. (iii) Main effects of N, P and K are highly significant. (iv) Av. yield of tuber in Q/ha.

	K_1	K_2	K_3	P_1	P_2	P_3	Mean
N_1	38.2	36.9	32.9	33.0	32.8	42.3	36.0
N_2	38.1	44.6	46.2	34.8	44.0	50.1	43.0
N_3	40.0	37.9	46.4	39.4	44.4	40.6	41.4
Mean	38.8	39.8	41.8	35.7	40.4	44.3	40.1
P_1	37.5	34.2	35.4				
P_2	39.5	40.0	41.7				
P_3	39.3	45.2	48.4				

C.D. for N, P or K marginal means 6.6 Q/ha.

Crop :- Potato (Rabi).
Site :- Agri. Res. Stn., Sambalpur.

Ref :- Or. 65(17).
Type :- 'M'.

Object :- To study the nutrient uptake of Potato in relation to soil fertility status and plant composition.

1. BASAL CONDITIONS :

(i) (a) Paddy-Potato. (b) Paddy. (c) N.A. (ii) Lateritic-light sandy loam. (iii) 12.11.64. (iv) (a) 6 ploughings and 2 ladderings. (b) Line planting. (c) 5.5 Q/ha. (d) 61 cm. x 15 cm. (e) 1. (v) Nil. (vi) Up-date. (vii) Irrigated. (viii) 2 hand weedings and earthing up. (ix) 5.1 cm. (x) 3rd week of April, 1965.

2. TREATMENTS :

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

(1) 3 levels of N as C/A/N : $N_1=89.7$, $N_2=79.3$ and $N_3=269.0$ Kg/ha.

(2) 3 levels of P_2O_5 as Super : $P_1=89.7$, $P_2=179.3$ and $P_3=269.0$ Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : $K_1=89.7$, $K_2=179.3$ and $K_3=269.0$ Kg/ha.

P_2O_5 and K_2O applied at the time of planting, $\frac{1}{2}$ in furrow and $\frac{1}{2}$ broadcasted. C/A/N $\frac{1}{2}$ at planting, remaining after one month.

3. DESIGN :

(i) 3rd confd. (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 3. (iv) (a) 5.5 m. × 4.3 m. (b) 5.2 m. × 3.1 m. (v) 15 cm. × 61 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Light attack of blight. 3 Kg. of endrin and 1 Kg. of Cu. fungicide in 449 litres/ha. (iv) Yield of tuber. (iv) (a) 1962-contd. (modified). (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Blight attack Data. not available.

5. RESULTS :

(i) 135.0 Q/ha. (ii) 14.4 Q/ha. (iii) Main effects of N and P are highly significant. (iv) Av. yield of tubers in Q/ha.

	K_1	K_2	K_3	P_1	P_2	P_3	Mean
N_1	110.2	119.3	117.7	109.3	115.3	122.6	115.7
N_2	141.6	139.4	137.4	128.4	140.7	149.2	139.4
N_3	149.1	154.5	145.9	144.8	147.1	157.6	149.8
Mean	133.6	137.7	133.6	127.5	134.4	143.1	135.0
P_1	126.1	131.8	124.6				
P_2	132.0	136.3	134.8				
P_3	142.9	145.1	141.5				

C.D. for N or P marginal means = 7.9 Q/ha.

Crop :- Potato.

**Ref :- Or. 62, 63, 64 for Mayurbhanj ;
62, 63, 64, 65(S.F.T.) for Puri
and Cuttack ; 62, 64, 65(S.F.T.)
for Balasore ; 64(S.F.T.) for
Kalahandi and 65(S.F.T.) for
Sambalpur and Ganjam.**

**Site :- (District) : Mayurbhanj, Puri,
Cuttack, Balasore, Kalahandi,
Sambalpur and Ganjam.**

Type :- 'M'.

Object :- To study the response curves of important cereal, cash and oilseed crops to nitrogen applied singly and in combination with other nutrients. (Type : A,)

1. BASAL CONDITIONS :

(i) N.A. (ii) Red and yellow for Mayurbhanj, Puri, Kalahandi and Sambalpur ; Red loamy for Cuttack, Balasore and Ganjam. (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 $N_2=120$ Kg/ha. of N $P_1=35$ Kg/ha. of P_2O_5 $N_1P_1=60$ Kg/ha. of N+35 Kg/ha. of P_2O_5 $N_2P_1=120$ Kg/ha. of N+35 Kg/ha. of P_2O_5 $N_2P_2=120$ Kg/ha. of N+70 Kg/ha. of P_2O_5 $N_2P_2K_1=120$ 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. of 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 oilseed. 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 to 1966 for Balasore and Puri [1964 N.A. for Balasore]; 1962 to 1965 for Cuttack; 1962 to 1964 for Mayurbhanj; 1965 to 1966 for Sambalpur and Ganjam; 1964—only for Kalahandi. (b) and (c) N.A. (v) to (vii) N.A.

5. RESULTS :

Mayurbhanj

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 Potato in Kg/ha.	781	257	2342	385	682	899	899	793.0

Control yield=3706 Kg/ha. ; No. of trials=2.

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 Potato in Kg/ha.	383	1190	313	1018	1588	2359	2685	205.8

Control yield=3112 Kg/ha. : No. of trials=7

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 Potato in Kg/ha.	703	1272	709	1125	1222	1575	1981	244.1

Control yield=1957 Kg/ha. ; No. of trials=6.

Puri

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 Potato in Kg/ha.	1735	2900	621	2800	4772	4395	5189	567.0

Control yield=3115 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 Potato in Kg/ha.	2780	3528	84	2803	4100	4453	3942	439.9

Control yield=4260 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 Potato in Kg/ha.	1467	1912	-642	1378	2298	2629	2688	169.4

Control yield=3414 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 Potato in Kg/ha.	1440	2206	526	1933	2219	2679	3319	394.3

Control yield=4646 Kg/ha. ; No. of trials=3.

Cuttack

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 Potato in Kg/ha.	2543	3176	1113	2161	3038	3051	3954	679.0

Control yield=4191 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 Potato in Kg/ha.	774	1133	494	632	882	1891	1443	52.4

Control yield= 2556 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 Potato in Kg/ha.	-14628	-13868	-15423	-13253	-1473	-1100	-13016	

S.E.=10136.5 Kg/ha. ; Control yield=22673 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 Potato in Kg/ha.	2914	4168	852	3581	4701	5112	6136	298.1

Control yield=4358 Kg/ha. ; No. of trials=8.

Balasore

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 Potato in Kg/ha.	1151	1789	306	1299	2718	2990	3026	700.0

Control yield=4448 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 Potato in Kg/ha.	780	1008	978	1423	1650	2559	2708	1519.1

Control yield=11821 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 Potato in Kg/ha.	373	1106	220	963	1550	1800	2830	250.6

Control yield=7269 Kg/ha. ; No. of trials=6.

Kalahandi

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 Potato in Kg/ha.	142	290	39	315	8518	-443	595	244.1

Control yield=2703 Kg/ha. , No. of trials=7.

Sambalpur

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 Potato in Kg/ha.	750	350	650	450	900	800	1250	313.8

Control yield =4900 Kg/ha. ; No. of trials=2.

Ganjam

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 Potato in Kg/ha.	1800	3790	2500	2300	4700	5930	4700	778.7

Control yield=2200 Kg/ha. ; No. of trials=2.

Crop :- Potato.

**Rep :- Or. 62, 63, 64, 65(S.F.T.) for Cuttack,
62, 63, 64(S.F.T.) for Puri ; 62, 64, 65
(S.F.T.) for Balasore, 62, 63, 64
(S.F.T.) for Mayurbhanj, 65(S.F.T.)
for Ganjam and Sambalpur.**

**Site :- (District) : Cuttack, Puri,
Balasore, Mayurbhanj,
Ganjam and Sambalpur.**

Type :- 'M'.

Object :-To study the response curves of important cereal, cash and oilseed crops to Phosphorus applied singly and in combination with other nutrients (Type : A₂).

1. BASAL CONDITIONS :

(i) N.A. (ii) Red loamy for Cuttack, Balasore and Ganjam ; Red and yellow for Puri ; Mayurbhanj and Sambalpur. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

Control (no manure)

N₁ =60 Kg/ha. of NP₁ =35 Kg/ha. of P₂O₅P₂ =70 Kg/ha. of P₂O₅N₁P₁ =60 Kg/ha. of N+35 Kg/ha. of P₂O₅N₁P₂ =60 Kg/ha. of N+70 Kg/ha. of P₂O₅N₂P₂ =120 Kg/ha. of N+70 Kg/ha. of P₂O₅N₂P₂K₂ =120 Kg/ha. of N+70 Kg/ha. of P₂O₅+120 Kg/ha. of K₂ON applied as A/S, P₂O₅ as Super and K₂O as Mur. of Pot.

3. DESIGN :

Same as in Type A₁ (Irrigated) on page 202.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1966 for Balasore and Puri (1963— N.A. for Balasore); 1962 to 1965 for Cuttack, 1962 to 1964 for Mayurbhanj, 1965 to 1966 for Ganjam and Sambalpur. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Cuttack

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.	2029	962	1384	2675	3202	3123	3090	658.1

Control yield=5443 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.	513	00	118	1492	1433	1635	1443	157.6

Control yield=2866 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.	2342	1401	1731	3932	4332	5091	5526	742.2

Control yield=5986 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.	2663	740	1051	3451	3761	5372	6099	330.0

Control yield=4663 Kg/ha. ; No. of trials=10.

Puri

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.	1478	218	102	2383	2898	4145	5202	700.0

Control yield=3784 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.	1818	-116	-21	1599	1676	3022	3614	573.5

Control yield= 3907 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 grain in Kg/ha.	2556	19	171	3321	3406	5535	6253	348.3

Control yield=3393 Kg/ha. ; No. of trials=3.

Balasore

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.	1917	929	1631	2847	3183	4547	6098	655.1

Control yield = 3608 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.	894	370	953	706	1398	1670	3706	1245.1

Control yield = 8529 Kg/ha. ; No. of trials = 4.

65 (S.F.T.)

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ K ₂	N ₂ P ₁	N ₂ P ₂ K ₂	S.E.
Av. response of grain in Kg/ha.	773	286	686	813	910	1833	1986	206.3

Control yield = 6586 Kg/ha. ; No. of trials = 6.

Mayurbhanj

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.	1997	1888	1028	-99	771	1987	2273	526.8

Control yield = 3459 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.	618	620	1208	1827	2101	2602	3106	252.3

Control yield = 3260 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 Potato in Kg/ha.	722	573	889	1142	1370	1447	1939	344.7

Control yield = 2306 Kg/ha. ; No. of trials = 6.

Ganjam

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 Potato in Kg/ha.	380	1260	1650	1180	2450	3520	3630	360.1

Control yield = 2620 Kg/ha. ; No. of trials = 2.

Sambalpur

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 Potato in Kg/ha.	800	400	650	850	450	1050	2200	526.4

Control yield = 6000 Kg/ha. ; No. of trials = 2.

Crop :- Potato.

**Ref :- Or. 62, 63, 64. 65(S.F.T.) for Cuttack
and Puri, 62, 64, 65(SFT) for Balasore
62, 63, 64(S.F.T.) for Mayurbhahj ;
65(S.F.T.) for Ganjam and Sambalpur.**

Site :- (District) : Cuttack, Puri,

Balasore, Mayurbhanj,

Ganjam and Samblpaur.

Type :- 'M'.

Object :—To study the response curves of important cereal, cash and oilseed crops to potash applied singly and in combination with other nutrients (Type : A₃).

1. BASAL CONDITIONS :

(i) N.A. (ii) Red and yellow for Puri. Mayurbhanj and Sambalpur and Red loamy for others. (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

K₁ = 60 Kg/ha of K₂O

K₂ = 120 Kg/ha of K₂O

N₁K₁ = 60 Kg/ha of N+60 Kg/ha of K₂O

N₁K₂ = 60 Kg/ha of N+120 Kg/ha of K₂O

N₂K₂ = 120 Kg/ha of N+120 Kg/ha of K₂O

N₁P₁K₁ = 60 Kg/ha of N+35 Kg/ha of P₂O₅+60 Kg/ha of K₂O

N applied as A/S, P₂O₅ as super and K₂O as Mur. of Pot.

3. DESIGN :

Same as on page Type A₁ (Irrigated) above.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1966 for Puri and Balasore (1963 N.A. for Balasore) ; 1962 to 1965 for Cuttack ; 1962 to 1964 for Mayurbhanj and 1965 to 1966 for others. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Cuttack

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.	2319	—119	—422	2866	3143	3314	3295	1242.8

Control yield=5878 Kg/ha. ; No. of trials=3.

63(S.F.T.)

Treatment	N ₂	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.	359	224	296	530	685	649	803	72.3

Control yield=1650 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 tuber in Kg/ha.	2783	2140	2549	3253	4700	5796	6076	374.4

Control yield=6096 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 tuber in Kg/ha	3111	1128	1446	3437	3713	5008	4726	568.3

Control yield=3968 Kg/ha. ; No. of trials=7.

Puri

62(S.F.T.)

Treatment	N ₁	K ₁	K ₂	N ₁ K ₁	N ₁ K ₂	N ₂ K ₁	N ₂ P ₂ K ₂	S.E.
Av. response of tuber in Kg/ha.	1344	583	1166	2036	2520	2797	3865	311.1

Control yield = 1898 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 tuber in Kg/ha.	2075	479	459	2050	2382	3512	3731	565.7

Control yield = 3118 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 ₁	N ₁ P ₁ K ₁	S.E.
Av. response of tuber in Kg/ha.	1759	-153	69	1912	2436	3874	2935	323.6

Control yield = 3177 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 ₁	N ₁ P ₁ K ₁	S.E.
Av. response of tuber in Kg/ha.	1386	480	646	393	1673	2640	2026	641.8

Control yield = 6319 Kg/ha. ; No. of trials = 3.

Mayurbhanj

62(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 tuber in Kg/ha.	1453	781	1404	1799	583	1058	761	906.6

Control yield = 3637 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 ₁	N ₁ P ₁ K ₁	S.E.
Av. response of tuber in Kg/ha.	865	1247	1831	1649	2330	2398	2596	224.2

Control yield = 2908 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 ₁	N ₁ P ₁ K ₁	S.E.
Av. response of tuber in Kg/ha.	1790	-1572	-1227	-823	-645	-617	-1023	1473.1

Control yield = 4413 Kg/ha. ; No. of trials = 6.

Balasore

62(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 tuber in Kg/ha.	1305	1428	1092	3010	2580	3731	4838	258.0

Control yield = 3978 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 ₁	N ₁ P ₁ K ₁	S.E.
Av. response of tuber of Kg/ha.	711	29	-69	721	296	1304	1146	334.5

Control yield = 9449 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 tuber in Kg/ha.	205	-41	301	1000	1075	2055	1845	86.0

Control yield=6134 Kg/ha. ; No. of trials=5

Ganjam

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.	2400	1600	1180	1200	1600	2600	2400	0.0

Control yield=2400 Kg/ha. ; No. of trials=1

Sambalpur

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.	600	400	0.0	450	200	490	600	779.7

Control yield=5200 Kg/ha. ; No. of trials=2

Crop :- Potato.

Ref :- Or. 60(S.F.T.).

Site :- (District) : Balasore, Cuttack, Dhankanal, Ganjam, Mayurbhanj and Puri.

Type :- 'M'.

Object :- To study the response of Potato to different levels of N, P₂O₅ and K₂O applied individually and in combination (Type : A).

1. BASAL CONDITIONS :

(i) N.A. (ii) Saline for Balasore ; Red and black for Dhankanal ; Coastal alluvial for Puri and Red soil for others. (iii) to (x) N.A.

2. TREATMENTS :

O=Control (no manure).

N=56 Kg/ha. of N as A/S.

P=28 Kg/ha. of P₂O₅ as Super.K=56 Kg/ha. of K₂O as Mur. Pot.NP=56 Kg/ha. of N as A/S+28 Kg/ha. of P₂O₅ as Super.NK=56 Kg/ha. of N as A/S+56 Kg/ha. of K₂O as Mur. Pot.PK=28 Kg/ha. of P₂O₅ as Super+ 56 Kg/ha. of K₂O as Mur. Pot.NPK=56 Kg/ha. of N as A/S+28 Kg/ha. of P₂O₅ as Super+56 Kg/ha. of K₂O as Mur. Pot.

3. DESIGN :

Same as in type A₁ (Irrigated) on page 202.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1960 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

District	No. of trials	Control yield	Av. response in Q/ha.				NP	NK	PK	NPK	S.E.
			N	P	K	S.E.					
Balasore	5	54.0	26.6	26.6	8.2	4.3	6.1	-2.7	-0.6	-4.5	2.4
Cuttack	4	22.6	36.7	9.7	8.0	1.1	-5.1	-3.0	-3.7	3.7	0.6
Dhankanal	6	42.1	10.1	5.3	10.1	2.1	2.5	-1.7	-0.9	3.0	1.7
Ganjam	6	44.0	14.4	10.2	4.8	2.2	-3.6	2.7	-0.8	2.2	2.7
Mayurbhanj	5	41.8	16.5	16.5	11.2	1.7	-0.6	-1.5	0.1	-0.6	0.7
Puri	13	44.0	18.7	6.4	4.9	2.1	0.3	-1.8	-0.6	3.2	1.1

Crop :- Potato.**Ref :- Or. 60 (S.F.T.).****Site :- As per results.****Type :- 'M'.**

Object :—To investigate the relative efficiency of different nitrogenous fertilizers at different doses (Type : B).

1. BASAL CONDITIONS :

(i) N.A. (ii) Saline for Balasore ; Red alluvial for Cuttack ; Coastal alluvial for Puri ; Red and black for Dhankanal and Red for others. (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 :**

(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 crop 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) 1.80 ac. (b) 1.40 ac. (iv) Yes.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1960 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

District	No. of trial	Control yield	Av. yield of tuber in Q/ha.								G.M.	S.E. mean
			n_1	n_2	n_1'	n_2'	n_1''	n_2''	n_1'''	n_2'''		
Balasore	3	56.3	69.2	85.8	69.7	75.2	—	—	63.7	80.7	71.5	0.7
Cuttack	4	24.0	60.9	70.1	59.5	66.9	—	—	57.2	66.4	57.9	0.6
Ganjam	3	38.6	55.8	63.2	59.5	68.1	—	—	68.1	76.7	61.4	2.8
Mayurbhanj	4	32.7	55.8	70.5	54.4	63.1	—	—	55.3	63.1	56.4	4.8
Puri	13	50.4	71.2	77.5	67.2	76.2	—	—	71.9	84.5	71.3	2.3
Balasore	2	57.2	—	—	71.0	82.1	74.7	83.0	74.7	101.5	77.7	0.2
Dhenkanal	6	30.6	—	—	40.4	46.1	44.4	56.4	58.8	61.8	48.4	5.8
Mayurbhanj	2	60.9	73.8	96.9	—	—	83.0	54.1	75.7	88.6	81.9	1.5

Crop :- Potato (Rabi).**Ref :- Or. 63(39).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'C'.**

Object :—To study the effect of polythelene mulching on Potato.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sannhemp (G.M.) (c) Nil. (ii) Sandy loam. (iii) 20 11.63. (iv) (a) 3 ploughings. (b) Tubers were planted in lines. (c) According to the size of the tuber. (d) 46 cm. x 15 cm. (e) 1. (v) 25 C.L./ha. of F.Y.M. (vi) Red patna. (vii) Irrigated. (viii) As per treatments. (ix) 3 cm. (x) 15.3.64.

2. TREATMENTS :

4 cultural treatments : T_1 =Planting on flat bed, ridged immediately and polythelene mulch covered, T_2 =Planting on flat bed, ridged immediately, followed by hand weeding after six weeks and polythelene mulch covered, T_3 =Planting on flat bed, followed by ridging after six weeks and polythelene mulch covered and T_4 =Planting on flat bed followed by ridging after 3 weeks, earthing up after 6 weeks with polythelene mulch covered.

Polythelene mulch : It is a cloth which is used to protect the moisture of the soil against Sun by covering the plots in day time.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 6.7 m. \times 3.4 m. (b) 5.8 m. \times 3.1 m. (v) 46 cm. \times 15 cm, (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of Epilachna. Spraying of Endrex at 28 gm. in 27 litres of water. (iii) Height, no. of tubers/plant, wt. of tubers/plant, grading the tuber size. (iv) 1963 to 64 (modified in 64). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 107.0 Q/ha. (ii) 7.9 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	75.1	83.0	138.8	131.3

C.D.=12.6 Q/ha.

Crop :- Potato (Rabi).

Ref :- Or. 64(14).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'C'.

Object :—To study the moisture conservation by polythelene cover and the effect of it on the growth and yield of Potato.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sannhemp (G.M.). (c) Nil. (ii) Sandy loam. (iii) 13.11.64. (iv) (a) 3 to 4 ploughings. (b) Tubers were planted in lines. (c) Varies according to the size of the tuber. (d) 46 cm. \times 23 cm. (e) One. (v) 25 C.L./ha. of cowdung cake one week before planting. 22.4 Kg/ha. of P_2O_5 as Super+67.2 Kg/ha. of N as A/S at planting. (vi) Red Patna. (vii) Irrigated. (viii) As per treatments. (ix) 3 cm. (x) 28.2.65.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 methods of planting : M_1 =Planting on flat bed, then ridged immediately and M_2 =Planting on flat bed followed by ridging after 3 and 6 weeks.

(2) 2 covering treatments : C_0 =No covering and C_1 =Covering of bed with black polythelene.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 6.7 m. \times 3.4 m. (b) 6.3 m. \times 2.4 m. (v) 23 cm. \times 46 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Dates of germination, moisture reading and yield of tuber. (iv) (a) 1963 to 1964. (modified) (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 49.1 Q/ha. (ii) 14.0 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of tuber in Q/ha.

	C ₀	C ₁	Mean
M ₁	50.7	45.0	47.9
M ₂	49.4	51.2	50.3
Mean	50.1	48.1	49.1

Crop :- Potato (Rabi).

Ref :- Or. 64(24).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'IM'.

Object :- To study the effect of intensity and frequency of irrigation and fertilizers on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sannhemp (G.M.). (c) Nil. (ii) Sandy loam. (iii) 27.10.64. (iv) (a) 4 ploughings with laddering. (b) Tubers were planted in lines (c) and (d) N.A. (e) Nil. (v) Nil. (vi) Red patna. (vii) Irrigated. (viii) earthing up. (ix) 2 cm. (x) 10.2.65.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 intensities of irrigation : I₁= 1, I₂= 1½ and I₃=2 acre inches.

(2) 3 intervals of irrigation : F₁=3, F₂=6 and F₃=9 days interval.

Sub-plot treatments :

3 levels of manures : M₁=90.0 Kg/ha of N+90.0 Kg/ha. of P₂O₅+90.0 Kg/ha. of K₂O, M₂= 135.0 Kg/ha. of N+180.0 Kg/ha. of P₂O₅+180.0 Kg/ha. of K₂O and M₃=180.0 Kg/ha. of N+270.0 Kg/ha. of P₂O₅+270. Kg/ha. of K₂O.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 3 sub-plots/main-plot. (b) Nil. (iii) 3.0 (iv) (a) 6.4 m. × 3.2 m. (b) 6.0 m. × 3.0 m. (v) 20 cm. × 10 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Mild attack of Epilachna. (iii) Yield of tubers. (iv) (a) 1964 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 74.2 Q/ha. (ii) (a) 15.9 Q/ha. (b) 9.0 Q/ha. (iii) Main effects of F and M are highly significant. (iv) Av. yield of tuber in Q/ha.

	F ₁	F ₂	F ₃	M ₁	M ₂	M ₃	Mean
I ₁	97.1	68.6	56.5	63.3	77.7	81.2	74.1
I ₂	89.6	74.7	57.3	66.0	75.8	75.8	73.9
I ₃	97.3	76.4	50.5	63.2	80.0	81.0	74.7
Mean	94.7	73.2	54.8	64.2	77.8	80.7	74.2
M ₁	83.1	62.3	47.1				
M ₂	97.2	79.6	56.7				
M ₃	103.7	77.8	60.5				

C.D. for F marginal means=9.1 Q/ha.

C.D. for M marginal means=4.9 Q/ha.

Crop :- Potato (Rabi).**Ref :- Or. 61(65).****Site :- Agri. Res. Stn., Sambalpur.****Type :- 'D'.**

Object :—To study the effect of different fungicidal sprays on Potato blight disease.

1. BASAL CONDITIONS :

(i) (a) Paddy-followed by Potato. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 23.11.60. (iv) (a) 8 ploughings. (b) Planting. (c) 5.5 Q/ha. (d) 46 cm. × 23 cm. (e) 1. (v) 25 C.L./ha. of F.Y.M. + 44.8 Kg/ha. of N as A/S + 35.9 Kg/ha. of P₂O₅ as Super + 53.8 Kg/ha. of K₂O as Pot. Sul. (vi) Patna red. (vii) Irrigated. (viii) 3 weedings, hoeings and earthing up. (ix) and (x) N.A.

2. TREATMENTS :

7 fungicidal treatments : T₀=Control, T₁=B. mixture 3 : 3 : 50, T₂=B. mixture 4 : 4 : 50, T₃=B. mixture 5 : 5 : 50, T₄=Crag fungicide at 3.4 Kg/ha., T₅=Crag fungicide at 4.5 Kg/ha. and T₆=Crag fungicide at 5.6 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 3.7 m. × 3.7 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Potato blight ; control measures as per treatments. (iii) Nil. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) Data for potato blight is N.A.

5. RESULTS :

(i) 128.2 Q/ha. (ii) 30.7 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
Av. yield	76.5	127.4	139.0	118.9	141.5	146.3	147.5

Crop :- Potato (Rabi).**Ref :- Or. 63(55).****Site :- Agri. Res. Stn., Sambalpur.****Type :- 'D'.**

Object :—To determine the best seed and soil disinfectants for controlling the wilt disease of Potato.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 1.12.62. (iv) (a) 8 ploughings. (b) Line planting. (c) 5.5 Q/ha. (d) 61 cm. × 15 cm. (e) 1. (v) 25 C.L./ha. of F.Y.M. + 173.0 Kg/ha. of Super + 370.6 Kg/ha. of Potash + 370.6 Kg/ha. of A/S and top dressing with 247 Kg/ha. of A/S. (vi) Patna red. (vii) Irrigated. (viii) 3 weedings, hoeings and earthing up. (ix) 2.1 cm. (x) 22 and 23.3.63.

2. TREATMENTS :**Main-plot treatments :**

4 applications of fungicides : A₀=No application, A₁=Soil application of Sulphone at 257.8 Kg/ha., A₂=Soil application of P.C.N.B. at 39.2 Kg/ha. and A₃=Soil application of Nemagon in 22.5 litres/ha.

Sub-plot treatments :

3 seed treatments : T₀=Control, T₁=Seed treated with Aretan 0.5% and T₂=Seed treated with Mercuric Chloride.

Sulphone and P.C.N.B. dust sprayed on the plot and Nemagon liquid injected in the soil of 10 cm. depth. The tubers are dipped in Aretan water (30 gm. in 2.3 litres of water). Seed are dipped in HgCl water (3½ gm. of HgCl in 2.3 litres of water).

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 2.4 m. × 4.9 m. (b) 1.8 m. × 4.9 m. (v) 30 cm. on each side along breadth. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Wilt disease attack ; control measures as per treatments. (iii) Incidence and yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 84.6 Q/ha. (ii) (a) 17.3 Q/ha. (b) 14.8 Q/ha. (iii) Main effect of A alone is highly significant. (iv) Av. yield of tuber in Q/ha.

	A ₀	A ₁	A ₂	A ₃	Mean
T ₀	91.1	105.5	102.5	41.1	85.1
T ₁	78.0	100.4	116.1	43.6	84.5
T ₂	104.7	99.6	82.6	49.6	84.1
Mean	91.3	101.8	100.4	44.8	84.6

C.D. for A marginal means = 19.8 Q/ha.

Crop :- Potato (Rabi).

Site :- Agri. Res. Stn., Sambalpur.

Ref :- Or. 63(54).

Type :- 'D'.

Object :—To find out the relative efficiency of insecticides in combination with fungicides on the control of early blight and *Epilachna* beetles in Potato.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 9.11.62. (iv) (a) 8 ploughings. (b) Line planting. (c) 5.5 Q/ha. (d) 61 cm. × 15 cm. (e) 1. (v) 25 C.L./ha. of F.Y.M. + 168.1 Kg/ha. of A/S + 173.0 Kg/ha. of Super + 247 Kg/ha. of Potash and top dressing with 247 Kg/ha. of A/S. (vi) DRR. (vii) Irrigated. (viii) Weedings and hoeing. (ix) 2.1 cm. (x) 18.3.63.

2. TREATMENTS :

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

(1) 3 fungicidal treatments : F₁ = 4.4 Kg/ha. of shall copper fungicide, F₂ = B. mixture (4 : 4 : 50) and F₃ = 0.2% of Dithane - 28.

(2) 2 levels of D.D.T. : D₀ = 0 and D₁ = 5.6 gm./ha.

Endrin at 2.3 Kg/ha. was applied to all the plots except control.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a) 5.5 m. × 4.3 m. (b) 4.3 m. × 4.0 m. (v) 61 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (i) Attack of *Epilachna* ; control measure as per treatments. (iii) Yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) The data for incidence of blight and *Epilachna* are not recorded.

5. RESULTS :

(i) 168.7 Q/ha. (ii) 23.1 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in Q/ha. Control = 153.8 Q/ha.

	F ₁	F ₂	F ₃	Mean
D ₀	170.1	198.6	162.4	177.0
D ₁	160.0	172.0	164.5	165.5
Mean	165.0	185.3	163.4	171.2

Crop :- Potato (Rabi).**Ref :- Or. 64(19).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'DC'.**

Object :—To find out the effect of different weedicides on the growth and yield of Potato.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sannhemp (G.M.). (c) Nil. (ii) Sandy loam. (iii) 25.11.64. (iv) (a) 3 ploughings followed by laddering. (b) Cut pieces of tubers were sown in lines. (c) N.A. (d) 46 cm. × 15 cm. (e) 1. (v) 25 C.L./ha. of F.Y.M. + 89.7 Kg/ha. of N as C/A/N + 179.3 Kg/ha. of P_2O_5 + 179.3 Kg/ha. of K_2O as Mur. of Pot. as Super. (vi) Up-to-date. (vii) Irrigated. (viii) As per treatments. (ix) 3 cm. (x) 24.2.65.

2. TREATMENTS :

10 weedicidal treatments : W_0 = Unweeded (control), W_1 = One hoeing and one earthing up, W_2 = One hoeing and one earthing followed by a second earthing, W_3 = 1.7 Kg/ha. a.e. of Sod. salt of 2, 4—D at pre-emergence state i.e., 5 days after planting, W_4 = 4.2 Kg/ha. a.e. of Sod. salt of 2, 4—D at pre emergence stage, W_5 = 3.4 Kg/ha. of Dowpon (Sod. salt of 2, 2 Dicloropropionic acid) at pre emergence stage ; W_6 = $2W_5$, W_7 = $3W_5$, W_8 = 0.6 Kg/ha. a.e. of MCPA at pre-emergence stage and W_9 = $2W_8$.

In the treatments, where earthing is not mentioned one earthing was given.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 2. (iv) (a) 6.7 m. × 4.6 m. (b) 6.4 m. × 3.7 m. (v) 15 cm. × 46 cm. (vi) Yes.

4. GENERAL :

(i) Germination was poor. (ii) Attack of *Epilachna* and lead blight ; Hexathene was sprayed. (iii) Germination count, weed count, height and yield of tuber. (iv) (a) 1964—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 56.0 Q/ha. (ii) 21.3 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	W_6	W_7	W_8	W_9
Av. yield	63.5	57.9	60.0	53.4	47.4	61.1	44.1	59.2	65.6	47.4

Crop :- Sugarcane.**Ref :- Or. 60(21).****Site :- Sugarcane Res. Stn., Bhubaneswar.****Type :- 'M'.**Object :—To study the response of Sugarcane to N, P_2O_5 and K_2O when applied alone and in combination at different levels.**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Sugarcane. (c) N.A. (ii) Sandy loam. (iii) 18.3.1960. (iv) (a) 5 ploughings with laddering. (b) In furrows of 10 cm. depth. (c) 46.1 Q/ha. (d) 91 cm. between rows. (e) 33 budded sets per row of 9.8 meter length. (v) 49 C.L./ha. of F.Y.M. (vi) Co. 617, (vii) Irrigated. (viii) Weeding and earthing up. (ix) 116 cm. (x) 20.4.1961.

2. TREATMENTS :

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

(1) 3 levels of N : $N_0=0$, $N_1=89.7$ and $N_2=179.3$ Kg/ha.(2) 3 levels of P_2O_5 : $P_0=0$, $P_1=89.7$ and $P_2=179.3$ Kg/ha.(3) 3 levels of K_2O : $K_0=0$, $K_1=56.0$ and $K_2=112.1$ Kg/ha.N as A/S applied in three splits, $\frac{1}{3}$ at planting, $\frac{1}{3}$ 45 days and $\frac{1}{3}$ after 90 days of planting.

3. DESIGN :

(i) 3³ confd. (ii) (a) 9 plots/block, 3 blocks/replication. (b) 1/24.9 ha. (iii) 3. (iv) (a) N.A. (b) 1.224.1 ha. (v) N.A.

4. GENERAL :

(i) Normal. (ii) Setts were treated with Areton at the cut end. Gammoxine applied at 22.4 Kg/ha (iii) Germination and yield of stripped canes. (iv) (a) 1959-1960. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 204.7 Q/ha. (ii) 93.7 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	P ₀	P ₁	P ₂	K ₀	K ₁	K ₂	Mean
N ₀	161.7	203.5	149.6	158.5	158.9	204.5	171.6
N ₁	193.3	241.7	216.6	237.0	218.5	196.1	217.2
N ₂	195.2	234.2	246.3	228.6	224.0	223.1	225.2
Mean	183.4	226.5	204.2	205.7	200.5	207.9	204.7
K ₀	188.7	240.7	187.7				
K ₁	180.3	185.0	236.2				
K ₂	181.2	253.7	188.7				

Crop :- Sugarcane.

Ref :- Or. 62(3).

Site :- Sugarcane Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :- To study the individual effects and interactions of higher doses of N, P and K with and without time on the growth, yield and juice quantity of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) N.A. (ii) Sandy loam. (iii) 17 to 20.3.1962. (iv) (a) 8 ploughings with laddering. (b) In furrows of 10 cm. depth. (c) 46.1 Q/ha. (d) 91 cm. between rows. (e) 34 setts planted in row of 10.1 m. length. (v) Nil. (vi) Co-872. (vii) Irrigated. (viii) Weeding and earthing up. (ix) 141 cm. (x) 28 to 30.3.1963.

2. TREATMENTS :

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

(1) 3 levels of N as A/S: N₁=179.3, N₂=269.0 and N₃=358.7 Kg/ha.

(2) 3 levels of P₂O₅ as Super: P₁=89.7, P₂=134.5 and P₃=179.3 Kg/ha.

(3) 3 levels of K₂O as Mur. Pot.: K₁=56.0, K₂=84.1 and K₃=112.1 Kg/ha.

(4) 2 levels of slacked lime: L₀=0 and L₁=560.4 Kg/ha.

3. DESIGN :

(i) 3³ × 2 confd. (ii) (a) 9 plots/block and 6 blocks/replication. (b) 1/16.5 ha. (iii) 1. (iv) (a) 10.1 m. × 6.7 m. (b) 10.1 m. × 4.9 m. (v) 91 cm. on either side lengthwise. (vi) 'es.

4. GENERAL :

(i) Normal. (ii) Nil but the seed setts were dipped in 0.5% solution of Agallol and gammoxine at 22.4 Kg/ha (iii) Germination and yield of cane. (iv) (a) 1962 only. (b) No. (c) Nil. (v) Nil. (vi) Prevailing hot condition in May and June. (vii) Nil.

5. RESULTS :

(i) 324.4 Q/ha. (ii) 75.0 Q/ha. (iii) Interaction N × P alone is significant. (iv) Av. yield of cane in Q/ha.

	P ₁	P ₂	P ₃	K ₁	K ₂	K ₃	L ₀	L ₁	Mean
N ₁	295.1	265.7	325.2	300.2	278.8	307.0	265.6	325.0	295.3
N ₂	372.2	340.8	284.4	325.7	299.5	372.2	327.2	333.7	332.5
N ₃	295.1	307.3	433.9	345.0	344.7	346.6	359.1	331.7	345.4
Mean	320.8	304.6	347.8	323.6	307.7	341.9	317.3	331.5	324.4
L ₀	318.5	303.0	330.5	320.8	306.4	324.7			
L ₁	323.1	306.2	365.1	326.4	309.0	359.1			
K ₁	343.2	302.0	325.7						
K ₂	277.9	283.3	361.8						
K ₃	341.3	328.6	355.9						

C.D. for means in the body of N×P table=89.4 Q/ha.

Crop :- Sugarcane.

Ref :- Or. 60(23).

Site :- Sugarcane Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :-To find out a suitable source of N and its optimum dose for Sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) Paddy-Sugarcane. (b) Paddy. (c) 44.8 Kg/ha. of N and 33.6 Kg/ha. of P₂O₅. (ii) Sandy-loam. (iii) 20.2.1960. (iv) (a) 5 ploughings with laddering. (b) In furrows of 10 cm. depth. (c) 46.1 Q/ha. (d) 91 cm. between rows. (e) 40 setts were planted in the row of 11.0 m. length. (v) 184.5 Q/ha. of F.Y.M. (vi) Co-881. (vii) Irrigated. (viii) Weeding and earthing up. (ix) 116 cm. (x) 10.3.1961.

2. TREATMENTS :

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

(1) 3 levels of N : N₁=89.7, N₂=134.5 and N₃=179.3 Kg/ha.

(2) 3 sources of N : S₁=A/S, S₂=Urea and S₃=C/A/N.

Fertilizers were applied $\frac{1}{2}$ at planting in furrows and $\frac{1}{2}$ at the time of earthing up in July.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 11.0 m.×3.8 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Medium. (ii) Nil. (iii) Germination and yield of cane. (iv) (a) 1959-60. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 201.3 Q/ha. (ii) 94.1 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

Control=113.1 Q/ha.

	S ₁	S ₂	S ₃	Mean
N ₁	159.4	176.8	291.7	209.3
N ₂	218.0	171.6	204.0	197.9
N ₃	168.3	240.8	269.2	226.1
Mean	181.9	196.4	255.0	211.1

Crop :- Sugarcane.**Ref :- Or. 60(22).****Site :- Sugarcane Res. Stn., Bhubaneswar.****Type :- 'M'.**Object :- To study the effect of growing maize and *dhaincha* as mixed crops on the yield of Sugarcane.**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Sugarcane. (c) N.A. (ii) Sandy loam. (iii) 4.3.1960. (iv) (a) 5 ploughings with laddering. (b) In furrows of 10 cm. depth. (c) 46.1 Q/ha. (d) 91 cm. between rows. (e) 40 setts were planted in the row of 13.4 m. length. (v) 134.4 Q/ha. of F.Y.M. + 4.6 Q ha. of A.S. + 9.2 Q ha. of G.N.C. was applied at the time of earthing up. (vi) Co. 881. (vii) Irrigated. (viii) Weeding and earthing up. (ix) 116 cm. (x) 6.3.1961.

2. TREATMENTS :

3 manurial treatments : T_0 = Sugarcane alone (control), T_1 = Sugarcane sown with maize and T_2 = Sugarcane sown with *dhaincha* for green manuring.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) 1/38.8 ha. (iii) 4. (iv) (a) 13.4 m. \times 6.4 m. (b) 13.4 m. \times 4.6 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Nil but cut ends of seeds were treated with 1% Areton and gammaxine applied at 22.4 Kg/ha. in furrows. (iii) Germination and yield of cane. (iv) (a) 1960 only. (b) and (c) Nil (v) and (vii) Nil.

5. RESULTS :

(i) 198.3 Q/ha. (ii) 125.5 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2
Av. yield	195.1	216.2	183.5

Crop :- Sugarcane.**Ref :- Or. 61(1), 62(2).****Site :- Sugarcane Res. Stn., Bhubaneswar.****Type :- 'M'.**

Object :- To find out the optimum time of application of N to Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) N.A. (ii) Sandy loam. (iii) 19.3.1961 ; 11.2.1962. (iv) (a) 6 to 7 ploughings with laddering. (b) In 10 cm. deep furrows. (c) 46.1 Q/ha. (d) 91 cm. between rows. (e) Nil. (v) 138.3 Q/ha. of F.Y.M. + 89.7 Kg/ha. of P_2O_5 as Super for 61(1) ; 49 C.L./ha. of F.Y.M. + 89.7 Kg/ha. of P_2O_5 as Super for 62(2). (vi) CO-527. (vii) Irrigated. (viii) Weeding and earthing up. (ix) 174 cm. ; 141 cm. (x) 23.2.1962, 29.3.1963.

2. TREATMENTS :

5 times of application of N : T_1 = Full dose at planting, T_2 = $\frac{1}{2}$ at planting + $\frac{1}{2}$ at 90th day from planting, T_3 = $\frac{1}{3}$ at planting + $\frac{1}{3}$ on 45th day from planting + $\frac{1}{3}$ on 90th day from planting, T_4 = $\frac{1}{4}$ at planting + $\frac{1}{4}$ on 30th day + $\frac{1}{4}$ on 60th day + $\frac{1}{4}$ on 90th day from planting and T_5 = $\frac{1}{2}$ at 45th day + $\frac{1}{2}$ on 90th day from planting.

N at 179.3 Kg/ha. applied as A.S.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. for 61(1) ; 1/26.4 ha. for 62(2). (iii) 4. (iv) (a) 10.2 m. \times 8.2 m. for 61(1) ; 10.4 m. \times 7.3 m. for 62(2). (b) 10.2 m. \times 6.4 m. for 61(1) ; 10.4 m. \times 5.5 m. for 62(2). (v) 91 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Poor for 61(1); Normal for 62(2). (ii) Nil. (iii) Yield of sugarcane. (iv)(a) 1961-1962. (b) No. (c) Results of combined analysis are given under 5. (v) N.A. (vi) Unusually high rainfall in July and August, prevailing water lodging condition in the field for 61(1). Prevailing hot condition in May and June for 62(2). (vii) The cut ends of the setts were treated with tillex water mixture for 61(1) and Gammoxine was applied at the rate of 22.4 Kg/ha.; the cut ends of the setts were treated with agallol solution (1 Kg. in 20 gallons of water 0.5%) for 62(2). Error variances are heterogeneous and Treatments \times years interaction is absent.

5. RESULTS :

61(1)

(i) 217.8 Q/ha. (ii) 59.0 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of cane in Q/ha.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅
Av. yield	107.4	242.0	265.6	226.7	247.2

C.D.=90.9 Q/ha.

62(2)

(i) 316.5 Q/ha. (ii) 7.2 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅
Av. yield	208.1	327.8	443.0	268.0	335.4

C.D.=11.1 Q/ha.

Crop :- Sugarcane.

Ref :- Or. 65(20).

Site :- Sugarcane Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :-To maximise yield by N, P and K manuring in Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) 179.3 Kg/ha. of N as C/A/N+89.7 Kg/ha. of P₂O₅ as Super+56.0 Kg/ha. of K₂O as Mur. Pot. (ii) Sandy loam. (iii) 22.12.65. (iv) (a) 5 ploughings by country plough. (b) Transplanting. (c) 50.2 Q/ha. (d) 91 cm. between rows. (e) 3 budded setts. (v) As per treatments. (vi) CO-997. (vii) Irrigated. (viii) Hand-weeding thrice. (ix) 142.6 cm. (x) 24.12.66.

2. TREATMENTS :

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

(1) 3 levels of N as C/A/N : N₁=179.3, N₂=269.0 and N₃=358.7 Kg/ha.

(2) 3 levels of P₂O₅ as Super : P₁=89.7, P₂=134.5 and P₃=179.3 Kg/ha.

(3) levels of K₂O as Mur. Pot. : K₁=56.0, K₂=84.1 and K₃=112.1 Kg/ha.

(4) 2 levels of F.Y.M. : F₀=0 and F₁=49.4 C.L./ha.

P and K applied at the time of planting. N in three splits, $\frac{1}{3}$ at planting, $\frac{1}{3}$ after 2 to 3 months of planting, $\frac{1}{3}$ after 2 to 3 months of the 2nd application.

F.Y.M. applied as basal.

3. DESIGN :

(i) 3³ \times 2 confd. (ii) (a) 9 plots/block ; 6 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 9.1 m. \times 3.5 m. (b) 8.2 m. \times 8.5 m. (v) 46 cm. on either side of plot along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Biometric observations. (iv) (a) 1965 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 802.8 Q/ha. (ii) 136.2 Q/ha. (iii) Main effect of N alone is significant. (iv) Av. yield of Sugarcane in Q/ha.

	N ₁	N ₂	N ₃	P ₁	P ₂	P ₃	K ₁	K ₂	K ₃	Mean
F ₀	745.2	734.5	815.4	731.0	787.5	776.6	747.4	750.4	797.3	765.0
F ₁	724.1	877.3	920.6	854.4	812.2	855.4	745.2	927.1	849.6	840.7
Mean	734.7	805.9	868.0	792.7	799.9	816.0	746.3	838.7	823.5	802.8
K ₁	588.3	751.0	899.6	762.9	684.6	791.4				
K ₂	817.2	823.4	875.6	790.9	865.2	860.2				
K ₃	798.5	843.2	828.8	824.3	849.8	796.4				
P ₁	741.1	822.9	814.2							
P ₂	730.6	813.3	855.8							
P ₃	732.4	781.5	934.0							

C.D. for N marginal means = 94.1 Q/ha.

Crop :- Sugarcane.

Ref :- Or. 65(13).

Site :- Sugarcane Res. Sub-Stn., Rayagada.

Type :- 'M'.

Object :- To study the effect of levels of N, P and K alone and in combination with lime on the yield and quality of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) N.A. (ii) Sandy loam. (iii) 26.10.64. (iv) (a) 6 to 8 ploughings and cross-ploughings by mould board plough. (b) Planting. (c) 50.2 Q/ha. (d) 91 cm. (e) 3 budded setts. (v) 49.4 C.L./ha. of F.Y.M. (vi) Co-997. (vii) Irrigated. (viii) 3 hand-weedings. (ix) N.A. (x) 1st. week of Feb., 66.

2. TREATMENTS :

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

(1) 2 levels of lime : L₀ - No lime and L₁ - 1120.8 Kg/ha.

(2) 3 levels of N as C/A/N : N₁ = 168.1, N₂ = 224.2 and N₃ = 280.2 Kg/ha.

(3) levels of P₂O₅ as Super : P₁ = 89.7, P₂ = 134.5 and P₃ = 179.3 Kg/ha.

(4) 3 levels of K₂O as Mur. Pot. : K₁ = 112.1, K₂ = 224.2 and K₃ = 336.2 Kg/ha.

Lime applied at planting. N in three splits, $\frac{1}{3}$ at planting, $\frac{1}{3}$ 2 to 3 months after planting and remaining $\frac{1}{3}$ to 3 months of the 2nd application. P₂O₅ and K₂O applied at planting.

3. DESIGN :

(i) 3³ × 2 confd. (ii) (a) 9 plots/block ; 6 blocks replication. (b) N.A. (iii) 1. (iv) (a) 10.1 m. × 11.9 m. (b) 10.1 m. × 10.1 m. (v) 91 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and yield of cane. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1022.4 Q/ha. (ii) 106.9 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	K ₁	K ₂	K ₃	P ₁	P ₂	P ₃	N ₁	N ₂	N ₃	Mean
L ₀	1011.1	1050.0	944.4	1014.8	1008.6	982.1	964.9	1028.9	1011.7	1001.8
L ₁	1018.9	1091.7	1018.3	1033.7	1045.4	1049.8	973.8	1079.6	1075.5	1043.0
Mean	1015.0	1070.8	981.3	1024.2	1027.0	1015.9	969.3	1054.2	1043.6	1022.4
N ₁	933.8	1016.3	957.9	931.0	1042.4	934.6				
N ₂	1054.0	1102.5	1006.3	1084.1	1027.0	1051.6				
N ₃	1057.2	1093.7	979.8	1057.7	1011.5	1061.5				
P ₁	1016.5	1092.8	963.4							
P ₂	1024.4	1077.8	978.8							
P ₃	1004.1	1041.9	1001.8							

Crop :- Sugarcane.

Ref :- Or. 65(16).

Site :- Sugarcane Res. Sub-stn., Rayagada.

Type :- 'M'.

Object :- To study the effect of forms of organic manures with and without inorganic fertilizers on the yield and quality of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Paddy-Sugarcane. (b) Paddy. (c) 33.6 Kg/ha. of N as C/A/N. (ii) (a) Sandy loam. (iii) 22.10.64. (iv) (a) 6 to 8 ploughings and cross-ploughings by mould board plough. (b) Planting. (c) 50.2Q/ha. (d) 91 cm. (e) 3 budded setts. (v) 49.4 C.L./ha. of F.Y.M.+89.7 Kg/ha. of P₂O₅ as Super+112.1 Kg/ha. of K₂O as Mur. Pot. (vi) Co-997. (vii) Irrigated. (viii) 3 hand-weedings. (ix) N.A. (x) 1st week of Feb., 66.

2. TREATMENTS :

6 manurial treatments : M₀=Control, M₁=Ordinary compost at 134.5 Kg/ha., M₂=134.5 Kg/ha. of N as G.N.C., M₃=134.5 Kg/ha. of N as A/S, M₄=67.2 Kg/ha. of N as ordinary compost+67.2 Kg/ha. of N as A/S and M₅=67.2 Kg/ha. of N as G.N.C.+67.2 Kg/ha. of N as A/S.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 11.9 m.×10.1 m. (b) 11.9 m.×8.2 m. (v) 91 cm. on either side along breadth. (vi) Yes.

4. GENERAL :

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

5. RESULTS :

(i) 866.0 Q/ha. (ii) 111.0 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in Q/ha.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Av. yield	839.0	766.3	845.7	907.1	840.8	997.2

Crop :- Sugarcane.**Ref :- Or. 62(75).****Site :- Sugarcane Res. Sub-Stn., Rayagada.****Type :- 'M'.**

Object :- To study the effect of Molasses solution on the yield of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Paddy-Sugarcane. (b) Paddy. (c) 32.6 Kg/ha. of N as C/A/N. (ii) Sandy loam. (iii) 6.11.61. (iv) (a) 6 to 8 ploughings and cross ploughings by mouldboard plough. (b) Planting. (c) 50.2 Q/ha. (d) 91 cm (e) 3 budded setts. (v) 49 C.L./ha. of F.Y.M. + 89.7 Kg/ha. of P_2O_5 + 112.1 Kg/ha. of K_2O at planting + 179.3 Kg/ha. of N as C/A/N. N applied in 3 splits, $\frac{1}{3}$ at planting, $\frac{1}{3}$, 2 to 3 months after planting and remaining $\frac{1}{3}$, 2 to 3 months after the 2nd. application (vi) Co. 419. (vii) Irrigated (viii) 3 hand weedings. (ix) N.A. (x) 29.3.63.

2. TREATMENTS :

4 manurial treatments : M_0 = Control, M_1 = Sets treated with 35% molasses solution for 15 minutes, M_2 = Sets planted in plots receiving molasses solution in irrigation water and M_3 = Foliar spraying of molasses solution at the ages of 4, 6 and 8 months.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 11.0 m. \times 11.9 m. (b) 10.1 m. \times 10.1 m. (v) 46 cm. \times 91 cm. (vi) Yes.

4. GENERAL :

(i) Average. (ii) N.A. (iii) Germination% and yield of cane. (iv) (a) 1962-contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 842.5 Q/ha. (ii) 53.6 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	M_0	M_1	M_2	M_3
Av. yield	831.5	693.9	870.2	974.2

C.D. = 85.7 Q/ha.

Crop :- Sugarcane.**Ref :- Or. 64(47), 65(16).****Site :- Sugarcane Res. Sub-Stn., Rayagada.****Type :- 'M'.**

Object :- To study the effect of molasses solution on the yield of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Paddy-Sugarcane. (b) Paddy. (c) 33.6 Kg/ha. of N as C/A/N. (ii) Sandy loam (iii) 2nd week of Oct., 1963 ; 20.10.64. (iv) (a) 6 to 8 ploughings. and cross ploughings (b) Planting. (c) 50.2 Q/ha. (3 budded setts). (d) 91 cm. between rows. (e) —. (v) 49 C.L./ha. of F.Y.M. + 12.1 Kg/ha. of K_2O as Mur. Pot. + 179.3 Kg/ha. of N as C/A/N. (vi) Co-617. (vii) Irrigated. (viii) 3 hand weedings. (ix) N.A. (x) 23.2.65 ; 3rd week of March, 1966.

2. TREATMENTS :

5 manurial treatments : M_0 = Control, M_1 = Cane setts planted after soaking overnight in 35% molasses solution neutralised with lime. M_2 = Cane setts planted after soaking overnight in water and crop irrigated with water flowing over pit in the channel filled with molasses. The molasses was stirred gently while water was passing over it, M_3 = Cane setts planted soaking overnight in water and the crop, foliar sprayed with 20% molasses solution once in a month starting from July to December and M_4 = Cane setts planted after soaking overnight in 35% of molasses neutralised with lime and irrigated with water flowing over a pit filled with molasses. Molasses being stirred and crop sprayed with 20% molasses solution in water, once in a month July to December.

3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 11.0 m. × 12.0 m. for 64 (47) ; 15.5 m. × 11.6 m. for 65(15).
 (b) 10.1 m. × 10.1 m. for 64(47) ; 13.7 m. × 10.7 m. for 65 (15). (v) 46 cm. × 91 cm. (vi) Yes.

4. GENERAL :

- (i) Normal. (ii) N.A. (iii) Yield of Cane. (iv) (a) 1963-65 (Expt. for 1963 destroyed by fire). (b) No.
 (c) Nil. (v) N.A. (vi) Nil. (vii) Error variances are homogeneous and Treatments × years interaction is absent

5. RESULTS :

- (i) 790.5 Q/ha. (ii) 71.6 Q/ha. (28 d.f. made up of pooled error and Treatments × years interaction). (iii)
 Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	M ₀	M ₁	M ₂	M ₃	M ₄
Av. yield	672.0	687.8	808.6	838.7	945.2

C.D. = 72.9 Kg/ha.

**Crop :- Sugarcane. Ref :- Or. 63(S.F.T.)
 for Balasore and 65(S.F.T.) for Puri.**

Site :- (District) : Balasore and Puri. Type :- 'M'.

Object :- To study the response curves of important cereal, cash and oilseed crops to nitrogen applied singly and in combination with other nutrients (Type : A₁).

1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) Red loamy, Red and yellow. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatment :

O = Control (no manure).

N₁ = 15 Kg/ha. of N

N₂ = 30 Kg/ha. of N

P₁ = 30 Kg/ha. of P₂O₅

N₁P₁ = 15 Kg/ha. of N + 30 Kg/ha. of P₂O₅

N₂P₁ = 30 Kg/ha. of N + 30 Kg/ha. of P₂O₅

N₂P₂ = 30 Kg/ha. of N + 60 Kg/ha. of P₂O₅

N₂P₂K₁ = 30 Kg/ha. of N + 60 Kg/ha. of P₂O₅ + 30 Kg/ha. of K₂O.

N applied as A/S ; P₂O₅ as Super and K₂O as Mur. of 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 for Balasore and 1965-only for Puri. (b) N.A. (c) Nil. (v) to (viii) N.A.

5. RESULTS :

Balasore

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 cane in Q/ha.	21.3	21.9	27.9	10.1	17.8	30.8	33.2	10.2

Control yield=435.9 Q/ha. ; No. of trials=3

65(S..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 Q/ha.	158.0	148.7	31.3	150.7	199.3	160.0	218.3	34.1

Control yield=954.7 Q/ha. ; No. of trials= 3.

Crop :- Sugarcane. Ref :- 63(S.F.T.) for Balasore and 65(S.F.T.) for Puri.
Site :- (District) ; Balasore and Puri. Type :- 'M'.

Object :—To study the response curves of important cereal, cash and oilseed crops to phosphorus applied singly and in combination with others nutrients (Type A₂).

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red loamy ; Red and yellow. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

O=Control (no manure)

N₁=15 Kg/ha. of NP₁=30 Kg/ha. of P₂O₅P₂=60 Kg/ha. of P₂O₅N₁P₁=15 Kg/ha. of N+30 Kg/ha. of P₂O₅N₁P₂=15 Kg/ha. of N+60 Kg/ha. of P₂O₅N₂P₁=30 Kg/ha. of N+60 Kg/ha. of P₂O₅N₂P₂K₂=30 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. of Pot.

3. DESIGN :

Same as in type A₁ (Irrigated) on page 223.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1963-only for Balasore and 1965-only for Puri. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Balasore

63(S..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 cane in Kg/ha.	1304	237	59	—237	474	1126	948	1259.9

Control yield=42224 Kg/ha. ; No. of trials=3

Puri

65(S..T.)

Treatments	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 cane in Kg/ha.	12600	—3400	5200	13300	7100	17100	18100	5091.0

Control yield=102400 Kg/ha. ; No. of trials=2

Crop :- Sugarcane. Ref :- Or. 63(S.F.T.) for Balasore ; 65(S.F.T.) for Puri.

Site :- (District) : Balasore and Puri.

Type :- 'M'.

Object : To study the response curves of important cereal, cash and oilseed crops to potash applied singly and in combination with other nutrients (Type : A₃).

1. BASAL CONDITIONS :

(i) N.A. (ii) Red loamy ; Red and yellow. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

O=Control (no manure)

N₁=15 Kg/ha. of N

K₁=30 Kg/ha. of K₂O

K₂=60 Kg/ha. of K₂O

N₁K₁=15 Kg/ha. of N+30 Kg/ha. of K₂O

N₁K₂=15 Kg/ha. of N+60 Kg/ha. of K₂O

N₂K₂=30 Kg/ha. of N+60 Kg/ha. of K₂O

N₁P₁K₁=15 Kg/ha. of N+30 Kg/ha. of P₂O₅+30 Kg/ha. of K₂O.

N applied as A/S ; P₂O₅ as Super and K₂O as Mur. of Pot.

3. DESIGN :

Same as in type A₁ (Irrigated) on page 202.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1963 only for Balasore and 1965 only for Puri. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Balasore

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.	761	573	217	662	395	751	929	818.3

Control yield=45772 Kg/ha. ; No of trials=2.

Puri

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.	3466	66	3266	5999	600	2333	8733	6002.6

Control yield=62866 Kg/ha. ; No. of trials=3.

Crop :- Sugarcane.

Ref :- Or. 60(S.F.T.).

**Site :- (District) : Bolangir, Dhenkanal, Ganjam,
Mayurbhanj and Puri.**

Type :- 'M'.

Object :- To study the response of cane to different levels of N, P₂O₅ and K₂O applied individually and in combination. (Type A).

1. BASAL CONDITIONS :

(i) N.A. (ii) Red and black for Dhenkanal ; coastal alluvium for Puri and Red soil for others. (iii) to (x) N.A.

2 TREATMENTS :

- O=Control (no manure)
 n=67.3 Kg/ha. of N as A/S
 p=44.8 Kg/ha. of P_2O_5 as Super
 k=44.8 Kg/ha. of K_2O as Mur. Pot.
 np=67.3 Kg/ha. of N as A/S+44.8 Kg/ha. of P_2O_5 as Super
 nk=67.3 Kg/ha. of N as A/S+44.8 Kg/ha. of K_2O as Mur. Pot.
 pk=44.8 Kg/ha. of P_2O_5 as Super+44.8 Kg/ha. of K_2O as Mur. Pot.
 npk=67.3 Kg/ha. of N as A/S+44.8 Kg/ha. of P_2O_5 as Super+44.8 Kg/ha. of K_2O as Mur. Pot

3. DESIGN :

Same as in type A₁(Irrigated) on page 202.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1960 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

		Av. response in Q/ha.									
District	No. of trials	Control yield	N	P	K	S.E.	NP	NK	PK	NPK	S.E.
Bolangir	2	368.9	124.3	62.4	32.5	23.6	5.7	-14.0	-23.3	7.7	17.7
Dhenkanal	4	670.1	96.8	69.4	73.3	32.6	7.2	6.5	-6.3	8.1	10.3
Ganjam	2	1773.6	63.2	113.9	104.4	6.5	-28.6	-19.4	-38.7	0.5	0.4
Mayurbhanj	3	573.2	73.0	112.7	97.0	15.1	-1.4	35.0	4.6	9.0	15.4
Puri	7	631.6	187.9	116.6	35.6	15.3	14.5	20.7	45.9	92.0	17.1

Crop :- Sugarcane.

Site :- As per results.

Ref :- Or. 60(SFT).

Type :- 'M'.

Object : To investigate the relative efficiency of different nitrogenous fertilizers at different doses (Type : B).

1. BASAL CONDITIONS :

(i) N.A. (ii) Red and black for Dhenkanal ; coastal alluvial for Puri and Red soil for others. (iii) to (x) N.A.

2. TREATMENTS :

- O=Control (no manure)
 $n_1=67.3$ Kg/ha. of N as A/S
 $n_2=134.6$ Kg/ha. of N as A/S
 $n_1'=67.3$ Kg/ha. of N as Urea.
 $n_2'=134.6$ Kg/ha. of N as Urea.
- $n_1''=67.3$ Kg/ha. of N as A/S/N.
 $n_2''=134.6$ Kg/ha. of N as A/S/N.
 $n_1'''=67.3$ Kg/ha. of N as C/A/N.
 $n_2'''=134.6$ Kg/ha. of N as C/A/N.

3 DESIGN :

(i) and (ii) The district has been divided into four agriculturally homogenous 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 crop 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) 1/40 ac. (b) 1/80 ac. (iv) Yes.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1960 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Av. yield of Sugarcane in Q/ha.

District	No. of Control trials	n_1	n_2	n_1'	n_2'	n_1''	n_2''	n_1'''	n_2'''	G.M.	S.E./mean	
Bolangir	2	349.6	—	—	534.1	611.5	487.0	523.0	486.1	528.5	502.8	55.0
Dhenkanal	2	534.9	—	—	564.4	584.7	565.3	572.7	532.1	573.6	561.1	32.3
Mayurbhanj	4	482.4	—	—	536.8	683.0	612.4	766.9	601.8	778.3	637.3	51.9
Puri	4	625.8	—	—	779.4	992.4	948.1	1052.4	896.0	1065.7	908.5	46.5
Puri	4	875.7	1059.7	1179.6	1038.0	1113.7	—	—	1060.6	1119.2	1063.8	40.0

Crop :- Sugarcane.

Ref :- Or. 65(9).

Site :- Sugarcane Res. Stn., Bhubaneswar.

Type :- 'MV'.

Object :- To study the optimum N requirement of different varieties of Sugarcane with the application of manurial doses.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) 179.3 Kg/ha. of N as A/S+89.7 Kg/ha. of P_2O_5 as Super+56.0 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 4.12.64 to 10.12.64. (iv) (a) 5 ploughings with country plough. (b) Planting. (c) 49.4 Q/ha. (d) 91 cm. between lines. (e) N.A. (v) 24.7 C.L./ha. of F.Y.M. (vi) As per treatments. (vii) Irrigated. (viii) 3 hand weedings. (ix) 132.9 cm. (x) 18.2.66.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 varieties : V_1 =Co. 997 (early), V_2 =Co. 1053 and V_3 =Co. 419 (late).(2) 3 levels of manures : M_1 =89.7 Kg/ha. of N as A/S+89.7 Kg/ha. of P_2O_5 as Super+56.0 Kg/ha. of K_2O as Mur. Pot., M_2 =179.0 Kg/ha. of N+89.7 Kg/ha. of P_2O_5 +56.0 Kg/ha. of K_2O and M_3 =269.0 Kg/ha. of N+89.7 Kg/ha. of P_2O_5 -56.0 Kg/ha. of K_2O .N as A/S, P_2O_5 as Super and K_2O as Mur. Pot. applied.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a) 7.6 m.×11.0 m. (b) 7.6 m.×9.1 m. (v) 91 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Average. (ii) Nil. (iii) Germination, height, tillers count and yield of cane. (iv) (a) 1965—contd. (b) No (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 559.6 Q/ha. (ii) 111.7 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	V_1	V_2	V_3	Mean
N_1	500.6	448.1	510.7	486.5
N_2	613.4	518.7	665.0	599.0
N_3	629.2	556.1	594.8	593.4
Mean	581.1	507.6	590.2	559.6

Crop :- Sugarcane.**Ref :- Or. 60(19).****Site :- Sugarcane Res. Stn., Bhubaneswar.****Type :- 'C'.**

Object :—To study the comparative suitability of top, bottom and middle buds for seed.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) N.A. (ii) Sandy loam. (iii) 8.3.1960. (iv) (a) 5 ploughings with laddering. (b) In furrows of 10 cm. depth. (c) 46.1 Q/ha. (d) 91 cm. between rows. (e) 22 setts planted in the row of 6.7 m. length. (v) 49 C.L./ha. of F.Y.M.+89.7 Kg/ha. of N as A/S+89.7 Kg/ha. of P_2O_5 as Super. (vi) Co. 881. (vii) Irrigated. (viii) Weeding and earthing up. (ix) 116 cm. (x) 14.3.1961.

2. TREATMENTS :

4 sources of seed material : S_0 = Control (All types of buds), S_1 = Top 6 buds, S_2 = Middle 6 buds and S_3 = Bottom 6 buds.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/163 ha (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Germination, tiller, height, yield of stripped canes and no. of millable canes. (iv) (a) 1960 only. (b) and (c) Nil. (v) and (vi) Nil. (vii) At the time of planting the setts were treated with Areton and Gammaxine 5% dust placed in furrows.

5. RESULTS :

(i) 415.4 Q/ha. (ii) 128.4 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of cane in Q/ha.

Treatment	S_0	S_1	S_2	S_3
Av. yield	368.1	252.4	545.1	496.2

C.D.=205.4 Kg/ha.

Crop :- Sugarcane.**Ref :- Or. 62(1), 63(1).****Site :- Sugarcane Res. Stn., Bhubaneswar.****Type :- 'C'.**

Object :—To study the effect of different important cultural practices on the yield of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil for 62(1) ; Paddy-Sugarcane for 63(1) ; (b) N.A. for 62(1), Paddy for 63(1). (c) N.A. for 62(1), 44.8 Kg/ha. N+33.6 Kg/ha. of P_2O_5 for 63(1). (ii) Sandy loam. (iii) 22.2.1962, 16.4.1963. (iv) (a) 5 to 7 ploughings with laddering. (b) In furrows of depth 8 to 10 cm. (c) 46.1 Q/ha. (d) 91 cm. between rows. (e) Nil. (v) N was applied in two doses of 89.7 Kg/ha. each at 45th and 90th days of planting + 49 C.L./ha. of F.Y.M.+89.7 Kg/ha. of P_2O_5 as Super for 62(1), 49 C.L./ha. of urban compost+89.7 Kg/ha. of P_2O_5 as Super for 63(1). (vi) Co. 527. (vii) Irrigated. (viii) Weeding and earthing up. (ix) 141 cm., 168 cm. (x) 9 to 12.4.1963, 28.11.1963.

2. TREATMENTS :

All combinations of (1), (2) and (3) —One extra treatment

(1) 2 methods of planting : M_1 = Dry planting and M_2 = Wet planting.

(2) 2 depths of planting : D_1 = 10 and D_2 = 20 cm.

(3) 2 cultural practices : E_0 = No earthing and E_1 = Earthing up.

Extra treatment : T = Dry planting at 8 cm. depth with earthing and 46 cm. spacing between rows.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) 1/25.9 ha. for 62(1), N.A. for 63(1). (iii) 3. (iv) (a) 6.7 m. × 6.4 m for 62(1), 15.5 m. × 11.6 m. for 63(1). (b) 6.7 m. × 4.6 m. for 62(1), 13.7 m. × 11.6 m. for 63(1). (v) 91 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Normal for 62(1) ; Poor for 63(1). (ii) Nil but the cut ends of the setts were dipped in agalol solution of 0.5% and gammaxine at 22.4 Kg/ha. applied in furrows for 62(1), Gammaxine at 75.5 Kg/ha. was applied for 63(1) as a control measure. (iii) Yield of sugarcane. (iv) (a) 1962-1963. (b) No. (c) Results of combined analysis are given under 5. (v) N.A. (vi) Water logging conditions prevailed due to heavy rains from June to September for 63(1). (vii) Variances are heterogeneous and (DM×years) and (DE×years) interactions are present and (EM×years) interaction is absent.

5. RESULTS :

(i) 247.7 Q/ha. (ii) 40.5 Q/ha. (5 d.f. made up of various components of Treatments×years interaction). (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

T=202.2 Q/ha.

	D ₁	D ₂	Mean
M ₁	298.6	236.0	267.3
M ₂	258.6	220.2	239.4
Mean	278.6	228.1	253.4
E ₀	286.9	213.9	250.4
E ₁	270.4	242.3	256.3

62(1)

	E ₀	E ₁	Mean
M ₁	393.3	388.9	391.1
M ₂	384.1	331.0	357.5
Mean	388.7	360.0	374.3

S.E. of body of the table=30.9 Q/ha.

63(1)

	E ₀	E ₁	Mean
M ₁	112.3	174.7	143.5
M ₂	111.8	130.7	121.2
Mean	112.1	152.7	132.4

S.E. of body of the table=13.6 Q/ha.

Crop :- Sugarcane.

Ref :- Or. 65(11).

Site :- Sugarcane Res. Stn., Bhubaneswar.

Type :- 'C'.

Object :- To study the economy of yield on different methods of inter cropping practices with Potato, Maize and Dhaincha as G.M.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) 179.3 Kg/ha. of N as A/S+89.7 Kg/ha. of P₂O₅ as Super+56.0 Kg/ha. of K₂O as Mur. Pot. (ii) Sandy loam. (iii) 24.11.64 to 27.11.64. (iv) (a) 5 ploughings by country plough. (b) Planting. (c) 49 Q/ha. (d) 91 cm. (e) 3 budded sets. (v) 24.7 C.L./ha. of F.Y.M. (vi) Co-997. (vii) Irrigated. (viii) 3 hand weedings. (ix) 122.7 cm. (x) 20.11.65.

2. TREATMENTS :

S_0 =Sugarcane alone, S_1 =Sugarcane with Potato, S_2 =Sugarcane with *Dhaincha* and S_3 =Sugarcane with Maize.

4. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 9'1 m. \times 7'6 m. (b) 7'3 m. \times 7'6 m. (v) 91 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Germination, tiller, count, height and yield of cane. (v) (a) 1965-contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 635.5 Q/ha. (ii) 94.0 Q/ha. (iii) Treatments differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatments	S_0	S_1	S_2	S_3
Av. yield	687.4	655.1	732.5	467.1

C.D.=129.4 Q/ha.

Crop :- Sugarcane (*Ratoon*).

Ref :- Or. 60(9).

Site :- Sugarcane Res. Sub-Stn., Rayagada.

Type :- 'C'.

Object :--To test the effect of different seed rates and spraying on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Suagrcane. (c) As per treatments. (ii) Loam. (iii) 30.10 1958. (iv) (a) Ploughings, levelling and spraying of furrows. (b) Planting in furrows. (c) and (d) As per treatments. (e) Close planting in lines. (v) 134.5 Kg/ha. of N as G.N.C. + C/A/N in 2 : 1 ratio by pocket method. (vi) Co-617. (vii) Unirrigated. (viii) and (ix) N.A. (x) 11.1.61.

2. TREATMENTS :

Main-plot treatments :

3 sprayings between rows : $S_1=61$, $S_2=76$ and $S_3=91$ cm.

Sub-plot treatments :

3 seed rates : $R_1=16000$, $R_2=20000$ and $R_3=24000$ three budded sets at 14.7, 18.5 and 22 l Q/ha. respectively.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9'1 m. \times 9'1 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of cane. (iv) (a) 1959-1960. (b) Yes (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 545.5 Q/ha. (ii) (a) 45.4 Q/ha. (b) 59.0 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	R_1	R_2	R_3	Mean
S_1	618.6	501.6	549.8	556.7
S_2	542.6	538.3	545.8	542.2
S_3	502.1	558.1	552.8	537.7
Mean	554.4	532.6	549.5	545.5

Crop :- Sugarcane.**Ref :- Or. 62(74).****Site :- Sugarcane Res. Sub-stn., Raygada.****Type :- 'C'.**

Object :- To find out suitable time of planting of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Paddy-Sugarcane. (b) Paddy. (c) 33.6 Kg/ha. of N as C/A/N. (ii) Sandy loam. (iii) As per treatments. (iv) (a) 6 to 8 ploughings and cross-ploughings by mould board plough. (b) Planting. (c) 50.2 Q/ha. (d) 91.4 cm. (e) 3 budded setts. (v) 89.7 Kg/ha. of P_2O_5 as Super+112.1 Kg/ha. of K_2O at planting+179.3 Kg/ha. of N as C/A/N in three splits, $\frac{1}{3}$ at planting, $\frac{1}{3}$ at 2 to 3 months after and remaining 2 to 3 months after the 2nd application. (vi) Co-617. (vii) Irrigated. (viii) 3 hand-weedings. (ix) N.A. (x) 27.3.63.

2. TREATMENTS :

6 dates of planting : $D_1=30.10.61$, $D_2=28.11.61$, $D_3=28.12.61$, $D_4=31.1.62$, $D_5=27.2.62$ and $D_6=27.3.1962$.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 11.0 m. \times 11.9 m. (b) 10.1 m. \times 10.1 m. (v) 46 cm. \times 91 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Germination % and yield of cane. (iv) (a) 1962—1964. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 790.0 Q/ha. (ii) 164.8 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	D_1	D_2	D_3	D_4	D_5	D_6
Av. yield	998.8	913.8	825.8	883.6	622.9	495.0

C.D.=248.3 Q/ha.

Crop :- Sugarcane.**Ref :- Or. 64(46).****Site :- Sugarcane Res. Sub-stn., Raygada.****Type :- 'C'.**

Object :- To find out suitable time of planting of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Paddy-Sugarcane. (b) Paddy. (c) 33.6 Kg/ha. of N as C/A/N. (ii) Sandy loam. (iii) As per treatments. (iv) (a) 6 to 8 ploughings and cross-ploughings by mould board plough. (b) Planting. (c) 50.2 Q/ha. (d) 91 cm. (e) 3 budded setts. (v) 49.4 C.L./ha. of F.Y.M.+89.7 Kg/ha. of P_2O_5 as Super+112.1 Kg/ha. of K_2O as Mur. Pot. at planting 179.3 Kg/ha. of N as C/A/N in three splits. $\frac{1}{3}$ at planting, $\frac{1}{3}$ 2 to 3 months after and $\frac{1}{3}$, 2 to 3 months after the 2nd application. (vi) Co-617. (vii) Irrigated. (viii) 3 hand-weedings. (ix) N.A. (x) 26.2.65.

2. TREATMENTS :

4 dates of planting : $D_1=19.10.63$, $D_2=31.12.63$, $D_3=8.2.63$ and $D_4=15.4.64$.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 11.0 m. \times 11.9 m. (b) 10.1 m. \times 10.1 m. (v) 46 cm. \times 91 cm. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) N.A. (iii) Germination % and yield of cane. (iv) (a) 1962—1964 (63 failed). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 514.6 Q/ha. (ii) 97.5 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	D ₁	D ₂	D ₃	D ₄
Av. yield	733.9	591.3	474.3	258.8

C.D.=134.4 Q ha.

Crop :- Sugarcane.

Ref Or. 62(4).

Site :- Sugarcane Res. Stn., Bhubaneswar.

Type :- 'CV'.

Object : -To find out an optimum spacing in respect of different varieties of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) Sandy loam. (iii) 13 and 14.2.1962. (iv) (a) 7 ploughings with laddering. (b) In furrows of 10 cm. depth. (c) 46.1 Q/ha. (d) As per treatments. (e) 25 setts planted in a row of 10.1 m. length. (v) 49 C.L. ha. of F.Y.M. and 89.7 Kg/ha. of P₂O₅ as Super-T 179.3 Q/ha. of N $\frac{1}{2}$ at planting, $\frac{1}{2}$ at 45th day and $\frac{1}{2}$ at 90th day. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and earthing up. (ix) 141 cm. (x) 30.3.1963.

2. TREATMENTS :

Main-plot treatments :

4 spacings between rows : S₁=46, S₂=76, S₃=91 and S₄=122 cm.

Sub-plot treatments :

3 varieties of s'cane : V₁=Co-527(early), V₂=Co-897(medium) and V₃=Co-617(late).

3. DESIGN:

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) 1,37.1 ha. (iii) 3. (iv) (a) N.A. (b) 10.1 m. x 6.7 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Nil. (iii) Germination and yield of cane. (iv) (a) 1962 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 390.8 Q/ha. (ii) (a) 81.4 Q/ha. (b) 219.6 Q/ha. (iii) Main effect of S alone is highly significant. (iv) Av. yield of cane in Q/ha.

	S ₁	S ₂	S ₃	S ₄	Mean
V ₁	294.6	355.1	465.9	270.5	346.5
V ₂	356.9	469.6	820.2	227.2	468.6
V ₃	399.8	259.0	534.4	236.1	357.3
Mean	350.5	361.2	606.8	244.6	390.8

C.D. for S marginal means=93.9 Q/ha.

Crop :- Sugarcane.

Ref :- Or. 64(44).

Site :- Sugarcane Res. Stn., Bhubaneswar.

Type :- 'CV'.

Object :—To study the effect of spacing on different varieties of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow (c) Nil. (ii) (a) Sandy loam. (iii) 28.3.64. (iv) (a) 5 ploughings by country plough. (b) Planting. (c) 49.4 Q/ha. (d) As per treatments. (e) 3 budded setts. (v) 25 C.L./ha. of F.Y.M.+89.7 Kg/ha. of P_2O_5 at planting+61.6 Kg/ha. of N as A/S top dressed 45 days and 90 days after transplanting. (vi) As per treatments. (vii) Irrigated. (viii) 3 hand weedings. (ix) 164.2 cm. (x) 30.6.65.

2. TREATMENTS :

Main-plot treatments :

4 spacings : $S_1=46$, $S_2=76$, $S_3=91$ and $S_4=122$ cm.

Sub-plot treatments :

3 varieties : $V_1=Co-527$ (early), $V_2=Co-897$ (medium) and $V_3=Co-872$ (late).

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 10.1 m. × 6.7 m. (b) $S_1=6.7$ m. × 9.1 m., $S_2=6.7$ m. × 8.5 m., $S_3=6.7$ m. × 8.2 m. and $S_4=6.7$ m. × 7.3 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Germination, tiller count, height and yield of sugarcane. (iv) (a) 1962 to 1964 (modified). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 121.6 Q/ha. (ii) (a) 57.2 Q/ha. (b) 60.9 Q/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of cane in Q/ha.

	S_1	S_2	S_3	S_4	Mean
V_1	183.7	186.4	114.8	182.8	166.9
V_2	111.4	64.6	51.9	55.0	70.7
V_3	102.7	139.2	163.1	103.3	127.1
Mean	132.6	130.1	109.9	113.7	121.6

C.D. for V marginal means=52.8 Q/ha.

Crop :- Sugarcane.

Site :- Sugarcane Res. Stn., Bhubaneswar.

Ref :- Or. 65(10).

Type :- 'P'.

Object :—To study the irrigation interval with different quantities of water on the growth yield and juice quantity of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) 179.3 Kg/ha. of N+89.7 Kg/ha. of P_2O_5 as Super+56.0 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 21.12.1964. (iv) (a) 5 ploughings by country plough. (b) Planting. (c) 49.4 Q/ha. (d) 91 cm. (e) 3 budded setts. (v) 49.4 C.L./ha. of compost+89.7 Kg/ha. of P_2O_5 as Super+201.7 Kg/ha. of N as A/S. (vi) Co. 997. (vii) Irrigated. (viii) Hand weeding thrice. (ix) 122.7 cm. (x) 20.11.1965.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 intensities of irrigations : $I_1=2$, $I_2=3$ and $I_3=4$ acre inches.

(2) 3 intervals of irrigations : $Q_1=1$, $Q_2=2$ and $Q_3=3$ weeks interval.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a) 7.3 m. × 8.5 m. (b) 7.3 m. × 7.3 m. (v) 61 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil, but sugarcane setts were treated with 0.5% agallol. (iii) Biometric observations. (iv) (a) 1965—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 633.3 Q/ha. (ii) 200.2 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	I ₁	I ₂	I ₃	Mean
Q ₁	682.2	554.9	593.0	610.0
Q ₂	656.5	576.6	575.6	602.9
Q ₃	611.6	813.0	636.5	687.0
Mean	650.1	648.2	601.7	633.3

Crop :- Sugarcane.

Ref :- Or. 61(64), 62(76).

Site :- Sugarcane Res. Sub-Stn., Rayagada.

Type :- 'IM'.

Object :- To study the effect of different intervals of irrigation with different levels of N on the yield of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Paddy-Sugarcane. (b) Paddy. (c) 33.6 Kg/ha. of N as C/A/N. (ii) Sandy loam. (iii) 19.4.1961 ; 5.11.1961. (iv) (a) 6 to 8 ploughings. (b) Planting. (c) 50.2 Q/ha. (d) 91 cm. between rows. (e) —. (v) 49 C.L./ha. of F.Y.M. + 89.7 Kg/ha. of P₂O₅ as Super + 112.1 Kg/ha. of K₂O as Mur. Pot. (vi) Co—617. (vii) As per treatments. (viii) 3 hand weedings. (ix) N.A. (x) 14.4.1962 ; 31.3.1963.

2. TREATMENTS :

Main-plot treatments :

3 intervals of irrigation : I₁=1, I₂=2 and I₃=3 weeks.

Sub-plot treatments :

3 levels of N as C/A/N : N₁=134.5, N₂=179.3 and N₃=224.2 Kg/ha.

C/A/N was applied in 3 splits : $\frac{1}{3}$ at planting, $\frac{1}{3}$ after 2 to 3 months of planting and remaining $\frac{1}{3}$ after 2 to 3 months of the second application.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. for 61(64) ; 11.0 m. x 11.9 m. for 62(76). (b) 22.0 m. x 2.7 m. for 61(64) ; 10.1 x 10.1 m. for 62(76). (v) N.A. for 61(64) ; 45 cm. x 91 cm. for 62(76). (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of Sugarcane. (iv) (a) 1961—1963 (The expt. for 1963 was completely destroyed by fire). (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Error variances for sub-plot treatments are heterogenous therefore individual years results are presented below.

5. RESULTS :

61(64)

(i) 2142.4 Q/ha. (ii) (a) 476.1 Q/ha. (b) 244.0 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	N ₁	N ₂	N ₃	Mean
I ₁	2095.6	2134.2	2261.7	2163.8
I ₂	2037.4	2147.5	2432.8	2205.9
I ₃	2098.1	2045.3	2029.1	2057.5
Mean	2077.0	2109.0	2241.2	2142.4

62(76)

(i) 1137.3 Q/ha. (ii) (a) 225.7 Q/ha. (b) 92.5 Q/ha. (iii) Main effect of N is highly significant and interaction I×N is significant. (iv) Av. yield of cane in Q/ha.

	N ₁	N ₂	N ₃	Mean
I ₁	1105.0	1266.1	1315.6	1228.9
I ₂	1085.2	960.0	1141.1	1062.1
I ₃	996.7	1212.5	1153.9	1121.0
Mean	1062.3	1146.2	1203.5	1137.3

C.D. for N marginal means = 79.4 Q/ha.

C.D. for N means at the same level of I = 137.4 Q/ha.

C.D. for I means at the same level of N = 251.2 Q/ha.

Crop :- Sugarcane.

Ref :- Or. 60(20).

Site :- Sugarcane Res. Stn., Bhubaneswar.

Type :- 'D'.

Object :- To determine the optimum dose of 2, 4-D for controlling weeds in Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Paddy-Sugarcane. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 4.4.1960. (iv) (a) 10 ploughings. (b) In furrows of 10 cm. depth. (c) 46.1 Q/ha. (d) 91 cm. between rows. (e) 20 setts planted in the row of 8.1 m. length. (v) 49 C.L./ha. of F.Y.M. (vi) Co-881. (vii) Irrigated. (viii) One hoeing before germination was completed. (ix) 116 cm. (x) 4.4.1961.

2. TREATMENTS :

6 weedicidal treatments: T₀=Control without hoeing and weeding but earthing up in proper time, T₁=Normal cultivation with proper hoeing, weeding and earthing, T₂=Spraying of 2, 4-D Sod. salt at 2.2 Kg/ha. after 5 days of planting, T₃=Spraying of 2, 4-D Sod. salt at 4.5 Kg/ha. after 5 days of planting, T₄=Spraying of 2, 4-D Sod. salt at 2.2 Kg/ha. 5 days after planting and 1.1 Kg/ha. 25 days after planting and T₅=Spraying of 2, 4-D Sod. salt at 2.2 Kg/ha., 5 days after planting and 2.2 Kg/ha., 25 days after planting.

In case of all the 2, 4-D treatments hoeing and weeding were not done but earthing up was done in proper time.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 1/10.9 ha. (iii) 4. (iv) (a) 7.3 m. × 8.1 m., (b) 5.5 m. × 7.2 m. (v) 91 cm. × 46 cm. (vi) Yes.

4. GENERAL :

(i) Poor, due to late planting. (ii) Nil. (iii) Yield, germination percentage, weed population and tiller per clump. (iv) (a) 1960-62. (b) and (c) Nil. (v) No. (vi) Nil. (vii) Setts were dipped in aretol before planting and Gammaxine applied at 22.4 Kg/ha. in furrows. Two acre of 30 cm. × 30 cm. had been selected at random in each plot and weed counts were averaged out.

5. RESULTS :

1. Yield of cane :

(i) 126.6 Q/ha. (ii) 31.6 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of cane in Q/ha.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Av. yield	75.3	125.5	150.1	140.8	109.7	158.4

C.D.=47.5 Q/ha.

II Weed population count.

(a) *Monocot* count after 90 days of planting (on 4.7.1960).

(i) 48.2. (ii) 6.9. (iii) Treatment differences are highly significant. (iv) Mean count of *monocot*.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Av. yield	111.7	28.0	37.2	31.5	64.5	16.0

C.D.=10.4

(b) *Dicot* count after 90 days of planting (on 4.7.1960).

(i) 5.8 (ii) 2.9. (iii) Treatment differences are highly significant. (iv) Mean count of *dicot*.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Mean count	12.7	9.0	3.0	4.2	4.5	1.5

C.D.=4.3

(c) *Monocot* count after 110 days of planting (on 24.7.1960).

(i) 96.4. (ii) 40.9. (iii) Treatment differences are highly significant. (iv) Mean count of *monocot*.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Mean count	220.0	75.0	79.0	57.0	111.7	35.5

C.D.=61.6

(d) *Dicot* count after 110 days of planting (on 24.7.1960).

(i) 1.8 (ii) 1.7. (iii) Treatment differences are not significant. (iv) Mean count of *dicot*.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Mean count	3.2	2.6	1.0	1.7	2.4	0.2

Crop :- Sugarcane.

Ref :- Or. 60(18).

Site :- Sugarcane Res. Stn., Bhubaneswar.

Type :- 'D'.

Object :- To study the effect of different insecticides for controlling borers in Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 24.2.1960. (iv) (a) 7 ploughings with laddering; (b) In furrows of 10 cm. depth. (c) 46.1 Q/ha. (d) 91 cm. between rows. (e) 25 setts were planted in 6.7 m. length. (v) 49 C.L./ha. of F.Y.M. + 89.7 Kg/ha. of P₂O₅ as Super + 89.7 Kg/ha. of N as A/S. (vi) Co-881. (vii) Irrigated. (viii) Weeding and earthing up. (ix) 116 cm. (x) 4 to 12.3.1961.

2. TREATMENTS :

5 insecticidal treatments : T₀=Control, T₁=1.1 Kg/ha. of gamma B.H.C. 20 E.C., T₂=1.7 Kg/ha. of gamma B.H.C. 20 E.C., T₃=1.1 Kg/ha. of Aldrin 30 E.C. and T₄=2.2 Kg/ha. of Aldrin 30 E.C.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 1/21.3 ha. (iii) 4. (iv) (a) 11.0 m. × 8.5 m. (b) 11.0 m. × 6.7 m. (v) 91 cm. on either side lengthwise. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Attack of borers. (iii) Germination count and grain yield. (iv) (a) 1960 only. (b) and (c) Nil. (v) and (vi) Nil. (vii) Seeds were treated with Aretol.

5. RESULTS :

I. Yield.

(i) 404.9 Q/ha. (ii) 61.9 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Av. yield	366.2	404.8	406.8	449.9	396.7

II. % of shoot borers and top borers.

(i) 5.7%. (ii) 5.1%. (iii) Treatment differences are not significant. (iv) Mean percentage of early shoot borers.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Percentage of shoot borers	4.7	4.3	7.5	3.2	8.9

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄
Percent age of top borers	0.9	0.7	0.8	0.1	0.9

Crop :- Sugarcane.

Ref :- Or. 61(2).

Site :- Sugarcane Res. Stn., Bhubaneswar.

Type :- 'D'.

Object :- To find out the effect of organomercurial fungicides on germination and stand of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Paddy-Sugarcane. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 17.3.61. (iv) (a) 10 ploughings with laddering. (b) In Furrows of 10 cm. depth. (c) 46.1 Q/ha. (d) 91 cm. between rows. (e) 20 setts of 3 budded each in a row of 6.8 m. length. (v) 44.8 Kg/ha. of N as A/S in furrows + 89.7 Kg/ha. P₂O₅ as Super at the time of planting. 25 C.L./ha. of compost at time of land preparation. (vi) Co. 527 (early). (vii) Irrigated. (viii) Weeding, earthing up and hoeing. (ix) 174 cm. (x) 11.4.62.

2. TREATMENTS :

3 fungicidal treatments : F₀=Control, F₁=28 gm. of tillex in 4.5 litres of water and F₂=454 gms of agallol in 91 litres of water.

Setts were treated with above solutions.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) 1/77.3 ha. (iii) 5. (iv) (a) and (b) 1/232.3 ha. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Poor ; water lodging. (ii) Nil but 11.2 Kg/ha. of Gamaxene was dusted in furrows just before planting as a control measure. (iii) Germination, millable canes and yield of cane. (iv) (a) 1961 only. (b) No. (c) Nil. (v) Nil. (vi) Unusually heavy rain-fall resulted in water lodging. (vii) 11.2 Kg/ha. of Gamaxene was dusted in furrows just before planting.

5. RESULTS :

(i) 212.7 Q/ha. (ii) 54.2 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of Cane in Q/ha.

Treatment	F ₀	F ₁	F ₂
Av. yield	222.0	256.4	159.8

Crop :- Sugarcane.

Ref :- Or. 64(43), 65(8).

Site :- Sugarcane Res. Stn., Bhubaneswar.

Type :- 'D'.

Object :- To study the effect of different insecticides for control of borer in Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Paddy-Sugarcane. (ii) Fallow. (c) Nil. (ii) Sandy loam. (iii) 17, 19, 20.5.64 ; 22.12.64. (iv) (a) 5 to 8 ploughings. (b) Transplanting (c) 36.9 to 46.1 Q/ha. (d) 91 cm. x 91 cm. (e) 3 budded sets. (v) 50 C.L./ha. of F.Y.M. + 89.7 Kg/ha. of P₂O₅ as Super + 67.2 Kg/ha. of N. (N was applied as A/S for 64 (43) and as C/A/N for 65 (8)). (vi) Co-527 for 64 (43) ; Co-419 for 65 (8). (vii) Irrigated. (viii) 3 hand weedings (ix) 156 cm. ; 133 cm. (x) 8.3.65 ; 18.2.66.

2. TREATMENTS :

6 insecticidal treatments : I₀ - Control, I₁ - Aldrin dust 5%, I₂ - Endrin dust 1%, I₃ - Endrin 20 E.C., I₄ = B.H.C. 20 E.C. and I₅ - W.L. 1650 (Teiodrin) 15 E.C.
Insecticides were sprayed at 1.1 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 9.1 m. x 10.1 m. for 64 (43) ; 7.3 m. x 8.5 m. for 65 (8). (b) 7.3 m. x 10.1 m. for 64 (43) ; 5.5 m. x 8.5 m. for 65 (8). (v) 91 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Borer, white fly and pyrilla attack. 2, 4-D was sprayed for weed control for 64 (43). (iv) Yield of cane. (iv) (a) 1964-65. (b) and (c) No. (v) N.A. (vi) Nil. (vii) Variances are heterogeneous and interaction is absent.

5. RESULTS :

64(43)

(i) 609.2 Q/ha. (ii) 92.5 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	I ₀	I ₁	I ₂	I ₃	I ₄	I ₅
Av. yield	655.5	527.0	615.0	638.7	603.9	615.3

65(8)

(i) 618.9 Q/ha. (ii) 172.2 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	I ₀	I ₁	I ₂	I ₃	I ₄	I ₅
Av. yield	650.3	564.9	630.1	632.3	712.4	523.3

Crop :- Sugarcane.

Ref :- Or. 65(7)

Site :- Sugarcane Res. Stn., Bhubaneswar.

Type :- 'D'.

Object :- To study the effect of foliar and soil application of insecticides on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Sugarcane-Paddy. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 20.12.64 and 29.12.64. (iv) (a) 5 to 8 ploughings by bullock drawn plough. (b) Transplanting. (c) 36.9 to 46.1 Q/ha. (d) 91 cm. x 91 cm. (e) 3 budded sets. (v) 89.7 Kg/ha. of P₂O₅ as Super + 44.8 Kg/ha. of N as C/A/N + 49.4 C.L./ha of F.Y.M. (vi) Co. 997. (vii) Irrigated. (viii) 3 hand weedings. (ix) 122.0 cm. (x) 24.11.65.

2. TREATMENTS :

F₀=Control, F₁=Endrin 20 E.C. (soil application) at 1.1 Kg/ha. F₂=Endrin 0.1 E.C. spraying once after 8th week of planting. F₃=Endrin 0.1 E.C. spraying twice at 8th and 12th weeks after planting. F₄=Endrin 20 E.C. soil application at 1.1 Kg/ha. at planting+Foliar spraying with 0.1 E.C. once at 8th week after planting. F₅=Endrin 20 E.C. soil application at 1.1 Kg/ha. at planting+Two sprayings with Endrin 0.1 E.C. at the 8th and 12th week after planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 7.3 m.×8.5 m. (b) 7.3 m.×5.5 m. (v) One row each side, lengthwise. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Borer attack ; control measures as per treatments. (iii) Tillers, germination count and yield of cane. (iv) (a) 1965. contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 562.5 Q/ha. (ii) 83.2 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	F ₀	F ₁	F ₂	F ₃	F ₄	F ₅
Av. yield	578.6	561.5	496.2	582.4	609.0	547.6

Crop :- Sugarcane.

Ref :- Or. 65(32).

Site :- Sugarcane Res. Stn., Bhubaneswar.

Type :- 'D'.

Object :- To assess the efficiency of different weedicides and cultural practices on the yield of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Paddy-Sugarcane. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 16.3.65. (iv) (a) 2 to 3 deep ploughings with iron-plough, followed by laddering and weeding 2 ploughings by count by plough. (b) Line sowing. (c) 46 Q/ha. (d) 91 cm. line to line. (e) 45 setts line ; bud to bud planting, (v) 37 to 49 C.L./ha. of F.Y.M. +179.3 Kg/ha. of N+89.7 Kg/ha. of P₂O₅ 84.0 Kg/ha. of K₂O. (vi) Co-527. (vii) Irrigated (viii) As per treatments (ix) 130.2 cm. (x) 14.2.66.

2. TREATMENTS :

C₀=Control, C₁=Cultivators practice (Two earthings and weedings), C₂=Pre-emergence spray of Dowpon at 5.6 Kg/ha., C₃=Pre-emergence and post-emergence 2, 4-D at 2.2 Kg/ha., C₄=Pre-emergence spray of Tufazin at 3.9 Kg./ha. 672 to 1122 litres/ha. of spraying material used.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 10.7m.×6.4 m. (b) 9.8 m.×4.6 m. (v) 46 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Mild stem-borer attack ; Malathion spraying. (iii) Height, tiller and weed count and yield of cane. (iv) (a) 1965-contd. (b) No, (c) Nil. (v) to (vii) Nil.

5. RESULTS :

1. Yield.

(i) 667.6 Q/ha. (ii) 53.2 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	C ₀	C ₁	C ₂	C ₃	C ₄
Av. yield	431.4	607.5	697.5	718.3	883.1

C.D.=81.9 Q/ha.

II. Weed count : (3 areas of 30×30 cm. had been selected randomly in each plot and the weed counts were averaged out).

(i) 67.4. (ii) 40.7. (iii) Treatment differences are highly significant. (iv) Av. weed count.

Treatment	C ₀	C ₁	C ₂	C ₃	C ₄
Av. yield	141.7	130.0	53.5	7.0	4.8

C.D. = 62.7

Crop :- Sugarcane.

Ref :- Or. 65(6).

Site :- Sugarcane Res. Stn., Bhubaneswar.

Type :- 'DC'.

Object :-Control of weeds in sugarcane by intercultural operations alone and in combination with different weedicidal applications.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 67.2 Kg/ha. of P₂O₅ as Super. 112.1 Kg/ha. of N as A.S. (ii) Sandy loam. (iii) 28.2.65. (iv) (a) 10 ploughings at 23 cm. depth by country plough. (b) Planting. (c) 49.4 Q/ha. (d) 76 cm. between rows. (e) 3 budded setts. (v) 49.4 C.L./ha. of F.Y.M. 179.3 Kg/ha. of N as C/A₇N 89.7 Kg/ha. of P₂O₅ as Super at the time of planting. (vi) Co-997. (vii) Irrigated. (viii) As per treatments. (ix) 132.1 cm. (x) 28.4.66.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) Four pre-emergence treatments : S₀=None, S₁=Planted and immediately ridged and later harrowed before germination, S₂=Sinauzine at 3.6 Kg/ha. and S₃=Sinaxzine at 6.7 Kg/ha.

(2) 3 post-emergence cultural treatments : I₀=None, I₁=Inter-row cultivations followed by ridging at proper stage of plant growth and I₂=Inter-row cultivation and weeding along and within rows followed by ridging.

Sub-plot treatments :

H₀=No post emergence herbicidal treatment, H₁=2, 4-D at 1.1 Kg/ha. and H₂=2, 4-D at 2.2 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 12 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 6.4 m. × 4.6 m. (b) 5.6 m. × 3.1 m. (v) 38 cm. × 76 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Early shoot borers ; spraying of endrin 20 E.C. concentration 0.5 % in 1121 litres/ha. (iii) Germination, tillers and weed pop. and yield of cane. (iv) (a) 1965-cont'd (b) Yes. (c) Nil. (v) 0 (vi) Nil.

5. RESULTS :

(i) 508.8 Q/ha. (ii) (a) 98.0 Q/ha. (b) 130.4 Q/ha. (iii) None of the effects is significant (iv) Av. yield in Q/ha.

	I ₀	I ₁	I ₂	H ₀	H ₁	H ₂	Mean
S ₀	483.4	482.4	573.6	485.8	596.4	457.2	513.1
S ₁	495.0	493.8	528.5	480.0	465.4	571.9	505.8
S ₂	488.7	521.2	562.7	493.6	566.8	512.2	524.2
S ₃	502.3	497.4	477.1	466.9	507.1	502.8	492.3
Mean	492.4	498.7	535.5	481.6	533.9	511.0	508.8
H ₀	489.8	467.3	487.6				
H ₁	510.2	500.0	591.6				
H ₂	477.1	528.9	527.1				

Crop :- Sugarcane.**Ref :- Or. 64(48), 65(14).****Site :- Sugarcane Res. Sub-Stn., Rayagada.****Type :- 'DC'.**

Object :- To study the effect of foliar spray of insecticides and trash mulching for control of borers in Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Paddy-Sugarcane. (b) Paddy. (c) 33.6 Kg/ha. of N as C/A/N. (ii) Sandy loam. (iii) 17, 18.10.1963; 19.10.1964. (iv) (a) 6 to 8 ploughings and cross ploughings. (b) Planting. (c) 50.2 Q/ha. (3 budded setts). (d) 91 cm. between rows. (e) Nil. (v) 49 C.L./ha. of F.Y.M. + 897 Kg/ha. of P_2O_5 as Super + 112.1 Kg/ha. of K_2O_5 as Mur. Pot. + 179.3 Kg/ha. of N as C/A/N. (vi) CO-997. (vii) Irrigated. (viii) 3 hand weedings. (ix) N.A. (x) 16 to 18.2.1965; 6.2.1966.

2. TREATMENTS :

6 insecticidal treatments : T_0 =Control, T_1 =Heptachlora 20 E.C. at 1.7 Kg/ha., T_2 =1.1 Kg/ha. of W.L. 1650 15 E.C., T_3 =1.1 Kg/ha. of Endrin 20 E.C., T_4 =Detrashing and mulching and T_5 =Trash covering.

The insecticides were applied in 561.5 litres of water/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 9.5 m. × 13.7 m. (b) 8.5 m. × 11.9 m. (v) 46 cm. × 91 cm.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Early shoot borer, infection and yield of cane. (iv) 1964-1965. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Variances are homogeneous and interaction is absent.

5. RESULTS :

(i) 850.6 Q/ha. (ii) 121.1 Q/ha. (35 d.f. made up of pooled error and Treatments × years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	863.8	789.5	820.9	800.0	923.2	906.2

Crop :- Cotton (Rabi).**Ref :- Or. 60(MAE).****Site :- M.A.E. Centre, Barpali.****Type :- 'M'.**

Object :- Type V : -To study the effect of different times of application of N on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red loam. (iii) and (iv) N.A. (v) 22.4 Kg/ha. of P_2O_5 as Super. (vi) to (x) N.A.

2. TREATMENTS :

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

(1) 2 sources of 44.8 Kg/ha. of N : S_1 =A/S and S_2 =Urea.

(2) 6 times of application : T_1 =At sowing, T_2 =At first interculture, T_3 =At flowering, T_4 = $\frac{1}{2}$ at sowing + $\frac{1}{2}$ at flowering, T_5 = $\frac{1}{3}$ at sowing + $\frac{1}{3}$ at first interculture + $\frac{1}{3}$ at flowering and T_6 = $\frac{1}{2}$ at flowering + $\frac{1}{2}$ one month after flowering.

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) and (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of *Kapas*. (iv) (a) 1956-1960. (b) No. (c) 1. (v) N.A. (vi) Nil. (vii) Crop damaged due to heavy rains and storms.

5. RESULTS :

(i) 322 Kg/ha. (ii) 119.9 Kg/ha. (iii) Main effect of T alone is significant. (iv) Av. yield of *Kapas* in Kg/ha.

Control=231 Kg/ha.

	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	Mean
S ₁	332	350	240	249	360	304	300
S ₂	240	590	277	304	360	258	338
Mean	286	470	258	276	360	281	322

C.D. for T marginal means=142.9 Kg/ha.

Crop :- Cotton (Kharif).**Ref :- Or. 62(11).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'CM'.**

Object :-To determine the optimum spacing and levels of N and P for Cotton crop.

1. BASAL CONDITIONS :

(i) (a) Cotton-Fallow. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 27 and 28.5.62. (iv) (a) 3 ploughings followed by laddering. (b) and (c) N.A. (d) As per treatments. (e) Nil (v) 4483 Kg/ha. of F.Y.M. (vi) P-216-F. (vii) Unirrigated. (viii) Two hand weeding and one earthing. (ix) 105 cm. (x) N.A.

2. TREATMENTS :

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

(1) 3 spacings : S₁=61 cm. × 30 cm., S₂=61 cm. × 46 cm., and S₃= 61 cm. × 61 cm.(2) 3 levels of N as A/S : N₁=33.6, N₂=67.2 and N₃=100.9 Kg/ha.(3) 3 levels of P₂O₅ as Super : P₀=0, P₁=33.6 and P₂=67.2 Kg/ha.**3. DESIGN :**

(i) 3³ confd. (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 5.5 m. × 6.1 m (b) Varies from treatment to treatment. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of cotton leaf roller. (iii) Yield of *Kapas*. (iv) (a) 196 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 356 Kg/ha. (ii) 90.0 Kg/ha. (iii) Main effects of P, N and interaction P × N are highly significant. Main effect of S is significant. (iv) Av. yield of *kapas* in Kg/ha.

	N ₁	N ₂	N ₃	P ₀	P ₁	P ₂	Mean
S ₁	263	360	424	287	388	372	349
S ₂	303	381	271	232	323	400	318
S ₃	320	451	428	282	421	496	400
Mean	295	397	374	267	377	423	356
P ₀	276	222	303				
P ₁	238	505	389				
P ₂	372	465	431				

C.D. for P, N or S marginal means=62.2 Kg/ha.

C.D. for body of P × N table =107.8 Kg/ha.

Crop :- Jute (Kharif).**Ref :- Or. 63(48), 64(37), 65(42).****Site :- Jute Res. Stn., Kendrapara.****Type :- 'M'.**

Object :—To study the effect of N, P and K at various levels singly and in combinations on the yield and quality of Jute.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jute for 63, 64 ; Fallow for 65. (c) N.A. for 63 ; as per treatments for 64 ; Nil for 65. (ii) Heavy clay. (iii) 14.5 63 ; 15.4.64 ; 23.4.65 (iv) (a) 3 to 4 ploughings and laddering. (b) Line sowing by seed drill for 63, 64 ; hand sowing for 65. (c) 5 to 6 Kg/ha. (d) 30 cm. x 8 cm. for 63, 64 ; 30 cm. between rows for 65. (e) Nil. (v) Nil for 63 ; 25 C.L./ha. of F.Y.M. for 64 ; 25 C.L./ha. of compost for 65. (vi) JRC—212. (vii) Irrigated. (viii) 3 weedings and 2 hoeings. (ix) 151 cm., 116 cm., 101 cm. (x) 30.9.63 ; 1st week of Sept. 64 ; 24.9.65.

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 $N_2=89.7$ 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.

3. DESIGN :

(i) 3³ confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 7.3 m. x 7.9 m. (b) 6.1 m. x 6.7 m. (v) 60 cm. x 60 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of Jute semilooper, spraying of Endrex at 276 gm. in 180 litres of water per ha (ii) Height, base diameter and yield of fibre. (iv) (a) 1963 to 1965. (b) Yes. (c) Results of combined analysis are given under 5. (v) and (vi) Nil. (vii) Variances are homogenous and interaction is present.

5. RESULTS :

(i) 1694 Kg/ha. (ii) 411.5 Kg/ha. (36 d.f. made up of interaction of various components of treatments with years). (iii) Main effect of N alone is highly significant. (iv) Av. yield of jute in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	585	787	788	710	628	822	720
N_1	1780	1840	2002	1882	1868	1873	1874
N_2	2440	2494	2528	2468	2491	2503	2487
Mean	1602	1707	1773	1687	1663	1733	1694
K_0	1546	1750	1764				
K_1	1675	1621	1692				
K_2	1585	1751	1862				

C.D. for N marginal means=160.7 Kg/ha.

Crop :- Jute (Kharif).**Ref :- Or. 63(46), 64(33), 65(37).****Site :- Jute Res. Stn., Kendrapara.****Type :- 'M'.**

Object :—To study the effect of Urea as foliar spray on the economics and yield of Capsularis Jute.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy for 63 ; Jute for 64 ; Fallow for 65. (c) 44.8 Kg/ha. of N as A/S for 63 ; As per treatments for 64 ; Nil for 65. (ii) Heavy clay. (iii) 15.5.63 ; 22.4.64 ; 26.4.65. (iv) (a) 3 to 5 ploughings and laddering. (b) Line sowing by seed drill. (c) 2 Kg/ha. (d) 30 cm. x 8 cm. (e) Nil. (v) Nil for 63(46) ; 25 C.L./ha. of F.Y.M. for 64 and 25 C.L./ha. of compost for 65. (vi) JRC.—212. (vii) Irrigated. (viii) 3 weedings and 2 hoeings. (ix) 166 cm., 134 cm., 104 cm. (x) 12.10.1963 ; 24.9.1964 ; 8.10.1965.

2. TREATMENTS :

5 levels of Urea : M_0 = No manure (control), M_1 = One foliar spray of Urea at 11.2 Kg/ha. of N as 2.2% solution after 35 days of sowing ; 33.6 Kg/ha. of N as Urea at the time of sowing, M_2 = 11.2 Kg/ha. of N as 2.2% solution of Urea after 35 and 70 days of sowing + 22.4 Kg/ha. of N at sowing, M_3 = 33.6 Kg/ha. of N as Urea at sowing + 11.2 Kg/ha. of N as Urea to soil after 35 days of sowing and M_4 = 22.4 Kg/ha. of N as Urea to soil at sowing + 11.2 Kg/ha. of N as Urea to soil after 35 and 70 days of sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5 for 63, 64 ; 4 for 65. (iv) (a) 7.3 m. x 6.7 m. for 63 ; 6.7 m. x 5.8 m. for 64 ; 5.6 m. x 4.6 m. for 65. (b) 6.7 m. x 5.8 m. for 63 ; 6.1 m. x 5.2 m. for 64 ; 5.0 m. x 4.0 m. for 65. (v) 30 cm. x 46 cm. for 63 ; 30 cm. x 30 cm. for 64 and 65. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Attack of stem rot for 63 ; attack of stem rot and jute semi-looper, controlled by endrex at 2.8 Kg/ha. in 180 litres of water per hectare for 64 ; Semi looper attack for 65, endrex sprayed. (iii) Height measurements and yield. (iv) (a) 1963—contd. (b) Yes. (c) Nil. (v) to (vii) Nil

5. RESULTS :

63(46)

(i) 789 Kg/ha. (ii) 284.0 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of fibre in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4
Av. yield	381	846	911	873	935

C.D. = 380.7 Kg/ha.

64(33)

(i) 226 Kg/ha. (ii) 97.0 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of fibre in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4
Av. yield	113	211	295	199	310

C.D. = 130.1 Kg/ha.

65(37)

(i) 583 Kg/ha. (ii) 214.0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of fibre in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4
Av. yield	119	955	647	633	560

C.D. = 329.7 Kg/ha.

Crop :- Jute (Kharif).

Ref :- Or. 64(32), 65(38).

Site :- Jute Res. Stn., Kendrapara.

Type :- 'M'.

Object :- To find out the effect of Urea as foliar spray on the yield of Capsularis Jute.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Heavy clay. (iii) 6.5.64 ; 20.6.1965. (iv) (a) 3 to 4 ploughings and ladderings for 64 ; 4 to 5 ploughings by deshi plough for 65. (b) Line sowing by seed drill for 64 ; Hand sowing for 65. (c) 2 Kg/ha. for 64. 6 Kg/ha. for 65. (d) 30 cm. × 8 cm. for 64 ; 30 cm. between rows for 65. (e) Nil. (v) 25 C.L./ha. of compost. (vi) JRC—212. (vii) Unirrigated for 64 ; irrigated for 65. (viii) 2 to 3 hand weedings and hoeings. (ix) 134 cm. ; 92.6 cm. (x) 30.9.1964 ; 28.9.1965.

2. TREATMENTS :

20 manurial treatments : M_0 =Control (water spray), $M_1=5$, $M_2=10$, $M_3=15$, $M_4=20$, $M_5=25$, $M_6=30$ Kg/ha. of N as Urea in four foliar sprays at the interval of one week from 35 days after sowing, $M_7=0$, $M_8=10$, $M_9=20$, $M_{10}=30$, $M_{11}=40$, $M_{12}=50$ and $M_{13}=60$ Kg/ha. of N as Urea applied to soil 35 days after sowing, $M_{14}=10$, $M_{15}=20$, $M_{16}=30$, $M_{17}=40$, $M_{18}=50$ and $M_{19}=60$ Kg/ha. of N as A/S applied to soil 35 days after sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 20. (b) N.A. (iii) 4. (iv) (a) 4.3 m. × 2.1 m. for 64 ; N.A. for 65. (b) 3.7 m. × 1.5 m. for 64 ; N.A. for 65. (v) 30 cm. × 30 cm for 64 ; N.A. for 65. (vi) Yes.

4. GENERAL :

(i) Poor for 64 ; N.A. for 65. (ii) Attack of jute semilooper controlled by spraying. Endrex at 2.8 Kg/ha. in 180 litres of water per hectare for 64 ; N.A. for 65. (iii) Height, base diameter and yield of fibre. (iv) (a) 1964—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

64(32)

(i) 152 Kg/ha. (ii) 57.0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of fibre in Kg/ha.

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	65	89	187	210	147	181	206	69	67	92	160	150
		M_{12}	M_{13}	M_{14}	M_{15}	M_{16}	M_{17}	M_{18}	M_{19}			
		156	192	105	114	203	139	294	207			

C.D.=80.8 Kg/ha.

65(38)

(i) 1024 Kg/ha. (ii) 212 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of fibre in Kg/ha.

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	487	1030	1187	834	730	1170	1165	733	650	932	1068	1325
		M_{12}	M_{13}	M_{14}	M_{15}	M_{16}	M_{17}	M_{18}	M_{19}			
		1265	1430	782	847	1208	1170	1279	1199			

C.D.=300.5 Kg/ha.

Crop :- Jute (Kharif).**Ref :- Or. 60(42), 62(64).****Site :- Jute Res. Stn., Kendrapara.****Type :- 'M'.**

Object :- To study the effect of N, P and K at various levels on the yield of Jute fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. for 60(42) ; Jute for 62(64). (c) N.A. for 60(42) ; Nil for 62(64). (ii) Clay soil. (iii) 7.5.1960 ; 25.4.1962. (iv) 3 to 4 ploughings and ladderings. (b) Line sowing by seed drill. (c) 2 Kg/ha. (d) 30 cm. × 8 cm. (e) —. (v) Nil. (vi) JRC—212. (vii) Irrigated. (viii) 3 weedings + 2 hoeings. (ix) 115 cm., 78 cm. (x) 16.9.1960 ; 17, 18.9.1962.

2. TREATMENTS :

12 manurial treatments : M_0 =Control (No manure), M_1 =22.4 Kg/ha. of N, M_2 =2 M_1 , M_3 =3 M_1 , M_4 =4 M_1 , M_5 =8 M_1 , M_6 =11.2 Kg/ha. of P ; 11.2 Kg/ha. of K_2O , M_7 = M_1 + M_6 , M_8 = M_1 + 2 M_6 , M_9 = M_1 + 3 M_6 , M_{10} = M_1 + 4 M_6 and M_{11} = M_1 + 8 M_6 .

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

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 7.9 m. × 7.3 m. (b) 6.7 m. × 6.1 m. for 60(42); 7.3 m. × 6.7 m. for 62(64). (v) 60 cm. × 60 cm. for 60(42); 30 cm. × 30 cm. for 62(64) (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of semi-looper. Spraying of endrex at 2.8 Kg/ha. in 140 litres of water/ha. (iii) Yield of fibre. (iv) (a) 1959-1964 (Expts. for 1959, 1961 are N.A. Expt. for 1964 failed). (b) Yes. (c) Results of combined analysis are given under 5. (v) N.A. (vi) Heavy rain and flood affected the crop for 62(64). (vii) Expt. conducted in 1963 failed. Error variances are homogeneous and Treatments × years interaction is absent.

5. RESULTS :

(i) 1942 Kg/ha. (ii) 316.8 Kg/ha. (77 d.f. made up of pooled error and Treatments × years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of fibre in Kg/ha.

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	758	1529	2052	2102	2268	2144	1035	1649	2380	2426	2524	2391

C.D.=315.8 Kg/ha.

Crop :- Jute. (Kharif).

Ref :- Or. 61(63), 62(73), 63(53)

Site :- Agri. Res. Stn., Sambalpur.

Type :- 'M'.

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow for 61(63), Jute for 62(73), Gram for 63(53). (c) 44.8 Kg/ha. of N as A/S + 22.4 Kg/ha. of P_2O_5 as Super + 22.4 Kg/ha. of K_2O as Pot. Sul. for 62(73); Nil for others. (ii) Sandy loam for 62(73); Clay loam for others. (iii) 2.5, 1961; 16 and 17.4, 1962; 10.4, 1963. (iv) (a) 4 to 6 ploughings, (b) Line sowing (c) 13 Kg/ha. (d) 23 cm between rows. (e) Nil. (v) 92.2 Q/ha. of compost for 61(63), 12 C.L/ha. of F.Y.M. for 63(73); Nil for 63(53). (vi) JRC-212. (vii) Irrigated. (viii) 1 to 2 weedings + 1 to 2 hoeings. (ix) 249 cm., 132 cm., 155 cm. (x) 27.9, 1961; 7, 8, 10, 1961; 11, 14.9, 1962; 9 to 20.9, 1963.

2. TREATMENTS :

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

(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 =22.4 and P_2 =44.8 Kg/ha.

(3) 3 levels of K_2O as Pot. Sul. : K_0 =0, K_1 =22.4 and K_2 =44.8 Kg/ha.

P_2O_5 and K_2O were applied just before sowing. N was applied $\frac{1}{2}$ at sowing and $\frac{1}{2}$ after one month.

3. DESIGN :

(i) 3³ confd. (ii) (a) 9 plots/block; 3 blocks/replication. (b) N.A. (iii) 3. (iv) (a) 3.2 m. × 3.1 m. for 61(63); 4.6 m. × 3.7 m. for others. (b) 2.7 m. × 2.7 m. for 61(63); 4.1 m. × 3.4 m. for 62(73); 4.0 m. × 3.4 m. for 63(53). (v) 23 cm. × 15 cm. for 61(63) and 62(73); 30 cm. × 15 cm. for 63(53). (vi) Yes.

4. GENERAL :

(i) Good. (ii) No incidence for 61(63) and 62(73). One preventive spray with endrex was given for 62(73). Attack of cut worms and red mits for 63(53). (iii) Yield of jute fibre. (iv) (a) 1961-1963. (b) No. (c) Results of combined analysis are given under 5. Results. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous. (N × P) × years and (N × K) × years interactions are present and (K × P) × years interaction is absent.

5. RESULTS :

- (i) 2527 Kg/ha. (ii) 376.6 Kg/ha. (28 d.f. made up of various components of Treatments \times years interaction).
 (iii) Main effect of N alone is 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	1917	1759	1696	1699	1775	1898	1721
N ₁	2679	2546	2569	2375	2730	2690	2598
N ₂	3242	3125	3207	3244	3208	3122	3191
Mean	2613	2477	2491	2439	2571	2570	2527

C.D. for N marginal means=363.6 Kg/ha.

61(63)

	P ₀	P ₁	P ₂	Mean
K ₀	2981	2734	2666	2794
K ₁	3160	2920	3002	3027
K ₂	3292	3060	2999	3117
Mean	3144	2905	2889	2979

S.E. of body of the table=230.0 Kg/ha.

62(73)

	P ₀	P ₁	P ₂	Mean
K ₀	1860	1904	1703	1822
K ₁	1938	1878	1965	1927
K ₂	1950	1931	1977	1953
Mean	1916	1904	1882	1901

S.E. of body of the table=115.7 Kg/ha.

63(53)

	P ₀	P ₁	P ₂	Mean
K ₀	2898	2653	2553	2701
K ₁	2817	2635	2826	2759
K ₂	2619	2576	2722	2639
Mean	2778	2621	2700	2700

S.E. of body of the table=132.3 Kg/ha.

Crop :- Jute (Kharif).

Site :- (District) Cuttack.

Ref :- Or. 62, 64, 65(S.F.T.).

Type :- 'M'.

Object :- To study the response curves of important cereal, cash and oilseed crops to nitrogen applied singly and in combination with other nutrients (Type : A₁).

1. BASAL CONDITIONS :

(i) N.A. (ii) Red loamy. (iii) to (vi) N.A. (vi) Unirrigated. (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. of 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+35 Kg/ha. of K₂O.N applied as A/S, P₂O₅ as Super and K₂O as Mur. of 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. Type A.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1966 (1963-N.A.) (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

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 Jute in Kg/ha.	969	1990	771	1516	2036	1852	5166	867.8

Control yield=6517 Kg/ha. ; No. of trials=1.

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 Jute in Kg/ha.	1512	2105	1611	2688	3212	3222	3805	496.0

Control yield=11663 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 Jute in Kg/ha.	5753	9373	6613	6713	12253	13693	14453	3523

Control yield=19646 Kg/ha. ; No. of trials=3.

Crop :- Jute.**Ref :- Or. 62, 64, 65(S.F.T.)****Site :- (District) Cuttack.****Type :- 'M'.**

Object :--To study the response curves of important cereal, cash and oilseed crops to phosphorus applied singly and in combination with other nutrients. (Type : A₂).

1. BASAL CONDITIONS :

(i) N.A. (ii) Red loamy. (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 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.N₂P₂K₂=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. of Pot.

3. DESIGN :

Same as in Type A₁ (unirrigated) on page 247.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1966 [1963—N.A.]. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

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 Jute in Kg/ha.	1977	751	217	3618	3331	4331	7571	680.9

Control yield=7373 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 Jute in Kg/ha.	3143	1571	1383	3271	3498	3894	4932	621.8

Control yield=9864 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 Jute in Kg/ha.	9070	700	-210	11925	11385	18980	19760	3647.8

Control yield=16820 Kg/ha.; No. of trials=3.

Crop :- Jute.**Ref :- Or. 62(S.F.T.).****Site :- (District) Cuttack.****Type :- 'M'.**Object :—To study the response curves of important cereal, cash and oilseed crops to potash applied singly and in combination with other nutrients (Type : A₃).

1. BASAL CONDITIONS :

(i) N.A. (ii) Red loamy, (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.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. of Potash.

3. DESIGN :

Same as in Type A₁ (unirrigated) on page 247.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 only. (b) N.A. (c) Nil. (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 Jute in Kg/ha.	3776	180	-929	1937	1838	1463	1838	0.0

Control yield=8125 Kg/ha.; No. of trials=1.

Crop :- Jute (Kharif).

Ref :- Or. 64, 65(S.F.T).

Site :- (District) Cuttack.

Type :- 'M'.

Object :-To study the response curves of important cereal, cash and oilseed crops to potash applied singly and in combination with other nutrients (Type : A₃).

1. BASAL CONDITIONS :

(i) N.A. (ii) Red loamy. (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 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. of Pot.

3. DESIGN :

Same as in type A₁(unirrigated) on page 247.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1964 to 1966. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

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 Jute in Q/ha.	21.1	9.4	5.3	45.3	30.4	34.5	44.2	11.6

Control yield=104.1 Q/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 Jute in Q/ha.	186.8	3.2	1.6	143.2	145.0	234.0	150.4	—

Control yield=245 Kg/ha. ; No. of trials=1.

Crop :- Jute.**Ref :- Or. 60(S.F.T.).****Site :- (District) Cuttack.****Type :- 'M'.**

Object :—To study the response of Jute to different levels of N, P₂O₅ and K₂O applied individually and in combination (Type A).

1. BASAL CONDITIONS :

(i) N.A. (ii) Red alluvial. (iii) to (x) N.A.

2. TREATMENTS :

O=Control (no manure)

n=44.8 Kg/ha. of N as A/S

p=22.4 Kg/ha. of P₂O₅ as Superk=22.4 Kg/ha. of K₂O as Mur. of Pot.np=44.8 Kg/ha. of N as A/S+22.4 Kg/ha. of P₂O₅ as Supernk=44.8 Kg/ha. of N as A/S+22.4 Kg/ha. of K₂O as Mur. Pot.pk=22.4 Kg/ha. of P₂O₅ as Super+22.4 Kg/ha. of K₂O as Mur. Pot.npk=44.8 Kg/ha. of N as A/S+22.4 Kg/ha. of P₂O₅ as Super+22.4 Kg/ha. of K₂O as Mur. Pot.

3. DESIGN :

Same as in type A₁ (unirrigated) on page 247.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1960 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Treatment	N	P	K	S.E.	NP	NK	PK	NPK	S.E.
Av. response of Jute in Q/ha.	8.0	6.7	8.3	2.9	-0.1	-0.2	2.3	2.1	1.0

Control means=10.6 Q/ha. ; No. of trials=4.

Crop :- Jute.**Ref :- Or. 60(S.F.T.).****Site :- (District) Cuttack.****Type :- 'M'.**

Object :—To investigate the relative efficiency of different nitrogenous fertilizers at different doses (Type : B).

1. BASAL CONDITIONS :

(i) N.A. (ii) Red alluvial. (iii) to (x) N.A.

2. TREATMENTS :

O=Control (no manure).

n₁=44.8 Kg/ha. of N as A/S.n₂=89.6 Kg/ha. of N as A/S.n₁'=44.8 Kg/ha. of N as Urea.n₂'=89.6 Kg/ha. of N as Urea.n₁''=44.8 Kg/ha. of N as C/A/N.n₂''=89.6 Kg/ha. of N as C/A/N.

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 legume crop. Half the number of trials conducted are of type A and the other half of type B on crop 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) 1/40 ac. (b) 1/80 ac. (iv) Yes.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1960 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Treatment	Control	n ₁	n ₂	n ₁ '	n ₂	n ₁ "	n ₂ "	S.E.
Av. yield of Jute in Q/ha.	292.4	373.5	549.2	333.5	530.2	393.1	521.5	41.5

G.M.=427.6 Q/ha. ; No. of trials - 3.

Crop :- Jute (Kharif).**Ref :- Or. 61(60), 62(67), 63(50).****Site :- Agri. Res. Stn., Sambalpur.****Type :- 'C'.**

Object :- To find out the optimum date of sowing for Jute.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Linseed for 61(60); Wheat for others. (c) 22.4 Kg/ha. of N as C/A/N for 61(60); N.A. for 62(67); 22.4 Kg/ha. of N as A/S for 63(50). (ii) Sandy loam for 62(67); clay loam for others. (iii) As per treatments. (iv) (a) 3 to 5 ploughings. (b) Line sowing. (c) 9 Kg/ha. for 63(50); 13 Kg/ha. for others. (d) 23 cm. between rows. (e) —. (v) 92.2 Q ha. of compost + 140.1 Kg ha. of P₂O₅ as Super + 45.9 Kg ha. of K₂O as Pot. Sul. and top dressing with 22.4 Kg/ha. of N as A/S for 61(60); 24" C.L., ha. of F.Y.M. + 22.4 kg/ha. of P₂O₅ as Super + 22.4 Kg/ha. of K₂O as KCl + 44.8 Kg/ha. of N as A/S for 62(67); 92.2 Q ha. of F.Y.M. + 44.8 Kg/ha. of N as A/S + 22.4 Kg/ha. of K₂O as of K; for 63(50). (vi) JRO—632 (early). (vii) Irrigated. (viii) 1 hoeing and 1 to 3 weedings. (ix) 249 cm.; 133 cm.; 112 cm. (x) 11.10.1961; 22.9.1962; 24 to 27.9.1963.

2. TREATMENTS :

8 dates of sowing : D₁—16th March, D₂—1st April, D₃—15th April, D₄—1st May, D₅—15th May, D₆—1st June, D₇—15th June and D₈—1st July.

Treatments D₁ and D₂ were tried only in expt. No. 63(50).

3. DESIGN :

(i) R.B.D. (ii) (a) 8 for 63(50); 6 for others. (b) N.A. (iii) 4. (iv) (a) 3.7 m. × 2.7 m. for 61(60); 6.4 m. × 4.7 m. for 62(67); 6.4 m. × 4.6 m. for 63(50). (b) 3.2 m. × 2.4 m. for 61(60); 5.9 m. × 4.4 m. for 62(67); 5.9 m. × 4.3 m. for 63(50). (v) 23 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of fibre. (iv) (a) 1961—1963. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Crop failed in treatments D₁ and D₂ due to heavy rains for 61(60); Treatment D₁ was rejected because of low yield for 62(67).

5. RESULTS :

61(60)

(i) 2319 Kg ha. (ii) 387.0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of fibre in Kg/ha.

Treatment	D ₃	D ₄	D ₅	D ₆
Av. yield	2535	3760	1807	1153

C.D.=619.1 Kg/ha.

62(67)

(i) 1372 Kg/ha. (ii) 299.0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of fibre in Kg/ha.

Treatment	D ₃	D ₄	D ₅	D ₆	D ₇
Av. yield	1720	1589	1563	1157	833

C.D.=460.7 Kg/ha.

63(50)

(i) 1450 Kg/ha. (ii) 503.0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of fibre in Kg/ha.

Treatment	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈
Av. yield	513	1704	2064	2663	1374	2087	926	272

C.D.=894.2 Kg/ha.

Crop :- Jute (Kharif).

Ref :- Or. 60(3).

Site :- Agri. Res. Stn., Sambalpur.

Type :- 'C'.

Object :- To find out the optimum period of sowing Jute in low lands under irrigated conditions.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Pea. (c) Nil. (ii) Clay. (iii) As per treatments. (iv) (a) 5 ploughings by *deshi* plough at 15 cm. depth intermitant laddering between two ploughings. (b) Line sowing. (c) 10 Kg/ha. (d) 23 cm. between rows. (e) Nil. (v) 92.2 Q/ha. of compost+140.1 Kg/ha. of P₂O₅ as Super+45.9 Kg/ha. of K₂O as Pot. Sul. and top dressing with 44.8 Kg/ha. of N as C/A/N. (vi) JRC-212. (vii) Irrigated. (viii) Two hoeings, one weeding and two thinnings (ix) N.A. (x) 26, 28.8.1960 ; 8, 12, 24, 26.9.1960.

2. TREATMENTS :

6 dates of sowing : D₁=15.3.1960, D₂=1.4.1960, D₃=15.4.60, D₄=1.5.1960, D₅=15.5.1960 and D₆=1.6.1960.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 7.9 m.×4.0 m. (b) 7.6 m.×3.5 m. (v) 15 cm.×26 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of semiloopers and mites, dusting with BHC 5%, endrin sprayed ; Folidol was sprayed for mites. (iii) Yield of fibre. (iv) (a) 1959—1961 (modified). (b) No. (v) to (vii) Nil.

5. RESULTS :

(i) 2689 Kg/ha. (ii) 422.6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of fibre in Kg/ha.

Treatment	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆
Av. yield	3074	3717	2963	2746	2485	1149

C.D.=636.7 Kg/ha.

Crop :- Jute (Kharif).

Ref :- Or. 61(58).

Site :- Agri. Res. Stn., Sambalpur.

Type :- 'C'.

Object :- To study the effect of different dates of sowing on the yield of Jute.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) Clay loam. (iii) As per treatments. (iv) (a) 6 ploughings. (b) Line sowing. (c) 13 Kg/ha. (d) 23 cm. between rows. (e) Nil. (v) 92.2 Q/ha. of compost+140.1 Kg/ha. of P₂O₅+45.9 Kg/ha. of K₂O as Pot. Sul. and top dressing with 44.8 Kg/ha. of N as C/A/N in two doses. (vi) IRC-212. (vii) Irrigated. (viii) Hand-weeding twice. (ix) 232.8 cm. (x) 29.8.61, 11.9.61, 12.9.61 and 15.9.61.

2. TREATMENTS :

6 dates of sowing : $D_1=1.3.1961$, $D_2=15.3.1961$, $D_3=1.4.61$, $D_4=15.4.61$, $D_5=1.5.61$ and $D_6=15.5.61$.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 5.5 m. \times 3.7 m. (b) 5.0 m. \times 3.4 m. (v) 23 cm. \times 15 cm. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Height, girth and yield of fibre. (iv) (a) 1959--1961. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2923 Kg/ha. (ii) 489.0 Kg/ha. (iii) Treatment difference are highly significant. (iv) Av. yield of fibre in Kg/ha.

Treatment	D_1	D_2	D_3	D_4	D_5	D_6
Av. yield	2149	3064	4180	3987	2463	1695

C.D. = 736.8 Kg/ha.

Crop :- Jute (*Kharif*).

Ref :- Or. 63(43).

Site :- Jute Res. Stn., Kendrapara.

Type :- 'CV'.

Object :- To study the effect of different times of harvest on the yield and quantity of some standard varieties of capsularies Jute.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jute. (c) 44.8 Kg/ha. of N as A.S. (ii) Clay soil. (iii) 1.6.1963. (iv) (a) 3 to 4 ploughings and laddering. (b) Line sowing by seed drill. (c) 2 Kg/ha. (d) 30 cm. \times 8 cm. (e) Nil. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 3 weedings and 2 hoeings. (ix) 150 cm. (x) As per treatments.

2. TREATMENTS :

- T_1 = JRC 321 harvested at maturity of its own.
 T_2 = D 154 harvested at maturity of JRC--521.
 T_3 = D 154 harvested at maturity of its own (24.8.63).
 T_4 = JRC--206 harvested at maturity of JRC--321.
 T_5 = JRC--206 harvested at maturity of D--154.
 T_6 = JRC --206 harvested at maturity of its own (10.9.63).
 T_7 = JRO--632 harvested at maturity of JRC--321.
 T_8 = JRO 632 harvested at maturity of D 154.
 T_9 = JRO --632 harvested at maturity of its own (25.8.63).
 T_{10} = JRO--620 harvested at maturity of JRC--321.
 T_{11} = JRO - 620 harvested at maturity of D--154.
 T_{12} = JRO--620 harvested at maturity of its own (20.8.63).
 T_{13} = C.G. harvested at maturity of JRC--321.
 T_{14} = C.G. harvested at maturity of D--154.
 T_{15} = C.G. harvested at maturity of its own (22.8.63).
 T_{16} = JRC--212 harvested at maturity of JRC--321.
 T_{17} = JRC--212 harvested at maturity of D--154.
 T_{18} = JRC--212 harvested at maturity of its own (25.8.63).

3. DESIGN :

(i) R.B.D. (ii) 18. (b) N.A. (iii) 4. (iv) (a) 7.3 m. \times 4.6 m. (b) 6.7 m. \times 4.0 m. (v) 30 cm. \times 30 cm. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Height, base diameter and fibre yield. (iv) (a) 1963 contd. with modifications. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 628 Kg/ha. (ii) 240 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of fibre in Kg/ha.

Treatment	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉
Av. yield	404	646	662	573	634	950	650	561	724
Treatment	T ₁₀	T ₁₁	T ₁₂	T ₁₃	T ₁₄	T ₁₅	T ₁₆	T ₁₇	T ₁₈
Av. yield	472	615	462	534	584	535	701	736	361

Crop :- Jute (Kharif).

Ref :- Or. 65(40).

Site :- Jute Res. Stn., Kendapara.

Type :- 'CV'.

Object :- To find out the best of the Capsularies and olitorious varieties and the best time of harvest of each of them for high yield and good quality of fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Kulthi. (c) N.A. (ii) Heavy clay. (iii) 25.4.65. (iv) (a) 4 to 5 ploughings by *deshi* bullock drawn plough. (b) Hand sowing. (c) 6.2 Kg/ha. (d) 30 cm. between lines. (e) Nil. (v) 24.7 C.L./ha. of compost. (vi) As per treatments. (vii) Irrigated. (viii) 2 wheel hoeings and hand weedings. (ix) 124.6 cm. (x) 5, 12, 18.9.65 ; 23.10.65.

2. TREATMENTS :

Main-plot treatments :

8 varieties : V₁=JRC. 321, V₂=JRC. 212, V₃=D 154, V₄=JRO. 206, V₅=JRO. 632, V₆=JRO. 620, V₇=CG and V₈=JRO. 514.

Sub-plot treatments :

3 stages of harvest : H₁=At the harvest stage of JRC. 321, H₂=D154, H₃=At their own stages of harvest.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 4.1 m. × 6.0 m. (b) 3.5 m. × 5.4 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Semilooper attack ; Endrin sprayed. (iii) Height, basal diameter and yield. (iv) (a) 1963 1966 (modified every year). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1133 Kg/ha. (ii) (a) 445 Kg/ha. (b) 225 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of fibre in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈	Mean
H ₁	543	862	1300	1503	1018	1125	773	1405	1066
H ₂	739	993	1223	1437	1073	1337	847	1368	1127
H ₃	715	1071	1167	2037	1063	1253	840	1515	1208
Mean	666	975	1230	1659	1051	1238	820	1429	1133

C.D. for V marginal means=377.7 Kg/ha.

Crop :- Jute (Kharif).**Ref :- Or. 65(39).****Site :- Jute Res. Stn., Kendrapara.****Type :- 'CV'.**

Object :- To study the flowering behaviour yield and quality of fibre of different capsularies varieties when sown at different times.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Heavy clay. (iii) As per treatments. (iv) (a) 4 to 5 ploughings by *deshi* bullock drawn plough. (b) Hand sowing. (c) 6.2 Kg/ha. (d) 30 cm. between lines. (e) Nil. (v) Compost at 24.7 C.L./ha. (vi) As per treatments. (vii) Irrigated. (viii) 2 hoeings and 2 hand weedings. (ix) 119.4 cm. (x) 11, 24.9.65 ; 16, 18.10.65.

2. TREATMENTS :**Main-plot treatments :**

2 varieties : $V_1 = D = 154$ and $V_2 = JRC = 206$.

Sub-plot treatments :

6 dates of sowing : $D_1 = 21st$ March, $D_2 = 5th$ April, $D_3 = 21st$ April, $D_4 = 5th$ May, $D_5 = 21st$ May and $D_6 = 5th$ June.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication : 6 sub-plots main-plot. (b) N.A. (iii) 4. (iv) (a) 10.7 m. \times 4.0 m. (b) 10.1 m. \times 3.4 m. (v) 30 cm. \times 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Semi-looper attack ; Endrin sprayed. (iii) Height, basal diameter and yield of fibre. (iv) (a) 1965 only. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1845 Kg/ha. (ii) (a) 384 Kg/ha. (b) 312 Kg/ha. (iii) Main effects of V and D are highly significant. Interaction $D \times V$ is significant. (iv) Av. yield of fibre in Kg/ha.

	D_1	D_2	D_3	D_4	D_5	D_6	Mean
V_1	1590	1989	1898	2071	1270	257	1512
V_2	2493	2958	2784	2880	1417	539	2178
Mean	2041	2473	2341	2476	1343	398	1845

C.D. for V marginal means = 353.2 Kg/ha.

C.D. for D marginal means = 318.6 Kg/ha.

C.D. for D means at the same level of V = 450.5 Kg/ha.

C.D. for V means at the same level of D = 530.6 Kg/ha.

Crop :- Jute (Kharif)**Ref :- Or. 61(57), 62(63), 63(44).****Site :- Jute Res. Stn., Kendrapara.****Type :- 'CV'.**

Object :- To study the effect of different dates of sowing on the yield of different varieties of Jute.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. for 61 (57) ; Jute for others. (c) N.A. for 61 (57) ; Nil. for 62 (63) ; 22.4 Kg/ha. of N for 63 (44). (ii) Heavy clay. (iii) As per treatments. (iv) (a) 3 to 4 ploughings and laddering. (b) Line sowing by seed drill. (c) 2 Kg/ha. (d) 30 cm. \times 8 cm. (e) —. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 3 weedings and 2 hoeings. (ix) 157 cm. ; 91 cm. ; 153 cm. (x) 1st week of Oct., 1961 ; 1st week of Oct., 1962 ; 1st week of Oct., 1963.

2. TREATMENTS :

Main-plot treatments :

2 varieties : V_1 =JRC-321 and V_2 =JRC-212.

Sub-plot treatments :

6 dates of sowing : S_1 =1st March, S_2 =21st March, S_3 =10th April, S_4 =1st May, S_5 =21st May and S_6 =10th June.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 4.0 m. \times 10.7 m. (b) 3.4 m. \times 10.1 m. (v) 30 cm. \times 30 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of Jute semmi looper. Spraying of endrex at 1 Kg in 73 litres of water/ha. (iii) Fibre yield. (iv) (a) 1961-contd. (modified in 1964). (b) No. (c) Nil. (v) N. A. (vi) Heavy rains for 61(57) and 62 (63). (vii) V_1S_5 , V_1S_6 , V_2S_1 and V_2S_6 plots were completely damaged by heavy rains for 61(57) ; V_2S_1 and V_1S_1 plots had no yield due to heavy rains for 62 (63).

5. RESULTS :

61(57)

(i) 3012 Kg/ha. (ii) (a) 269.2 Kg/ha. (b) 274.9 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of fibre in Kg/ha.

 $V_1S_1=1600$, $V_2S_5=2190$.

	S_2	S_3	S_4	Mean
V_1	2500	2579	2511	2530
V_2	3360	3653	3472	3495
Mean	2930	3116	2992	3012

C.D. for V marginal means=349.7 Kg/ha.

62(63)

(i) 1678 Kg/ha. (ii) (a) 750.0 Kg/ha. (b) 371.0 Kg/ha. (iii) Main effect of S alone is highly significant. (iv) Av. yield of fibre in Kg/ha.

	S_1	S_2	S_3	S_4	S_5	S_6	Mean
V_1	—	1436	1703	1854	1333	492	1364
V_2	—	2181	2446	2677	1723	936	1993
Mean	—	1808	2075	2265	1528	714	1678

C.D. for S marginal means=382.9 Kg/ha.

63(44)

(i) 1004 Kg/ha. (ii) (a) 1075.0 Kg/ha. (b) 351.0 Kg/ha. (iii) Main effect of S alone is highly significant. (iv) Av. yield of fibre in Kg/ha.

	S_1	S_2	S_3	S_4	S_5	S_6	Mean
V_1	1323	1266	400	391	676	44	638
V_2	1995	2088	1527	634	1457	233	1325
Mean	1659	1677	963	512	1075	138	1004

C.D. for S marginal means=358.4 Kg/ha.

Crop :- Jute (Kharif).**Ref :- Or. 64(35).****Site :- Jute Res. Stn., Kendrapara.****Type :- 'CV'.**

Object :- To study the effect of different dates of sowing on the yield of different varieties of Jute.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jute. (c) N.A. (ii) Heavy clay. (iii) As per treatments. (iv) (a) 3 to 4 ploughings and ladderings. (b) Line sowing by seed drill. (c) 2 Kg/ha. (d) 30 cm. × 8 cm. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 3 weedings and 2 hoeings. (ix) 138 cm. (x) 1st week of Oct., 64.

2. TREATMENTS :**Main-plot treatments :**2 varieties : V_1 = J.R.C. - 321 and V_2 = J.R.C. - 212.**Sub-plot treatments :**6 dates of sowing : D_1 = 21st March, D_2 = 5th April, D_3 = 21st April, D_4 = 5th May, D_5 = 21st May and D_6 = 5th June.**3. DESIGN :**

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 10.7 m. × 4.0 m. (b) 10.1 m. × 3.4 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Better. (ii) Attack of Jute senmi looper ; spraying of Endrex at 1 Kg in 73 litres of water ha. (iii) Height, base diameter and yield of Jute. (iv) (a) 1960-contd. (modified in 1964). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1185 Kg/ha. (ii) (a) 360.0 Kg/ha. (b) 280.0 Kg/ha. (iii) Main effect of V is highly significant and that of D is highly significant. (iv) Av. yield of fibre in Kg/ha.

	D_1	D_2	D_3	D_4	D_5	D_6	Mean
V_1	1316	1620	796	1428	460	92	952
V_2	2107	2239	1188	1689	1157	126	1418
Mean	1712	1929	992	1558	808	109	1185

C.D. for V marginal means = 330.6 Kg/ha.

C.D. for D marginal means = 285.9 Kg/ha.

Crop Jute (Kharif).**Ref :- Or. 62(65), 63(47), 64(36), 65(41).****Site :- Jute Res. Stn., Kendrapara. Type :- 'CV'.**

Object :- To study the effect of different dates of sowing and harvest on the yield and quality of different varieties of Jute.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jute for 62, 63 ; kulti for 64 ; Fallow for 65. (c) N.A. for 62, 63 ; Nil for 64, 65 (ii) Heavy clay. (iii) As per treatments. (iv) (a) 3 to 4 ploughings and ladderings. (b) Line sowing by seed drill. (c) 5 Kg/ha. (d) 30 cm. × 8 cm. (e) Nil. (v) 25 C.L./ha. of F.Y.M. for 62, 63, 64 ; 25 C.L./ha. of compost for 65. (vi) As per treatments. (vii) Irrigated. (viii) 3 weedings and 2 hoeings. (ix) 81 cm. ; 229 cm. ; 138 cm. ; 101 cm. (x) As per treatments.

2. TREATMENTS :

Main-plot treatments :

3 varieties of Jute : V_1 =Fanduk, V_2 =D—154 and V_3 =JRC—206.

Sub-plot treatments :

4 dates of sowing : D_1 =10th April, D_2 =25th April, D_3 =10th May and D_4 =25th May.

Sub-sub-plot treatments :

4 dates of harvest : H_1 =15th August, H_2 =1st September, H_3 =15th September and H_4 =1st October.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 4 sub-plots/main-plot and 4 sub-sub-plots/sub-plot. (b) N.A. (iii) 3. (iv) (a) 4.6 m. \times 2.1 m. (b) 4.0 m. \times 1.5. (v) 30 cm. \times 30 cm. (vi) Yes.

4. GENERAL :

(i) Good for 62, 64 ; Not good for 63 ; Poor for 65. (ii) Attack of Jute semmilooper ; spraying of Endrex at 1 kg. in 73 litres of water/ha. (iii) Height, base diameter and yield of fibre. (iv) (a) 1962-contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

62(65)

(i) 2786 Kg/ha. (ii) (a) 821.0 Kg/ha. (b) 808.0 Kg/ha. (c) 755.0 Kg/ha. (iii) Main effects of D and H are highly significant. Interaction $H \times V$ is significant. (iv) Av. yield of fibre in Kg/ha.

	D_1	D_2	D_3	D_4	H_1	H_2	H_3	H_4	Mean
V_1	2724	3382	2587	1499	2288	2875	2558	2471	2548
V_2	3224	3346	3026	1810	2147	2750	3148	3361	2852
V_3	3831	3343	2978	1678	1148	2784	3390	3508	2958
Mean	3260	3357	2864	1662	2194	2803	3032	3113	2786
H_1	2672	2736	2132	1236					
H_2	3146	3052	3143	1871					
H_3	3576	3754	2967	1832					
H_4	3646	3885	3214	1709					

C.D. for D marginal means =400.0 Kg/ha.

C.D. for H marginal means =355.1 Kg/ha.

C.D. for H means at the same level of V =615.2 Kg/ha.

C.D. for V means at the same level of H =698.6 Kg/ha.

63(47)

(i) 753 Kg/ha. (ii) (a) 810.0 Kg/ha. (b) 656.0 Kg/ha. (c) 291.0 Kg/ha. (iii) Main effects of D, H and interaction $V \times H$ are highly significant. (iv) Av. yield of fibre in Kg/ha.

	D_1	D_2	D_3	D_4	H_1	H_2	H_3	H_4	Mean
V_1	1178	660	118	230	531	605	668	382	546
V_2	1523	1059	249	290	481	727	989	924	780
V_3	1429	1461	264	573	573	865	1166	1124	932
Mean	1377	1060	210	364	528	732	941	810	753
H_1	992	874	136	111					
H_2	1483	1008	161	277					
H_3	1600	1362	252	549					
H_4	1431	995	293	521					

C.D. for D marginal means = 324.8 Kg/ha.
 C.D. for H marginal means = 136.9 Kg/ha.
 C.D. for H means at the same level of V = 237.1 Kg/ha.
 C.D. for V means at the same level of H = 498.0 Kg/ha.

64(36)

(i) 1661 Kg/ha. (ii) (a) 459.0 Kg/ha. (b) 606.0 Kg/ha. (c) 310.0 Kg/ha. (iii) Main effects of D and H are highly significant. Interaction H × V is significant. (iv) Av. yield of fibre in Kg/ha.

	D ₁	D ₂	D ₃	D ₄	H ₁	H ₂	H ₃	H ₄	Mean
V ₁	2691	1169	1987	300	1417	1563	1648	1518	1537
V ₂	3072	1126	1892	560	1565	1668	1850	1567	1662
V ₃	2924	1264	2122	820	1527	1611	1922	2071	1783
Mean	2896	1186	2000	560	1503	1614	1807	1719	1661
H ₁	2617	1113	1721	561					
H ₂	2883	1147	2004	423					
H ₃	3074	1244	2311	598					
H ₄	3010	1242	1966	657					

C.D. for D marginal means = 300.0 Kg/ha.
 C.D. for H marginal means = 145.7 Kg/ha.
 C.D. for H means at the same level of V = 252.5 Kg/ha.
 C.D. for V means at the same level of H = 335.2 Kg/ha.

65(41)

(i) 1153 Kg/ha. (ii) (a) 590 Kg/ha. (b) 654 Kg/ha. (c) 286 Kg/ha. (iii) Main effects of D and H are highly significant. (iv) Av. yield of fibre in Kg/ha.

	D ₁	D ₂	D ₃	D ₄	H ₁	H ₂	H ₃	H ₄	Mean
V ₁	1376	1183	717	649	698	964	1110	1154	981
V ₂	1953	1558	753	883	727	1275	1468	1677	1287
V ₃	2011	1371	570	808	701	1121	1364	1575	1190
Mean	1780	1371	680	780	709	1120	1314	1468	1153
H ₁	1230	840	337	428					
H ₂	1818	1307	693	661					
H ₃	1851	1588	935	882					
H ₄	2222	1747	755	1150					

C.D. for D marginal means = 323.6 Kg/ha.
 C.D. for H marginal means = 134.5 Kg/ha.

Crop :- Jute (Kharif).

Ref :- Or. 65(2).

Site :- Agri. Res. Stn., Sambalpur.

Type :- 'CV'.

Object :- To find out the best combined rotation of Jute-Paddy giving the highest profit.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) N.A. (ii) Clay-loam. (iii) 19, 20.4.1965. (iv) (a) 5 ploughings followed by laddering. (b) Line sowing. (c) 12 Kg/ha. (d) 25 cm. row to row. (e) Nil. (v) 20 Kg/ha. of P_2O_5 as Super+30 Kg/ha. of K_2O as KCl+40 Kg/ha. of N as A/S applied in two doses as top dressing for Jute crop. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings, one hoeing and one thinning. (ix) 70 cm. (x) 4.8.65 to 16.8.65 for V_2 , 3.8.65 to 25.8.65 for V_1 and 14.8.65 to 6.9.65 for V_3 .

2. TREATMENTS :

All combinations of (1) and (2)+a control (fallow prior to paddy).

(1) 3 varieties of Jute crop : V_1 =D 154, V_2 =Funduk and V_3 =JRC—212.

(2) 3 stages of harvesting of Jute crop : H_1 =Pretlowing stage, H_2 =at flowering and H_3 =Post flowering stage.

Paddy crop is followed by every treatment combination.

3. DESIGN :

(i) Fact in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 7.8 m.×7.0 m. (b) 7.3 m.×6.7 m. (v) 25 cm.×15 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Jute semilooper attack, 2 sprayings of Metasystx and folidol. (iii) Girth and height and yield of fibre. (iv) (a) 1965 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2156 Kg/ha. (ii) 282 Kg/la. (iii) Main effect of H alone is significant. (iv) Av. yield of fibre in Kg/ha.

	H_1	H_2	H_3	Mean
V_1	1742	2268	2347	2119
V_2	1783	2313	2337	2144
V_3	2239	2110	2267	2205
Mean	1921	2230	2317	2156

C.D. for H marginal means=237.6 Kg/ha.

Crop :- Tobacco (Rabi).

Ref :- Or. 61(3).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :—To study the effect of N, K and lime on the yield of Tobacco.

1. BASAL CONDITIONS :

(i) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 16.9.61/31.10.61. (iv) (a) 6 ploughings followed by laddering. (b) Transplanted. (c) N.A. (d) 76 cm.×76 cm. (e) 1. (v) 25 C.L./ha. of F.Y.M. (vi) T-238. (vii) Irrigated. (viii) Earthing up. (ix) 37 cm. (x) 20.3.62.

2. TREATMENTS :

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

(1) 3 levels of lime : L_1 =6.3, L_2 =8.4 and L_3 =12.6 Q/ha.

(2) 3 levels of K_2O as Mur. Pot. : K_1 =44.8, K_2 =89.7 and K_3 =134.5 Kg/ha.

(3) 3 levels of N as A/S : N_1 =67.2, N_2 =112.1 and N_3 =156.9 Kg/ha.

3. DESIGN :

(i) 3³ confd. (ii) 9 plots/block, 3 blocks/replication. (iii) 1. (iv) (a) 3.8 m.×3.8 m. (b) 2.3 m.×2.3 m. (v) 76 cm.×76 cm. (vi) Yes.

4. GENERAL ;

(i) Good. (ii) Attack of black foot rot. Affected plants were removed. (iii) Yield of tobacco. (iv) (a) 1961 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1266 Kg/ha. (ii) 499.0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of leaf in Kg/ha.

	K ₁	K ₂	K ₃	L ₁	L ₂	L ₃	Mean
N ₁	956	1218	1244	1320	1148	950	1139
N ₂	1340	1672	766	1334	887	1557	1259
N ₃	1365	995	1837	1480	1027	1690	1399
Mean	1220	1295	1282	1378	1021	1399	1266
L ₁	1123	1429	1582				
L ₂	906	1097	1059				
L ₃	1632	1359	1206				

Crop :- Groundnut (Kharif).

Ref :- Or. 62(19).

Site :- State Agri. Res. Stn , Bhubaneswar.

Type : 'M'.

Object :- To study the effect of different doses of N, P and K with and without lime on the yield of Groundnut and also the residual effect on the succeeding Wheat crop.

1. BASAL CONDITIONS ;

(i) (a) Groundnut-Wheat. (b) Wheat. (c) 33.6 Kg/ha. of N as A/S. (ii) Loamy sand. (iii) 30.6.62 and 1.7.62. (iv) (a) 1 summer ploughing, 2 ploughings after the break of monsoon and 1 ploughing while mixing the lime. (b) Line sowing (c) N.A (d) 15 cm. × 15 cm. (e) Nil. (v) Nil. (vi) T.M.V. 3 (late). (vii) Unirrigated. (viii) 2 weedings, one hoeing and gap filling. (ix) 105 cm. (x) 11 to 16.12.62.

2. TREATMENTS ;

Main-plot treatments :

All combinations of (1) and (2)

(1) 2 levels of lime : L₀=0 and L₁=560.4 Kg/ha.

(2) 3 levels of P₂O₅ as Super : P₀=0, P₁=33.6 and P₂=67.2 Kg/ha.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 levels of N as A/S : N₀=0 and N₁=16.8 Kg/ha.

(2) 3 levels of K₂O as Mur. Pot. ; K₀=0, K₁=50.4 and K₂=100.9 Kg/ha

N, P and K broadcast just before sowing.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication, 6 sub-plots/main plot. (b) N.A. (iii) 3. (iv) (a) 4.9 m. × 3.1 m. (b) 4.3 m. × 2.4 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Very good. (ii) Crop was affected by the *Tikka* disease of Groundnut. Spraying of *Shell* copper fungicide. (iii) Yield of green hulms. (iv) (a) 1962 only. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1226 Kg/ha. (ii) (a) 256.0 Kg/ha. (b) 286.0 Kg/ha. (iii) None of the effects is significant. (iv) (a) Av yield of green hulms in Kg/ha.

	P ₀	P ₁	P ₂	N ₀	N ₁	K ₀	K ₁	K ₂	Mean
L ₀	1238	1135	1288	1260	1181	1171	1287	1203	1220
L ₁	1178	1320	1197	1212	1251	1227	1193	1275	1232
Mean	1208	1227	1243	1236	1216	1199	1240	1239	1226
K ₀	1184	1224	1189	1235	1163				
K ₁	1185	1220	1316	1190	1290				
K ₂	1255	1238	1223	1282	1195				
N ₀	1175	1193	1340						
N ₁	1241	1262	1145						

Crop :- Groundnut (*Kharif*).
Site :- Agri. Res. Stn., Sambalpur.

Ref :- Or. 62(72).
Type :- 'M'.

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 3rd week of June, 1962. (iv) (a) 4 ploughings. (b) Line sowing. (c) 90 Kg/ha. (d) 23 cm. between rows. (e) Nil. (v) Nil. (vi) T.M.V.--2. (vii) Unirrigated. (viii) Hoeing, weeding and top dressing. (ix) 135.6 cm. (x) 24.10.62.

2. TREATMENTS :

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

- (1) 3 levels of N as A/S : N₁=16.8, N₂=33.6 and N₃=50.4 Kg/ha.
(2) 3 levels of P₂O₅ as Super : P₁=33.6, P₂=67.2 and P₃=100.9 Kg/ha.
(3) 3 levels of K₂O as Mur. Pot. : K₀=0, K₁=50.4 and K₂=100.9 Kg/ha.

3. DESIGN :

(i) 3³ confd. (NP²K, NPK² and NPK are confd.) (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 3. (iv) (a) 7.4 m. × 3.8 m. (b) 7.0 m. × 3.4 m. (v) 19 cm. × 19 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) *Tikka* disease appeared, controlled by fungicidal spraying. (iii) Pods yield. (iv) (a) 1962 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1900 Kg/ha. (ii) 281.0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of pods in Kg/ha.

	P ₁	P ₂	P ₃	K ₀	K ₁	K ₂	Mean
N ₁	1948	2088	1891	1932	2137	1858	1976
N ₂	1906	1909	1829	1928	1961	1754	1881
N ₃	1835	1886	1810	1858	1873	1799	1844
Mean	1896	1961	1843	1906	1990	1804	1900
K ₀	1889	1980	1849				
K ₁	1984	2093	1894				
K ₂	1815	1811	1785				

Crop :- Groundnut (Rabi).

Ref :- Or. 64(45).

Site :- Agri. Res. Stn., Sambalpur.

Type :- 'M'.

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

1. BASAL CONDITIONS :

(i) (a) Nil, (b) Faddy, (c) N.A. (ii) Sandy loam. (iii) 21.64 and 41.64. (iv) (a) 4 ploughings. (b) Line sowing. (c) 90 Kg/ha. (d) 23 cm. between lines. (e) Nil. (v) Nil. (vi) TMV 2. (vii) Irrigated. (viii) Hoeing and weeding. (ix) Nil. (x) 23.4.64.

2. TREATMENTS :

Same as in expt. no. 62(72) on page 263.

3. DESIGN :

(i) 3rd confd. with NP:K and NPK being confd. (ii) (a) 9 plots block; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) and (b) 4.9 m. x 5.8 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Spraying endrex and phylloene. (iv) (a) 1964 only (b) No. (c) Nil. (v) to (vii) Nil

5. RESULTS :

(i) 1716 Kg/ha. (ii) 1730 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of pods in Kg/ha.

	P ₁	P ₂	P ₃	K ₀	K ₁	K ₂	Mean
N ₁	1602	1705	1677	1658	1717	1609	1661
N ₂	1641	1824	1752	1746	1707	1764	1739
N ₃	1747	1593	1908	1928	1698	1622	1749
Mean	1663	1707	1779	1777	1707	1665	1716
K ₀	1720	1728	1883				
K ₁	1690	1682	1750				
K ₂	1580	1712	1703				

Crop :- Groundnut.

Ref :- Or. 62, 63, 64, 65(S.F.T.) for Mayurbhanj and 65(S.F.T.) for others.

Site :- (District) : Mayurbhanj, Cuttack, Ganjam and Sambalpur.

Type :- 'M'.

Object :- To study the response curves of important cereal, cash and oilseed crops to nitrogen applied singly and in combination with other nutrients (Type : A₁).

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red and yellow for Mayurbhanj and Sambalpur and Red sandy for Cuttack and Ganjam. (iii) to (vi) N.A. (vii) Unirrigated (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

O = Control (no manure)

N₁ = 15 Kg/ha. of N

N₂ = 30 Kg/ha. of N

P₁ = 20 Kg/ha. of P₂O₅

N₁P₁ = 15 Kg/ha. of N + 20 Kg/ha. of P₂O₅

N₂P₁ = 30 Kg/ha. of N + 20 Kg/ha. of P₂O₅

N₂P₂ = 30 Kg/ha. of N + 40 Kg/ha. of P₂O₅

N₂P₂K₁ = 30 Kg/ha. of N + 40 Kg/ha. of P₂O₅ + 20 Kg/ha. of K₂O

N applied as A.S, P₂O₅ as Super and K₂O as Mur. of 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 to 66 for Mayurbhanj ; 1965 only for Cuttack and Ganjam ; 1965 to 1966 for Sambalpur. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Mayurbhanj**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 pods in Kg/ha.	150	254	103	207	127	150	219	—

Control yield=380 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 pods in Kg/ha.	88	189	377	514	495	647	720	58.0

Control yield=885 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 pods in Kg/ha.	267	320	137	499	651	868	981	403.4

Control yield=1582 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 pods in Kg/ha.	357	405	516	599	615	796	1023	205.5

Control yield=1202 Kg/ha. ; No. of trials=4.

Cuttack**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 pods in Kg/ha.	620	826	—13	566	740	780	882	93.2

Control yield=1533 Kg/ha. ; No. of trials=3.

Ganjam.**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 pods in Kg/ha.	—77	—15	200	120	135	490	535	113.7

Control yield=790 Kg/ha. ; No. of trials=4.

Sambalpur

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 pods in Kg/ha.	100	100	74	100	100	100	200	-

Control yield--150 Kg./ha. ; No. of trials--1

Crop :- Groundnut.

Ref :- Or. 65 (S.F.T.)

Site :- (District) : Sambalpur.

Type :- 'M'.

Object :— To study the response curves of important cereal, cash and oilseed crops to phosphorus applied singly and in combination with other nutrients (Type : A₂)

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red and yellow. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

O = Control (no manure).

N₁ = 15 Kg/ha. of N

P₁ = 30 Kg/ha. of P₂O₅

P₂ = 60 Kg/ha. of P₂O₅

N₁P₁ = 15 Kg/ha. of N + 30 Kg/ha. of P₂O₅

N₁P₂ = 15 Kg/ha. of N + 60 Kg/ha. of P₂O₅

N₂P₂ = 30 Kg/ha. of N + 60 Kg/ha. of P₂O₅

N₂P₂K₂ = 30 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. of Pot.

3. DESIGN :

Same as in type A₁ (unirrigated) on page 265.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1965 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

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 pods in Kg/ha.	474	324	674	174	174	848	1774	-

Control yield--126 Kg./ha. ; No. of trials--1.

Crop :- Groundnut (Kharif).

Ref :- Or. 62, 63, 64, 65 (S.F.T.) for Mayurbhanj and 65 (S.F.T.) for others.

Site :- (District) : Mayurbhanj, Cuttack and Ganjam.

Type :- 'M'.

Object :— To study the response curves of important cereal cash and oilseed crops to phosphorus applied singly and in combination with other nutrients (Type : A₂)

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red and yellow for Mayurbhanj and Red loamy for others. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

- O = Control (no manure)
 N_1 = 15 Kg/ha. of N
 P_1 = 20 Kg/ha. of P_2O_5 .
 P_2 = 40 Kg/ha. of P_2O_5 .
 N_1P_1 = 15 Kg/ha. of N + 20 Kg/ha. of P_2O_5 .
 N_1P_2 = 15 Kg/ha. of N + 40 Kg/ha. of P_2O_5 .
 N_2P_2 = 30 Kg/ha. of N + 40 Kg/ha. of P_2O_5 .
 $N_2P_2K_2$ = 30 Kg/ha. of N + 40 Kg/ha. of P_2O_5 + 40 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 265.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1966 for Mayurbhanj and 1965 only for others. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Mayurbhanj

62 (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 pods in Kg/ha.	136	205	332	298	308	367	436	—

Control yield=462 Kg/ha. ; No. of trials=1.

63 (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 pods in Kg/ha.	-23	60	108	139	299	361	433	67.3

Control yield=896 Kg/ha. : No. of of trials=6.

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 pods in Kg/ha.	169	269	492	547	753	921	1130	258.0

Control yield= 1509 Kg/ha. ; No. of trials=8.

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 pods in Kg/ha.	418	239	195	547	619	738	950	170.7

Control yield=929 Kg/ha. ; No. of trials=5.

Cuttack

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 pods in Kg/ha.	493	253	186	626	733	760	888	132.3

Control yield=1466 Kg/ha. ; No. of trials=3.

Ganjam**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 pods in Kg/ha.	20	180	440	187	265	392	367	67.3

Control yield = 570 Kg/ha ; No. of trials = 4.

Crop :- Groundnut.

Ref :- Or. 65(S.F.T.).

Site :- (District) : Sambalpur.

Type :- 'M'.

Object :- To study the response curves of important cereal, cash and oilseed crops to potash applied singly and in combination with other nutrients (Type : A.)

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red and yellow. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

O = Control (no manure).

N₁ = 15 Kg/ha. of N.

K₁ = 30 Kg/ha. of K₂O.

K₂ = 60 Kg/ha. of K₂O.

N₁K₁ = 15 Kg/ha. of N + 30 Kg/ha. of K₂O.

N₁K₂ = 15 Kg/ha. of N + 60 Kg/ha. of K₂O.

N₂K₂ = 30 Kg/ha. of N + 60 Kg/ha. of K₂O.

N₁P₁K₁ = 15 Kg/ha. of N + 30 Kg/ha. of P₂O₅ + 30 Kg/ha. of K₂O.

N applied as A/S, P₂O₅ as Super and K₂O as Mur. of Pot.

3. DESIGN :

Same as in type A₁ (Unirrigated) on page 265.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1965 only. (b) N.A. (c) Nil. (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 pods in Kg/ha.	500	400	800	350	350	474	174	—

Control yield = 2450 Kg/ha. ; No. of trials = 1

Crop :- Groundnut (Kharif).

Ref :- Or. 62, 63, 64, 65(S.F.T.) for Mayurbhanj and 65 (S.F.T.) for others.

Site :- (District) Mayurbhanj, Cuttack and Ganjam.

Type : 'M'.

Object :- To study the response curves of important cereal, cash and oilseed crops to potash applied singly and in combination with other nutrients (Type : A₃).

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

O = Control (no manure)

N₁ = 15 Kg/ha. of NK₁ = 20 Kg/ha. of K₂OK₂ = 40 Kg/ha. of K₂ON₁K₁ = 15 Kg/ha. of N+20 Kg/ha. of K₂ON₁K₂ = 15 Kg/ha. of N+40 Kg/ha. of K₂ON₂K₂ = 30 Kg/ha. of N+40 Kg/ha. of K₂ON₁P₁K₁ = 15 Kg/ha. of N+20 Kg/ha. of P₂O₅+20 Kg/ha. of K₂ON applied as A/S, P₂O₅ as Super and K₂O as Mur. of Pot.

3. DESIGN :

Same as in Type A₁ (Unirrigated) on page no. 265.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1966 for Mayurbhanj and 1965 only for others. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Mayurbhanj

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 pods in Kg/ha.	45	138	45	298	276	229	253	—

Control yield=369 Kg/ha. ; No. of trials=1.

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 pods in Kg/ha.	276	426	388	363	496	603	426	100.5

Control yield=849 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 pods in Kg/ha.	186	286	632	639	666	1054	962	61.3

Control yield=1463 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 pods in Kg/ha.	197	156	430	292	452	553	628	219.8

Control yield=866 Kg/ha. ; No. of trials=3.

Cuttack

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 pods in Kg/ha.	576	140	260	833	903	950	1066	68.7

Control yield=1373 Kg/ha. ; No. of trials=3.

Ganjam

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 pods in Kg/ha.	210	0.0	260	25	140	215	187	152.9

Control yield=590 Kg/ha. ; No. of trials=4.

Crop :- Groundnut.**Ref :- Or. 60(S.F.T.).****Site :- (District) : Balasore, Mayurbhanj and Sambalpur.****Type :- 'M'.**

Object :—To study the response of Groundnut to different levels N, P₂O₅ and K₂O applied individually and in combination (Type : A).

1. BASAL CONDITIONS :

(i) N.A. (ii) Saline ; Red ; Red and black. (iii) to (x) N.A.

2. TREATMENTS :

O = Control (no manure)

N = 22.4 Kg/ha. of N as A/S.

P = 33.6 Kg/ha. of P₂O₅ as Super.K = 33.6 Kg/ha. of K₂O as Mur. Pot.NP = 22.4 Kg/ha. of N as A/S + 22.4 Kg/ha. of P₂O₅ as Super.NK = 22.4 Kg/ha. of N as A/S + 22.4 Kg/ha. of K₂O as Mur. Pot.PK = 33.4 Kg/ha. of P₂O₅ as Super + 22.4 Kg/ha. of K₂O as Mur. Pot.NPK = 22.4 Kg/ha. of N as A/S + 22.4 Kg/ha. of P₂O₅ as Super + 22.4 Kg/ha. of K₂O as Mur. Pot.**3. DESIGN :**Same as in Type A₁ (unirrigated) on page no. 265.**4. GENERAL :**

(i) to (iii) N.A. (iv) (a) 1960 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

District	No. of trials	Control yield in Q/ha.			Av. response in Q/ha.						
		N	P	K	S.E.	NP	NK	PK	NPK	S.E.	
Balasore	2	66.4	14.0	9.1	1.6	1.9	5.3	4.0	-0.2	2.7	2.2
Mayurbhanj	4	23.1	11.5	17.5	10.6	2.9	0.7	0.8	2.3	4.5	1.1
Sambalpur	2	6.6	3.8	3.9	1.5	0.2	-0.9	-1.6	0.4	-0.1	0.5

Crop :- Groundnut.**Ref :- Or. 60(S.F.T.).****Site :- As per results.****Type : 'M'.**

Object :—To investigate the relative efficiency of different nitrogenous fertilizers at different doses. (Type : B).

1. BASAL CONDITIONS :

(i) N.A. (ii) Saline for Balasore and Red and black for others. (iii) to (x) N.A.

2. TREATMENTS :

- 0 =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 :

(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 legumens 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) 1/197.6 ha. (iv) Yes.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1960 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

District	No. of trials	Control	Av. yield of grain Q/ha.								G.M.	S.E./mean
			n_1	n_2	n_1'	n_2'	n_1''	n_2''	n_1'''	n_2'''		
Balasure	2	46.1	73.0	73.0	64.5	72.8	—	—	68.2	77.0	67.8	4.1
Mayurbhanj	2	12.5	17.8	17.3	16.8	21.2	—	—	17.5	19.7	17.5	0.8
Mayurbhanj	2	23.5	—	—	30.8	50.5	28.7	53.3	37.3	61.7	40.8	4.8
Sambalpur	2	6.1	—	—	15.8	14.7	15.9	17.7	15.9	19.0	15.0	0.8

Crop :- Groundnut (Kharif).

Ref :- Or. 60(6).

Site :- Agri. Res. Stn., Sambalpur.

Type :- 'C'.

Object :—To find out the optimum spacing in order to obtain high yield of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhaincha*. (c) Nil. (ii) (a) Sandy loam. (iii) 21st July 1960. (iv) (a) 4 ploughings by *deshi* plough and 3 ladderings. (b) Line sowing. (c) 112 Kg/ha. (d) As per treatments. (e) 2 (v) 26.9 Kg/ha. of P_2O_5 as Super at sowing. 44.8 Kg/ha. of N as A/S top dressed after 20 days. (vi) T.M.V. 2. (vii) Unirrigated. (viii) 2 weedings, 1 hoeing and 2 earthing up. (ix) N.A. (x) 28th Nov. 1960.

2. TREATMENTS :

6 spacings : $S_1=23$ cm. \times 46 cm., $S_2=23$ cm. \times 38 cm., $S_3=23$ cm. \times 30 cm., $S_4=23$ cm. \times 23 cm., $S_5=23$ cm. \times 15 cm. and $S_6=15$ cm. \times 15 cm.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 23.2 m. \times 11.0 m. (iii) 4. (iv) (a) 7.3 m. \times 5.5 m. (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of pod. (iv) 1960 only. (v) to (vii) Nil.

5. RESULTS :

(i) 812 Kg/ha. (ii) 153.5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of pod in Kg/ha.

Treatment	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆
Av. yield	724	932	823	805	783	807

Crop :- Gingely (Til).

**Ref :- Or. 62, 63, 64, 65(S.F.T.) for Puri,
62, 63(S.F.T.) for Mayurbhanj
and 63, 65(S.F.T.) for Cuttack.**

**Site :- (District) : Puri, Mayurbhanj
and Cuttack.**

Type :- 'M'.

Object :- To study the response curves of important cereal, cash and oilseed crops to nitrogen applied singly and in combination with other nutrients (Type : A₁).

1. BASAL CONDITIONS :

(i) N.A. (ii) Red and yellow for Puri and Mayurbhanj and Red loamy for Cuttack. (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 P.

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. of 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 are 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 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 1966 for Puri, 1962 to 1963 for Mayurbhanj and 1963 to 1965 [1964 N.A. for Cuttack. (b) and (c) N.A. (v) to (vii) N.A.

5. RESULTS :

Puri

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 Til in Kg/ha.	62	70	72	80	90	146	203	28.3

Control yield = 145 Kg/ha. ; No. of trials = 4.

63 (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 Til in Kg/ha.	83	124	15	126	156	173	154	—

Control yield = 25 Kg/ha. ; No. of trials = 1.

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 Til in Kg/ha.	83	172	180	246	318	375	416	11.1

Control yield=90 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 Til in Kg/ha.	121	209	116	232	327	467	582	30.4

Control yield=82 Kg/ha. ; No. of trials=2.

Mayurbhanj

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 Til in Kg/ha.	219	288	264	243	310	310	357	--

Control yield=288 Kg/ha. ; No. of trials=1.

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 Til in Kg/ha.	162	185	114	185	324	347	387	—

Control yield=183 Kg/ha. ; No. of trials=1.

Cuttack

63 (S.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 Til in Kg/ha.	110	244	108	216	288	358	491	—

Control yield=166 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 Til in Kg/ha.	100	280	100	200	250	250	400	88.3

Control yield=250 Kg/ha. ; No. of trials=2.

Crop :- Gingelly.

Ref :- Or. 62, 63, 64, 65(S.F.T.) for Puri, 62, 63(S.F.T.) for Mayurbhanj and 63, 65(S.F.T.) for Cuttack.

Site :- (District) : Puri, Mayurbhanj
and Cuttack.

Type :- 'M'.

Object :- To study the response curves of important cereal, cash and oilseed crops to phosphorus applied singly and in combination with other nutrients (Type : A₂).

1. BASAL CONDITIONS ;

(i) N.A. (ii) Red and yellow for Puri and Mayurbhanj and Red loamy for Cuttack. (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. of Pot.

3. DESIGN :

Same as in Type A₁ (unirrigated) on page no. 272.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1966 for Puri, 1962 to 1963 for Mayurbhanj and 1963 to 1965 [1964 N.A.] for (Cuttack). (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Puri

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 Til in Kg/ha.	38	16	42	69	77	115	150	23.4

Control yield=135 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.	29	-7	9	11	47	90	160	--

Control yield=98 Kg/ha., No. of trials=1.

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.	39	6	17	53	47	92	119	13.1

Control yield=121 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. respot.se of grain in Kg/ha.	110	178	215	310	427	664	670	27.4

Control yield=87 Kg/ha., No. of trials=2.

Mayurbhanj

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. yield of grain in Kg/ha.	229	138	241	298	276	345	345	--

Control yield=369 Kg/ha., No. of trials=1.

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.	140	128	71	164	233	360	428	--

Control yield=298 Kg/ha. ; No. trials=1.

Cuttack**63 (S.F.T.)**

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₁ P ₁ K ₂	S.E.
Av. response of pods in Kg/ha.	0	-11	-6	52	105	117	79	32.1

Control yield=89 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.	140	100	140	300	340	500	600	—

Control yield=100 Kg/ha. : No. of trials=1.

Crop :- Gingelly.**Ref :- Or. 62, 63, 64, 65(S.F.T.) for Puri, 62, 63(S.F.T.) for Mayurbhanj, 63, 65(S.F.T.) for Cuttack.****Site :- (District) : Puri, Mayurbhanj and Cuttack.****Type :- 'M'.****Object :-**To study the response curves of important cereal, cash and oilseed crops to potash applied singly and in combination with other nutrients (Type A₃).**1. BASAL CONDITIONS ;**

(i) N.A. (ii) Red loamy for Cuttack, Red and yellow 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.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. of Pot.**3. DESIGN :**Same as in Type A₁ (unirrigated) on page no. 272.**4. GENERAL :**

(i) to (iii) N.A. (iv) (a) 1962 to 1966 for Puri, 1962 to 1963 for Mayurbhanj, 1963 to 1965 [1964 N.A.] for Cuttack. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :**Puri****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 <i>Til</i> in Kg/ha.	138	45	69	69	90	207	183	—

Control yield=138 Kg/ha. ; No. of trials=1.

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 Til in Kg/ha.	94	17	—1	86	49	170	116	—

Control yield=81 Kg/ha. ; No. of trials=1.

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 Til in Kg/ha.	103	114	166	259	358	495	714	52.3

Control yield=91 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 Til in Kg/ha.	123	106	269	281	380	537	659	52.2

Control yield=69 Kg/ha. ; No. of trials=2.

Mayurbhanj

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 Til in Kg/ha.	23	162	221	276	300	185	393	—

Control yield=322 Kg/ha. ; No. of trials=1.

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 Til in Kg/ha.	116	-69	-39	162	128	116	278	—

Control yield=253 Kg/ha. ; No. of trials=1.

Cuttack

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 Til in Kg/ha.	51	14	24	68	120	146	120	42.6

Control yield=89 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 Til in Kg/ha.	100	40	100	200	340	500	400	—

Control yield=100 Kg/ha. ; No. of trials=1.

Crop :- Gingelly.

Ref :- Or. 60(S.F.T.).

Site :- (District) : Bolangir, Ganjam and Puri.

Type :- 'M'.

Object :—To study the response of Gingelly to different levels of N, P₂O₅ and K₂O applied individually and in combination (Type : A).

1. BASAL CONDITIONS :

(i) N.A. (ii) Red soil for Bolangir and Ganjam, coastal alluvium for Puri. (iii) to (x) N.A.

2. TREATMENTS ;

0 =Control (no manure).

n =22.4 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 =22.4 Kg/ha. of N as A/S+22.4 Kg/ha. of P_2O_5 as Super.nk =22.4 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=22.4 Kg/ha. of N as A/S+22.4 Kg/ha. of P_2O_5 as Super+22.4 Kg/ha. K_2O as Mur. Pot.

3. DESIGN :

Same as in Type A₁ (unirrigated) above.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1960 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

District	No. of trials	Control yield	Av. response			S.E.	Interaction effect				S.E.
			N	P	K		NP	NK	PK	NPK	
Bolangir	2	380	340	180	190	67.0	50	70	40	80	25.0
Ganjam	3	200	50	60	70	8.3	30	10	20	60	45.0
Puri	2	360	100	60	20	14.0	10	10	0	-20	42.0

Crop :- Gingeley.**Ref :- Or. 60 (S.F.T).****Site :- (District) Balosore and Puri.****Type :- 'M'.**

Object :—To investigate the relative efficiency of different nitrogenous fertilizers at different doses (Type : B).

1. BASAL CONDITIONS :

(i) N.A. (ii) Red soil. (iii) to (x) N.A.

2. TREATMENTS :

0 =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 ;

(i) and (ii) The district has been divided into four agriculturally homogeneous zones 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* creal, 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 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 villages. (iii) (a) 1/98.8 ha. (b) 1/197.6 ha. (iv) Yes.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1960 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

District	No. of Control trials	Av. yield of Til in Kg/ha.								G.M.	S.E./mean	
		n_1	n_2	n_1'	n_2'	n_1''	n_2''	n_1'''	n_2'''			
Bolangir	2	370	—	610	700	810	830	570	880	681	112.4	
Puri	4	260	350	400	330	350	—	—	370	390	350	23.3

Crop :- Gingely (*Kharif*).

Ref :- Or. 62(30).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'D'.

Object :- To study the effect of different fungicides in controlling *Percos pora* leaf spot disease in Sesamum.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) Sandy loam. (iii) 28.6.62. (iv) (a) 2 ploughings and harrowing. (b) Line sowing. (c) 6 Kg/ha. (d) 23 cm. x 15 cm. (e) Nil. (v) 25 C.L./ha. of F.Y.M. + 33.6 Kg/ha. of P_2O_5 . (vi) Selection 14. (vii) Irrigated. (viii) One hand weeding and hoeing. (ix) 131.4 cm. (x) 1st week of Oct., 64.

2. TREATMENTS :

9 Fungicidal treatments : T_0 =Control, T_1 =Bordeux Mixture 0.4%, T_2 =Fit 0.2%, T_3 =Cupravit 0.2%, T_4 =Blitax 0.2%, T_5 =Shell copper 0.2%, T_6 =Micop 0.2%, T_7 =Ziram 0.2%, T_8 =Cuprous oxide 0.2%.

Fungicides were applied in 1123 litres of water per hectare.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a) 9.6 m. x 2.1 m. (b) 9.1 m. x 1.8 m. (v) 23 cm. x 15 cm. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Nil. (iii) Percentage of fungicide. (iv) (a) 1962—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Seed yield

(i) 107 Kg/ha. (ii) 9.0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of seed different in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	86	126	102	107	121	115	108	92	103

C.D.=15.4 Kg/ha.

Disease index

(i) 22.82 degree. (ii) 4.42 degree. (iii) Treatment differences are highly significant. (iv) Mean disease index in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Mean angle	37.24	17.74	21.76	22.18	15.39	23.99	20.66	24.80	21.58

C.D.=7.68 degree

Crop :- Gingelly (Rabi).**Ref :- Or. 64(5).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'D'.**

Object :—To study the effect of fungicides in controlling alternaria blight disease of Sesamum.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sesamum. (c) 25 C.L./ha. of F.Y.M. +33.6 Kg/ha. of P_2O_5 +33.6 Kg/ha. of N as A/S. (ii) Sandy loam. (iii) 13.11.64. (iv) (a) 3 ploughings and 2 ladderings. (b) Line sowing. (c) 6 Kg/ha. (d) 23 cm. × 15 cm. (e) N.A. (v) 25 C.L./ha. of F.Y.M. +22.4 Kg/ha. of P_2O_5 +33.6 Kg/ha. of N as A/S. (vi) Selection 14. (vii) Irrigated. (viii) 2 hoeings, 1 weeding and earthing up after top dressing. (ix) 2.7 cm. (x) 2.3.65.

2. TREATMENTS :

9 fungicidal treatments : T_0 =Control, T_1 =Bordeaux mixture 3 : 3 : 50, T_2 =Bliton—50, 0.3%, T_3 =Cupramar 0.3%, T_4 =Micop, W—50, 0.3%, T_5 =Dithane Z-78 (Hexathane) 0.2%, T_6 =Shell copper 0.3%, T_7 =Copper Sencoz 0.3% and T_8 =Flit 406 (captan) 0.2%.

Above fungicides were sprayed with 1123 litres of water/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a) 4.6 m. × 4.0 m. (b) 4.3 m. × 3.5 m. (v) 23 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Attack of anti-Castra and Phyllody ; Control measure as per treatments. (iii) Percentage of fungicide disease. (iv) (a) 1964—contd. (b) No, (c) Nil. (v) to (vii) Nil.

5. RESULTS :**Seed Yield**

(i) 32 Kg/ha. (ii) 6.0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of seed in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	25	38	40	29	32	27	38	35	28

Mean disease Index

(i) 16.7 degrees. (ii) 0.9 degrees. (iii) Treatment] differences are highly significant. (iv) Mean disease index in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Mean angle	21.5	13.1	14.4	18.4	15.0	18.3	15.9	15.9	18.0
Transformed back %	13.1	5.4	6.2	10.0	9.6	9.8	7.5	7.5	9.5

C.D.=1.6 degrees.

Crop :- Gingelly (Kharif).**Ref :- Or. 64(6).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'D'.**

Object :—To study the effect of different fungicides in controlling cercosporal leaf spot disease in Sesamum.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Potato. (c) 25 C.L./ha. of F.Y.M. (ii) Sandy loam. (iii) 20.6.64. (iv) (a) 3 ploughings and 3 ladderings. (b) Line sowing. (c) 6 Kg/ha. (d) 46 cm. × 30 cm. (e) Nil. (v) 25 C.L./ha. of F.Y.M. +33.6 Kg/ha. of P_2O_5 +33.6 Kg/ha. of N as A/S. (vi) Selection 14. (vii) Irrigated. (viii) 2 hoeings, 1 weeding and earthing up. (ix) 102.4 cm. (x) Last week of Oct.

2. TREATMENTS :

Same as in expt. no. 64(5) above

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a) 5.0 m. × 4.4 m. (b) 4.1 m. × 3.8 m. (v) 46 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Attack of powdery mildew disease; dusting with Sulphur. (iii) Percentage of disease effect. (iv) (a) 1964—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Seed Yield

(i) 103 Kg/ha. (ii) 10 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of seed in Kg/ha.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Av. yield	87	118	106	109	106	99	113	99	94

C.D.=17.2 Kg/ha.

Disease Index

(i) 14.2 degrees. (ii) 0.4 degrees. (iii) Treatment differences are highly significant. (iv) Mean disease index in degrees.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
Mean angle	18.3	11.7	13.8	14.1	12.7	15.0	11.7	14.6	15.9

C.D.=0.7 degrees

Transformed back%	9.9	4.1	5.7	5.9	4.8	6.7	4.1	6.4	7.6
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Crop Gingelly (*Kharif*).

Ref :- Or. 65(29).

Site :- State Agri Res. Stn., Bhubaneswar.

Type :- 'D'.

Object :- To study the effect of fungicides on control of *Cercospora* leaf spot of Sesamum caused by *Cercospora sesamicola*.

1. BASAL CONDITIONS :

(i) Potato and Kulthi—Sesamum. (b) Potato and Kulthi. (c) N.A. (d) Sandy loam. (iii) 4.6.65. (iv) (a) One tractor ploughing 2 ploughings by bullock drawn plough and 2 laddering. (b) Line sowing. (c) 5.6 Kg/ha. (d) 45 cm. × 30 cm. (e) Nil. (v) 33.6 Kg/ha. of P₂O₅ and 148.3 Q/ha. of F.Y.M. before sowing. (vi) Selection-14. (vii) Irrigated. (viii) Two hoeings, weedings and earthing up. (ix) 70.7 cm. (x) 11.9.65.

2. TREATMENTS :

12 Fungicides treatments : T₀=Control, T₁=Bordeaux mixture 3:3:50, T₂=Blitox—50 0.3%, T₃=Copper Sandox 0.3%, T₄=Shell cu-fungicide 0.3%, T₅=Cupravil 0.3%, T₆=Hexathane 0.2%, T₇=Captan 0.2%, T₈=Cupramar 0.3%, T₉=Blitane 0.3%, T₁₀=Cuman (Ziran) and T₁₁=Dithane M-45.

Spraying done at 1123 litres/ha. and on 28.7.65, 2.8.65 and 12.8.65.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 4.0 m. × 3.0 m. (b) 3.7 m. × 2.7 m. (v) 15 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Moderate incidence. (iii) Incidence of disease and yield. (iv) (a) 1962 contd with modification. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

I. Yield

(i) 651 Kg/ha. (ii) 48 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of Sesamum in Kg/ha.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Av. yield	605	733	683	633	721	633

Treatment	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁
Av. yield	637	627	590	652	675	624

II. Incidence of Cercospora leaf spot

(i) 14.06 degrees. (ii) 1.16 degrees. (iii) Treatment differences are highly significant. (iv) Av. incidence of cercospora leaf spot in degrees.

Treatment	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅
Av. yield	16.98	11.00	13.34	13.54	12.00	14.55

Treatment	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁
Av. yield	14.09	15.96	14.55	15.71	13.50	13.56

C.D.=1.96 degrees.

Crop :- Gingelly (Kharif).

Ref :- Or. 65(30).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'DC'.

Object :—To study the effect of different dates of sowing on incidence and intensity of attack of Cercospora leaf spot of Sesamum.

1. BASAL CONDITIONS :

(i) (a) Potato and Kulti-Sesamum. (b) Potato and Kulti. (c) N.A. (ii) Sandy loam. (iii) As per treatments. (iv) (a) 3 tractor ploughings and 2 ladderings. (b) Line sowing. (c) 5.6 Kg/ha. (d) 45 cm. × 30 cm. (e) Nil. (v) 148.3 Q/ha. of F.Y.M. and 33.6 Kg/ha. of P₂O₅ before sowing. (vi) Selection-14. (vii) Irrigated. (viii) 2 weedings, hoeings and earthing up. (ix) 70.7 cm. (x) 25.8.65 and 10.9.65.

2. TREATMENTS :

5 dates of sowing : D₁=26.5.65, D₂=10.6.65, D₃=25.6.65 and D₄=10.7.65.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 4.0 m. × 3.0 m. (b) 3.7 m. × 2.7 m. (v) 15 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Heavily attacked by Antigastra cantnanlanics—sprayed with endrin on 19.6.65. (iii) Incidence of disease and yield. (v) 1965 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS ;

I. Yield

(i) 373 Kg/ha. (ii) 41 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of sesamum in Kg/ha.

Treatment	D ₁	D ₂	D ₃	D ₄
Av. yield	157	635	507	192

C.D.=65.6 Kg/ha.

II. Incidence of Cercospora in degrees

(i) 22.8 degrees. (ii) 1.4 degrees. (iii) Treatment differences are highly significant. (iv) Av. incidence in degrees.

Treatment	D ₁	D ₂	D ₃	D ₄
Av. incidence in degrees	17.3	17.7	27.5	29.0

C.D.=2.2 degrees.

Crop :- Linseed (Rabi).

Ref :- Or. 61(4).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'MV'.

Object : -To study the effect of P on different varieties of Linseed.

1. BASAL CONDITIONS :

(i) (a) Ragi-Linseed-Vegetables. (b) Ragi. (c) 22.4 Kg/ha. of N as A/S. (ii) Sandy loam. (iii) 13.11.61. (iv) (a) 4 ploughings followed by ladderings. (b) Line sowing. (c) 28 Kg/ha. (d) 30 cm. × 15 cm. (v) 12 C.L./ha. of F.Y.M. (vi) As per treatments. (vii) Irrigated. (viii) One weeding. (ix) 2 cm. (x) 24.2.62.

2. TREATMENTS :

Main-plot treatments :

4 levels of P₂O₅ as Super : P₁=22.4, P₂=44.8, P₃=67.2 and P₄=89.7 Kg/ha.

Sub-plot treatments :

2 varieties of Linseed : V₁=Karanja-2 and V₂=T-62.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 3.7 m. × 2.4 m. (b) 3.4 m. × 1.8 m. (v) 15 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of rust. (iii) Height and yield of grain. (iv) (a) 1961 only. (b) and (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 1095 Kg/ha. (ii) (a) 180.0 Kg/ha. (b) 171.0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of seed in Kg/ha.

	P ₁	P ₂	P ₃	P ₄	Mean
V ₁	1133	1061	800	1240	1058
V ₂	1028	1069	1193	1232	1131
Mean	1081	1065	997	1236	1095

Crop :- Mustard.

Ref :- Or. 62, 64, 65 (S.F.T.) for Balasore ; 62, 64(S.F.T.) for Cuttack, 64 (S.F.T.) for Ganjam and 65(S.F.T.) for Mayurbhanj.

Site :- (District) : Balasore, Cuttack, Ganjam and Mayurbhanj.

Type :- 'M'.

Object :—To study the response curves of important cereal, cash and oilseed crops to nitrogen applied singly and in combination with other nutrients. (Type : A₁)

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red and yellow for Mayurbhanj and Red loamy 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. 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. of 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 1965 for Balasore [1963 N.A.] ; 1962 to 1964 for Cuttack [1963 N.A.] ; 1964 only for Ganjam and 1965 to 1966 for Mayurbhanj. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Balasore

62 (S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₂	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of mustard in Kg/ha.	9	19	39	49	118	177	197	—

Control yield=177 Kg/ha. ; No. of trials=1.

64(S.F.T.)

Treatment	N ₁	N ₂	P ₁	N ₁ P ₂	N ₂ P ₁	N ₂ P ₂	N ₂ P ₂ K ₁	S.E.
Av. response of mustard in Kg/ha.	71	209	—12	108	125	128	120	64.2

Control yield=744 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 mustard in Kg/ha.	26	200	00	86	136	296	200	—

Control yield=424 Kg/ha. ; No. of trials=1

Cuttack

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 mustard in Kg/ha.	75	59	47	60	96	120	92	—

Control yield=120 Kg/ha. ; No. of trials=1.

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 mustard in Kg/ha.	49	39	39	74	79	79	118	27.1

Control yield=247 Kg/ha. ; No. of trials=2.

Ganjam

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 mustard in Kg/ha.	513	365	602	751	805	434	681	502.5

Control yield=840 Kg/ha. ; No. of trials=2.

Mayurbhanj

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 mustard in Kg/ha.	40	64	10	50	94	146	204	—

Control yield =130 Kg/ha. ; No. of trials=1.

Crop :- Mustard (Rabi).

Ref :- Or. 65, (S.F.T.).

Site :- (District) : Balasore.

Type :- 'M'.

Object :—To study the response curves of important cereal, cash and oil seed crops to phosphorus applied singly and in combination with other nutrients. (Type : A₅.)

1. BASAL CONDITIONS :

(i)(a) to (c) N.A. (ii) Red loamy. (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.

N₂P₂K₂=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. of Pot.

3. DESIGN :

Same as in type A₁ (unirrigated) on page 283.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1955 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

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.	115	14	122	90	100	162	225	55.7

Control yield=500 Kg/ha. ; No. of trials=2.

Crop :- Mustard.

**Ref :- Or. 62, 64 (S.F.T.) for Balasore and
Cuttack ; 64 (S.F.T.) for Ganjam.**

**Site :- (District) : Balasore, Cuttack
and Ganjam.**

Type :- 'M'.

Object :- To study the response curves of important cereal, cash and oilseed crops to phosphorus applied singly and in combination with other nutrients (Type : A₂).

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red loamy. (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. of Pot.

3. DESIGN :

Same as in Type A₁ (unirrigated) on page 283.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1964 [1963—N.A.] for Balasore and Cuttack and 1964 only for Ganjam.

(b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Balasore

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 mustard in Kg/ha.	29	-9	19	69	69	227	266	—

Control yield=168 Kg/ha. ; No. of trials=1.

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 mustard in Kg/ha.	59	56	49	155	155	133	205	52.1

Control yield=472 Kg/ha. ; No. of trials=2.

Cuttack

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 mustard in Kg/ha.	75	77	75	57	81	98	195	—

Control yield=81 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 mustard in Kg/ha.	-4	34	-19	59	39	93	108	39.5

Control yield=355 Kg/ha. ; No. of trials=2.

Ganjam

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 mustard in Kg/ha-	444	563	899	563	909	859	1230	220.2

Control yield=859 Kg/ha. ; No. of trials = 2.

Crop :- Mustard.**Ref :- Or. 65(S.F.T.).****Site :- (District) : Balasore.****Type :- 'M'.**

Object :—To study the response curves of important cereal, cash and oilseed crops to potash singly and in combination with other nutrients (Type : A₂).

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red loamy. (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=25 Kg/ha. of N.K₂=50 Kg/ha. of P₂O₅.N₁K₁=35 Kg/ha. of N+50 Kg/ha. of K₂O.N₁K₂=35 Kg/ha. of N+50 Kg/ha. of K₂O.N₂K₂=70 Kg/ha. of N+50 Kg/ha. of K₂O.N₁P₁K₁=35 Kg/ha. of N+25 Kg/ha. of K₂O₂+25 Kg/ha. of K₂O.N applied as A/S, P₂O₅ as super and K₂O as Mur. of Pot.

3. DESIGN :

Same as in type A₁ (unirrigated) on page 283.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1965 only. (b) N.A. (c) Nil. (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 Mustard in Kg/ha.	82	2	-78	40	55	152	27	57.2

Control yield=445 Kg/ha. ; No. of trials=2

Crop :- Mustard.**Ref :- Or. 64(S.F.T.) for Balasore, 64(S.F.T.) for Cuttack and Ganjam and 65(S.F.T.) for Mayurbhanj.****Site :- (District) Balasore, Cuttack, Ganjam and Mayurbhanj.****Type :- 'M'.**

Object :—To study the response curves of important cereal, cash and oilseed crops to potash singly and in combination with other nutrients (Type : A₂).

1. BASAL CONDITIONS :

(i) (a) and (c) N.A. (ii) Red and yellow for Mayurbhanj and Red loamy for others. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

O = Control (no manure).

 $N_1 = 25$ Kg/ha. of N. $K_1 = 25$ Kg/ha. of K_2O . $K_2 = 50$ Kg/ha. of K_2O . $N_1K_1 = 25$ Kg/ha. of N + 25 Kg/ha. of P_2O_5 . $N_1K_2 = 25$ Kg/ha. of N + 50 Kg/ha. of P_2O_5 . $N_2K_2 = 50$ Kg/ha. of N + 50 Kg/ha. of P_2O_5 . $N_1P_1K_1 = 25$ Kg/ha. of N + 25 Kg/ha. of P_2O_5 + 25 Kg/ha. of K_2O .N applied as A/S, P_2O_5 as super and K_2O as Mur. of Pot.

3. DESIGN :

Same as in Type A_1 (unirrigated) on page 283.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1964 for Balasore [1963-N.A.]; 1964 only for Cuttack and Ganjam; 1965 to 1966 for Mayurbhanj. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Balasore

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 Mustard in Kg/ha.	59	0	29	128	138	276	266	—

Control yield = 118 Kg/ha. ; No. of trials = 1.

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 Mustard in Kg/ha.	84	-14	0	101	106	247	143	102.4

Control yield = 597 Kg/ha. ; No. of trials = 2.

Cuttack

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 Mustard in Kg/ha.	19	0	14	14	14	88	39	11.7

Control yield = 345 Kg/ha. ; No. of trials = 2.

Ganjam

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 Mustard in Kg/ha.	207	780	296	434	622	830	553	252.5

Control yield = 642 Kg/ha. ; No. of trials = 2.

Mayurbhanj

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 Mustard in Kg/ha.	40	54	-80	130	240	150	340	—

Control yield = 110 Kg/ha. ; No. of trials = 1.

Crop :- Mustard.**Ref :- Or. 60(SFT).****Site :- (District) : Balasore and Dhenkanal.****Type :- 'M'.**

Object :—To study the response of Mustard to different levels of N, P₂O₅ and K₂O applied individually and in combination (Type : A)

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Saline, Red and black. (iii) to (x) N.A.

2. TREATMENTS :

O = Control (no manure)
 n = 22.4 Kg/ha. of N as A/S
 p = 22.4 Kg/ha. of P₂O₅ as Super.
 k = 22.4 Kg/ha. of K₂O as Mur. Pot.
 np = 22.4 Kg/ha. of N as A/S + 22.4 Kg/ha. of P₂O₅ as Super.
 nk = 22.4 Kg/ha. of N as A/S + 22.4 Kg/ha. of K₂O as Mur. Pot.
 pk = 22.4 Kg/ha. of P₂O₅ as Super + 22.4 Kg/ha. of K₂O as Mur. Pot.
 npk = 22.4 Kg/ha. of N as A/S + 22.4 Kg/ha. of P₂O₅ as Super + 22.4 Kg/ha. K₂O as Mur. Pot.

3. DESIGN :Same as in type A₁ (unirrigated) on page 283.**4. GENERAL :**

(i) to (iii) N.A. (iv) (a) 1960 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Av. response in Kg/ha.

District	No. of trials	Control yield	N	P	K	S.E.	NP	NK	PK	NPK	S.E.
Balasore	3	450	130	60	70	17.0	0	0	0	0	—
Dhenkanal	4	670	120	80	60	30.0	-20	-10	20	30	13.0

Crop :- Mustard (Rabi).**Ref :- Or. 60(SFT).****Site :- (District) : Balasore and Dhenkanal.****Type :- 'M'.**

Object :—To investigate the relative efficiency of different nitrogenous fertilizers at different doses. (Type : B)

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Saline ; Red and black. (iii) to (x) N.A.

2. TREATMENTS :

O = Control (No manure).
 n₁ = 22.4 Kg/ha. of N as A/S. n₁' = 22.4 Kg/ha. of N as A/S/N.
 n₂ = 44.8 Kg/ha. of N as A/S. n₂' = 44.8 Kg/ha. of N as A/S/N.
 n₁' = 22.4 Kg/ha. of N as Urea. n₁'' = 22.4 Kg/ha. of N as C/A/N.
 n₂' = 44.8 Kg/ha. of N as Urea. n₂'' = 44.8 Kg/ha. of N as C/A/N.

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) 1/40 ac. (b) 1/80 ac. (iv) Yes.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1960 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

District	No. of trials	Control	Av. response in Kg/ha.								G.M.	S.E./Mean
			n_1	n_2	n_1'	n_2'	n_1''	n_2''	n_1'''	n_2'''		
Balasore	3	560	—	—	630	640	620	660	670	730	644	26.2
Dhekanal	7	700	—	—	750	850	760	890	850	960	823	19.1
Balasore	2	270	410	520	390	490	—	—	410	520	430	19.8

Crop :- Mustard (Rabi).

Ref :- Or. 64(42),

Site :- Agri. Res. Stn., Sambalpur.

Type :- 'CV'.

Object :- To find out a suitable date of sowing for different varieties of Mustard.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) Clay loam. (iii) As per treatments. (iv) (a) 3 plougings by country plough and 2 ladderings. (b) Broadcasted. (c) 12 Kg/ha. (d) N.A. (e) Nil. (v) 10 Kg/ha. of N as A/S+30 Kg/ha. of P_2O_5 as Super+30 Kg/ha. of K_2O as KCl+10 Kg/ha. of N as A/S top dressed just before flowering. (vi) As per treatments. (vii) Irrigated. (viii) Nil. (ix) 90.4 cm. (x) 15, 29, 30.1.65 ; 3, 4, 12, 15, 16, 18, 26, 27.2.65 and 3, 8.3.65.

2. TREATMENTS :

Main-plot treatments :

6 dates of sowing : $D_1=15.9.64$; $D_2=1.10.64$; $D_3=15.10.64$; $D_4=1.11.64$; $D_5=15.11.64$ and $D_6=1.12.64$.

Sub-plot treatments :

4 varieties : $V_1=Local$, $V_2=B-85$, $V_3=R.T.-11$ and $V_4=R.L.-18$.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/903.3 ha. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Attack of aphid ; spraying Sayphos. (iii) Height, branches/plant, Silica/plant and grain yield. (iv) (a) 1964—66. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) The crop sown on 1.12.64 failed completely.

5. RESULTS :

(i) 275 Kg/ha. (ii) (a) 124.0 Kg/ha. (b) 92.0 Kg/ha. (iii) Main effect of D is highly significant and that of V is significant. (iv) Av. yield of seed in Kg/ha

	D_1	D_2	D_3	D_4	D_5	Mean
V_1	128	165	305	303	464	273
V_2	168	56	179	399	423	245
V_3	231	159	312	520	425	329
V_4	103	120	359	317	369	254
Mean	157	125	289	385	420	275

C.D. for D marginal means=93.3 Kg/ha.

C.D. for V marginal means=53.4 Kg/ha.

Crop :- Mustard (Rabi).**Ref :- Or. 65(3).****Site :- Agri. Res. Stn., Sambalpur.****Type :- 'CV'.**

Object :- To find out a suitable time of sowing with relation to a suitable variety.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Brinjal. (c) N.A. (ii) Clay loam. (iii) As per treatments (iv) (a) 3 ploughings and 3 laddering. (b) Broadcasted. (c) 12 Kg/ha. (d) and (e) Nil. (v) 20 Kg/ha. of N as A/S + 32 Kg/ha. of P_2O_5 as Super + 30 Kg/ha. of K_2O as KCl. (vi) As per treatments. (vii) Irrigated. (viii) Nil. (ix) 3.8 cm. (x) 22.12.65 to 2.3.66.

2. TREATMENTS :**Main-plot treatments :**

5 dates of sowing : $D_1=1.10.65$; $D_2=15.10.65$; $D_3=1.11.65$; $D_4=15.11.65$ and $D_5=1.12.65$.

Sub-plot treatments :

4 varieties : $V_1=$ Angul local, $V_2=B-85$, $V_3=R.T.-11$ and $V_4=K.L.-18$.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 5.0 m. x 3.0 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Mustard saw-fly, aphid—weekly spraying of folidol after flowering. (iii) Yield of mustard. (iv) (a) 1964--1966. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 301 Kg/ha. (ii) (a) 268 Kg/ha. (b) 141 Kg/ha. (iii) Main effect of D is significant and that of V is highly significant. (iv) Av. yield of seed in Kg/ha.

	D_1	D_2	D_3	D_4	D_5	Mean
V_1	377	482	550	295	182	377
V_2	202	345	445	252	42	257
V_3	287	372	532	180	72	289
V_4	373	359	393	208	72	281
Mean	310	389	480	234	92	301

C.D. for D marginal means=206.3 Kg/ha.

C.D. for V marginal means=89.9 Kg/ha.

Crop :- Niger.**Ref :- Or. 60(S.F.T.).****Site :- (District) : Kalahandi.****Type :- 'M'.**

Object :- To study the response of Niger to different levels of N, P_2O_5 and K_2O applied individually and in combination (Type : A).

1. BASAL CONDITIONS :

(i) (a) to (c) N A. (ii) Red soil. (iii) to (x) N.A.

2. TREATMENTS :

O=Control (no manure).

n=22.4 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=22.4 Kg/ha. of N as A/S+22.4 Kg/ha. of P_2O_5 as Super.

nk=22.4 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. K_2O as Mur. Pot.

npk=22.4 Kg/ha. of N as A/S+22.4 Kg/ha. of P_2O_5 as Super+22.4 Kg/ha. K_2O as Mur. Pot.

3. DESIGN :

A selected district is divided into four agriculturally homogenous 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) 1960 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Treatment	N	P	K	S.E.	NP	NK	PK	NPK	S.E.
Av. response in Kg/ha.	150	180	140	28.0	-120	-40	-60	60	18.0

Control yield=370 Kg/ha. ; No. of trials=2.

Crop :- Niger.

Ref :- Or. 60(SFT).

Site :- (District) : Mayurbhanj.

Type :- 'M'.

Object :- To investigate the relative efficiency of different nitrogenous fertilizers at different doses (Type : B).

1. BASAL CONDITIONS :

(i) N.A. (ii) Red soil. (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 C/A/N.

n_2'' =44.8 Kg/ha. of N as C/A/N.

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 ex-

periments 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) 1/40 c. (b) 1/80 ac. (iv) Yes.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1960 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Treatment	O	n ₁	n ₂	n ₁ '	n ₂ '	n ₁ ''	n ₂ ''	S.E.
Av. yield in Kg/ha.	300	390	420	500	360	340	450	59.4

G.M.=394 Kg/ha. ; No. of trials=2.

Crop :- Onion (Rabi).

Ref :- Or. 65(18).

Site :- Agri. Res. Stn., Sambalpur.

Type :- 'M'.

Object :- To study the optimum doses of N, P and K for Onion.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Lacterite-light sandy loam. (iii) 27.1.65. (iv) (a) 6 cross-ploughings and 2 ladderings. (b) Line planting. (c) 5 Kg/ha. (d) 23 cm. x 8 cm. (e) 1. (v) Nil. (vi) Pusa-red. (vii) Irrigated. (viii) 2 hand weedings. (ix) 5.1 cm. (x) 24.4.65.

2. TREATMENTS :

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

(1) 3 levels of N as C/A/N : N₁=67.2, N₂=134.5 and N₃=201.7 Kg/ha

(2) 3 levels of P₂O₅ as Super : P₁=100.9, P₂=201.7 and P₃=302.6 Kg/ha.

(3) 3 levels of K₂O as Mur. Pot. : K₁=67.2, K₂=134.5 and K₃=201.7 Kg/ha.

N, P and K broadcast at planting.

3. DESIGN :

(i) 3³ confd. (ii) (a) 9 plots/block, 3 blocks/replication. (b) N.A. (iii) 3 (iv) (a) 4.9 m. x 2.1 m. (b) 4.8 m. x 1.8 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Spraying of 2 Kg. of parathion in 136 litres of water. (iii) Nil. (iv) (a) 1965 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 9248 Kg/ha. (ii) 717 Kg/ha. (iii) Main effect of P is highly significant and that of K is significant. (iv) Av. yield of bulb in Kg/ha.

	K ₁	K ₂	K ₃	P ₁	P ₂	P ₃	Mean
N ₁	6985	9855	8530	5485	9714	10170	8456
N ₂	9399	9786	10037	6924	10858	11400	9741
N ₃	8845	10173	9623	7228	8524	12880	9547
Mean	8409	9938	9396	6545	9715	11483	9248
P ₁	6309	7398	5929				
P ₂	8962	9577	10606				
P ₃	9957	12838	11654				

C.D. for P or K marginal means = 393.3 Kg/ha.

Crop :- Chilli (Rabi).**Ref :- Or. 65(S.F.T.)****Site :- (District) Mayurbhanj.****Type :- 'M'.**

Object :—To study the response curves of important cereal, cash and oilseed crops to nitrogen applied singly and in combination with other nutrients (Type : A₁),

1. BASAL CONDITIONS :

(i) N.A. (ii) Red and yellow. (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 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.N₂P₂K₁=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. of 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, on a *rabi* cereal, 3 on a cash crop and 2 on oil seed. All the three type—C experiments are conducted 3 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 :

(1) to (iii) N.A. (iv) (a) 1965 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

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 Chilli in Kg/ha.	60	2	2	134	222	262	362	—

Control yield=210 Kg/ha., No. of trials=1.

Crop :- Chilli.**Ref :- Or. 65(S.F.T.)****Site :- (District) Mayurbhanj.****Type :- 'M'.**

Object :—To study the response curves of important cereal, cash and oil seed crops to phosphorus applied singly and in combination with other nutrients (Type : A₂).

1. BASAL CONDITIONS :

(i) N.A. (ii) Red and yellow. (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 N.P₁ =30 Kg/ha. of P₂O₅.P₂ =60 Kg/ha. of P₂O₅.N₁P₁ =60 Kg/ha. of N+30 Kg/ha. of P₂O₅.N₁P₂ =60 Kg/ha. of N+60 Kg/ha. of P₂O₅.N₂P₂ =120 Kg/ha. of N+60 Kg/ha. of P₂O₅.N₂P₂K₁=120 Kg/ha. of N+60 Kg/ha. of P₂O₅+120 Kg/ha. of K₂O.N applied as A/S ; P₂O₅ as Super and K₂O as Mur. of Pot.

3. DESIGN :

Same as in Type A₁ (unirrigated) on page 293.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1965—only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Treatment	N ₁	P ₁	P ₂	N ₁ P ₁	N ₁ P ₂	N ₂ P ₂	N ₂ P ₁ K ₂	S.E.
Av. response of grain in Kg/ha.	82	42	-2	158	260	280	420	—

Control yield=212 Kg/ha. ; No. of trials =1.

Crop :- Chilli.

Site :- (District) Mayurbhanj.

Ref :- Or. 65(S.F.T.).

Type :- 'M'.

Object :—To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients (Type : A₃)

1. BASAL CONDITIONS :

(i) N.A. (ii) Red and yellow. (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 N.

K₁ =60 Kg/ha. of K₂O.

K₂ =120 Kg/ha. of K₂O.

N₁K₁ =60 Kg/ha. of N+60 Kg/ha. of K₂O.

N₁K₂ =60 Kg/ha. of N+120 Kg/ha. of K₂O.

N₂K₂ =120 Kg/ha. of N+120 Kg/ha. of K₂O.

N₁P₁K₁=60 Kg/ha. of N+30 Kg/ha. of P₂O₅+60 Kg/ha. of K₂O.

N applied as A/S, P₂O₅ as Super and K₂O as Mur. of Pot.

3. DESIGN :

Same as in Type A₁ (unirrigated) on page 293.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1265—only. (b) N.A. (c) Nil. (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 chillies in Kg/ha.	100	100	2	200	302	240	502	—

Control yield=210 Kg/ha. ; No. of trials=1.

Crop :- Berseem (Rabi).

Site :- Agri. Res. Stn., Sambalpur.

Ref :- Or. 62(70), 63(52), 64(39).

Type :- 'M'.

Object :—To study the effect of P, K and lime on the yield of Berseem.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Potato for 62(70); *Berseem* for 63(52); Paddy for 64(39). (c) 89.7 Kg/ha. of N as A/S+67.2 Kg/ha. of P_2O_5 as Super+44.8 Kg/ha. of K_2O as Pot. Sul.+59 C.L./ha. of F.Y.M. for 62(70); As per treatments for 63(52); Nil for 64(39). (ii) Sandy loam. (iii) 19.11.1961; 19.11.1962; 13.11.1963. (iv) (a) 2 to 6 ploughings. (b) Broadcasting. (c) 28 Kg/ha. (d) Nil. (e) . (v) 12 C.L./ha. of F.Y.M.+11.2 Kg/ha. of N as A/S+22.4 Kg/ha. of N as A/S top dressed for 62(70); Nil for others. (vi) N.A. (vii) Irrigated. (viii) One hand weeding+one hoeing for 62(70); Nil for others. (ix) 4 cm., 1 cm., Nil. (x) 8.2.1962, 2.3.1962; 5, 29.1.1963, 27.3.1963; 12 to 14.11.1964, 18.2.1964, 20.3.1964.

2. TREATMENTS :

Main-plot treatments :

2 levels of lime : $L_1=1681$ and $L_2=3362$ Kg/ha.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of P_2O_5 as Super : $P_1=56.0$, $P_2=112.1$ and $P_3=168.1$ Kg/ha.

(2) 3 levels of K_2O : $K_1=28.0$, $K_2=56.0$ and $K_3=84.1$ Kg/ha.

K_2O was applied as Pot. Chloride for 64(39) and as Mur. Pot. for others. Lime, N and P were applied as broadcast.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication; 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 4.8 m. \times 4.4 m. for 62(70); 4.8 m \times 4.5 m. for others. (b) 3.9 m. \times 4.2 m. for 62(70); 4.6 m. \times 4.3 m. for others. (v) 44 cm. \times 12 cm. for 62(70), 10 cm. \times 12 cm. for others. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of green fodder. (iv) (a) 1962—1964. (b) No. (c) Nil. (v) (a) N.A. (b) Nil. (vi) Nil. (vii) Sub-plot error variances are heterogeneous.

5. RESULTS :

62(70)

(i) 62.1 Q/ha. (ii) (a) 13.2 Q/ha. (b) 8.0 Q/ha. (iii) Main effect of P alone is highly significant. (iv) Av. yield of fodder in Q/ha.

	P_1	P_2	P_3	K_1	K_2	K_3	Mean
L_1	50.6	56.2	73.7	58.9	58.6	63.0	60.1
L_2	52.9	59.1	80.2	64.1	63.1	65.1	64.1
Mean	51.7	57.6	76.9	61.5	60.8	64.0	62.1
K_1	53.7	57.0	73.8				
K_2	51.3	56.8	74.5				
K_3	50.3	59.2	82.5				

C.D. for P marginal means=4.7 Q/ha.

63(52)

(i) 212.8 Q/ha. (ii) (a) 17.6 Q/ha. (b) 13.7 Q/ha. (iii) Main effect of P alone is highly significant. (iv) Av. yield of fodder in Q/ha.

	P_1	P_2	P_3	K_1	K_2	K_3	Mean
L_1	182.0	209.8	235.9	205.6	210.8	211.4	209.2
L_2	187.9	223.2	238.1	214.1	218.7	216.3	216.4
Mean	185.0	216.5	237.0	209.8	214.8	213.8	212.8
K_1	181.7	215.3	232.5				
K_2	189.0	220.1	235.2				
K_3	184.2	214.0	243.3				

C.D. for P marginal means=7.9 Q/ha.

64(39)

(i) 155.6 Q/ha. (ii) (a) 37.1 Q/ha. (b) 17.7 Q/ha. (iii) Main effect of P is highly significant and interaction $P \times K$ is significant. (iv) Av. yield of fodder in Q/ha.

	P ₁	P ₂	P ₃	K ₁	K ₂	K ₃	Mean
L ₁	132.5	159.0	184.9	152.4	162.4	161.7	158.8
L ₂	137.7	159.2	160.3	146.8	150.6	159.8	152.4
Mean	135.1	159.1	172.6	149.6	156.5	160.7	155.6
K ₁	139.3	148.1	161.4				
K ₂	140.0	159.7	169.7				
K ₃	126.0	169.5	186.7				

C.D. for P marginal means = 10.3 Q/ha.

C.D. for means in the body of $P \times K$ table = 18.0 Q/ha.

Crop :- Legumes (Rabi).

Ref :- Or. 64(4).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'CM'.

Object :- To find out the effect of seed inoculation with specific bacteria on vegetative growth, effective nodule formation and yield of leguminous crops.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 14.11.1964. (iv) (a) Tractor ploughing and harrowing by cultivator. (b) Line sowing. (c) Moong and horsegram at 18.4 Kg/ha.; Groundnut at 33.6 Kg/ha. and pea at 23 Kg/ha. (d) Green gram, horse gram and blackgram 23 cm. \times 15 cm.; Field pea and groundnut at 46 cm. \times 23 cm. (e) Nil. (v) Nil. (vi) Local varieties; groundnut AK 12—24. (vii) Irrigated. (viii) 2 hoeings and weedings. (ix) 1.8 cm. (x) 2nd week of Feb., 1965.

2. TREATMENTS :

Main-plot treatments :

5 leguminous crops : C₁=Field pea, C₂=Green gram, C₃=Black gram, C₄=Horse gram and C₅=Groundnut.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 levels of P₂O₅ as Super : P₀=0 and P₁=22.4 Kg/ha.

(2) 2 seed treatments : T₀=Uninoculated seeds and T₁=Inoculated seeds.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 4.6 m. \times 2.7 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Not good. (ii) Tikka disease, control measures N.A. (iii) Counting of effected nodule, no. and length of roots. (iv) (a) 1964—contd. (b) No. (c) Nil. (v) and (vi) Nil. (vii) The analysis has been done separately for each crop taking it as R.B.D.

5. RESULTS :

Grain yield

Field Pea

(i) 91 Kg/ha. (ii) 10.5 Kg/ha. (iii) Main effect of T alone is significant. (iv) Yield of pea in Kg/ha.

	T ₀	T ₁	Mean
P ₀	74	97	86
P ₁	85	106	96
Mean	80	102	91

C.D. for T marginal means=14.9 Kg/ha.

Green gram

(i) 125 Kg/ha. (ii) 24.8 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T ₀	T ₁	Mean
P ₀	110	147	128
P ₁	108	135	122
Mean	109	141	125

Black gram

(i) 236 Kg/ha. (ii) 142.9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T ₀	T ₁	Mean
P ₀	139	305	222
P ₁	160	338	249
Mean	150	322	236

Horse gram

(i) 536 Kg/ha. (ii) 59.6 Kg/ha. (iii) Main effect of T alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	T ₀	T ₁	Mean
P ₀	499	599	449
P ₁	519	725	622
Mean	509	662	536

C.D. for T marginal means=84.1 Kg/ha.

Groundnut

(i) 1820 Kg/ha. (ii) 149.6 Kg/ha. (iii) Main effect of T alone is highly significant. (iv) Av. yield of pod in Kg/ha.

	T ₀	T ₁	Mean
P ₀	1637	1877	1757
P ₁	1664	2103	1884
Mean	1650	1990	1820

C.D. for T marginal mean=211.4 Kg/ha.

Nodules counts (for 10 plants/plot)

Field pea

(i) 29.1 (ii) 3.1 (iii) Main effect of T is highly significant and that of P is significant. (iv) Av. number of effective nodules.

	T ₀	T ₁	Mean
P ₀	19.5	18.1	26.8
P ₁	22.7	40.2	31.4
Mean	21.1	37.1	29.1

C.D. of Port marginal mean=4.4

Green gram

(i) 16.2 (ii) 3.6 (iii) Main effect of T alone is highly significant. (iv) Av. number of effective nodules.

	T ₀	T ₁	Mean
P ₀	10.1	18.1	14.1
P ₁	12.8	24.0	18.4
Mean	11.4	21.0	16.2

C.D. for T marginal means=5.1 Kg/ha.

Black gram

(i) 17.7 (ii) 3.8 (iii) Main effect of T alone is highly significant. (iv) Av. number of effective nodules.

	T ₀	T ₁	Mean
P ₀	12.8	20.8	16.8
P ₁	14.8	22.3	18.6
Mean	13.8	21.6	17.7

C.D. for T marginal mean=5.3.

Horse gram

(i) 6.1. (ii) 1.0. (iii) Main effect of T alone is highly significant. (iv) Av. number of effective nodules.

	T ₀	T ₁	Mean
P ₀	4.6	6.9	5.8
P ₁	5.2	7.5	6.4
Mean	4.9	7.2	6.1

C.D. for T marginal means=1.4.

Groundnut

(i) 42.8. (ii) 3.3. (iii) Main effect of T alone is highly significant. (iv) Av. number of effective nodules.

	T ₀	T ₁	Mean
P ₀	33.1	51.0	42.0
P ₁	32.2	55.1	43.6
Mean	32.6	53.0	42.8

C.D. for T marginal means=4.7.

Crop :- Mossabique.

Ref :- Or. 65(34 B).

Site :- State Agri. Res. Stn., Bhubaneswar.

Type :- 'M'.

Object :—To select one of the doses of N with combination to P which will be best for plant in respect to growth and yield.

1. BASAL CONDITIONS :

(i) Fallow. (ii) Red loamy. (iii) Grafts have been planted. (iv) Mossabique. (v) 7.8.1959 ; square system with 6.7 m. × 6.7 m. (vi) One year. (vii) 8 baskets of compost, 1.9 Kg. of oilcake, 1.9 Kg. of B.M.+ 1.9 Kg. of Super and 0.9 Kg. of A/S was applied per pit. (viii) One tractor ploughing, making basins, hoeing and earthing up at the time of manuring during kharif. (ix) Bottle gourd in June 65(Kulti in Sept. 66). (x) Irrigated. (xi) 122.7 cm. (xii) 15.9.65.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as C/A/N : N₁=0.2, N₂=0.5 and N₃=0.9 Kg/pit.

(2) 3 levels of P₂O₅ as Super : P₁=0.1, P₂=0.2 and P₃=0.5 Kg/pit.

0.1 Kg/pit of K₂O as KCl was applied to all the treatment combinations. N applied in two splits, ½ in kharif and remaining half in January. P₂O₅ and K₂O applied as basal.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a) 6.7 m. × 20.1 m. (b) 3 trees/plot. (v) One row around.

4. GENERAL :

(i) Good. (ii) Fruit drop ; Bordeaux mixture (5 : 5 : 50) sprayed. (iii) Height, spread, girth and yield of fruit. (iv) 1959 contd (60 to 64 N.A.). (v) and (vii) Nil.

5. RESULTS :

(i) 3217 fruits/ha. (ii) 2967 fruits/ha. (iii) None of the effects is significant. (iv) Av. no. of fruits/ha.

	P ₁	P ₂	P ₃	Mean
N ₁	988	6424	1433	2948
N ₂	1952	2001	2520	2158
N ₃	6078	4472	3089	4546
Mean	3006	4299	2347	3217

Crop :- Guava.**Ref :- Or. 65(33 B).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'M'.**

Object :--To find out suitable doses of N and P alone and in combinations at constant level of Potash with respect to growth and yield.

1. BASAL CONDITIONS :

(i) Fallow. (ii) Loamy. (iii) Grafts have been planted. (iv) Allahabad Sateda. (v) 3.8.1960, square system with 6.1 m. x 6.1 m. (vi) One year. (vii) 8 baskets of compost, 1.9 Kg. of Super + 1.9 Kg. of B.M. + 1.9 Kg. of Groundnut oil cake + 0.9 Kg. of A/S perit. (viii) One tractor ploughing, making basins, hoeing and earthing up at the time of manuring during kharif. (ix) Unirrigated. (x) 122.7 cm. (xi) November/December 65.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as C/A/N : $N_0=0$, $N_1=56.0$ and $N_2=112.1$ Kg/ha.

(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=44.8$ and $P_2=56.0$ Kg/ha.

44.8 Kg/ha. of K_2O as KCl was applied to all treatment combinations. N applied in two splits, $\frac{1}{2}$ in kharif and remaining $\frac{1}{2}$ in January, P_2O_5 and K_2O applied as basal.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a) 6.1 m. x 18.3 m. (b) 3 trees/plot. (v) One row around.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height, girth, spread and yield. (iv) 1963 contd (60 to 64—N.A.). (v) to (vii) Nil.

5. RESULTS :

(i) 966 Kg/ha. (ii) 424 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of guava in Kg/ha.

	P_0	P_1	P_2	Mean
N_0	1007	906	974	962
N_1	790	333	1186	770
N_2	726	1493	1280	1166
Mean	841	911	1147	966

Crop :- Pineapple.**Ref :- Or. 63(3).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'CV'.**

Object :--To study the effect of mulching on different varieties of Pineapple.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) Main suckers were planted. (iv) As per treatments. (v) 28.7.1962 ; square system with 61 cm. x 61 cm. spacing. (vi) 3 months. (vii) 49 C.L. ha. of compost. (viii) Weeding by hoes. (ix) Nil. (x) Irrigated. (xi) 172.4 cm. (xii) 2, 4, 6, 14, 20, 26 and 28.6.1964.

2. TREATMENTS :

Main-plot treatments :

2 types of mulching : M_0 =No mulch (open) and M_1 = Black polythelene mulch

Sub-plot treatments :

8 varieties : V_1 —Gaint Kew, V_2 —Green, V_3 —Queen, V_4 —Smooth Cyennes, V_5 —Red Riply, V_6 —Singapore, V_7 —Local (horticulture) and V_8 —Kew.

3. DESIGN :

- (i) Split-plot. (ii) (a) 2 main-plots/block ; 8 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) 6 trees per plot.
(v) One row on each side.

4. GENERAL :

- (i) Medium. (ii) Nil. (iii) Measurement and counting of leaves, no. of plants flowered during the season.
(iv) 1963 only. (v) to (vii) Nil.

5. RESULTS :

- (i) 1319 Kg/ha. (ii) (a) 1199.0 Kg/ha. (b) 847.0 Kg/a. (iii) None of the effects is significant. (iv) Av. yield of fruit in Kg/ha.

	V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	V ₇	V ₈	Mean
M ₀	955	680	1666	1743	655	1845	680	1084	1163
M ₁	1688	1609	1371	1866	939	925	1224	2185	1476
Mean	1321	1144	1518	1804	797	1385	952	1634	1319

Crop :- Paddy (Kharif).

Ref :- Or. 62(69).

Site :- Agri Res. Stn., Sambalpur.

Type :- 'R'.

Object :- To find out a suitable cropping pattern for Paddy.

1. BASAL CONDITIONS :

- (i) (a) and (b) As per treatments. (c) N.A. (ii) Sandy loam. (iii) 1.6.62 for C₁ and 18.8.62 for C₂ to C₆.
(iv) (a) 3 ploughings. (b) Transplanted for C₂ to C₆. (c) 67.3 Kg/ha. for broadcasting and 37 Kg/ha. for transplanting. (d) 23 cm. × 15 cm. (e) 2 to 3. (v) 22.4 Kg/ha. of N as A/S + 22.4 Kg/ha. of P₂O₅ as Super + 22.4 Kg/ha. of K₂O as Mur. Pot. and 22.4 Kg/ha. of N as A/S top dressed. (vi) T-1242. (vii) Irrigated. (viii) Hand-weeding one. (ix) 136.9 cm. (x) 21.12.62.

2. TREATMENTS :

C₁ = G.M. (*Dhaincha*) and Paddy (Broadcasted).

C₂ = G.M. (*Dhaincha*) — Paddy (Transplanted).

C₃ = G.M. (*Dhaincha*) — Paddy (Transplanted) — Paddy (PTB10).

C₄ = G.M. (*Dhaincha*) — Paddy (Transplanted) — *Ragi* (AKP-2).

C₅ = Jute (JRC212) — Paddy (Transplanted) — Paddy (PTB-10).

C₆ = Jute (JRC 212) — Paddy (Transplanted) — Paddy (PTB-10).

3. DESIGN :

- (i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 6.1 m. × 7.9 m. (b) 5.5 m. × 7.6 m. (v) 30 cm. × 15 cm.
(vi) Yes.

4. GENERAL :

- (i) Poor. (ii) Attack of Gallfly and stem-borer. (iii) Height and tillers count. (iv) (a) 1961—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

- (i) 456 Kg/ha. (ii) 94.0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	C ₁	C ₂	C ₃	C ₄	C ₅	C ₆
Av. yield	1078	359	371	332	281	314

C.D. = 141.6 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 61(59), 62(66), 63 (49).****Site :- Agri Res. Stn., Sambalpur.****Type :- 'R'.**

Object : To find out a suitable cropping pattern for Paddy.

1. BASAL CONDITIONS :

(i) (a) As per treatments. (b) Bengal gram for 61(59) ; As per treatments for others. (c) N.A. (ii) Clay loam. (iii) 24.7.1961, 1.8.1961 and 5.9.1961 ; 17.7.1962 ; 16.7.1963, 1.8.1963 and 20, 21.8.1963. (iv) (a) 3 to 6 ploughings and one laddering. (b) Transplanting. (c) 37 Kg/ha. (d) 23 cm. x 15 cm. (e) 2 to 3. (v) 92.2 Q ha. of compost, 140.1 Kg ha. of P_2O_5 as Super, 46.0 Kg/ha. of K_2O as Pot. Sul. + 112.1 Kg/ha. of N as A/S and top pressing with 22.4 Kg ha. of N as A/S ; for 61(59) 25 C.L./ha. of F.Y.M. + 122.4 Kg/ha. of N as A/S + 22.4 Kg/ha. of P_2O_5 as Super + 22.4 Kg/ha. of K_2O as Kcl and 22.4 Kg/ha. of N as A/S top dressed for 62(66) ; 16.8 Kg/ha. of N as A/S + 22.4 Kg ha. of P_2O_5 as Super + 22.4 Kg/ha. of K_2O as Kcl and top dressing with 11.2 Kg/ha. of N as A/S for 63(49). (vi) T-90 (vii) Irrigated. (viii) 1 to 2 hand weedings. (ix) 206 cm. 121 cm. 103 cm. (x) 16, 21.12.1961 ; 6.12.1962 ; 26 to 28.11.1963.

2. TREATMENTS :

8 Cropping pattern : C_1 = Paddy alone, C_2 = Paddy-Mung, C_3 = G.M. Paddy-Mung, C_4 = G.M.-Paddy Sesamum, C_5 = G.M.-Paddy vegetables (Bhindi), C_6 = Jute-Paddy Mung, C_7 = Jute-Paddy-Groundnut and C_8 = Jute-Paddy-field pea.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 8.2 m. x 3.7 m. (b) 7.8 m. x 3.6 m. (v) 23 cm. x 15 cm.

4. GENERAL :

(i) Normal. (ii) Browning of leaves and wilting for 63(49) ; No. incidence for others. (iii) Yield of Paddy grain. (iv) (a) 1961 - 1963. (b) Yes. (v) N.A. (vi) Nil. (vii) Variances are homogeneous and Treatments x years interaction is present.

5. RESULTS :

(i) 2524 Kg/ha. (ii) 653.9 Kg/ha. (14 d.f. made up of Treatments x years interaction). (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	3322	3344	2885	2736	2585	1857	1624	1840

C.D. = 1145.3 Kg/ha.

Crop :- Paddy (Kharif).**Ref :- Or. 60(36), 61(22), 62(22).****Site :- State Agri. Res. Stn., Bhubaneswar.****Type :- 'R'.**

Object :—To evolve a most suitable cropping and manuring pattern to obtain maximum yield without depleting the soil fertility.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) Sandy loam. (iii) 26.6.1960/23.7.1960 for A_1 and A_3 , 24.8.1960 for A_2 series ; 23.7.1961/12.8.1961 for A_1 and A_2 , 7.9.1961 for A_3 series, 3.5.1962/25.6.1962. (iv) (a) 2 to 3 ploughing and puddling. (b) Transplanting. (c) 22 Kg/ha. (d) 23 cm. x 23 cm. (e) 2. (v) 9 Kg/ha. of N as A/S top dressed for 60(36) ; Nil for others. (vi) T-141 (mhdium). (vii) Un-irrigated. (viii) 3 hand weedings for 60(36) ; 1 weeding by Japanese weeder and 1 hand weeding for others. (ix) 165 cm. 109 cm. (x) 22, 27.11.1960, 27.11.1961, 9.12.1961, 1.10.1962.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 cropping patterns : A_1 =*Dhaincha*-Paddy Groundnut, A_2 =Paddy-Maize+Cowpea and A_3 =Jute-Paddy-Mung.

(2) 8 manuring systems :

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈
1960—61	M	M	M	M	O	O	O	O
1961—62	M	M	O	O	M	M	O	O
1962—63	M	O	M	O	M	O	M	O

Manuring schedule :

	N (Kg/ha.)	P (Kg/ha.)
Jute	44.8	22.4
Paddy	44.8	28.0
Maize	44.8	22.0
<i>Dhaincha</i>	0	22.0
Mung	0	33.6
Groundnut	22.4	33.6

N was applied as A/S and P₂O₅ as Super except in *Dhaincha* where B.M. was applied.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 24. (b) N.A. (iii) 2. (iv) (a) 8.5 m. × 5.3. (b) 8.0 m. × 4.8 m. (v) 23 cm. × 23 cm. (vi) Yes.

4. GENERAL :

(i) Normal, Partial lodging for 61(22). (ii) Attack of mealy bug, casewarm, stem borer and rice hispa for 60(36), Attack of gallfly, souring catter piller and rice hispa for 61(22) for which endrex was sprayed No. incidence for 62(22). (iii) Yield of paddy grain. (iv) (a) 1960—1962. (b) Yes. (c) Results of combined analysis given under 5. (v) N.A. (vi) Nil. (vii) Variances are heterogeneous and interaction is present.

5. RESULTS :

(i) 1934 Kg/ha. (ii) 409.4 Kg/ha. (46 d.f. made up of Treatments × years interaction). (iii) Main effect of A alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	S ₈	Mean
A ₁	2190	2374	2229	2176	2118	2138	2098	2088	2176
A ₂	2317	2231	2270	2091	2057	2033	2053	1857	2114
A ₃	1753	1474	1584	1639	1535	1370	1455	1276	1511
Mean	2087	2026	2028	1969	1903	1847	1869	1740	1934

C.D. for of A marginal means=238.1 Kg/ha.

Crop :- As per treatments (*Kharif*) and (*Rabi*).

Ref :- Or. 62(57).

Site :- State Agri Res. Stn., Bhubaneswar.

Type :- 'R'.

Object :—To evolve suitable cropping pattern of irrigated medium and land to study the economics of different patterns.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 2242 Kg/ha. of F.Y.M. + 22.4 Kg/ha. of N + 22.4 of P₂O₅. (ii) Sandy loam. (iii) Varies from crop to crop. (iv) (a) 2 ploughings for G.M., Paddy, Groundnut, wheat and 3 ploughing for onion, chilli, cowpea and cotton. (b) Paddy transplanted, others N.A. (c) N.A. (d) 2.3 cm. × 23 cm. (e) Nil. (v) Varies from crop to crop. (vi) Paddy T—1145, cotton P—216 F, Wheat NP—718, Groundnut TMV—2, chilli G—2, cowpea S.E.B.—2. (vii) Irrigated. (viii) Hand weeding for all the crops except G.M. and chilli. Hoeing for groundnut, onion and wheat, Howing + earthing for chilli + Cotton. (ix) 143.1 cm for Paddy. (x) Varies from crop to crop.

2. TREATMENTS :

6 cropping pattern : C₁=Green manure (*Dhaincha*)—Paddy T1145—Cotton P 216 F, C₂=Green manure (*Dhaincha*)—Paddy T1145—Groundnut TMV—2, C₃=Green manure (*Dhaincha*)—Paddy T1145—Wheat NP—718, C₄=Green manure (*Dhaincha*)—Paddy T1144—Chilli G—2, C₅=Green manure (*Dhaincha*)—Paddy T1145—Onion, C₆=Green manure (*Dhaincha*)—Paddy T1145—Cowpea for fodder S.E. B 2.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 9.3 m. × 5.0 m. (b) 8.8 m. × 4.6 m. (v) 23 cm. × 23 cm.

4. GENERAL :

(i) *Dhaincha* (G.M.) normal, Paddy lodged during flowering, onion cowpea and cotton, good growth, poor in wheat and chilli, good in groundnut. (ii) Yield of mixed produce in Rs/ha. (iii) (a) No. (b) No, (v) and (vi) Nil. (vii) This expt. has been analysed from the replication wise data of money nature per ha.

5. RESULTS :

(i) 1540 Rs/ha. (ii) 566 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. profit in Rs/ha.

Treatment	C ₁	C ₂	C ₃	C ₄	C ₅	C ₆
Av. profit	1065	1360	659	2682	2337	1138

C.D. = 852.2 Rs/ha.

Crop :- As per treatments (*Kharif and Rabi*).

Ref :- Or. 62(56).

Site :- State Agri. Res. Stn., Bhumbaneswar.

Type :- 'R'.

Object : - To evolve suitable cropping pattern of irrigated high lands and to study the economics of different patterns.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jute and vegetables. (c) 12 C.L./ha. of F.Y.M. = 33.6 Kg/ha. of N as A/S + 22.4 Kg/ha. of P₂O₅ as Super. (ii) Sandy loam. (iii) Varies from crop to crop and treatment to treatment. (iv) (a) 2 ploughings. (b) to (d) N.A. (e) 1 to 2 for Paddy and N.A. for others. (v) Varies from crop to crop and treatment to treatment. (vi) Varies from crop to crop treatment to treatment. (vii) Irrigated. (viii) Hoeing and weeding for all crops except (G.M.) potato and cowpea; for potato 2 harrowings and casting up. (ix) 150.3 cm. (x) Varies from treatment to treatment

2. TREATMENTS :

C₁ = Mung—Potato—Lady's finger.
 C₂ = Mung—Wheat and Mustard and mixed—Cowpea (fodder)
 C₃ = Paddy PTB-10—Potato—Groundnut.
 C₄ = Green manuring—Potato—Lady's finger.
 C₅ = Jute—Groundnut—Lady's finger.
 C₆ = Paddy PTB-10—Potato—Cowpea (fodder)

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 10.1 m. × 8.2 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good in Paddy, Potato, cowpea; medium in Jute crop and poor in lady's finger. (ii) N.A. (iii) Average profit or less. (iv) (a) and (b) No. (v) and (vi) Nil. (vii) Experiment has been analysed from the replication wise data of the money nature per ha.

5. RESULTS :

(i) 432.8 Rs/ha. (ii) 256.2 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. profit (+) or less (-) in Rs/ha.

Treatment	C ₁	C ₂	C ₃	C ₄	C ₅	C ₆
Av. profit or less	461.9	962.3	759.7	421.7	-237.6	228.6

C.D.=386.1 Rs/ha.

Crop :- As per treatments (Kharif and Rabi).
Site :- State Agri. Res. Stn., Bhubaneswar.

Ref :- Or. 62(58).
Type 'R'.

Object ;—To evolve suitable cropping pattern for irrigated low lands and to study the economics of different Patterns.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Vegetables. (c) 12 C.L./ha. of F.Y.M.+33.6 Kg/ha. of N+22.4 Kg/ha. of P₂O₅. (ii) Sandy loam. (iii) Varies from crop to crop for different treatments. (iv) (a) 2 ploughings, (b) Ragi and paddy transplanted. (c) to (e) N.A. (v) Varies from crop to crop and for different treatments. (vi) Varies from treatment to treatment. (vii) Irrigated. (viii) Hoeing for jute and paddy (treatments C₁) Weeding by Japanese weeder for crops other than G.M. (ix) 138.3 cm. (x) Varies from crop to crop.

2. TREATMENTS :

6 cropping patterns : C₁=G.M. (*Dhaincha*)—Paddy T90—Dalva paddy MTV 15. C₂=Jute (Cap)—Paddy T90—Jhain Mung mixed with *Dhaincha*, C₃=Jute (Cap)—Paddy T90—Till mixed with *Dhaincha*, C₄=G.M. (*Dhaincha*)—Paddy T90—Ragi transplanted, C₅=G.M. (*Dhaincha*)—Paddy T90—Jhain Mung, C₆=G.M. (*Dhaincha*)—Paddy N—136 and BAM 6—Jhain Mung.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 10.0 m. × 8.2 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good in *Kharif* crop ; Poor in Paddy BAM—6, good in Paddy T—90, paddy N—136. (ii) Paddy T90 slightly damaged by rats and paddy N—136 damaged by 80% by birds. (iii) Av. profit or less in Rs/ha. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) Experiment has been analysed from the replication wise date of the money nature per ha.

5. RESULTS :

(i) 990.1 Rs/ha. (ii) 157.8 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. profit in Rs/ha.

Treatment	C ₁	C ₂	C ₃	C ₄	C ₅	C ₆
Av. profit.	1707.4	1456.9	1192.3	164.9	690.1	728.9

C.D.=237.8 Rs/ha.

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