NATIONAL INDEX

OF

AGRICULTURAL

FIELD

EXPERIMENTS

VOL. 10 PART 3

ORISSA

1960—65

Published by
INSTITUTE OF AGRICULTURAL RESEARCH STATISTICS
(INDIAN COUNCIL OF AGRICULTURAL RESEARCH)
NEW DELHI-110012
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. Servasri P. P. Rao, S. N. Rajpal, M. P. Saksena, B. L Chaudhary, M. L. Sahni, H. C. Jain, Mahesh Komar, 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
<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Region &amp; Headquarters</th>
<th>Statistical staff from the Institute of Agricultural Research Statistics</th>
<th>Regional Supervisor</th>
</tr>
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</table>
| 1.    | Andhra Pradesh (Hyderabad) | 1. Shri C. H. Rao  
2. Shri G. V. S. R. Krishna  
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  
2. Dr. D. K. Desai, Dy. Director of Agriculture (Stat.)  
3. Shri J. B. Trivedi, I/C. Dy. Director (Stat.) |
2. Shri G. Rama Chandran Nair, Research Officer  
3. Shri K. George, Research Officer |
| 5.    | Kerala (Trivandrum) |  | 1. Shri A. G. Khare, Dy. Director of Agriculture (Stat.)  
2. Shri V. G. Sharma, Sr. Statistician  
3. Shri G. C. Shaligram, Dy. Statistician  
| 6.    | Madhya Pradesh (Bhopal) | 1. Shri Rama Rao Patil  
2. Shri S. S. Kutaula | 1. Shri B. Misra, Director of Research  
2. Shri A. Mishra, Dy. Director of Agri. (HQ)  
3. Shri P. S. Sahota, Chief Statistician |
| 7.    | Maharashtra (Poona) | 1. Shri P. R. Yeri  
2. Shri B. Ramakrishnan | 1. Shri P. S. Sahota, Director of Crop Insurance  
2. Shri Darshan Singh, Asstt. Statistician  
3. Shri M. S. Pannu, Statistician, Department of Agriculture |
11. Rajasthan (Jaipur)  
1. Shri N. K. Ohri  
2. Shri C. H. Rao

12. Tamil Nadu (Coimbatore)  
1. Shri P. Narayanan  
2. Shri M. V. George

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

14. West Bengal (Calcutta)  
1. Shri A. K. Mukherjee  
2. Shri A. Sinha

4. Dr. D. Raghavarao,  
Prof. & Head, Dept. of  
Machs. & Stat., P.A.U.,  
Ludhiana

1. Shri H. C. Kothari,  
Dy. Director (Statistics),  
Department of Agriculture

1. Shri K. R. Nagaraja Rao,  
Secretary, Research Council

2. Dr. K. Ramakrishnan,  
Associate Dean

3. Dr. D Daniel Sunderaraj,  
Principal

1. Dr K. Kishen, Jr. Director  
of Agriculture (Statistics)

2. Shri K. P. Avasthy,  
Officer-on-Special Duty

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

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. P. R. I. — Central Potato Research Institute.
C. R. R. I. — Central Rice Research Institute.
C. T. C. R. I. — Central Tuber Crops Research Institute.
C. T. R. L. — Cotton Technological Research Laboratory.
I. A. R. I. — Indian Agricultural Research Institute.
I. H. R. — Institute of Horticultural Research.
I. L. R. I. — Indian Lac 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

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>Kg.</td>
<td>Kilogram(s)</td>
</tr>
<tr>
<td>Kg/ha.</td>
<td>Kilogram(s) per hectare</td>
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<tr>
<td>N</td>
<td>Nitrogen</td>
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<tr>
<td>P</td>
<td>Phosphate</td>
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<tr>
<td>K</td>
<td>Potash</td>
</tr>
<tr>
<td>Nitro. Phos.</td>
<td>Nitrogen Phosphate</td>
</tr>
<tr>
<td>Ammo. Phos.</td>
<td>Ammonium Phosphate</td>
</tr>
<tr>
<td>A/S</td>
<td>Ammonium Sulfate</td>
</tr>
<tr>
<td>A/S/N</td>
<td>Ammonium Sulfate</td>
</tr>
<tr>
<td>C/A/N</td>
<td>Calcium Ammonium Nitrate</td>
</tr>
<tr>
<td>A/N</td>
<td>Ammonium Nitrate</td>
</tr>
<tr>
<td>A/C</td>
<td>Ammonium Chloride</td>
</tr>
<tr>
<td>C/N</td>
<td>Chilean Nitrate</td>
</tr>
<tr>
<td>Mur. Pot.</td>
<td>Muriate of Potash</td>
</tr>
<tr>
<td>Pot. Sul.</td>
<td>Potassium Sulfate</td>
</tr>
<tr>
<td>Super.</td>
<td>Super Phosphate</td>
</tr>
</tbody>
</table>

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) Intercropping, 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) 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. (iv) Abnormal occurrences such as heavy rains, frost, storm, drought, etc. (vii) Any other important information.
## Glossary of Vernacular Names of Crops—Conf.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of Crop</th>
<th>Botanical Name</th>
<th>Assamese</th>
<th>Bengali</th>
<th>Oriya</th>
<th>Telugu</th>
<th>Tamil</th>
<th>Malayalam</th>
<th>Kannada</th>
<th>Marathi</th>
<th>Gujarati</th>
<th>Hindi</th>
<th>Punjabi</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Linseed</td>
<td><em>Linum usitatissimum</em> L.</td>
<td>Tisi</td>
<td>Tishi</td>
<td>Peshi</td>
<td>Avise</td>
<td>Alivithei</td>
<td>Cheruchanavithu</td>
<td>Agase</td>
<td>Javas, Alsi</td>
<td>Alsi</td>
<td>Alsi</td>
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<tr>
<td>14</td>
<td>Mustard</td>
<td><em>Brassica juncea</em> Coss.</td>
<td>Saria</td>
<td>Rai</td>
<td>Sarisha</td>
<td>Ra</td>
<td>Avalu</td>
<td>Kadugu</td>
<td>Kaduku</td>
<td>Kempu</td>
<td>Karmi</td>
<td>Rai</td>
<td>Rai</td>
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<tr>
<td>15</td>
<td>Niger</td>
<td><em>Guizotia abyssinica</em> Cass.</td>
<td>Sorguja</td>
<td>Sarguza</td>
<td>Alashi</td>
<td>Verrinuvvulu</td>
<td>Peyella</td>
<td>—</td>
<td>Huchelu</td>
<td>Karkale, Khursani</td>
<td>Ramtal</td>
<td>Ramtal</td>
<td>Ramtal</td>
</tr>
<tr>
<td>16</td>
<td>Onion</td>
<td><em>Allium Cepa</em> L.</td>
<td>Piyaz</td>
<td>Piaj</td>
<td>Pesh, Ulli</td>
<td>Ulli</td>
<td>Vengayam, Erangagam</td>
<td>Ulli</td>
<td>Eerulli</td>
<td>Kanda</td>
<td>Dungli, Kando</td>
<td>Piaz</td>
<td>Ganda, Payaz</td>
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<tr>
<td>17</td>
<td>Chilli</td>
<td><em>Capsicum frutescens</em> L.</td>
<td>Jalakiya</td>
<td>Laka, Marich.</td>
<td>Laka</td>
<td>Mirapakaya</td>
<td>Milakai</td>
<td>Mulaku</td>
<td>Menasina</td>
<td>Kayi</td>
<td>Mirchi</td>
<td>Marcha</td>
<td>Lalnyc</td>
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<td>18</td>
<td>Berseem</td>
<td><em>Trifolium alexandrium</em> L.</td>
<td>—</td>
<td>Berseem</td>
<td>Ginighasa</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>Barsim, Gavat</td>
<td>Barsim</td>
<td>Berseem</td>
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<td>19</td>
<td>Mossambique</td>
<td><em>Citrus sinensis</em> Osbeck</td>
<td>Malta, Mozambique</td>
<td>Mosambi</td>
<td>Mitha, Kamala, Mhata Kamala</td>
<td>Batteyi</td>
<td>Sathugudi, Cheeni</td>
<td>Madura, Naranga</td>
<td>Sathkudi</td>
<td>Mosambi</td>
<td>Mosambi</td>
<td>Malta, Mausmee</td>
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<td>20</td>
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<td><em>Psidium guajava</em> L.</td>
<td>Madhuri</td>
<td>Peyara</td>
<td>Pijuli</td>
<td>Jana</td>
<td>Koyya</td>
<td>Pera</td>
<td>Sabe</td>
<td>Peru</td>
<td>Jamphal</td>
<td>Anrood</td>
<td>Amrud</td>
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<td>21</td>
<td>Pineapple</td>
<td><em>Ananas sativa</em> Schult.; <em>Ananas comosus</em> Merr.</td>
<td>Matikathal</td>
<td>Anarash</td>
<td>Sapuri, Saphrd, Panasa</td>
<td>Anasa</td>
<td>Annasi palam</td>
<td>Kaltha chakka</td>
<td>Ananas</td>
<td>Ananas</td>
<td>Ananas</td>
<td>Ananas</td>
<td>Ananas</td>
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<tr>
<td>Sl. No.</td>
<td>Name of Crop</td>
<td>Botanical Name</td>
<td>Assamese</td>
<td>Bengali</td>
<td>Oriya</td>
<td>Telugu</td>
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</tr>
<tr>
<td>1</td>
<td>Paddy</td>
<td><em>Oryza Sativa</em> L.</td>
<td>Dhan</td>
<td>Dhan</td>
<td>Dhano</td>
<td>Vadlu</td>
<td>Nel</td>
<td>Bhatta</td>
<td>Bhatta</td>
<td>Dangar</td>
<td>Dhan;</td>
<td>Chaul;</td>
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<td>; Biyyamu</td>
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<td></td>
<td>Dhan;</td>
<td>Chawal</td>
<td>Dhan</td>
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<tr>
<td>2</td>
<td>Wheat</td>
<td><em>Triticum Sativum</em> Lamk.</td>
<td>Gaum ;</td>
<td>Gam</td>
<td>Gaham</td>
<td>Godumalu</td>
<td>Kothumai</td>
<td>Gothambu</td>
<td>Godhi</td>
<td>Gahu</td>
<td>Gahu</td>
<td>Gehon</td>
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<td></td>
<td><em>Triticum aestivum</em> L.</td>
<td>Ghehu</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Maize</td>
<td><em>Zea mays</em> L.</td>
<td>Gom dhan</td>
<td>Bhutta</td>
<td>Macca</td>
<td>Mokka-Jonna</td>
<td>Makka-cholam</td>
<td>Cholam ; Makka-cholam</td>
<td>Musukina jola</td>
<td>Makka</td>
<td>Makkaj</td>
<td>Makka ; Makkey</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Ragi</td>
<td><em>Eleusine coracana</em> Gaertn.</td>
<td>—</td>
<td>Marwa</td>
<td>Mandia</td>
<td>Ragi-Chodi</td>
<td>Keppai, Ragi</td>
<td>Ragi, Muthari</td>
<td>Nagli, Naclini</td>
<td>Nagli, Bavto</td>
<td>Ragi, Mandka, Marwah</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Bhindi (Lady’s finger)</td>
<td><em>Hibiscus esculentus</em> ; <em>Abelmoschus esculentus</em>, Moench.</td>
<td>Bhendi</td>
<td>Dhenosh</td>
<td>Vendi</td>
<td>Benda</td>
<td>Bendai Kal</td>
<td>Venda</td>
<td>Bende kayi</td>
<td>Bhendi</td>
<td>Bhida, Bhinda</td>
<td>Bhindi, Tori</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Potato</td>
<td><em>Solanum tuberosum</em> L.</td>
<td>Alooguti</td>
<td>Alu</td>
<td>Bilati Alu</td>
<td>Bangaladumpa, Urigadada</td>
<td>Uruzhai Kilangu</td>
<td>Urala kizangu</td>
<td>Alu gedde</td>
<td>Batata</td>
<td>Aloo ; Batata</td>
<td>Aaloo, Alu</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Sugarcane</td>
<td><em>Saccharum officinarum</em> L.</td>
<td>Kuiiar</td>
<td>Akh</td>
<td>—</td>
<td>Cheruku</td>
<td>Karumbu</td>
<td>Karumbu</td>
<td>Kabbu</td>
<td>Oos</td>
<td>Sherdi</td>
<td>Ganna, Kamad, Naihakar</td>
<td>Kamad, Ganna, Eakh</td>
</tr>
<tr>
<td>8</td>
<td>Cotton</td>
<td><em>Gossypium</em> spp.</td>
<td>Kapah</td>
<td>Kapas</td>
<td>Kapa</td>
<td>Pratti</td>
<td>Paruthi</td>
<td>Paruthi</td>
<td>Hatti</td>
<td>Kapus</td>
<td>Kapas</td>
<td>Kapas</td>
<td>Kapah</td>
</tr>
<tr>
<td>9</td>
<td>Jute</td>
<td><em>Corchorus</em> spp.</td>
<td>Marapat</td>
<td>Tula Shada pat, Tosha pat</td>
<td>Jhota</td>
<td>Janumu</td>
<td>Chanapal</td>
<td>Chanam- bu</td>
<td>Joot</td>
<td>Moti</td>
<td>Jute</td>
<td>Ptsan</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Tobacco</td>
<td><em>Nicotiana tabacum</em> L.</td>
<td>Dhopai</td>
<td>Tamak Uanpatra</td>
<td>Pogaku</td>
<td>Pugayila</td>
<td>Hoge soppu</td>
<td>Tambaku</td>
<td>Tamaku</td>
<td>Tambaku</td>
<td>Tamaku, Tambaku</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Groundnut</td>
<td><em>Arachis hypogaea</em> L.</td>
<td>China Badam</td>
<td>Cheena Badam</td>
<td>China Badam</td>
<td>Veru Senaga</td>
<td>Nilakada- lai</td>
<td>Nilakka-dala</td>
<td>Kadaile kayi</td>
<td>Bhimug</td>
<td>Bhoising; Magafali</td>
<td>Mung- phali</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Gingelly</td>
<td><em>Sesamum indicum</em> L.; <em>Sesamum orientale</em> L.</td>
<td>Til</td>
<td>Til</td>
<td>Rasi</td>
<td>Nevvulu</td>
<td>Ellu</td>
<td>Ellu</td>
<td>Yellu</td>
<td>Til, Tili</td>
<td>Tal</td>
<td>Til</td>
<td></td>
</tr>
</tbody>
</table>
CONTENTS

FOREWORD

PREFACE

LIST OF ABBREVIATIONS

GLOSSARY OF VERNACULAR NAMES OF CROPS

ORISSA STATE (Salient features of experimentation)

PARTICULARS OF RESEARCH STATIONS AND SOIL ANALYSIS

EXPERIMENTAL DATA

Paddy
Wheat
Maize
Ragi
Bhindi
Potato
Sugarcane
Cotton
Jute
Tobacco
Groundnut
Gingelly
Linseed
Mustard
Niger
Onion
Chilli
Berseem
Legumes
Mosambique
Guava
Pineapple
Rotational Type

INDEX (crop-wise and type-wise)
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 1**

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

<table>
<thead>
<tr>
<th>Crop</th>
<th>M</th>
<th>MV</th>
<th>C</th>
<th>CV</th>
<th>CM</th>
<th>IM</th>
<th>D</th>
<th>R</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paddy</td>
<td>8(20)</td>
<td>1(2)</td>
<td>-</td>
<td>-</td>
<td>1(2)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>10(24)</td>
</tr>
<tr>
<td>Maize</td>
<td>1(2)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1(3)</td>
<td>-</td>
<td>-</td>
<td>2(5)</td>
</tr>
<tr>
<td>Ragi</td>
<td>1(2)</td>
<td>4(8)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5(10)</td>
</tr>
<tr>
<td>Bhindi</td>
<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
<td>1(2)</td>
<td>-</td>
<td>-</td>
<td>1(2)</td>
</tr>
<tr>
<td>Sugarcane</td>
<td>2(4)</td>
<td>-</td>
<td>1(2)</td>
<td>-</td>
<td>-</td>
<td>1(2)</td>
<td>2(4)</td>
<td>-</td>
<td>6(12)</td>
</tr>
<tr>
<td>Jute</td>
<td>5(13)</td>
<td>-</td>
<td>1(3)</td>
<td>2(7)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>8(23)</td>
</tr>
<tr>
<td>Berseem</td>
<td>1(3)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>1(3)</td>
</tr>
<tr>
<td>Rotational</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2(6)</td>
<td>2(6)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>8(44)</td>
<td>5(10)</td>
<td>2(5)</td>
<td>2(7)</td>
<td>1(2)</td>
<td>1(2)</td>
<td>4(9)</td>
<td>2(6)</td>
<td>35(85)</td>
</tr>
</tbody>
</table>

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)

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

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 up to 20 square metres. The maximum and the minimum number of varieties tried in these 101 experiments were 22 and 3 respectively. In about 50% 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\(_2\)O\(_5\) as a factor, ranging between 0 and 45 Kg/ha. of P\(_2\)O\(_5\). 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\(_{45}\), T\(_{15}\) 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\(_2\)O\(_5\). Of these, in only 3 experiments levels of K\(_2\)O were tried. In 15 C CV, CM and CMV types of experiments weedings, 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. 0.514% of the total cropped area. 35 experiments were reported on this crop, of which 31 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. 23, 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 18 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\(_2\)O\(_5\) between 0 and 180 Kg/ha. and levels of K\(_2\)O 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. Efficacy 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 Block Design, Split-plot Design and Confounded Designs respectively. Experiments in Randomised Block Design included 12 experiments with 4 repli-

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 manual experiments doses of N ranged between 0 and 40 Kg ha. and doses of P2O5 and K2O 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 (%): 17.00 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. 23.9 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:

<table>
<thead>
<tr>
<th></th>
<th>Jan.</th>
<th>Feb.</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>0.2</td>
<td>2.1</td>
<td>0.4</td>
<td>2.0</td>
<td>1.0</td>
<td>2.7</td>
<td>3.8</td>
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<tr>
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<td>1.7</td>
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<td>2.2</td>
<td>0.2</td>
<td>2.1</td>
<td>1.2</td>
<td>1.3</td>
</tr>
<tr>
<td>3rd</td>
<td>1.0</td>
<td>1.1</td>
<td>2.3</td>
<td>1.0</td>
<td>1.0</td>
<td>1.3</td>
<td>1.7</td>
</tr>
</tbody>
</table>

(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 23% of the total area is irrigated.

(ii) Yes, there is a 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: 1.8 to 19.8%
- Sand: 32.6 to 58.0%

E. No. of Experiments:

- Paddy: 89
- Wheat: 2
- Maize: 11
- Ragi: 15
- B. j.: 12
- S. j.: 23
- Cotton: 1
- Tobacco: 1
- Groundnut: 1
- G. j.: 5
- L. j.: 1
- L. j.: 3
- C. j.: 1
- P. j.: 1
- G. j.: 1
- G. j.: 1
- P. j.: 1
- R. j.: 6

Total: 173

3. Irrigation Research Centre, Chakuli.

A. General Information:

(i) In Bargarh taluka of Sambalpur district, 6 km from Wai Uda 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 Hybrid; Rice-Potato; Rice-Irrigated Groundnut; Rice-Soybean; Rice-Winter Vegetables; Rice-Wheat. (v) Agronomical, Entomological, and Chemical experiments on Wheat, Rice, Cotton and Jowar.

B. Normal Rainfall:

<table>
<thead>
<tr>
<th></th>
<th>Jan.</th>
<th>Feb.</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
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</thead>
<tbody>
<tr>
<td>1st</td>
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<td>18</td>
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<td>0.4</td>
<td>0.6</td>
<td>0.4</td>
<td>1</td>
<td>5.5</td>
<td>10.5</td>
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<tr>
<td>3rd</td>
<td>1.0</td>
<td>1.1</td>
<td>0.7</td>
<td>0.1</td>
<td>0.7</td>
<td>0.1</td>
<td>1.4</td>
</tr>
</tbody>
</table>

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

C. Irrigation and Drainage facilities:

(i) The Research station has irrigation facilities since 1951. It gets irrigation water in the month of May when the canal is closed.

(ii) Flow irrigation facilities available.

(iii) 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—1.32 m to 1.83 m at highest contour; Colour—yellowish brown; Structure—Friable.
(ii) Chemical analysis: Total nutrient% 
Organic carbon %
Calcium
Magnesium

(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 Vizianagaram R.S., with Lat. 18°6′ N./Long. 82°44′ E/

B. Normal Rainfall:

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<tr>
<th></th>
<th>Jan.</th>
<th>Feb.</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
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</thead>
<tbody>
<tr>
<td>2·8</td>
<td>0·5</td>
<td>6·1</td>
<td>7·4</td>
<td>5·8</td>
<td>37·9</td>
<td>59·9</td>
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<tr>
<td>Aug.</td>
<td>58·2</td>
<td>35·3</td>
<td>15·7</td>
<td>2·8</td>
<td>5·8</td>
<td>238·2</td>
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</tbody>
</table>

(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—7. (iv) Jute—paddy-fallow; Jute—paddy-mung. (v) Agronomical, botanical, entomological and soil nutrient up take experiments on jute crop.
B. Normal Rainfall:

<table>
<thead>
<tr>
<th></th>
<th>Jan.</th>
<th>Feb.</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount</td>
<td>1·8</td>
<td>2·7</td>
<td>4·2</td>
<td>2·1</td>
<td>5·9</td>
<td>16·8</td>
<td>28·7</td>
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</table>

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<th></th>
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</thead>
<tbody>
<tr>
<td>Amount</td>
<td>32·2</td>
<td>29·2</td>
<td>18·0</td>
<td>3·9</td>
<td>0·1</td>
<td>145·6</td>
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</tbody>
</table>

(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 pumps. (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:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>E.C. mhos/cm.</td>
<td>0·08</td>
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<tr>
<td>Org. carbon %</td>
<td>0·50</td>
</tr>
<tr>
<td>Av. K2O in Kg/ha.</td>
<td>195·00</td>
</tr>
<tr>
<td>Av. P2O5 in Kg/ha.</td>
<td>17·00</td>
</tr>
<tr>
<td>Av. Mg. in Kg/ha.</td>
<td>720·00</td>
</tr>
<tr>
<td>Ex.-Ca. in m.e. %</td>
<td>8·00</td>
</tr>
<tr>
<td>C.E.C. m.e. %</td>
<td>15·00</td>
</tr>
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</table>

(iii) Mechanical analysis:

| Sand | 95% |
| Silt | 4%  |
| Clay | 5%  |

E. No. of Experiments:


6. Sugarcane Research Sub-Station, Rayagada.

A. General Information:

(i) In Koraput district, about 3 Km. from Rayagada R.S. with Lat. 19°2'N Long. 83°3'E./Mt. 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) Agronomic trials on mineral, cultural, varietal and irrigational aspects.

B. Normal Rainfall:

<table>
<thead>
<tr>
<th></th>
<th>Jan.</th>
<th>Feb.</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
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</thead>
<tbody>
<tr>
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<td>14·8</td>
<td>12·2</td>
<td>21·4</td>
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</tr>
</thead>
<tbody>
<tr>
<td>Amount</td>
<td>35·9</td>
<td>46·2</td>
<td>20·5</td>
<td>1·2</td>
<td>2·4</td>
<td></td>
</tr>
</tbody>
</table>

(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: Sand+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 Mycrobiological experiments on Paddy, Wheat, Cotton and Oilseeds.

B. Normal Rainfall:

<table>
<thead>
<tr>
<th>Month</th>
<th>Jan</th>
<th>Feb</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rainfall (in cm)</td>
<td>0.6</td>
<td>0.9</td>
<td>0.2</td>
<td>1.1</td>
<td>2.6</td>
<td>1.8</td>
<td>0.7</td>
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</tbody>
</table>

August, September, October, November, December, Total:

<table>
<thead>
<tr>
<th>Month</th>
<th>Aug</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rainfall (in cm)</td>
<td>34.8</td>
<td>29.0</td>
<td>13.4</td>
<td>10.6</td>
<td>4.4</td>
<td>0.3</td>
</tr>
</tbody>
</table>

(The average 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 (*Kharij*).  
Ref :- Or. 62(5), 63(2), 64(1).  
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.  
   (d) 15 cm. x 15 cm.  
   (e) —.  
   (f) 44.8 Kg/ha. of N : 1/2 at the planting and 1/2 after one month.  
   (g) T-90 for 62(5); T-1242 for others.  

2. TREATMENTS:
   All combinations of (1) and (2)
   (1) 3 levels of P<sub>2</sub>O<sub>5</sub>:  
   \[ P_0 = 0, \quad P_1 = 22.4 \text{ and } P_2 = 44.8 \text{ Kg/ha.} \]
   (2) 3 sources of P<sub>2</sub>O<sub>5</sub>:  
   \[ S_1 = \text{Super}, \quad S_2 = \text{Basic slag and } S_3 = \text{B.M.} \]

3. DESIGN:
   (i) Fact. in R.B.D.  
   (ii) (a) 9.  
   (iii) 3.  
   (iv) (a) 9.3 m. x 4.7 m.  
   (b) 9.0 m. x 4.4 m.  
   (v) 15 CIL x 15 em.  
   (vi) Yes.

4. GENERAL:
   (i) Good for 62(5); Normal for others.  
   (ii) Most of the spikelets were choffy due to stink 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.  
   (d) N.A.  
   (e) Heavy rains damaged the crop for 63(2).  
   (f) 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.

   \[
   P_0 = 1543 \text{ Kg/ha.} \\
   S_1 \quad S_2 \quad S_3 \quad \text{Mean} \\
   P_0 \quad 1297 \quad 1382 \quad 1496 \quad 1392 \\
   P_2 \quad 1462 \quad 1385 \quad 1670 \quad 1506 \\
   \text{Mean} \quad 1380 \quad 1384 \quad 1583 \quad 1449 
   \]

Crop :- Paddy (*Kharij*).  
Ref :- Or. 60(24), 63(35), 64(17).  
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.  
   (f) Nil.  
   (g) Yes.  
   (h) Unirrigated.  
   (i) Weeding by Japanese weeder and hand weeding.  
   (j) 66 cm., 132 cm., 82 cm.

---
2. TREATMENTS:

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

(1) 3 levels of N as A/S: N₀ = 0, N₁ = 22.4 and N₂ = 44.8 Kg/ha.
(2) 3 levels of P₂O₅ as Super: P₀ = 0, P₁ = 22.4 and P₂ = 44.8 Kg/ha.
(3) 3 levels of K₂O: K₀ = 0, K₁ = 22.4 and K₂ = 44.8 Kg/ha.
(4) 2 levels of FYM: F₀ = 0 and F₁ = 8967 Kg/ha.

3. DESIGN:

(i) 3 x 2 confd., (ii) 9 plots/block; 6 blocks, replication. (b) N.A. (iii) l. iv) a) 5'5 m x 7'3 m.
(b) 5'0 m x 6'8 m. (v) 23 cm x 23 cm. (vi) Yes.

4. GENERAL:


5. RESULTS:

(i) 2026 Kg/ha. (ii) 5990 Kg/ha. (52 d.f., made up of various components of Treatments × years interaction) (iii) Mean effect of F alone is highly significant. (iv) Av. yield of grain in Kg/ha.

<table>
<thead>
<tr>
<th></th>
<th>Na</th>
<th>N₁</th>
<th>N₂</th>
<th>P₀</th>
<th>P₁</th>
<th>P₂</th>
<th>K₀</th>
<th>K₁</th>
<th>K₂</th>
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<td>1871</td>
<td>1691</td>
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<td>F₁</td>
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<td>2268</td>
<td>2204</td>
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<td>2288</td>
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</table>

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

<table>
<thead>
<tr>
<th></th>
<th>P₀</th>
<th>P₁</th>
<th>P₂</th>
<th>K₀</th>
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<td>2491</td>
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<td>2396</td>
<td>2534</td>
<td>2288</td>
<td>2406</td>
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</table>

S.E. plot = 355.0 Kg/ha.

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<th>P₁</th>
<th>P₂</th>
<th>K₀</th>
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<td>1356</td>
<td>1380</td>
<td>1467</td>
<td>1344</td>
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</table>

S.E. plot = 345.0 Kg/ha.
Crop :- Paddy (Kharif).  
Ref :- Or. 63(5), 64(2).  
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. x 15 cm. (e) 2. (v) 1121 Kg/ha. of lime. (vi) T-90 (late). (vii) Weed ing.  

2. TREATMENTS:
(a) 2 levels of N: N₀ =0 and N₁ =33.6 Kg/ha.  
(b) 2 levels of P₂₀₅ : P₀ =0 and P₁ =22.4 Kg/ha.  
(c) 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. x 5·5 m. (b) 6·9 m. x 5·2 m. (v) 23 cm. 
   x 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 x 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 
   x years interaction). (iii) Main effect of N alone is highly significant (iv) Av. yield of grain in Kg/ha.

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C.D. for N marginal means=220·9 Kg/ha.
Crop :- Paddy (Rabi).

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

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

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., 15 cm. (e) 2 (v) Nil. (vi) P.T.B.-10. (vii) Irrigated. (viii) Ooe hand weeding. (ix) 6 cm., 11 cm. (x) 26.4.1963, 30th week of April, 1964.

2. TREATMENTS :
   All combinations of (1), (2) and (3). 4 extra treatments
   (1) Types of fertilizers : N1 = Super, S2 = Nitrophos, O.D.D.A. and S3 = Nitrophos P.E.C.
   (2) 3 manurial treatments : L1 = 13.4 Kg ha. of N = 11.5 Kg ha. of P2O5, L2 = 26.9 Kg ha. of N = 23 Kg ha. of P2O5, and L3 = 35.8 Kg ha. of N = 47.1 Kg ha. of P2O5.
   (3) 3 methods of placement : M1 = Broadcasting at final puddling, M2 = Through mudshallow immediately before planting and M3 = Pellet immediately after planting.
   4 extra treatments : N4 = 0, N5 = 13.3, N6 = 26.9 and N7 = 53.8 Kg ha.

3. DESIGN :
   (i) 3' confd., 4 extra treatments in each block (S1L1M and S3L3M confd.). (ii) 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. (c) 27 cm. x 15 cm. (v) 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 values 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.

   N1 = 969, N2 = 1158, N3 = 1510 and N4 = 1534

   C.D. for extra treatment means 369.8 Kg ha

   \[ \begin{array}{cccccccc}
   & S_1 & S_2 & S_3 & M_1 & M_2 & M_3 & M_4 & \text{Mean} \\
   L_1 & 1156 & 993 & 1200 & 1114 & 1102 & 1134 & 1116 \\
   L_2 & 1434 & 1150 & 1201 & 1222 & 1200 & 1354 & 1262 \\
   L_3 & 1458 & 1359 & 1312 & 1366 & 1332 & 1431 & 1376 \\
   \text{Mean} & 1349 & 1167 & 1238 & 1237 & 1211 & 1306 & 1251 \\
   \end{array} \]

63(57)

   S.E. plot. = 346.0 Kg ha.

   \[ \begin{array}{cccc}
   & M_1 & M_2 & M_3 & \text{Mean} \\
   S_1 & 2235 & 2149 & 2111 & 2165 \\
   S_2 & 1772 & 1713 & 1837 & 1774 \\
   S_3 & 1894 & 1679 & 1947 & 1840 \\
   \text{Mean} & 1967 & 1847 & 1965 & 1926 \\
   \end{array} \]
Crop: Paddy (Kharif).


Ref: Or. 62(6), 64(16).

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. x 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. x 3.7 m. (b) 13.3 m. x 3.2 m. (v) 23 cm. x 23 cm. (v) 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) No (vi) 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.

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C.D. for G marginal means=225.3 Kg/ha.
C.D. for N marginal means=209.2 Kg/ha.
64(16)

(i) 2848 Kgm/ha. (ii) (a) 442·0 Kgm/ha. (b) 260·0 Kgm/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kgm/ha.

\[
\begin{array}{|c|c|c|c|c|c|}
\hline
& N_4 & N_1 & N_2 & N_3 & \text{Mean} \\
\hline
G_0 & 2598 & 2881 & 2805 & 2693 & 2663 & 2688 \\
G_1 & 3040 & 3099 & 2952 & 2107 & 2116 & 2945 \\
G_2 & 2905 & 3005 & 2952 & 2622 & 2746 & 2846 \\
G_3 & 2811 & 2870 & 2964 & 2987 & 2834 & 2913 \\
\hline
\text{Mean} & 2838 & 2939 & 2918 & 2830 & 2715 & 2848 \\
\hline
\end{array}
\]

Crop :- Paddy (Khandi).

Ref :- Or. 4·I(24), 62(7), 63(18).


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 :


2. TREATMENTS :-

All combinations of (1) and (2)

(1) 2 sources of N at 33·6 Kgm/ha. : S_1 = A/S and S_2 = C/A, N.

(2) 3 times of application : T_1 : Full dose at planting, T_2 = ½ at planting and ½ after one month and T_3 = ½ at planting - ½ one month after planting - ½ 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. (iii) a) 6 (1 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 1943). (b) No. (c) Results of co-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 Kgm/ha. (ii) 314·5 Kgm/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 Kgm/ha.

\[
\begin{array}{|c|c|c|c|c|}
\hline
& T_1 & T_2 & T_3 & \text{Mean} \\
\hline
S_1 & 2695 & 2628 & 2630 & 2651 \\
S_2 & 2257 & 2882 & 2814 & 2754 \\
\hline
\text{Mean} & 2631 & 2755 & 2722 & 2703 \\
\hline
\end{array}
\]
Crop :- Paddy (Kharif).


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; 30.6.1962/11.8.1962. (iv) (a) 3 ploughings+laddering for 60(34); 2 ploughings+puddling for others. (b) Transplanting. (c) 22 Kg/ha. (d) 23 cm x 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) 6.7.1961; 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. x 3·7 m. for 62 (21); 7·5 m. x 5·5 m. for others. (b) 9·1 m. x 3·2 m. for 62 (21); 7·1 m. x 5·0 m. for others. (v) 23 cm. x 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 x 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 x years interaction) (b) 329·3 Kg/ha. (30 d.f. made up of pooled error and various components of Treatments x years interaction); (c) 235·9 Kg/ha. (11 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.
Crop := Paddy (kherij).
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 ploughings and puddling. (b) Transplanting. (c) 1 to 25 Kg/ha. (d) 23 cm × 23 cm. (e) 2. (f) 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
(2) 3 manural 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) 3² confined. - 1 extra treatments (NLM, SL'M are confined). (ii) (a) 13 plots/block; 3 blocks, replication. (b) N.A. (iii) 2. (iv) 6 m. × 2.7 m. for 62(41); 5.6 m. × 3.7 m. for others. (b) 5.6 m. × 23 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) 2970 Kg/ha. (iii) Main effects of S, M and interaction N vs. others are highly significant. (iv) Av. yield of grain in Kg/ha.
N₀ = 1401, N₁ = 1462, N₂ = 1549, and N₃ = 1730

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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) 3090 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

N₀ = 2381, N₁ = 2254, N₂ = 2277 and N₃ = 2439

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64(22)

(i) 3010 Kg/ha. (ii) 6660 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain is Kg/ha.

N₀ = 3317, N₁ = 2869, N₂ = 2859 and N₃ = 2580

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**Crop :- Paddy (Rah).**

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

Ref :- Or. 64(8).

Type :- 'M'.

Object :- To compare the efficiency of different nitroegnous 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. x 23 cm. (e) 2. (vi) 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 : S₄ - Control, S₁ = A, S₂ = A, S₃ = A. Phos., S₄ = C, S₅ = N, S₆ = Urea. Phos.

3. **DESIGN :**
   - (i) R.B.D. (ii) 7. (b) Nil. (iii) 3. (iv) (a) 12.5 m. x 4.4 m. (b) 12.2 m. x 4.0 m. (v) 15 cm. x 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>S₄</th>
<th>S₁</th>
<th>S₂</th>
<th>S₃</th>
<th>S₅</th>
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<tr>
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<td>2367</td>
<td>1901</td>
<td>1756</td>
<td>1618</td>
<td>1842</td>
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</tbody>
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**Crop :- Paddy (Kharij).**

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

Ref :- Or. 65(27).

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. x 15 cm. (e) 2. (v) F.Y.M. @ 4.83 Kg./ha. (vi) T-1242. (vii) Irrigated. (viii) 2 hand-weedings. (ix) 6.2-4 cm. (x) 29.12.65.

2. **TREATMENTS :**
   - Same as in exp. no. 64(8) above.

3. **DESIGN :**
   - (i) R.B.D. (ii) 7. (b) Nil. (iii) 3. (iv) (a) 12.2 m. x 9.1 m. (b) 11.9 m. x 8.4 m. (v) 15 cm. x 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.

<table>
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<th>Treatment</th>
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<th>S₂</th>
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<td>1951</td>
<td>2109</td>
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C.D. = 417.9 Kg./ha.
**Crop:** Paddy *(Kharif).*  
**Site:** State Agri. Res. Stn., Bhubaneswar.  

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. (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.), \( G_1 = \) Sesbania, \( G_2 = \) Dhaincha, \( G_3 = \) Sannhemp., \( G_4 = \) Glyricidia, \( G_5 = \) Cassia, \( G_6 = \) Indigofera, \( G_7 = \) Karanja and \( G_8 = \) Ipomea Carifia.  
   (2) 2 levels of \( P_2O_5 \) as Super: \( P_0 = 0 \) and \( P_1 = 26.9 \) 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) 15. (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.

<table>
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<th>( P_0 )</th>
<th>( G_0 )</th>
<th>( G_1 )</th>
<th>( G_2 )</th>
<th>( G_3 )</th>
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<td>2204</td>
<td>1958</td>
<td>2313</td>
<td>2323</td>
<td>2300</td>
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**Crop:** Paddy *(Kharif).*  
**Site:** State Agri. Res. Stn., Bhubaneswar.  

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) \( T_4 \), (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) 1967 only. (b) Nil. (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.

<table>
<thead>
<tr>
<th></th>
<th>G₀</th>
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<th>G₂</th>
<th>G₃</th>
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<td>2448</td>
<td>2521</td>
<td>2381</td>
<td>2700</td>
<td>2413</td>
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</tbody>
</table>

C.D. for G marginal mean - 88.6 Kg/ha.

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**Crop:** Paddy (Kharif).
**Site:** State Agri. Res. Stn., Bhubaneswar.

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

1. BASAL CONDITIONS:
(a) Nil. (b) Paddy. (c) Nil. (d) Sandy loam. (e) 2.7-6.0-29.6.0. (iv) (a) Ploughings and 1 ladder- ing. (b) Transplanting. (c) 22 Kg/ha. (d) 25 cm. (e) 3 cm. (f) Nil. (g) January. (h) Unirrigated. (vii) Weeding by Japanese weeder and one hand weeding. (ix) 82 cm.

2. TREATMENTS:
All combinations of (1) and (2)
(11) 6 types of organic manures: G₀ = No organic manure, G₁ = Night soil compost, G₂ = Dhaincha, G₃ = Sannhemp, G₄ = Glyricidia and G₅ = Ipomea. Organic manures were applied at 4483 Kg/ha.
(2) 2 levels of P₀O₅ as Super: P₀ = 0 and P₁ = 26 Kg/ha. Manures applied 8 days before transplanting.

3. DESIGN:
(i) Factorial 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:
(a) N.A. (b) Nil. (c) Height, tiller count and grain yield. (iv) (a) 1858 to 1860. (b) N.A. (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.

<table>
<thead>
<tr>
<th></th>
<th>G₀</th>
<th>G₁</th>
<th>G₂</th>
<th>G₃</th>
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<tr>
<td>Mean</td>
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<td>2642</td>
<td>2523</td>
<td>2610</td>
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</tbody>
</table>
Object: To study the residual effect of organic manure and inorganic fertilizers on the yield of Paddy.

1. BASAL CONDITIONS:
   - (i) 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. x 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: N₀ = 0, N₁ = 22.4 and N₂ = 44.8 Kg/ha.
     - (2) 3 levels of P₂O₅ as Super: P₀ = 0, P₁ = 22.4 and P₂ = 44.8 Kg/ha.
     - (3) 3 levels of F.Y.M.: F₀ = 0, F₁ = 8967 and F₂ = 17930 Kg/ha.

3. DESIGN:
   - (i) 3² confd. (ii) (a) 9 plots/block and 3 blocks/replication. (b) Nil. (iii) One. (iv) (a) 3.7 m. x 11.0 m. (b) 3.2 m. x 10.5 m. (v) 23 cm. x 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.

<table>
<thead>
<tr>
<th></th>
<th>P₀</th>
<th>P₁</th>
<th>P₂</th>
<th>F₀</th>
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</tbody>
</table>

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

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**Crop:** Paddy (Kharif).
**Site:** State Agri. Res. Stn., Bhubaneswar.
**Ref:** Or. 62(15).
**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. x 15 cm. (e) 2. (v) 44.8 Kg/ha. of N, 22.4 Kg/ha. of P₂ 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: N₀=0, N₁=44·8 and N₂=89·7 Kg/ha.
(2) 3 levels of P₂O₅: P₀=0, P₁=22·4 and P₂=44·8 Kg/ha.
(3) 3 levels of K₂O: K₀=0, K₁=22·4 and K₂=44·8 Kg/ha.
(4) 2 levels of F·Y·M.: F₀=0 and F₁=44·9 Kg/ha.

3. DESIGN:

(i) 3² confd. (ii) 9 plots block and 6 blocks/replication. (iii) One. (iv) (a) 6½ m x 5½ m. (b) 5½ m x 5·2 m. (v) 23 cm. x 15 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Attack of hispa. Endrix 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.

<table>
<thead>
<tr>
<th></th>
<th>N₀</th>
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<th>N₂</th>
<th>P₀</th>
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</tbody>
</table>

**Crop:** Paddy (Kharif).

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

**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) Sandy loam. (iii) 2·7.60; 1·8.60. (iv) (a) 3 ploughings and puddling. (b) Line sowing. (c) 22 Kg/ha. (d) 23 cm. x 23 cm. (e) 1·3. (f) Nil. (g) (h) (i) (j) (k) (l) (m) (n) (o) Unirrigated. (p) Weeding by Japanese weeder. (q) 165 cm. (r) 13.12.60.

2. TREATMENTS:

6 material treatments: M₀=Control. M₁=Dhanicha alone. M₂=Dhanicha-B.M. at the time of sowing Dhanicha. M₃=Dhanicha-B.M. at the time of puddling, M₄=Dhanicha-cow dung at the time of sowing Dhanicha and M₅=B.M. meal alone at the time of puddling.

B.M. meal at 22·4 Kg/ha. of P₂O₅ and Cowdung @ 5004 Kg/ha. Dhanicha was sown on 23.5.60.

(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) 2617 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>M₀</th>
<th>M₁</th>
<th>M₂</th>
<th>M₃</th>
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**Crop:** Paddy (Kharif).  
**Site:** State Agri. Res. Stn., Bhubaneswar.  
**Ref:** Or. 60(40).  
**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 x 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 manural 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. x 5'0 m. (b) 7'6 m. x 4'6 m. (v) 23 cm x 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>M₀</th>
<th>M₁</th>
<th>M₂</th>
<th>M₃</th>
<th>M₄</th>
</tr>
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<tbody>
<tr>
<td>Av. yield</td>
<td>662</td>
<td>496</td>
<td>481</td>
<td>761</td>
<td>574</td>
</tr>
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</table>

**Crop:** Paddy (Rabi).  
**Site:** Agri. Res. Stn., Bhubaneswar.  
**Ref:** Or. 60(26).  
**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 x 23 cm. (e) 2. (f) 24.4 Kg./ha. of P₂O₅ as Super-P22'-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) Tillers height, straw and grain weight. (iv) (a) and (b) 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  M4  M1  M3  M2  M1
   Av. yield  485  469  574  514  455

---

Crop :- Paddy (kunj).


Object :- To study the most suitable time of application of N as A1. and CA;N for Paddy.

1. BASAL CONDITIONS:
   (i) (a) Nil. (b) Mung for 60(17), Paddy for 61(61). (c) Nil for 60(17), As pellet treatments for 61(61). (ii) Clay for 60(17), Sandy loam for 61(61). (iii) 27.7, 29.6, 28, 29.7, 1961. (iv) (a) 7 ploughings and 3 ladderings for 60(17), one ploughing with seed for 61(61). (b) Transplanting. (c) 22 Kg./ha. for 60(17), 38 Kg./ha. for 61(61). (d) 23 cm. x 15 cm. (e) 2 to 3. (y) 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./ha.: S1 = A/S and S2 = C/A/N.
   (2) 7 times of applications: T1 = Full dose at planting, T2 = Full dose 14 days after planting, T3 = ½ dose at planting + ½ dose after one month, T4 = ½ dose after 14 days of planting + ½ dose after one month, T5 = ½ at planting + ½ one month after planting + ½ one week before flowering and T6 = ½ after 14 days of planting + ½ one month after planting + ½ one week before flowering.

3. DESIGN:
   (i) R.B.D. (ii) (a) 15. (b) 3: 1 m. x 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. x 3·7 m. for 60(17), 5·7 m. x 4·9 m. for 61(61). (b) 5·0 m. x 3·4 m. for 60(17), 4·6 m. x 4·6 m. for 61(61). (v) 23 cm. x 15 cm. for 60(17), 30 cm. x 15 cm. for 61(61). (vi) Yes.

4. GENERAL:
   (i) Good for 60(17). Fair for 61(61). (ii) Endrine was sprayed to protect against pests for 60(17), Attack of Gastrida 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 expl. 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 x 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 x years interaction). (iii) None of the effects is significant. (iv) Av. yield of grain in Kg./ha.

   Control = 2684 Kg./ha.

<table>
<thead>
<tr>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>T5</th>
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<td>2693</td>
<td>2375</td>
<td>2354</td>
<td>2350</td>
<td>2530</td>
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</table>
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 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: C₀ = No compost, C₁ = 125·5 Kg/ha. of compost, C₂ = Compost reinforced with Super, C₃ = Compost reinforced with B.M., C₄ = Compost + Super and C₅ = 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>C₀</th>
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<th>C₂</th>
<th>C₃</th>
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<td>975</td>
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Crop :- Paddy (Kharif).

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

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

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 P₂O₅ as Super. (vi) T-141 (medium). (vii) Unirrigated. (viii) Bushing, one weeding and roguing. (ix) N.A. (x) 29, 30.11.1960.

2. TREATMENTS:
   4 G.M. crops grown with Paddy : G₀ = No G.M. crop, G₁ = S. acoelea, G₂ = S. species and G₃ = A. Americana.

3. DESIGN:
   (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) x 1 (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) 39% 9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

<table>
<thead>
<tr>
<th>Treatment</th>
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<th>$G_3$</th>
<th>$G_4$</th>
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<td>4174</td>
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</table>

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Crop: Paddy (Kharif).
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 $\times$ 15 cm. (e) 2 to 3. (v) 140.1 Kg/ha. of Super. (vi) $T_m$ (late). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 18, 19.8.60.

2. TREATMENTS:
6 G.M. crops: $G_1$ = No G.M., $G_2$ = Sesbania speciosa, $G_3$ = Sesbania mucrowarpa, $G_4$ = Sesbania aculeata, $G_5$ = Sesbania sericica and $G_6$ = Deschononme 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$\cdot$3 m $\times$ 5$\cdot$5 m. (b) 6$\cdot$9 m $\times$ 1$\cdot$2 m. (v) 23 cm $\times$ 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>$G_1$</th>
<th>$G_2$</th>
<th>$G_3$</th>
<th>$G_4$</th>
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<tr>
<td>Av. yield</td>
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<td>2477</td>
<td>2742</td>
<td>3189</td>
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Crop: Paddy (Kharif).
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 (e) 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: $L_1$=0, $L_2$=1121 and $L_3$=1681 Kg/ha.
Sub-plot treatments:
- All combinations of (1), (2) and (3)
  1. 2 levels of N as A/S: $N_0$=0 and $N_1$=33.6 Kg/ha.
  2. 2 levels of $P_2O_5$ as Super: $P_0$=0 and $P_1$=22.4 Kg/ha.
  3. 2 levels of $K_2O$ as Pot. Sul: $K_0$=0 and $K_1$=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) 4589 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.

<table>
<thead>
<tr>
<th></th>
<th>N_a</th>
<th>N_s</th>
<th>P_a</th>
<th>P_s</th>
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Crop :- Paddy (Kharif).

Ref :- Or. 60(15).
Type :- 'M'.

Object :- To study the effect of soil testing recommendation on Paddy as compared to other practices.
Crop = Paddy (*kharif*).

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 144.8 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: Sₓ = A/S and Sᵧ = C/A/N.
   (2) 7 times of application of N: Tₓ = Full dose at planting, Tᵧ = Full dose 14 days after planting, T₀ = Full dose one month after planting, T₁ = ½ dose at planting + ½ dose after one month, T₂ = ½ dose after 14 days of planting + ½ dose after one month, T₃ = ½ at planting + ½ one month after planting + ½ one week before flowering, and T₄ = ½ dose after 14 days after planting + ½ one month after planting + ½ 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) Feight, 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.

<table>
<thead>
<tr>
<th></th>
<th>T₁</th>
<th>T₂</th>
<th>T₃</th>
<th>T₁</th>
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</table>

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).

Site:– M.A.E. Centre, Barpali.

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 25.6.60; 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 cm. x 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: N₀ = 0, N₁ = 33.6 and N₂ = 67.2 Kg/ha.
   (2) 3 levels of P₂₀₅ as Super: P₀ = 0, P₁ = 36.6 and P₂ = 67.2 Kg/ha.
   (3) 3 levels of K₃₀ as Mur. Pot.: K₀ = 0, K₁ = 33.6 and K₂ = 67.2 Kg/ha.
   (4) 2 levels of F.Y.M.: F₀ = 0 and F₁ = 5600 Kg/ha.

Manures broadcast at the time of puddling.

3. DESIGN:
   (i) 3 x 3 x 2. (ii) 9 plots/block, 3 blocks under F₀ and F₁. (b) N.A. (iii) 1. (iv) (a) 1/198 h.a. (b) 1/247 h.a. (v) N.A. (vi) Yes.

4. GENERAL:
   (i) Good. (ii) Rice hipo 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) 835.7 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

<table>
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<tr>
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<th>N₂</th>
<th>P₀</th>
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1960

Residual Phase
   (i) 3039 Kg/ha. (ii) 1207.1 Kg/ha. (iii) Interaction F x K is highly significant and interaction F x P is significant. (iv) Av. yield of grain in Kg/ha.
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C.D. for body of F x K or F x P table = 1407·3 Kg/ha.

**1960**

**Direct Phase**
(i) 3524 Kg/ha.
(ii) 921·8 Kg/ha.
(iii) Interaction F x K is significant.
(iv) Av. yield of grain in Kg/ha.

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C.D. for N marginal means = 519·1 Kg/ha.

**Cumulative Phase**
(i) 3193 Kg/ha.
(ii) 602·6 Kg/ha.
(iii) Interaction F x P is significant.
(iv) Av. yield of grain in Kg/ha.

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C.D. for body of F x P table = 587·8 Kg/ha.

C.D. for body of F x P table = 1129·1 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.

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1961

Direct Phase
(i) 3230 Kg/ha. (ii) 628.7 Kg/ha. (iii) Interaction F x P is highly significant. (iv) Av. yield of grain in Kg/ha.

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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.

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C.D. for body of F x P table = 613.3 Kg/ha.
### Residual Phase

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Mean: 1583 (1472 1627) 1266 1489 1618 1382 1550 1541 1557

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Mean: 1594 (1730 1760) 1589 1793 1701 1705 1766 1613 1694

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Mean: 3341 (3596 3550) 3287 3596 3603 3503 3421 3562 3496

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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×F and N×K are highly significant. Main effect of N is significant. (iv) Av. yield of grain in Kg/ha.

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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.

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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 (e) 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_{0}P_{0})
  - (1) 2 leguminous crops: L_{0} = Pea and L_{1} = Gram.
  - (2) 3 levels of P_{2}O_{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:
- Split-plot. (i) 7 main-plots (replication) and 3 sub-plots (main-plot).
- (a) 1/198 ha.
- (b) N.A.
- (c) 1/247 ha.
- (d) 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.

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Crop - Paddy.
Site - M.A.E. Centre, Kendrapara.
Object - Type IV: To study the effect of direct and indirect manuring of Paddy.

1. BASAL CONDITIONS:
- (i) Paddy-Logans. (b) Legumes. (c) Maltei d alluvium.
- (iii) N.A. 18.7.60, 19.6.61/14.7.61.
- (iv) 1 ploughings, puddling and laddering.
- (b) Transplanting. (c) 56 Kg/ha.
- (d) 23 cm. < 15 cm.
- (e) N.A.
- (f) Nil.
- (g) Fertilizer. (h) 1 weeding. (i) 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_{0}P_{0}).
- (1) 2 legumes crops: L_{0} = Mung and L_{1} = Viti.
- (2) 3 levels of P_{2}O_{5} applied to legumes: P_{0} = 0, P_{1} = 44.8 and P_{2} = 89.7 Kg/ha.

Sub-plot treatments:
- 3 levels of N as A/S: N_{0} = 0, N_{1} = 16.8 and N_{2} = 33.6 Kg/ha.

3. DESIGN:
- Split-plot. (i) 7 main-plots (replication) and 3 sub-plots (main-plot).
- (b) N.A.
- (c) 10.1 m. x 5 m. (b) 11.1 m. x 4.4 m. (c) 46 cm. x 30 cm.
- (d) Yes.

4. GENERAL:
- (i) Good.
- (ii) Nil.
- (iii) Yield of grain. (iv) (a) 1957-1951.
- (b) N.A.
- (c) Nil.
- (d) Nil.
- (v) to (vii) Nil.

5. RESULTS:

(i) 3075 Kg/ha.
(ii) 309.4 Kg/ha. (with 6 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.
Crop: Paddy (Kharij).  
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) L. c. a. (c) As per treatments. (ii) (a) Recent alluvium. (b) N.A. i
   (iii) 7.6.63/17.6.63. (iv) (a) 2 ploughings and puddling. (b) Transplanted. (c) 28 Kg/ha. (d) 23 em. x 15 cm.
   (e) N.A. (v) Nil. (vi) T-141 (150 days). (viii) 2 hand weedings.
   (vii) Irrigated. (ix) 112 em. (x) 25, 26.11.63.

2. TREATMENTS and 3 DESIGN:
   Same as in expt. no. 61 (MAE) type IV conducted at Kendrapara on page 26.
   N top dressed on 7.8.1963.

4. GENERAL:
   (i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) 19f2-contd. (data for other years N.A.)
   (b) No. (c) Nil. (d) 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.

<table>
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C.D. for N marginal means=141'5 Kg/ha.

Crop: Paddy (Kharij).  
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.
TREATMENTS:

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

(1) 3 levels of N: \( N_1 = 33.6 \), \( N_2 = 50.4 \) and \( N_3 = 67.2 \) Kgf/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 at planting + about a month after planting and \( M_4 = \) Applied in the form of pellets about three weeks after planting.

DESIGN:

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

GENERAL:

(i) Normal. (ii) Incidence of stem borer. 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.

RESULTS:

(i) 3085 Kg/ha. (ii) 318.6 Kg/ha. (iii) "Control vs. others" is highly significant. Main effect of \( M \) is significant.

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

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

Crop: Paddy. Site: M.A.E. Centre, Tirtol. Ref: Or. 62, 63(MAE). Type: 'M'.

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

BASEL CONDITIONS:

(i) Paddy-Pulse for 61, Paddy-Fallow for 63. (b) Not 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. to 15 cm. (e) N.A. (f) Nil. (g) T-30 (late). (h) Irrigated for 62. Unirrigated for 63. (i) 1 growing. (ii) 125 cm.; 112 cm. (iii) 17.12.62, 24.12.63

TREATMENTS:

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

DESIGN:

(i) R.B.D. (ii) 13. (b) N.A. (iii) 4. (iv) (a) 9 ft. x 5 ft. m. (b) 91 m. x 14 m. (c) 31 m. x 13 m. (v) Yes.

GENERAL:


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.

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C.D. for N marginal means = 126·0 Kg/ha,  
C.D. for M marginal means = 157·0 Kg/ha,  
C.D. for control vs. others = 202·2 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.

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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.AM-9 (late—sarada, 170 days).  
   (vii) Irrigated.  
   (viii) 1 weeding.  
   (ix) 119 cm.  

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.  

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:

5. RESULTS:
(i) 2924 Kg/ha. (ii) 4171 Kg/ha. (iii) 3453 Kg/ha. (iv) Main effect of D and interactions D x S and D x N are significant. (v) Av. yield of grain in Kg/ha.

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C.D. for D marginal means - 240.6 Kg/ha.
C.D. for N means at the same level of D - 2418 Kg/ha.
C.D. for D means at the same level of N - 294.2 Kg/ha.
C.D. for body of D x S table - 461.0 Kg/ha.

Crop :- Paddy (Kharif).
Site :- M.A.E. Centre, Kendrapara.
Ref :- Or. 61(MAE).
Type :- ‘M’.

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

1. BASAL CONDITIONS:
(i) (a) N.A. (b) Paddy. (c) N.A. (ii) (a) R.rax. alluvium. (b) N.A. (iii) 19.6.61. As per treatments. (iv) (a) 3 ploughings, puddling and ladling. (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:

4. GENERAL:
(i) Satisfactory Crop lodged. (ii) Mild attack of false m. (iii) Grain yield. (iv) 1956-1961. (b) No. (c) N.A. (v) Tirtol. (vi) and (vii) 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.

\[
\begin{array}{|c|c|c|c|c|c|c|c|c|}
\hline
 & R_1 & R_2 & S_1 & S_2 & P_1 & P_2 & Mean \\
\hline
D_1 & 3357 & 3549 & 3514 & 3348 & 3538 & 3440 & 3446 & 3454 & 3453 \\
D_2 & 3220 & 3182 & 3177 & 3034 & 3378 & 3154 & 3258 & 3294 & 3205 \\
D_3 & 2599 & 2905 & 2739 & 2518 & 2918 & 2684 & 2752 & 2878 & 2718 \\
Mean & 3062 & 3182 & 3123 & 2967 & 3278 & 3093 & 3152 & 3262 & 3122 \\
S_1 & 3256 & 3311 & 3219 & 3191 & 3333 & 3228 & 3296 & 3228 & 3296 \\
S_2 & 2951 & 3237 & 3190 & 2905 & 3347 & 3127 & 3125 & 3205 & 3125 \\
S_3 & 2979 & 2998 & 2960 & 2805 & 3153 & 2924 & 3034 & 3020 & 3024 \\
P_1 & 3034 & 3154 & 3091 & 2914 & 3272 & 3093 & 3152 & 3262 & 3122 \\
P_2 & 3090 & 3210 & 3155 & 3020 & 3284 & 3093 & 3152 & 3262 & 3122 \\
N_1 & 2841 & 2988 & 3072 & 2914 & 3272 & 3093 & 3152 & 3262 & 3122 \\
N_2 & 3283 & 3376 & 3174 & 3093 & 3152 & 3093 & 3152 & 3262 & 3122 \\
\hline
\end{array}
\]

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 laddercings.  (b) Transplanting.  (c) 28 Kg/ha.  (d) and (e) As per treatments.  (v) 5000 Kg/ha. of F.Y.M.  (vi) P.A.M.—9 (late).  (vii) Unirrigated.  (viii) 1 weeding.  (ix) 112 cm.  (x) 15.12.63.

2. **TREATMENTS:**
Same as in expn. 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) I.  (iv) (a) 10'1 m.x5.0 m.  (b) S1=9.5 m.x4.4 m., S2=9.2 m.x4.2 m., S3=9.0 m.x4.0 m.  (v) N.A.  (vi) Yes.

4. **GENERAL:**
(i) Satisfactory.  (ii) Spraying with Gammaexane was done on 9.9.1963 in D1 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) Avg. yield of grain in Kg/ha.

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<th>R₃</th>
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C.D. for D marginal means
C.D. for N or P marginal means
C.D. for N means at the same level of D
C.D. for D means at the same level of N

CROP: Paddy (Kharif)

SITE: M.A.E. Centre, Barpali.

REF: Or. 61, 62, 63(MAE).

TYPE: 'M'.

OBJECT: 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) II/12.7.61, 8.7.62 and 12.8.62, N.A. (iv) (a) 5 to 6 ploughings each followed by耙. (b) Transplanting in lines. (c) 22.4 Kg/ha. for 61, 62, N.A. for 63. (d) 23 cm × 15 cm. (e) 3. (iv) 560.4 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; 8.12.61, 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 M₃ = In pellet form.
4 extra treatments : N₀ = 0, N₁ = 17.5, N₂ = 27.0 and N₃ = 54.0 Kg/ha.

3. DESIGN:

(i) 3 conf. (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 < 3 m. for 62, 63. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Normal. (ii) Incidence of gall 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 x L, N₀ v/s N and extra treatments v/s others are significant. (iv) Av. yield of grain in Kg/ha.

\[ \text{N₀} = 1411 \text{ Kg/ha}, \text{ N₁} = 1992 \text{ Kg/ha}, \text{ N₂} = 2499 \text{ Kg/ha}, \text{ and N₃} = 2047 \text{ Kg/ha.} \]

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<td>2663</td>
<td>2760</td>
<td>2622</td>
<td>2561</td>
<td>2619</td>
<td>2601</td>
</tr>
</tbody>
</table>

C.D. for body of P x L table = 737.5 Kg/ha.
C.D. for N₀ 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.

\[ \text{N₀} = 1978 \text{ Kg/ha}, \text{ N₁} = 2145 \text{ Kg/ha}, \text{ N₂} = 2475 \text{ Kg/ha}, \text{ and N₃} = 2613 \text{ Kg/ha.} \]

<table>
<thead>
<tr>
<th></th>
<th>P₁</th>
<th>P₂</th>
<th>P₃</th>
<th>L₁</th>
<th>L₂</th>
<th>L₃</th>
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</tr>
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<tbody>
<tr>
<td>M₁</td>
<td>2347</td>
<td>2322</td>
<td>2243</td>
<td>2230</td>
<td>2343</td>
<td>2338</td>
<td>2304</td>
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<tr>
<td>M₂</td>
<td>2542</td>
<td>2272</td>
<td>2343</td>
<td>2523</td>
<td>2310</td>
<td>2324</td>
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<tr>
<td>M₃</td>
<td>2992</td>
<td>2361</td>
<td>2667</td>
<td>2765</td>
<td>2690</td>
<td>2565</td>
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<tr>
<td>Mean</td>
<td>2627</td>
<td>2318</td>
<td>2418</td>
<td>2506</td>
<td>2448</td>
<td>2409</td>
<td>2454</td>
</tr>
</tbody>
</table>

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.

\[ \text{N₀} = 2869 \text{ Kg/ha}, \text{ N₁} = 3033 \text{ Kg/ha}, \text{ N₂} = 3146 \text{ Kg/ha}, \text{ and N₃} = 3371 \text{ Kg/ha.} \]

<table>
<thead>
<tr>
<th></th>
<th>P₁</th>
<th>P₂</th>
<th>P₃</th>
<th>L₁</th>
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<tbody>
<tr>
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<td>3533</td>
<td>2833</td>
<td>3094</td>
<td>3113</td>
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<td>3202</td>
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<tr>
<td>M₂</td>
<td>3248</td>
<td>3258</td>
<td>2825</td>
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<td>3004</td>
<td>3107</td>
<td>3111</td>
</tr>
<tr>
<td>M₃</td>
<td>3265</td>
<td>2977</td>
<td>3017</td>
<td>3084</td>
<td>3044</td>
<td>3132</td>
<td>3086</td>
</tr>
<tr>
<td>Mean</td>
<td>3349</td>
<td>3023</td>
<td>2979</td>
<td>3139</td>
<td>3065</td>
<td>3147</td>
<td>3117</td>
</tr>
</tbody>
</table>

C.D. for P marginal means = 286.9 Kg/ha.
Crop: Paddy (Kharif).
Site: M.A.E. Centre, Kendrapara.

Object: To study the effect of N and methods of application of \(\text{P}_2\text{O}_5\) on Paddy.

1. BASAL CONDITIONS:
   (i) (a) to (c) N.A. (ii) Recent alluvium. (iii) 14.6.1964/7.8.1964. (iv) (a) 3 ploughings, puddling and laddering. (b) Transplanting in lines. (c) 56 Kg/ha. (d) 23 cm. >15 cm. (e) N.A. (f) Nil. (v) T-1-141 (150 days). (vi) Irrigated. (vii) 1 weeding. (ix) 165 cm. (x) 10.12.1964. (viii) Unirrigated. (x) 2 weedings. (x) 112 cm. (x) 27.11.1963.

2. TREATMENTS and DESIGN:
   Same as in exp. no. 61 (MAE) type IX conducted at Barpali on page 32. N applied at transplanting.

3. 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) 2198 Kg/ha. (iii) Main effects of P and L and effect of N are highly significant. Interaction P \(\times\) L is significant. (iv) Av. yield of grain in Kg/ha.

\[
\begin{array}{cccccc}
<table>
<thead>
<tr>
<th>P_a</th>
<th>P_b</th>
<th>P_c</th>
<th>L_1</th>
<th>L_2</th>
<th>L_3</th>
<th>\text{Mean}</th>
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<tr>
<td>M_1</td>
<td>3071</td>
<td>2712</td>
<td>2767</td>
<td>2665</td>
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<td>3192</td>
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<td>M_2</td>
<td>2822</td>
<td>2795</td>
<td>2776</td>
<td>2730</td>
<td>2693</td>
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<td>M_3</td>
<td>2924</td>
<td>3090</td>
<td>3182</td>
<td>2942</td>
<td>3026</td>
<td>3228</td>
</tr>
<tr>
<td>Mean</td>
<td>2939</td>
<td>2866</td>
<td>2908</td>
<td>2779</td>
<td>2804</td>
<td>3130</td>
</tr>
</tbody>
</table>
\end{array}
\]

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 \(\times\) L table = 256.1 Kg/ha.

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

Object: To study the residual effect of N and method of application of \(\text{P}_2\text{O}_5\) 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. (f) Nil. (v) T-1-141 (150 days). (vi) Unirrigated. (vii) 2 weedings. (ix) 112 cm. (x) 27.11.1963.

2. TREATMENTS:
   Same as in exp. no. 61 (MAE) type IX conducted at Barpali on page 32. Manures applied in Kharif 1962.

3. DESIGN:
   (i) 3\(^{4+1}\) confd. (ii) (a) 13 plots/block and 3 blocks/repl. (b) N.A. (iii) 2. (iv) (a) 9'8 m. \(\times\) 50 m. (b) 8'8 m. \(\times\) 4'4 m. (c) 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×M and P×L×M are highly significant. Interaction P×L is significant. (iv) Av. yield of grain in Kg/ha.

\[ N_4=2257 \text{ Kg/ha, } N_1=2014 \text{ Kg/ha, } N_4=1950 \text{ Kg/ha, and } N_3=2022 \text{ Kg/ha.} \]

<table>
<thead>
<tr>
<th></th>
<th>( P_1 )</th>
<th>( P_2 )</th>
<th>( P_3 )</th>
<th>( L_1 )</th>
<th>( L_2 )</th>
<th>( L_3 )</th>
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</tr>
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<tr>
<td>( M_1 )</td>
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<td>2197</td>
<td>2137</td>
<td>2164</td>
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<td>2184</td>
<td>2167</td>
</tr>
<tr>
<td>( M_2 )</td>
<td>2197</td>
<td>2120</td>
<td>2197</td>
<td>2270</td>
<td>2189</td>
<td>2056</td>
<td>2171</td>
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<tr>
<td>( M_3 )</td>
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<td>1988</td>
<td>1950</td>
<td>2299</td>
<td>2184</td>
<td>2144</td>
</tr>
<tr>
<td>Mean</td>
<td>2196</td>
<td>2180</td>
<td>2107</td>
<td>2134</td>
<td>2207</td>
<td>2142</td>
<td>2161</td>
</tr>
</tbody>
</table>

\[ \text{C.D. for means in the body of L×M or P×L table or N means}=179\cdot3 \text{ Kg/ha.} \]

---

**Crop:** Paddy (Kharif).

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

**Ref:** Or. 62(MAE).

**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. x 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. : \( G_0=\text{No G.M.}, G_1=\text{G.M. raised and ploughed in situ} \) and \( G_2=\text{G.M. raised with application of 35 Kg/ha. of P}_2O_5 \) and ploughed in situ.

(2) 3 levels of N as A/S: \( N_0=0, N_1=17\cdot5 \) 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: \( T=\text{NPK through artificial fertilizers equivalent to those obtained from G.M.} \) N and \( P_2O_5 \) applied at final pludging. G.M. incorporated on 31.7.1962.

3. DESIGN:
(i) 3\(^{rd}\)+1 confd. (ii) (a) 10 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 11'9 m. x 7'0 m. (b) 11·0 m. x 6'4 m. (v) N.A. (vi) Yes.

4. GENERAL:
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.

<table>
<thead>
<tr>
<th></th>
<th>N₀</th>
<th>N₁</th>
<th>N₂</th>
<th>P₀</th>
<th>P₁</th>
<th>P₂</th>
<th>P₃</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
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<td>G₀</td>
<td>1434</td>
<td>1757</td>
<td>1475</td>
<td>1550</td>
<td>1690</td>
<td>1426</td>
<td>1555</td>
<td></td>
</tr>
<tr>
<td>G₁</td>
<td>1552</td>
<td>1588</td>
<td>1787</td>
<td>1439</td>
<td>1663</td>
<td>1824</td>
<td>1642</td>
<td></td>
</tr>
<tr>
<td>G₂</td>
<td>1736</td>
<td>1431</td>
<td>1553</td>
<td>1561</td>
<td>1520</td>
<td>1639</td>
<td>1573</td>
<td></td>
</tr>
</tbody>
</table>

Mean 1574 1592 1605 1517 1624 1630 1590

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

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) 5.6.63.11, 17.7.63. (iv) (a) 4 ploughings each followed by pata. (b) Transplanting. (c) N.A. (d) 23 cm. x 15 cm. (e) 3. (v) Nil. (vi) T—41 (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
(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 T₄ plot. Optimum dose of each micro-nutrient for the two methods has been tried. T₁ and T₄ applied to soil.

3. DESIGN:
(i) Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) 10'1 m. x 3'0 m. (c) 9'1 m. x 4'4 m. (v) 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) 3534 Kg/ha. (iii) Main effect of S alone is significant. (iv) Av. yield of grain in Kg/ha.

<table>
<thead>
<tr>
<th>S₁</th>
<th>S₂</th>
<th>S₃</th>
<th>S₄</th>
<th>S₅</th>
<th>S₆</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>M₁</td>
<td>3434</td>
<td>3527</td>
<td>2792</td>
<td>3366</td>
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<td>3002</td>
<td>3243</td>
<td>3638</td>
<td>3187</td>
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</table>

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 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.
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 A1S, 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 and 3 are of type A3. 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.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>N2</th>
<th>P1</th>
<th>N1P1</th>
<th>N2P1</th>
<th>N2P2K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>365</td>
<td>583</td>
<td>383</td>
<td>627</td>
<td>854</td>
<td>825</td>
<td>921</td>
</tr>
</tbody>
</table>

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

Cuttack
64 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>N2</th>
<th>P1</th>
<th>N1P1</th>
<th>N2P1</th>
<th>N2P2K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>256</td>
<td>367</td>
<td>444</td>
<td>615</td>
<td>810</td>
<td>1008</td>
<td>1245</td>
</tr>
</tbody>
</table>

Control yield=2075 Kg/ha.; No. of trials=2.

65 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>N2</th>
<th>P1</th>
<th>N1P1</th>
<th>N2P1</th>
<th>N2P2K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>366</td>
<td>566</td>
<td>200</td>
<td>533</td>
<td>633</td>
<td>966</td>
<td>1200</td>
</tr>
</tbody>
</table>

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

**65 (S.F.T.)**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. response of grain (Kg/ha)</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>N&lt;sub&gt;1&lt;/sub&gt;</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;</td>
<td>P&lt;sub&gt;1&lt;/sub&gt;</td>
</tr>
<tr>
<td>140</td>
<td>292</td>
<td>138</td>
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</tbody>
</table>

### Sambalpur

**65 (S.F.T.)**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. response of grain (Kg/ha)</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>N&lt;sub&gt;1&lt;/sub&gt;</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;</td>
<td>P&lt;sub&gt;1&lt;/sub&gt;</td>
</tr>
<tr>
<td>183</td>
<td>434</td>
<td>350</td>
</tr>
</tbody>
</table>

### 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: 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 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 manorial treatments
     - Control (no manure)
     - 35 Kg/ha. of N<sub>1</sub>
     - 70 Kg/ha. of P<sub>1</sub>
     - 35 Kg/ha. of P<sub>1</sub>D<sub>1</sub>
     - 70 Kg/ha. of N<sub>1</sub>P<sub>1</sub>
     - 70 Kg/ha. of N<sub>1</sub>P<sub>1</sub>K<sub>1</sub>
   - N applied as A<sub>1</sub>S<sub>1</sub>; P<sub>1</sub>D<sub>1</sub> as Super and K<sub>1</sub>D<sub>1</sub> as Mur. of Pot.

3. **Design:**
   - Same as in type A<sub>1</sub> (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.)**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. response of grain (Kg/ha)</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
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<td>N&lt;sub&gt;2&lt;/sub&gt;</td>
<td>P&lt;sub&gt;1&lt;/sub&gt;</td>
</tr>
<tr>
<td>261</td>
<td>364</td>
<td>160</td>
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<tr>
<td>Treatment</td>
<td>N$_1$</td>
<td>N$_2$</td>
</tr>
<tr>
<td>-----------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>Control yield</td>
<td>2172 Kg/ha.</td>
<td>No. of trials=6.</td>
</tr>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>406</td>
<td>286</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N$_1$</th>
<th>N$_2$</th>
<th>P$_1$</th>
<th>N$_1$P$_1$</th>
<th>N$_2$P$_2$</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control yield</td>
<td>3278 Kg/ha.</td>
<td>No. of trials=6.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>376</td>
<td>288</td>
<td>234</td>
<td>582</td>
<td>385</td>
<td>526</td>
</tr>
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<table>
<thead>
<tr>
<th>Treatment</th>
<th>N$_1$</th>
<th>N$_2$</th>
<th>P$_1$</th>
<th>N$_1$P$_1$</th>
<th>N$_2$P$_2$</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control yield</td>
<td>3351 Kg/ha.</td>
<td>No. of trials=9.</td>
<td></td>
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</tr>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>269</td>
<td>324</td>
<td>228</td>
<td>349</td>
<td>551</td>
<td>471</td>
</tr>
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<table>
<thead>
<tr>
<th>Treatment</th>
<th>N$_1$</th>
<th>N$_2$</th>
<th>P$_1$</th>
<th>N$_1$P$_1$</th>
<th>N$_2$P$_2$</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control yield</td>
<td>3168 Kg/ha.</td>
<td>No. of trials=6.</td>
<td></td>
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</tr>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>771</td>
<td>684</td>
<td>429</td>
<td>988</td>
<td>1062</td>
<td>1169</td>
</tr>
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<table>
<thead>
<tr>
<th>Treatment</th>
<th>N$_1$</th>
<th>N$_2$</th>
<th>P$_1$</th>
<th>N$_1$P$_1$</th>
<th>N$_2$P$_2$</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control yield</td>
<td>1711 Kg/ha.</td>
<td>No. of trials=5.</td>
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</tr>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>279</td>
<td>268</td>
<td>324</td>
<td>563</td>
<td>592</td>
<td>701</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N$_1$</th>
<th>N$_2$</th>
<th>P$_1$</th>
<th>N$_1$P$_1$</th>
<th>N$_2$P$_2$</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control yield</td>
<td>2600 Kg/ha.</td>
<td>No. of trials=9.</td>
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<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>506</td>
<td>848</td>
<td>261</td>
<td>833</td>
<td>959</td>
<td>1091</td>
</tr>
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<table>
<thead>
<tr>
<th>Treatment</th>
<th>N$_1$</th>
<th>N$_2$</th>
<th>P$_1$</th>
<th>N$_1$P$_1$</th>
<th>N$_2$P$_2$</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control yield</td>
<td>2203 Kg/ha.</td>
<td>No. of trials=9.</td>
<td></td>
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</tr>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>757</td>
<td>1173</td>
<td>384</td>
<td>1055</td>
<td>1490</td>
<td>1741</td>
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<table>
<thead>
<tr>
<th>Treatment</th>
<th>N$_1$</th>
<th>N$_2$</th>
<th>P$_1$</th>
<th>N$_1$P$_1$</th>
<th>N$_2$P$_2$</th>
<th>S.E.</th>
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</thead>
<tbody>
<tr>
<td>Control yield</td>
<td>1956 Kg/ha.</td>
<td>No. of trials=10.</td>
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<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>675</td>
<td>931</td>
<td>605</td>
<td>1104</td>
<td>1185</td>
<td>1483</td>
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<table>
<thead>
<tr>
<th>Treatment</th>
<th>N$_1$</th>
<th>N$_2$</th>
<th>P$_1$</th>
<th>N$_1$P$_1$</th>
<th>N$_2$P$_2$</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control yield</td>
<td>2387 Kg/ha.</td>
<td>No. of trials=3.</td>
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<td></td>
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</tr>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>620</td>
<td>1155</td>
<td>525</td>
<td>840</td>
<td>1142</td>
<td>1434</td>
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</table>
### 64 (S.F.T.) [Rabi]

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;3&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>775</td>
<td>906</td>
<td>$-85$</td>
<td>857</td>
<td>1295</td>
<td>1687</td>
<td>1858</td>
</tr>
</tbody>
</table>

Control yield = 1881 Kg/ha.; No. of trials = 2.

### 65 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;3&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>625</td>
<td>1002</td>
<td>638</td>
<td>1221</td>
<td>1679</td>
<td>2021</td>
<td>2054</td>
</tr>
</tbody>
</table>

Control yield = 1975 Kg/ha.; No. of trials = 7.

### Mayurbhanj

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;3&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>9</td>
<td>125</td>
<td>168</td>
<td>243</td>
<td>$-98$</td>
<td>44</td>
<td>92</td>
</tr>
</tbody>
</table>

Control yield = 1577 Kg/ha.; No. of trials = 7.

### 63 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;3&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>363</td>
<td>621</td>
<td>189</td>
<td>707</td>
<td>825</td>
<td>1135</td>
<td>1295</td>
</tr>
</tbody>
</table>

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

### 64 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;3&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>371</td>
<td>740</td>
<td>310</td>
<td>904</td>
<td>1122</td>
<td>1488</td>
<td>1560</td>
</tr>
</tbody>
</table>

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

### Ganjam

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;3&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>575</td>
<td>597</td>
<td>177</td>
<td>871</td>
<td>972</td>
<td>1480</td>
<td>1663</td>
</tr>
</tbody>
</table>

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

### 65 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;3&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>751</td>
<td>1594</td>
<td>678</td>
<td>1983</td>
<td>1706</td>
<td>2167</td>
<td>3143</td>
</tr>
</tbody>
</table>

Control yield = 3223 Kg/ha.; No. of trials = 3.

### 66 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;3&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>603</td>
<td>760</td>
<td>760</td>
<td>484</td>
<td>816</td>
<td>946</td>
<td>1325</td>
</tr>
</tbody>
</table>

Control yield = 1169 Kg/ha.; No. of trials = 6.
Crop : - Paddy.

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

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

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
- N2P2K=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 : N1 P1 P2 N1P1 N1P2 N1P2K  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 : N1 P1 P2 N1P1 N1P2 N1P2K  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 : N2 P1 P2 N2P1 N2P2 N2P2K  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
seed crops to phosphorus applied
singly and in combination with other nutrients (Type A3).

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 manural treatments

<table>
<thead>
<tr>
<th>O</th>
<th>N1 = 35 Kg/ha. of N</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>= 35 Kg/ha. of P2O5,</td>
</tr>
<tr>
<td>P2</td>
<td>= 70 Kg/ha. of P2O5,</td>
</tr>
<tr>
<td>N1P1 = 35 Kg/ha. of N + 35 Kg/ha. of P2O5,</td>
<td></td>
</tr>
<tr>
<td>N1P2 = 35 Kg/ha. of N + 70 Kg/ha. of P2O5,</td>
<td></td>
</tr>
<tr>
<td>N1P2K2 = 70 Kg/ha. of N + 70 Kg/ha. of P2O5 + 70 Kg/ha. of K2O.</td>
<td></td>
</tr>
</tbody>
</table>

N applied as A/S, P2O5 as Super and K2O as Mur. Pot.

3. DESIGN:
Same as in Type A3 (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.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>P1</th>
<th>P2</th>
<th>N1P1</th>
<th>N1P2</th>
<th>N1P2K2</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>719</td>
<td>195</td>
<td>119</td>
<td>779</td>
<td>629</td>
<td>600</td>
<td>1016</td>
</tr>
<tr>
<td>Control yield = 3051 Kg/ha.; No. of trials = 6</td>
<td></td>
<td></td>
<td></td>
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63 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>P1</th>
<th>P2</th>
<th>N1P1</th>
<th>N1P2</th>
<th>N1P2K2</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>452</td>
<td>453</td>
<td>744</td>
<td>774</td>
<td>910</td>
<td>96</td>
<td>1096</td>
</tr>
<tr>
<td>Control yield = 2130 Kg/ha.; No. of trials = 5</td>
<td></td>
<td></td>
<td></td>
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64 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>P1</th>
<th>P2</th>
<th>N1P1</th>
<th>N1P2</th>
<th>N1P2K2</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>775</td>
<td>460</td>
<td>636</td>
<td>873</td>
<td>973</td>
<td>1401</td>
<td>1865</td>
</tr>
<tr>
<td>Control yield = 2595 Kg/ha.; No. of trials = 8</td>
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65 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>P1</th>
<th>P2</th>
<th>N1P1</th>
<th>N1P2</th>
<th>N1P2K2</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of Pods in Kg/ha.</td>
<td>748</td>
<td>478</td>
<td>618</td>
<td>1060</td>
<td>1259</td>
<td>1554</td>
<td>1896</td>
</tr>
<tr>
<td>Control yield = 2400 Kg/ha.; No. of trials = 11.</td>
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<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
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### Mayurbhanj

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. response of grain in Kg/ha.</th>
<th>N1</th>
<th>P1</th>
<th>P2</th>
<th>N1P1</th>
<th>N2P2</th>
<th>N2P2K2</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>62 (S.F.T.)</td>
<td>112</td>
<td>103</td>
<td>326</td>
<td>321</td>
<td>204</td>
<td>243</td>
<td>255</td>
<td>121.8</td>
</tr>
<tr>
<td>Control yield=1871 Kg/ha.; No. of trials=9.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. response of grain in Kg/ha.</th>
<th>N1</th>
<th>P1</th>
<th>P2</th>
<th>N1P1</th>
<th>N2P2</th>
<th>N2P2K2</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>63 (S.F.T.)</td>
<td>495</td>
<td>338</td>
<td>732</td>
<td>856</td>
<td>910</td>
<td>1140</td>
<td>1305</td>
<td>87.5</td>
</tr>
<tr>
<td>Control yield=1297 Kg/ha.; No. of trials=11.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. response of grain in Kg/ha.</th>
<th>N1</th>
<th>P1</th>
<th>P2</th>
<th>N1P1</th>
<th>N2P2</th>
<th>N2P2K2</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>64 (S.F.T.)</td>
<td>431</td>
<td>259</td>
<td>528</td>
<td>822</td>
<td>937</td>
<td>1391</td>
<td>1459</td>
<td>122.8</td>
</tr>
<tr>
<td>Control yield=1513 Kg/ha.; No. of trials=10.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. response of grain in Kg/ha.</th>
<th>N1</th>
<th>P1</th>
<th>P2</th>
<th>N1P1</th>
<th>N2P2</th>
<th>N2P2K2</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>65 (S.F.T.)</td>
<td>329</td>
<td>649</td>
<td>224</td>
<td>1033</td>
<td>888</td>
<td>1163</td>
<td>1541</td>
<td>213.8</td>
</tr>
<tr>
<td>Control yield=2784 Kg/ha.; No. of trials=3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
### Balasore

#### 62 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;4&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>277</td>
<td>146</td>
<td>539</td>
<td>511</td>
<td>513</td>
<td>712</td>
<td>987</td>
<td>95.3</td>
<td></td>
</tr>
<tr>
<td>Control yield</td>
<td>1526 Kg/ha.; No. of trials</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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#### 63 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;4&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>247</td>
<td>215</td>
<td>394</td>
<td>395</td>
<td>432</td>
<td>564</td>
<td>713</td>
<td>78.9</td>
<td></td>
</tr>
<tr>
<td>Control yield</td>
<td>2118 Kg/ha.; No. of trials</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</table>

#### 64 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;4&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>264</td>
<td>-20</td>
<td>123</td>
<td>426</td>
<td>439</td>
<td>421</td>
<td>398</td>
<td>124.4</td>
<td></td>
</tr>
<tr>
<td>Control yield</td>
<td>3559 Kg/ha.; No. of trials</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</table>

#### 65 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;4&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>329</td>
<td>137</td>
<td>399</td>
<td>434</td>
<td>451</td>
<td>546</td>
<td>951</td>
<td>76.9</td>
<td></td>
</tr>
<tr>
<td>Control yield</td>
<td>3242 Kg/ha.; No. of trials</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

### Ganjam

#### 64 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;4&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>1515</td>
<td>860</td>
<td>1476</td>
<td>1114</td>
<td>1650</td>
<td>2969</td>
<td>2834</td>
<td>412.3</td>
<td></td>
</tr>
<tr>
<td>Control yield</td>
<td>2012 Kg/ha.; No. of trials</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 65 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;4&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>586</td>
<td>245</td>
<td>846</td>
<td>651</td>
<td>700</td>
<td>1446</td>
<td>1253</td>
<td>178.8</td>
<td></td>
</tr>
<tr>
<td>Control yield</td>
<td>1429 Kg/ha.; No. of trials</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

---

**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 oil-seed crops to Potash applied singly and in combination with other nutrients (Type: A.)

1. **BASAL CONDITIONS:**

- (i) N.A.  
- (ii) Red loamy for Cuttack and Ganjam; Red and yellow for others.  
- (iii) to (v) N.A.  
- (vi) Irrigated.  
- (vii) to (x) N.A.
2. TREATMENTS:
O = Contral (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
N1K2 = 35 Kg/ha. of N + 70 Kg/ha. of K2O
K 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.)
<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>K1</th>
<th>K2</th>
<th>N1K1</th>
<th>N1K2</th>
<th>N2P2K2</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>266</td>
<td>434</td>
<td>612</td>
<td>879</td>
<td>1089</td>
<td>1275</td>
<td>1373</td>
</tr>
</tbody>
</table>

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

65 (S.F.T.)
<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>K1</th>
<th>K2</th>
<th>N1K1</th>
<th>N1K2</th>
<th>N2P2K2</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>400</td>
<td>233</td>
<td>460</td>
<td>666</td>
<td>866</td>
<td>1100</td>
<td>1266</td>
</tr>
</tbody>
</table>

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

Ganjam
64 (S.F.T.)
<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>K1</th>
<th>K2</th>
<th>N1K1</th>
<th>N1K2</th>
<th>N2P2K2</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>489</td>
<td>202</td>
<td>481</td>
<td>691</td>
<td>523</td>
<td>548</td>
<td>444</td>
</tr>
</tbody>
</table>

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

Sambalpur
65 (S.F.T.)
<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>K1</th>
<th>K2</th>
<th>N1K1</th>
<th>N1K2</th>
<th>N2P2K2</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>132</td>
<td>282</td>
<td>299</td>
<td>300</td>
<td>324</td>
<td>499</td>
<td>741</td>
</tr>
</tbody>
</table>

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

Ref :- Or. 64, 65 (S.F.T.) for Ganjam and 62, 63, 64, 65 (S.F.T.) for others.

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 : A).
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
   
<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>K&lt;sub&gt;1&lt;/sub&gt;</th>
<th>K&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;1&lt;/sub&gt;</th>
<th>S.L.</th>
</tr>
</thead>
<tbody>
<tr>
<td>N&lt;sub&gt;1&lt;/sub&gt;</td>
<td>35 Kg/ha. of N</td>
<td>35 Kg/ha. of K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>70 Kg/ha. of P&lt;sub&gt;1&lt;/sub&gt;O&lt;sub&gt;1&lt;/sub&gt;</td>
<td>70 Kg/ha. of K&lt;sub&gt;2&lt;/sub&gt;</td>
<td>70 Kg/ha. of P&lt;sub&gt;1&lt;/sub&gt;O&lt;sub&gt;1&lt;/sub&gt;</td>
<td>70 Kg/ha. of K&lt;sub&gt;2&lt;/sub&gt;</td>
<td>70 Kg/ha. of P&lt;sub&gt;1&lt;/sub&gt;O&lt;sub&gt;1&lt;/sub&gt;</td>
</tr>
<tr>
<td>N&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>35 Kg/ha. of N</td>
<td>35 Kg/ha. of K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>70 Kg/ha. of P&lt;sub&gt;1&lt;/sub&gt;O&lt;sub&gt;1&lt;/sub&gt;</td>
<td>70 Kg/ha. of K&lt;sub&gt;2&lt;/sub&gt;</td>
<td>70 Kg/ha. of P&lt;sub&gt;1&lt;/sub&gt;O&lt;sub&gt;1&lt;/sub&gt;</td>
<td>70 Kg/ha. of K&lt;sub&gt;2&lt;/sub&gt;</td>
<td>70 Kg/ha. of P&lt;sub&gt;1&lt;/sub&gt;O&lt;sub&gt;1&lt;/sub&gt;</td>
</tr>
<tr>
<td>N&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;2&lt;/sub&gt;</td>
<td>35 Kg/ha. of N</td>
<td>35 Kg/ha. of K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>70 Kg/ha. of P&lt;sub&gt;1&lt;/sub&gt;O&lt;sub&gt;1&lt;/sub&gt;</td>
<td>70 Kg/ha. of K&lt;sub&gt;2&lt;/sub&gt;</td>
<td>70 Kg/ha. of P&lt;sub&gt;1&lt;/sub&gt;O&lt;sub&gt;1&lt;/sub&gt;</td>
<td>70 Kg/ha. of K&lt;sub&gt;2&lt;/sub&gt;</td>
<td>70 Kg/ha. of P&lt;sub&gt;1&lt;/sub&gt;O&lt;sub&gt;1&lt;/sub&gt;</td>
</tr>
<tr>
<td>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>35 Kg/ha. of N</td>
<td>35 Kg/ha. of K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>70 Kg/ha. of P&lt;sub&gt;1&lt;/sub&gt;O&lt;sub&gt;1&lt;/sub&gt;</td>
<td>70 Kg/ha. of K&lt;sub&gt;2&lt;/sub&gt;</td>
<td>70 Kg/ha. of P&lt;sub&gt;1&lt;/sub&gt;O&lt;sub&gt;1&lt;/sub&gt;</td>
<td>70 Kg/ha. of K&lt;sub&gt;2&lt;/sub&gt;</td>
<td>70 Kg/ha. of P&lt;sub&gt;1&lt;/sub&gt;O&lt;sub&gt;1&lt;/sub&gt;</td>
</tr>
<tr>
<td>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;2&lt;/sub&gt;</td>
<td>35 Kg/ha. of N</td>
<td>35 Kg/ha. of K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>70 Kg/ha. of P&lt;sub&gt;1&lt;/sub&gt;O&lt;sub&gt;1&lt;/sub&gt;</td>
<td>70 Kg/ha. of K&lt;sub&gt;2&lt;/sub&gt;</td>
<td>70 Kg/ha. of P&lt;sub&gt;1&lt;/sub&gt;O&lt;sub&gt;1&lt;/sub&gt;</td>
<td>70 Kg/ha. of K&lt;sub&gt;2&lt;/sub&gt;</td>
<td>70 Kg/ha. of P&lt;sub&gt;1&lt;/sub&gt;O&lt;sub&gt;1&lt;/sub&gt;</td>
</tr>
</tbody>
</table>

3. **DESIGN**:  
   Same as in type A-1 (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<sub>1</sub>K<sub>1</sub>K<sub>2</sub>  
   Av. response of grain in Kg/ha.  
   Control yield = 2754 Kg/ha.; No. of trials = 3.

   65 (S.F.T.)  
   Treatment: N<sub>1</sub>K<sub>1</sub>K<sub>2</sub>  
   Av. response of grain in Kg/ha.  
   Control yield = 1373 Kg/ha.; No. of trials = 6.

   **Cuttack**
   62 (S.F.T.)  
   Treatment: N<sub>1</sub>K<sub>1</sub>K<sub>2</sub>  
   Av. response of grain in Kg/ha.  
   Control yield = 2307 Kg/ha.; No. of trials = 3.

   63 (S.F.T.)  
   Treatment: N<sub>1</sub>K<sub>1</sub>K<sub>2</sub>  
   Av. response of grain in Kg/ha.  
   Control yield = 1888 Kg/ha.; No. of trials = 5.

   64 (S.F.T.)  
   Treatment: N<sub>1</sub>K<sub>1</sub>K<sub>2</sub>  
   Av. response of grain in Kg/ha.  
   Control yield = 2476 Kg/ha.; No. of trials = 9.

   65 (S.F.T.)  
   Treatment: N<sub>1</sub>K<sub>1</sub>K<sub>2</sub>  
   Av. response of grain in Kg/ha.  
   Control yield = 2145 Kg/ha.; No. of trials = 9.
<table>
<thead>
<tr>
<th>Treatment</th>
<th>N</th>
<th>K</th>
<th>K&lt;sub&gt;2&lt;/sub&gt;</th>
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<td>Av. response of grain in Kg/ha.</td>
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<td>Av. response of grain in Kg/ha.</td>
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<td>514</td>
<td>810</td>
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<td>Control yield=1741 Kg/ha.; No. of trials=8.</td>
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<td>Av. response of grain in Kg/ha.</td>
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<td>305</td>
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<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;1&lt;/sub&gt;</th>
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<td>Av. response of grain in Kg/ha.</td>
<td>348</td>
<td>223</td>
<td>438</td>
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<td>587</td>
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<td>984</td>
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<th>S.E.</th>
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<td>210</td>
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<td>1200</td>
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62 (S.F.T.)

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<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;1&lt;/sub&gt;</th>
<th>Av. response of grain in Kg/ha.</th>
<th>Control yield = 1389 Kg/ha.; No. of trials - 12.</th>
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<td>733</td>
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63 (S.F.T.)

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<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;1&lt;/sub&gt;</th>
<th>Av. response of grain in Kg/ha.</th>
<th>Control yield = 1896 Kg/ha.; No. of trials - 6.</th>
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<td>100</td>
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64 (S.F.T.)

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<th>N&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;1&lt;/sub&gt;</th>
<th>Av. response of grain in Kg/ha.</th>
<th>Control yield = 4072 Kg/ha.; No. of trials - 4.</th>
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<td>451</td>
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65 (S.F.T.)

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<th>K&lt;sub&gt;1&lt;/sub&gt;</th>
<th>K&lt;sub&gt;2&lt;/sub&gt;</th>
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<th>N&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;1&lt;/sub&gt;</th>
<th>Av. response of grain in Kg/ha.</th>
<th>Control yield = 3167 Kg/ha.; No. of trials - 8.</th>
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<td>166</td>
<td>260</td>
<td>430</td>
<td>489</td>
<td>490</td>
<td>683</td>
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Crop :- Paddy.  

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).
   n<sub>1</sub>= 22.4 Kg/ha. of N as A/S.
   n<sub>2</sub>= 44.8 Kg/ha. of N as A/S.
   n<sub>3</sub>= 44.8 Kg/ha. of N as Urea.
   n<sub>4</sub>= 44.8 Kg/ha. of N as Urea.
   n<sub>5</sub>= 44.8 Kg/ha. of N as A/S/N.
   n<sub>6</sub>= 44.8 Kg/ha. of N as A/S/N.
   n<sub>7</sub>= 22.4 Kg/ha. of N as C/A/N.
   n<sub>8</sub>= 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 1 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 randomised complete block with 3 randomly selected villages in each of the 4 zones at the rate of one experiment per village.  (iii) (a) 1/30 ac.  (b) 1/40 ac.  (iv) Yes.

4. GENERAL :
   (i) to (vii) N.A.
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<th>Soil type</th>
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<th>n₂</th>
<th>n₁'</th>
<th>n₂'</th>
<th>n₁''</th>
<th>n₂''</th>
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1. **RESULTS:**
2. **TREATMENTS:**
3. **DESIGN:**
4. **GENERAL:**
5. **S.E.**

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<tr>
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<td>Paddy.</td>
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</table>
Crop :- Paddy (Kharif).
Site :- Rice Res. Stn., Berhampur.
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 laddergins. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. x 15 cm. (e) 1. (v) 12·3 C.L./ha. of F.Y.M.+puddling with average growth of Dhauncha+33·6 Kg/ha. of P₂O₅ 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 : N₁ = 22·4, N₂ = 44·8 and N₃ = 67·2 Kg/ha.
   Sub-plot treatments :
   N broadcast at planting, 1 month after planting and 15 days before flowering.

3. DESIGN :
   (i) Split-plot. (ii) 3 main-plots/replication ; 7 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 5·8 m. x 1·5 m. (b) 5·5 m. x 1·2 m. (c) 15 cm. x 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.

<table>
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<tr>
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<th>V₃</th>
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C.D. for V marginal means=303·8 Kg/ha.

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Crop :- Paddy (Kharif).
Site :- Rice Res. Stn., Berhampur.
Object :- To study the effect of different levels of N on different varieties of Paddy.

1. BASAL CONDITIONS :
   Same as in exp't no. 61(42) above. But date of planting is 24.7.61.

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 :
   N broadcast at planting, 1 month after planting and 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. 
×1'5 m. (b) 5'5 m. ×1'2 m. (v) 15 cm. ×15 cm. (vi) Yes.

4. GENERAL:
Same as in exp. no. 61 (42) on page 51.

5. RESULTS:
(i) 2201 Kg/ha. (ii) (a) 1564.0 Kg/ha. (b) 438.0 Kg/ha. (iii) Main effect of V alone is highly significant. 
(iv) Av. yield of grain in Kg/ha.

<table>
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C.D. for V marginal means = 549.7 Kg/ha.

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

Ref :- Or. 61(45).
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. (i) N.A. (iii) 25.6.25.7.61.
(iv) (a) 3 ploughings and 2 ladderingns. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. × 15 cm. (e) I. (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

2. TREATMENTS:
Main-plot treatments:
3 levels of N as A:S: $N_1$ = 22'2, $N_2$ = 44'8 and $N_3$ = 67'2 Kg/ha.
Sub-plot treatments:
9 varieties: $V_1$ = FH-94, $V_2$ = FH-43, $V_3$ = FH-61, $V_4$ = FH-305, $V_5$ = V-7, $V_6$ = FH-32, $V_7$ = FH-220,
$V_8$ = T-442, and $V_9$ = BAM-12.
N broadcast at planting, 1 month after planting and 1, 15 days before lowering.

3. DESIGN:
(i) Split-plot. (ii) (a) 3 main-plots/repliation; 9 sub-plots/main plot. (b) N.A. (iii) 4. (iv) (a) 5'8 rs. x
×1'5 m. (b) 5'5 m. ×1'2 m. (v) 15 cm. × 15 cm. (vi) Yes.

4. GENERAL:
Same as in exp. no. 61 (42) on page 51.

5. RESULTS:
(i) 2201 Kg/ha. (ii) (a) 1564.0 Kg/ha. (b) 438.0 Kg/ha. (iii) Main effect of V alone is highly significant. 
(iv) Av. yield of grain in Kg/ha.
Crop :- Paddy (Kharif).
Site :- Rice Res. Stn., Berhampur.
Ref :- Or. 61(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) 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 ladderrings. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. x 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 2 0 5  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: N 1 =22.4, N 2 =44.8 and N 3 =67.2 Kg/ha.
Sub-plot treatments :
N broadcast at planting, ½ month after planting and ½ of 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.
x1.5 m. (b) 5'5 m. x1.2 m. (v) 15 cm. x 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.

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C.D. for V marginal means=515.6 Kg/ha.
Crop: Paddy (Kharif).

Site: Rice Res. Stn., Berhampur.

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) 25.0.61/28.7.61.

(iv) (a) 3 ploughings and 2 ladderings. (b) Transplanting. (c) 3 Sub plough. (d) 23 cm. \times 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.O. as Super before puddling. (vi) As per treatments. (vii) Weeding. (ix) and (x) N.A.

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:


N broadcast at planting, 1 month after planting and 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. \times 1.5 m. (b) 15.5 m. \times 1.2 m. (v) 15 cm. \times 15 cm. (vi) Yes.

4. GENERAL:

Same as in exp. no. 62(61) 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.

\[
\begin{array}{cccccccccc}
 & V_1 & V_2 & V_3 & V_4 & V_5 & V_6 & V_7 & V_8 & V_9 & \text{Mean} \\
N_1 & 2925 & 1643 & 1982 & 1876 & 2374 & 2861 & 1653 & 2819 & 2766 & 4886 & 2679 \\
N_2 & 2893 & 1696 & 2067 & 2194 & 2109 & 2999 & 1537 & 2554 & 3031 & 4303 & 2538 \\
N_3 & 2491 & 2162 & 2257 & 2109 & 2321 & 3116 & 1791 & 2941 & 2808 & 4313 & 2628 \\
\hline
\text{Mean} & 2770 & 1834 & 2102 & 2060 & 2268 & 2992 & 1660 & 2742 & 2858 & 4501 & 2582 \\
\end{array}
\]

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

Crop: Paddy (Kharif).

Site: Rice Res. Stn., Berhampur.

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. \times 15 cm. (e) 1

(v) Compost Dhaincha = 33.6 Kg/ha. of P.O. as Super. (vi) As per treatments. (vii) Weeding. (ix) N.A. (x) 13 and 30.10.62.

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:

7 varieties: V1 = Co. 21, V2 = B-76 (Std.), V3 = AC-2150, V4 = Masch beti, V5 = ADR-36, V6 = PLA-1 and V7 = GS-362.

N broadcast at planting, 1 month after planting and 15 days before flowering.
3. DESIGN:
(i) Split-plot. (ii) 3 main-plots/replication, 7 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 5·5 m. x 2·6 m. (b) 5·2 m. x 2·3 m. (v) 15 cm. x 15 cm. (vi) Yes.

4. GENERAL:
Same as in exp. 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 x V are significant. (iv) Av. yield of grain in Kg/ha.

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<th>V4</th>
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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. x 23 cm. (e) 1 (f) 12·3 C.L./ha. of F.Y.M. + Dhaincha + 33·6 Kg/ha. of P205 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:

N broadcast ¼ at planting, ¼ one month after planting and ¼, 15 days before flowering.

3. DESIGN:
(i) Split-plot. (ii) 2 main-plots/replication, 18 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 5·8 m. x 1·5 m. (b) 5·5 m. x 1·2 m. (v) 15 cm. x 15 cm. (vi) Yes.

4. GENERAL:
Same as in exp. no. 61(42) on page 64.

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 x V are significant and main effect of V is highly significant. (iv) Av. yield of grain in Kg/ha.
Crop: Paddy (Kharif).
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. (d) 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. x 23 cm. (e) One
   (v) 12.3 C.L./ha. of compost: Dhaincha (G.M.)-i- 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:
   N broadcast ] at planting ] at one month after planting and 1, 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.
   x 15 m. (b) 4'9 m. x 1.2 m. (v) 15 cm. x 15 cm. (vi) Yes.

4. GENERAL:
   Same as in exp't no. 61(42) on page 51.

5. RESULTS:
   (i) 2847 Kg/ha. (ii) (a) 1389 Kg/ha. (b) 470 Kg/ha. (iii) Mean effect of V alone is highly significant.
   (iv) Av. yield of grain in Kg/ha.

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C.D. for N marginal means 359.1 Kg/ha.
C.D. for V marginal means 594.7 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*).
Site: Rice Res. Stn., Berhampur.

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) 15.11.61.
   (iv) (a) 3 ploughings and 2 ladderings. (b) Transplanting. (c) 37 Kg/ha. (d) 37 cm. x 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.

2. TREATMENTS:
   Main-plot treatments:
   2 levels of N as A/S : N₁ = 22.4 and N₂ = 67.2 Kg/ha.
   Sub-plot treatments:
   N broadcast at planting, 1 month after planting and 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.
   x 1’6 m. (b) 4’9 m. x 1’2 m. (v) 15 cm. x 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.

C.D. for V marginal means = 540’2 Kg/ha.
Crop :- Paddy (Kharif).  
Site :- Rice Res. Stn., Berhampur.  
Type :- ‘MV’.  
Ref :- Or. 61(53).

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 ; 36.7 61.  
   (iv) (a) 3 ploughings and 2 ladderings. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm x 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)  

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,  
   N broadcast at planting and 1 month after planting and 15 days before flowering.

3. DESIGN:
   (i) Split-plot. (ii) (a) 2 main-plots-replication : 17 sub-plots/main-plot. (f) N.A. (iii) 3. (iv) 5 x 5 m x 1.5  
   m. (b) 5 x 2 m x 1.2 m. (v) 15 cm x 15 cm. (vi) 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. (iii) (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.

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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.

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. x 15 cm. (e) 1. (v) 12.3 C.L./ha. of F.Y.M.+Dhaivt (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:
   N broadcast at planting, one month after planting and 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. x 1.5 m. (b) 5.2 m. x 1.2 m. (v) 15 cm. x 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 grain in Kg/ha.
Crop :- Paddy (Kharif).
Site :- Rice Res. Stn., Berhampur.

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. x 15 cm. (e) 1.
(v) 12.3 C.L.:ha. of F.Y.M. + Dhaincha (G.M.) + 33.6 Kgiha. of P2O5 as Super. (vi) As per treatments. (vii)

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, V1 = FH-5, V2 = FH-6, V4 = FH-228, V5 = FH-354, V5 = FH-256,
V7 = FH-33, V8 = FH-169, V9 = FH-184, V10 = FH-185, V11 = FH-20 and V13
BAM = 9.

N broadcast at planting, 1 month after planting and 15 days before flowering.

3. DESIGN :
(i) Split-plot. (ii) 2 main-plots/replication; 12 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 5'8 m. x
1'5 m.  (b) 5'5 m. x 1'2 m. (v) 15 cm. x 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.
C.D. for N marginal means=373·1 Kg/ha.
C.D. for V marginal means=596·2 Kg/ha.

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

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) 18·6.0/23.7.62. (iv) (a) 3 ploughings and 2 ladderings. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. x 23 cm. (e) 1 12·3 C.L./ha. of compost + G.M. with Dhaineha + 33.6 Kg/ha. of P₂O₅ as Super. (vi) At 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.
N broadcast 1 at planting, 1 two months after planting and 1. 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. x 2·1 m. (b) 5·2 m. x 1·6 m. (v) 15 cm. x 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) 368·0 Kg/ha. (b) 309·0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

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C.D. for V marginal means=357·7 Kg/ha.
Crop :- Paddy (Kharif).
Site :- Rice Res. Stn., Berhampur.

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. x 15 cm. (e) l.
   (v) 12·3 C.L./ha. of F.Y.M. + 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) 18.11.61.

2. TREATMENTS :
   Main-plot treatments :
   4 levels of N as A/S : N1=22.4, N2=44.8, N3=67.2 and N4=89.6 Kg/ha.

   Sub-plot treatments :
   7 varieties: V1=FH-258, V2=FH-365, V3=FH-89, V4=SP-1 and V7=T-442.

   N broadcast ½ at planting, ½ one month after planting and ½ 15 days before flowering.

3. DESIGN :
   (i) Split-plot. (ii) (a) 4 main-plots replication ; 7 sub-plots. (b) N.A. (iii) 4. (iv) (a) 5·5 m. x 1·5 m. (b) 18·4-3·5 m. x 1·2 m. (v) 15 cm. x 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.

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C.D. for V marginal means=451·7 Kg/ha.

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

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. + 44.0 Kg/ha. of N. (i) 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. x 23 cm. (e) l.
   (v) 12·3 C.L./ha. of F.Y.M. + puddling with average growth of Dhaincha : 32.0 Kg/ha. of P2O5 as Super applied before puddling. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (b) 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: \( V_1 = \text{FH-366} \), \( V_2 = \text{FH-32} \), \( V_3 = \text{FH-19} \), \( V_4 = \text{FH-24} \), \( V_5 = \text{FH-4} \) and \( V_6 = T-141 \).
N broadcast \( \frac{1}{2} \) at planting, \( \frac{1}{2} \) month after planting and \( \frac{1}{2} \), 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 exp. 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.

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<td>( N_4 )</td>
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</tbody>
</table>

Mean: 2380

Crop : Paddy (Kharif).

Site : Rice Res. Stn., Berhampur.

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) 25.6/28.7/61. (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<sub>2</sub>O<sub>5</sub> 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: \( V_1 = \text{FH-191} \), \( V_2 = \text{FH-239} \), \( V_3 = \text{FH-188} \), \( V_4 = \text{FH-34} \), \( V_5 = \text{ACB-362} \) and \( V_6 = \text{BAM-9} \).
N broadcast \( \frac{1}{2} \) at planting, \( \frac{1}{2} \) month after planting and \( \frac{1}{2} \), 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 exp. no. 61 (44) on page 62.

5. RESULTS:
(i) 3135 kg/ha. (ii) (a) 761.0 kg/ha. (b) 556.0 kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in kg/ha.
Crop: Paddy (Kharif).

Site: Rice Res. Sta., Berhampur.

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. o': N. iii) N.A. (iii) 18.6:62.24.T. iv) (a) 3 ploughings and 2 laddernings. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. x 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=T-442 (std).
   N broadcast 1 at planting, 1 one month after planting and 1, 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. x 2.7 m. (b) 5'2 m. x 2.3 m. (v) 23 em. - 15 em. (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 o' V alone is significant. (iv) Av. yield of grain in Kg/ha.

<table>
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C.D. for V marginal means—278.8 Kg/ha.
Crop: Paddy (Kharif).

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 ladderings. (b) Transplanting. (c) 37 Kg/ha. (d) 33:6 Kg/ha. of P2O5.

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:
   N broadcast at planting, 1 month after planting and 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. x 4'1 m. (b) 4'1 m. x 3'6 m. (v) 23 cm. x 23 cm. (vi) Yes.

4. GENERAL:
   Same as in exp. 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.

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   C.D. for N marginal means = 239'8 Kg/ha.
   C.D. for V marginal means = 277'8 Kg/ha.

Crop: Paddy (Kharif).

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 ladderings. (b) Transplanting. (c) 37 Kg/ha. (d) 33:6 Kg/ha. of P2O5. (v) As per treatments. (vi) Irrigated. (vii) Weeding. (ix) N.A. (x) 8 and 9.11.63.
2. TREATMENTS:

Main-plot treatments:

- 4 levels of N broadcast: N1 = 22.4, N2 = 44.8, N3 = 67.2 kg/ha and N4 = 99.6 kg/ha.

Sub-plot treatments:

- 6 varieties: V1 = F1147, V2 = F1149, V3 = F1150, V4 = F1147, V5 = F1450 and V6 = F1452

3. DESIGN:

(i) Split-plot. (ii) 4 main-plots/replication, 6 sub-plots in main-plot. (b) N.A. (iii) 3. (iv) (a) 15 cm. x 15 cm. (b) 4.0 m. x 2.3 m. (v) 23 cm. x 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.

5. RESULTS:

(i) 2174 Kg/ha. (ii) 456.0 Kg/ha. (b) 1700 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

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

Obj(64): To study the effect of different levels of N on different varieties of Paddy.
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.

<table>
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**Crop :** Paddy *(Kharif).*  
**Site:** Rice. Res. Stn., Berhampur.  
**Ref:** Or. 65(44).  
**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 P₀₂₀ as Super. (vi) As per treatments. (vii) Irrigated. (viii) 2 hand weedicides 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 : 
N applied ¾ at planting, ¼ 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.

<table>
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<tr>
<th></th>
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<th>V₃</th>
<th>V₄</th>
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---
Crop: Paddy (Kharif).

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. > 20 cm. (e) 2. (v) Dhainchha (G.M.) at 2242 Kg/ha. ~ 16 Kg/ha. of P.O₃ as Super. (vi) As per treatments. (vii) Irrigated. (viii) 2 hand weedings 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: N₀ = 0, N₁ = 920 and N₂ = 1013 Kg/ha.
   Sub-plot treatments:
   N as C/A/N applied 1/4 at planting and remaining 1/4 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. x 5.4 m. (b) 1.2 m. x 5.1 m. (v) 15 cm. > 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.

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<th>V₃</th>
<th>V₄</th>
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C.D. for V marginal means = 680'0 Kg/ha.


Crop: Paddy (Kharif).

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. x 15 cm. (e) 2. (v) Nil. (vi) As per treatments. (vii) Un-irrigated. (viii) 1 hand weeding and weeding by Japanese weeder. (ix) 03 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<sub>0</sub> = 0, N<sub>1</sub> = 44.8 and N<sub>2</sub> = 89.7 Kg/ha.
(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super: P<sub>0</sub> = 0, P<sub>1</sub> = 22.4 and P<sub>2</sub> = 44.8 Kg/ha.

Sub-plot treatments:
5 varieties: V<sub>1</sub> = BAM - 11, V<sub>2</sub> = T - 141, V<sub>3</sub> = J - 5, V<sub>4</sub> = BBS - 871 and V<sub>5</sub> = BBS - 873.
P<sub>2</sub>O<sub>5</sub> broadcast at planting. N broadcast 1/2 at planting and 1/2 one month after. V<sub>1</sub>, V<sub>2</sub> and V<sub>3</sub> are standard while V<sub>4</sub> and V<sub>5</sub> are mutants.

3. DESIGN:
(i) Split-plot. (ii) (a) 9 main-plots/replication. 5 sub-plots/main plots. (b) N.A. (ii) 2. (iv) (a) 6'1 m. x 5'0 m. (b) 5'8 m. x 4'6 m. (v) 23 cm. x 15 cm.

4. GENERAL:

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 x years interaction). (b) 554.4 Kg/ha. (20 d.f. made of various components of Treatments x years interaction). (iii) Main effect of N is highly significant and that of P is significant. (iv) Av. yield of grain in Kg/ha.

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</tbody>
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C.D. for N or P marginal means = 141.8 Kg/ha.

---

Crop :- Paddy (Kharif).
Object :- To study the effect of fertilizers on different varieties of Paddy.

Ref :- Or. 65(23).
Type :- 'MV'.

1. BASAL CONDITIONS:
(i) (a) Nil. (b) FalloV. (c) Nil. (ii) Soya lova of laterite origin. (iii) 29.7.65/3.9.65. (iv) (a) 3 to 4 summer ploughing, 2 puddings and laddering. (b) Transplanting. (c) 37 Kg/ha. (d) 20 cm. x 15 cm. (e) 2.3. (f) G.M. with Dhaincha. (g) As per treatments. (h) Irrigated. (i) Two hand weedings and one weeding by Japanese weeder. (j) 62'4 cm. (k) 14.12.65.
2. **TREATMENTS:**

**Main-plot treatments:**
3 levels of fertilizers: L₁ = 30 Kg/ha. of N + 20 Kg/ha. of P, L₂ = 60 Kg/ha. of N + 40 Kg/ha. of P and L₃ = 90 Kg/ha. of N + 60 Kg/ha. of P.

**Sub-plot treatments:**

P as basal as Super. N applied in 3 splits; 1 at puddling, 1 one month after and 1 just before flowering.

3. **DESIGN:**

(i) Split-plot. (ii) 3 main-plots/replication, 8 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 6/4 m. x 0/6 m. (b) 6/0 m. x 0/6 m. (v) 20 cm. on each side along length. (vi) Yes.

4. **RESULTS:**

(i) 2414 Kg/ha. (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.

<table>
<thead>
<tr>
<th>V₁</th>
<th>V₂</th>
<th>V₃</th>
<th>V₄</th>
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C.D. for V marginal means = 394/1 Kg/ha.

**Crop:** Paddy (*Kharij*).

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

Ref: Or. 65(24).

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) 4 summer ploughings and 2 puddlings and laddering. (b) Transplanting. (c) 37 Kg/ha. (d) 15 15 em. (e) 2-3. (v) G.M. with *Dhanicha* (dose N.A.). (vi) As per treatment. (vii) Irrigated. (viii) 2 hand weedicings, weeding by Japanese weeder once. (ix) 61/7 em. (x) 25.11.65.

2. **TREATMENTS:**

**Main-plot treatments:**
3 fertilizers: F₁ = 30 Kg/ha. of N + 20 Kg/ha. of P, F₂ = 60 Kg/ha. of N + 40 Kg/ha. of P, F₃ = 90 Kg/ha. of N + 62 Kg/ha. of P.

**Sub-plot treatments:**

N as CA/N in three splits, 1 at puddling, 1 one month after, 1 just before flowering. P applied as basal as Super.

3. **DESIGN:**

(i) Split-plot. (ii) 3 main-plots/replication, 8 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 0/6 m. x 6/2 m. (b) 0/6 m. x 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.

<table>
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<tr>
<th></th>
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<th>V₁</th>
<th>V₂</th>
<th>V₃</th>
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</table>

C.D. for V marginal means = 562.5 Kg/ha.

Crop :- Paddy (*Kharif*).
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 x 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 31.2.60.

2. TREATMENTS:
Main-plot treatments :
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. x 4.6m. (b) 8.4 m x 4.1 m. (v) 23 cm x 23 cm. (vi) Yes.

4. GENERAL:
(i) N.A. (ii) Mealy bags 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 V₃ N₁ P₂, V₄ N₁ P₂ N₄ P₃, V₄ N₁ P₃ and in V₅ N₄. P₁ plots were severe and in V₅ N₄ P₄, V₅ N₃ P₄ 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 × V, P × V and N × P × V are highly significant. (iv) Av. yield of grain in Kg/ha.

<table>
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<tr>
<th></th>
<th>V1</th>
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<th>V3</th>
<th>V4</th>
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</table>

C.D. for N or P marginal means ± 72.6 Kg/ha.
C.D. for N or P means at the same level of N ± 162.1 Kg/ha.
C.D. for V means at the same level of N or P ± 779.7 Kg/ha.

Crop => Paddy (Kharij).
Site => Agri. Res. Sta., Bhubaneswar.
Ref => Or. 61(25).
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) 6.7.6.1; 10.8.6.1. (iv) (a) 3 ploughings with iron hand plough and laddering. (b) Transplanting. (c) 22 Kg/ha. (d) 23 cm. × 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 = GI-73, V2 = IC-22, V3 = 170, V4 = 25V, V5 = 76V, V6 = M-136 and V7 = PTB 0. P2O5 was given fully at planting and A/S 1/3 at planting and 1/3 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. × 4.6 m. (b) 4.6 cm. × 4.3 m. (v) 25 cm. × 15 cm. (vi) Yes.

4. GENERAL:

(i) N.A. (ii) Nil. (iii) Biometric observations and yield of grain. (iv) (a) 19—contd. (b) No. (c) Nil. (d) 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 × P are significant. (iv) Av. yield of grain in Kg/ha.
Crop :- Paddy (Kharif).

Ref. :- Or. 63(21).
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. x 15 cm. (e) 2. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (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 :

P₂O₅ broadcast at planting. N broadcast at planting and one month after planting.

3. DESIGN :
   (i) Split-plots. (ii) (a) 9 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 7·3 m. x 4·1 m. (b) 6·9 m.x3·8 m. (v) 23 cm.x15 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) 264·0 Kg/ha. (b) 520·0 Kg/ha. (iii) Main effect of N and interaction N x P is significant and main effect of V is highly significant. (iv) Av. yield of grain in Kg/ha.

<table>
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<tr>
<th>N₀</th>
<th>V₁</th>
<th>V₂</th>
<th>V₃</th>
<th>V₄</th>
<th>V₅</th>
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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 x P table=305·9 Kg/ha.
Crop :- Paddy (Kharif).


Ref :- Or. 64(11).

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) Clay 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. x 15 cm.
   (e) 2. (f) Nil. (g) As per treatments. (h) Unirrigated. (i) Weeding by Japanese weeder and one hand weeding. (j) 138 cm. 0. 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 P₀₂ as Super : P₀ =0, P₁ =22·4 and P₂ =44·8 Kg/ha.

   Sub-plot treatments :
   P₀₂ 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. x 4·1 m. (b) 6·9 m. x 3·8 m. (v) 23 cm. x 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-contrd. (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.
Crop: Paddy (Kharif).
Ref: Or. 65(28).
Type: ‘MV’.

Object: To find out the response of medium duration Paddy varieties to manuring.

### 1. BASAL CONDITIONS:

(i) Nil.  
(ii) Paddy.  
(iii) Sandy loam.  
(iv) 3 ploughings and levelling.

(b) Transplanting, (c) 22.4 Kg/ha.  
(d) 15 cm. x 23 cm.  
(e) 2.  
(f) N.A.  
(g) As per treatments.

(h) Unirrigated.  
(i) Two hand weedings.  
(j) 7.12.65.

### 2. TREATMENTS:

**Main-plot treatments:**
- All combinations of (1) and (2)
  - (1) 3 levels of N as A/S: N = 0, N = 50.4, and N = 100.8 Kg/ha.
  - (2) 3 levels of P2O5 as Super P = 0, P = 22.4, and P = 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) 9 main-plots/replication; 5 sub-plots/main-plot.  
(iii) N.A.  
(iv) 6 m x 50 m.  
(v) 5.8 m x 4.6 m.  
(vi) Yes.

### 4. GENERAL:

(i) Good.  
(ii) Nil.  
(iii) Height, tiller count, panicle-length and yield of grain.  
(iv) 1961-contd. (modified every year).  
(v) Yes.  
(vi) Nil.  
(vii) Nil.

### 5. RESULTS:

(i) 2201 Kg/ha.  
(ii) 339 Kg/ha.  
(iii) None of the effects is significant.  
(iv) Av. yield of grain in Kg/ha.

<table>
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<th></th>
<th>V1</th>
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**Object:** To find out the response of medium duration Paddy varieties to manuring.

1. **BASAL CONDITIONS:**
   - (i) Nil.
   - (b) Paddy.
   - (c) Sandy loam.
   - (iii) 25.7.65/19.8.65.
   - (iv) 3 ploughings and levelling.
   - (b) Transplanting, (c) 22.4 Kg/ha.
   - (d) 15 cm. x 23 cm.
   - (e) 2.
   - (f) N.A.
   - (vi) As per treatments.
   - (vii) Unirrigated.
   - (viii) Two hand weedings.
   - (j) 7.12.65.

2. **TREATMENTS:**
   - **Main-plot treatments:**
     - All combinations of (1) and (2)
     - (1) 3 levels of N as A/S: N = 0, N = 50.4, and N = 100.8 Kg/ha.
     - (2) 3 levels of P2O5 as Super P = 0, P = 22.4, and P = 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) 9 main-plots/replication; 5 sub-plots/main-plot.
   - (iii) N.A.
   - (iv) 6 m x 50 m.
   - (v) 5.8 m x 4.6 m.
   - (vi) 15 cm. x 23 cm.
   - (vii) Yes.

4. **GENERAL:**
   - (i) Good.
   - (ii) Nil.
   - (iii) Height, tiller count, panicle-length and yield of grain.
   - (iv) 1961-contd. (modified every year).
   - (v) Yes.
   - (vi) Nil.
   - (vii) Nil.

5. **RESULTS:**
   - (i) 2201 Kg/ha.
   - (ii) 339 Kg/ha.
   - (iii) None of the effects is significant.
   - (iv) Av. yield of grain in Kg/ha.
Crop: Paddy (Rabi).
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 FYM 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: V1=M.T.U. 15, V2=N-136 and V3=PTB-10.
   (2) 3 levels of N as Urea: N1=22.4, N2=44.8 and N3=67.2 Kg/ha.
   (3) 3 methods of application of N: M1=All N applied to the soil, M2=All N sprayed and M3 = N  
   applied to the soil + N sprayed.


3. DESIGN:
   (i) 3×3 confd. (ii) (a) 12 plots/block; 3 blocks/replication. (b) N.A. (ii) 2. (iv) (a) 3-4 m. × 5-7 m.  
   (b) 3-1 m. × 6-4 m. (v) 15 cm. x 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×V is significant. (iv) Av. yield of grain in Kg/ha.

   |   | N2  | N3  | N4  | V1  | V2  | Mean  |
---|-----|-----|-----|-----|-----|-------|
| M1 | 2802| 1982| 2093| 2315| 1896| 2665  |
| M2 | 2563| 2187| 2324| 2614| 1384| 3075  |
| M3 | 2204| 2349| 2175| 2511| 1529| 2887  |
| Mean| 2523| 2173| 2264| 2480| 1603| 2876  |
| V1 | 2716| 2289| 2435|     |     |       |
| V2 | 1452| 1871| 1496|     |     |       |
| V3 | 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×N table = -610.0 Kg/ha.
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. x 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 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 = 44.8, N_2 = 67.2 and N_3 = 89.7 Kg/ha.

Sub-plot treatments:
- 3 varieties: V_1 = MUT-871, V_2 = MUT-873 and V_3 = T-141.

N broadcast at final puddling and one month after transplanting.

3. DESIGN:

(i) Split-plot. (ii) 3 main-plots/replication; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 5.0 m x 3.8 m. (b) 4.6 m x 3.5 m. (v) 23 cm x 15 cm. (vi) Yes.

4. GENERAL:

(i) Lodging on 18, 20.9.61. (ii) N.A. (iii) Flowering dates, height and ear bearing 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.

<table>
<thead>
<tr>
<th>N_1</th>
<th>N_2</th>
<th>N_3</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1500</td>
<td>1778</td>
<td>1982</td>
<td>1753</td>
</tr>
<tr>
<td>4359</td>
<td>4621</td>
<td>4258</td>
<td>4413</td>
</tr>
<tr>
<td>2768</td>
<td>2554</td>
<td>2182</td>
<td>2501</td>
</tr>
<tr>
<td>Mean</td>
<td>2876</td>
<td>2984</td>
<td>2807</td>
</tr>
</tbody>
</table>

C.D. for V marginal means=758.9 Kg/ha.

Crop :- Paddy (Khafij).


Ref :- Or. 65(22).

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. x 20 cm. (e) 2 to 3. (iv) G.M. Bhalenia 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: F_1 = 30 Kg/ha. of N+20 Kg/ha. of P, F_2 = 60 Kg/ha. of N+30 Kg/ha. of P and F_3 = 90 Kg/ha. of N+60 Kg/ha. of P.

Sub-plot treatments:
- 8 varieties: V_1 = H_4, V_2 = CR 1014, V_3 = CR 2001, V_4 = CR 1004, V_5 = FH 60--124, V_6 = FH 60--9, V_7 = T 90 and V_8 = BAM 9.

N as C/A/N applied in 3 splits: 1/4 at puddling, 1/4 after one month and 1/4 just before flowering. P applied as basal as Super.
3. DESIGN:
(i) Split-plot. (ii) 14 main-plots/replication, 8 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 6·4 m. × 0·8 m. (b) 6·0 m. × 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 effect of F and V are highly significant. (iv) Av. yield of grain in Kg/ha.

<table>
<thead>
<tr>
<th></th>
<th>V1</th>
<th>V2</th>
<th>V3</th>
<th>V4</th>
<th>V5</th>
<th>V6</th>
<th>V7</th>
<th>V8</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>2430</td>
<td>2370</td>
<td>681</td>
<td>2028</td>
<td>1785</td>
<td>1889</td>
<td>2326</td>
<td>1701</td>
<td>1909</td>
</tr>
<tr>
<td>F2</td>
<td>2639</td>
<td>1840</td>
<td>521</td>
<td>1910</td>
<td>1805</td>
<td>1215</td>
<td>2108</td>
<td>1146</td>
<td>1648</td>
</tr>
<tr>
<td>F3</td>
<td>2187</td>
<td>2292</td>
<td>257</td>
<td>1646</td>
<td>1334</td>
<td>569</td>
<td>1944</td>
<td>854</td>
<td>1388</td>
</tr>
<tr>
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<td>486</td>
<td>1861</td>
<td>1648</td>
<td>1224</td>
<td>2126</td>
<td>1234</td>
<td>1568</td>
</tr>
</tbody>
</table>

C.D. for F marginal means = 223·5 Kg/ha.
C.D. for V marginal means = 404·4 Kg/ha.

Crop: Paddy ('Kharij').
Ref: Or. 61(13).
Type: 'MV'.

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

1. BASEAL CONDITIONS :
(u) (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 to 14.7.61. (iv) (a) ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. x 15 cm. (e) L. (v) 12·3 C.L./ha. of F.Y.M. G.M. to produce 5604 Kg/ha. of green matter. (vi) as per treatments. (vii) Irrigated. (viii) Weeding. (ix) and (x) N.A.

2. TREATMENTS:
Main-plot treatments:
2 levels of N: N<sub>1</sub> = 22·4 and N<sub>2</sub> = 67·8 Kg/ha.
Sub-plot treatments:
14 varieties: V<sub>1</sub> = ADT - 15, V<sub>2</sub> = MPV<sub>20</sub>, V<sub>3</sub> = Sathika, V<sub>4</sub> = O.S. 122, V<sub>5</sub> = H 42 - 12, V<sub>6</sub> = H - 90, V<sub>7</sub> = FH 61 - 53, V<sub>8</sub> = FH 70 - 62, V<sub>9</sub> = FH 60 - 93, V<sub>10</sub> = H 60 100, V<sub>11</sub> = FH 161 - 9, V<sub>12</sub> = B 76 (std), V<sub>13</sub> = PTB 10 (std) and V<sub>14</sub> = J 10 (sic). (v) Yes. N broadcast 1/4 at final puddling and 1/4 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. × 1·8 m. (b) 6·2 m. × 1·8 m. (v) 15 cm. on either side along length.

4. GENERAL:
(i) Lodging from 8·10.61 to 13·9.61. (ii) N.A. (iii) F<sub>1</sub> to 13.5.1. (iv) and effective No. of tillers, grain and straw yield. (v) (a) to (c) Nil. (v) (a) and (b) Nil. (vii) Heavy rains. (viii) Nil.

5. RESULTS:
(i) 1436 Kg/ha. (ii) (a) 739·0 Kg/ha. (b) 505·0 Kg/ha. (iii) Main effect of V is significant. (iv) Av yield of grain in Kg/ha.
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) See Table.
   (iii) (a) Paddy, (b) Wheat, (c) Groundnut, (d) Fallow and (e) Paddy alone. (b) Traditionally.
   (c) 30 days after sowing. (i) 1 st and 4 th V = 12.3 C.L. ha. of F.Y.M., 8.6 Kg/ha. and 5.05 Kg/ha.
   (d) N broadcast after final puddling and one month after transplanting.
   (e) Lodging was not observed. (iv) (a) N broadcast after final puddling and one month after transplanting.

2. TREATMENTS:
   (a) 2 main-plots/replication, 12 sub-plots/main-plot. (b) N.A. (iii) (a) 3. (iv) (a) 4.14 kg.
   (b) 1.01, 1.51, 2.01 and 2.51 m. (c) 1.51 cm. (d) Treatment modified. (e) No. (c) Nil. (f) 3. (iv) Nil.
   (v) (a) 6.2, (b) 1.51 cm. on ear axis along length. (vi) Y. 2.01 m. 2.51 kg.

3. GENERAL:
   (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. (d) See Table.
   (ii) (a) Paddy, (b) Wheat, (c) Groundnut, (d) Fallow and (e) Paddy alone. (b) Traditionally.
   (iii) 30 days after sowing. (i) 1 st and 4 th V = 12.3 C.L. ha. of F.Y.M., 8.6 Kg/ha. and 5.05 Kg/ha.
   (iv) N broadcast after final puddling and one month after transplanting.

4. GENERAL:
   (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. (d) See Table.
   (ii) (a) Paddy, (b) Wheat, (c) Groundnut, (d) Fallow and (e) Paddy alone. (b) Traditionally.
   (iii) 30 days after sowing. (i) 1 st and 4 th V = 12.3 C.L. ha. of F.Y.M., 8.6 Kg/ha. and 5.05 Kg/ha.
   (iv) N broadcast after final puddling and one month after transplanting.

5. RESULTS:
   (i) 2472 Kg/ha. (ii) 41.0 Kg/ha. (b) 42.9 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.
Crop: Paddy (Kharif).

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 Kgf/ha. (d) 23 cm. x 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 P\textsubscript{2}O\textsubscript{5} 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: \(N_1=22.4\) and \(N_2=67.2\) Kg/ha.

   Sub-plot treatments:
   18 varieties: \(V_1=\text{FH 60-2}, V_2=\text{FH 60-3}, V_3=\text{FH 60-4}, V_4=\text{FH 60-5}, V_5=\text{FH 60-6}, V_6=\text{FH 60-7}, V_7=\text{FH 60-8}, V_8=\text{FA 60-9}, V_9=\text{FH 60-22}, V_{10}=\text{FH 60-23}, V_{11}=\text{FH 60-25}, V_{12}=\text{FH 60-37}, V_{13}=\text{FH 60-67}, V_{14}=\text{FH 60-71}, V_{15}=\text{FH 60-79}, V_{16}=\text{BAM-11}, V_{17}=\text{T 141 and V}_{18}=\text{T - 1145.}

   \(\text{N broadcast at final puddling and one month after transplanting.}\)

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. x 1.6 m. (b) 4'6 m. x 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) Nil.

5. RESULTS:
   (i) 2505 Kg/ha. (ii) (a) 96/0 Kg/ha. (b) 555/0 Kg/ha. (iii) Main effect of \(V\) alone is highly significant. (iv) Av. yield of grain in Kg/ha.
Crop: Paddy (Kharif).

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) Paddy. (b) Transplanting. (c) 37 Kg/ha.
   (d) 23 cm. x 15 cm. (e) (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:
   Mode of N as A/S: N₁ = 22.4 and N₂ = 67.2 Kg/ha.
   Sub-plot treatments:

N broadcast tat final puddling and 1 month after transplanting.

3. DESIGN and 4. GENERAL:
   Same as in exp. 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.
Crop: Paddy (Kharif).


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. x 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:

3. DESIGN:
   (i) Split-plot. (ii) (a) 2 main-plots: replicate, 16 sub-plots: main-plot. (b) N.A. (iii) 3. (iv) (a) 5.3 m. x 1.7 m. (b) 4.8 m. x 1.7 m. (v) 23 cm. of each side length wise. (vi) 1 tes.

4. GENERAL:

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.
Crop: Paddy (Kharif).

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. x 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. (vii) 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, 
   N broadcast at final puddling and 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. 
   x 1·6 m. (b) 4·8 m. x 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) Av. yield of grain in Kg/ha.
Crop :- Paddy (Kharif).


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 weather and seasonal. (b) Transplanting.
   v. 37 Kg/ha.
   vi. 23 cm. × 15 cm. (e) Dhaincha at 4483 of green matter, 33·6 Kg/ha. of P₂O₅ as Super.
   vii. As per treatments. (viii) 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:

N broadcast ½ at final puddling and ½ 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, ear-bearing tillers count grain and straw yield. (iv) to (vii) Nil.

5. RESULTS:
   i. 1602 Kg/ha. (ii) (a) 332.0 Kg/ha. (b) 372.0 Kg/ha. (iii) Main effect of V alone is highly significant.
   (iv) Av. yield of grain in Kg/ha.
Crop: Paddy (Kharif).
Ref: Or. 62(36).
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) 38 Kg/ha.
   (d) 23 cm. x 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
   N broadcast ½ at final puddling and ½ 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:

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.
   C.D. for V marginal means = 255.3 Kg/ha.
Crop :- Paddy (Kharif).

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.I. (ha.) of F.Y.M. 33'6 Kg/ha. of Pₑ₀ as Super (i) Sandy loam.
   (ii) 19.6.62 - 3.8.62. (iv) (a) Ploughings both wet weather and normal. (b) Transplanting. (c) 37
   Kg/ha (d) 23 cm. - 15 cm. (e) 1 to 2. (v) 44'8 Kg/ha. of Dhaincha : 33'8 Kg/ha. of Pₑ₀ as Super.
   (vi) As per treatments. (vii) Irrigated. (vii) 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
   T-442 (std.).

   N broadcast at final puddling and one month after transplanting.

3. DESIGN :
   (i) Split-plot. (ii) (a) 2 main-plots: replication; 12 sub-plots: main-plot. (b) N.A. (iii) 3. (iv) (a) 6'9 m.
   > 1'6 m. (b) 6'6 m. > 1'1 m. (v) 23 cm. - 15 cm. (vi) Yes.

4. GENERAL :
   (i) No lodging. (ii) N.A. (iii) Flowering dates, height, earbage, 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.

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C.D. for V marginal means = 382'0 Kg/ha.
1. **BASAL CONDITIONS:**
   (i) Nil. (b) Paddy. (c) 24'7 C.L./ha. of F.Y.M.+33'6 Kg/ha. of P_{2}O_{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) 73 cm. x 15 cm. (e) 1 to 2. (v) 44'8 Kg/ha. of green matter from Dhanicha+33'6 Kg/ha. of P_{2}O_{5} as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weedling. (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, V_{8}=T-141, V_{9}=T-1850, V_{10}=T-141, V_{11}=FH-60-6, V_{12}=FH-60-157, V_{13}=FH-60-108.

   N broadcast at final puddling and 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. x 1'1 m. (b) 10'1 m. x 0'8 m. (v) 23 cm. x 15 cm. (vi) Yas.

4. **GENERAL:**

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 x N is significant. (iv) Av. yield of grain in Kg/ha.

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   C.D. for V marginal means =190'6 Kg/ha.
   C.D. for V means at 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)**.

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

**Ref:** Or. 61(5).

**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) 11.6-61.8.61. (iv) (a) Ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 73 cm. x 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) Weedling. (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-30, V_2 = GS-362, V_3 = Co. 21, V_4 = F-H 42, V_5 = 58-83, V_6 = 1376, and V_7 = J-10.

N broadcast ½ at final puddling and ½ 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. x 2.0 m. (b) 8.1 m. x 1.7 m. (v) 15 cm. x 15 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) N.A. (iii) Lodging dates are N.A. (iv) N.A. (v) Dates of flowering, height and effective no. of tillers ear bearing tillers grain and straw yield. (vi) (a) to (c) Nil. (v) Nil. (vi) Heavy rain. (vii) Crop was damaged by birds.

5. RESULTS:

(i) 207.1 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.

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Crop: Paddy (Kharij).  Ref: Or. 61(6).
Site: State 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) Basal dose of 12.3 C.L. ha. of F.M.Y. 44 Kg/ha. of N as A/S. (ii) Sandy loamy. (iii) 16.6.6/9.7.6. (iv) 1 ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha. (d) 15 cm. > 15 cm. (e) 1. (v) 123 C.L. ha. F.Y.M. - G.M. from 5604 Kg/ha. of green matter. (vi) A. 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 = PH16-22, V_5 = F-H 7-40, V_6 = B76 (Std.), and V_7 = J-10 (Std.).

N broadcast at final puddling and ½ 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. x 1.4 m. (b) 8.8 m. x 1.1 m. (v) 15 cm. x 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) Nil. (v) N/A. (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.

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Mean: 2263  2418  2441  2602  1811  2913  2422

Crop :- Paddy. (Kharif).
Ref :- Or. 61(8).
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. 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 P₂O₅ as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) 144 em. (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 § at final puddling and § 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. x 1'1 m. (b) 8'5 m x 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.

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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).

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. (i) Sandy loam. (iii) N.A. (iv) (a) Ploughings both hot weather and seasonal. (b) Transplanting. (c) 23 cm. (d) 15 cm. (e) (i) 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_{2}O_{5} as Super. (ii) As per treatments. (vii) Irrigated. (ix) Weeding. (x) Nil.

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 - 632, V_{5} = FH - 692, V_{6} = T - 141 and V_{7} = J - 5.

3. DESIGN :
(i) Split-plot. (ii) 3 main-plot replication; 7 sub-plots main-plot. (b) N.A. (iii) 3. (vi) (a) 5·8 m. x 3·0 m. (b) 5·5 m. x 3·0 m. (v) 15 cm. on either side. (vii) 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.

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C.D. for V marginal means= 408·6 Kg. w.

Crop :- Paddy (Kharif).

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. (i) 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) I. (v) 12·3 C.L. ha. of F.Y.M. 33·6 Kg/ha. of P_{2}O_{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: N₁ = 22.4, N₂ = 44.8 and N₃ = 67.2 Kg/ha.

Sub-plot treatments:
N broadcast at final puddling and 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 x 3.0 m. (b) 5.3 m x 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) 396.0 Kg/ha. (b) 337.0 Kg/ha. (iii) Main effect of V is highly significant and interaction V x N is significant. (iv) Av. yield of grain in Kg/ha.

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<td>2107</td>
<td>1786</td>
<td>2668</td>
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<td>2616</td>
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</tbody>
</table>

C.D. for V marginal means = 322.6 Kg/ha.
C.D. for V means at the same level of N = 559.6 Kg/ha.
C.D. for N means at the same level of V = 718.2 Kg/ha.

Crop: Paddy (Kharif).
Ref: Or. 62/31.
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 P₃O₅ 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 x 15 cm. (e) 1 to 2. (v) 24-7 C.L./ha. of F.Y.M.+33'6 Kg/ha. of P₃O₅ 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: N₁ = 22.4, N₂ = 44.8 and N₃ = 67.2 Kg/ha.
   Sub-plot treatments
   5 varieties: V₁ = Marich beti, V₂ = Co-21, V₃ = B-76, V₄ = G.S.—362 and V₅ = AC—2150.
   A/S broadcast at final puddling and after one month of 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 (e) 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.

<table>
<thead>
<tr>
<th></th>
<th>V₁</th>
<th>V₂</th>
<th>V₃</th>
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<td>188</td>
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</tbody>
</table>

C.D. for V marginal means = 103·2 Kg/ha.

...
Crop: Paddy (Kharif).


Ref: Or. 61(7).

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. X 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 Kgf/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:
   6 varieties: V_1 = ADR-10, V_2 = FH-1198, V_3 = FH-1163, V_4 = FH-1199, V_5 = FH-1161 and V_6 = T-442 (std.)
   N broadcast at final puddling and 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. x 1'.1 m. (b) 6'.1 m. x 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.

<table>
<thead>
<tr>
<th></th>
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C.D. for N marginal means=313.7 Kg/ha.
C.D. for V marginal means=545.2 Kg/ha.
Crop: Paddy (Kharif).


Ref: Or. 61(9).

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 (s) 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. x 23 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, N₂, N₃, N₄
   - 22.4, 44.8, 67.2, and 89.7 Kg ha.
   Sub-plot treatments:
   - N broadcast at final puddling and 1 month after transplanting.

3. DESIGN:
   (i) Split-plot. (ii) (a) 4 main-plots x replication; 7 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 8.7 m. x 8.7 m. (b) 8.4 m. x 1.8 m. (v) One row on each side lengthwise. (vi) Ycv.

4. GENERAL:
   (i) Lodging on 18.9.61. (ii) N.A. (iii) Flowering dates, height, ear-baring, 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) Ave. yield of grain in Kg ha.

<table>
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<tr>
<th></th>
<th>V₁</th>
<th>V₂</th>
<th>V₃</th>
<th>V₄</th>
<th>V₅</th>
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C.D. for V marginal means = 40s 4 Kg ha.

Crop: Paddy (Kharif).


Ref: Or. 61(11).

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. x 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<sub>1</sub> = 22.4, N<sub>2</sub> = 44.8, N<sub>3</sub> = 67.2 and N<sub>4</sub> = 89.7 Kg/ha.

Sub-plot treatments:
- 7 varieties: V<sub>1</sub> = AC 1176-6, V<sub>2</sub> = FH 54-1-A, V<sub>3</sub> = FH 849, V<sub>4</sub> = FH -1168, V<sub>5</sub> = BAM -9, V<sub>6</sub> = BAM -6 and V<sub>7</sub> = T-1242.

N broadcast ¼ at final puddling and ¾ 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. x 3.0 m. (b) 4.6 m. x 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.

<table>
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<tr>
<th>V&lt;sub&gt;i&lt;/sub&gt;</th>
<th>V&lt;sub&gt;1&lt;/sub&gt;</th>
<th>V&lt;sub&gt;2&lt;/sub&gt;</th>
<th>V&lt;sub&gt;3&lt;/sub&gt;</th>
<th>V&lt;sub&gt;4&lt;/sub&gt;</th>
<th>V&lt;sub&gt;5&lt;/sub&gt;</th>
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</table>

C. D. for V marginal means=427.4 Kg/ha.

Orop: Paddy (Kharif).


Ref: Or. 62(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) 24.1 C.L./ha. of F.Y.M.+33.6 Kg/ha. of P<sub>2</sub>O<sub>5</sub> 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. x 15 cm. (e) 1. (v) Dhaincha at 4483 Kg/ha. of green matter +34.6 Kg/ha. of P<sub>2</sub>O<sub>5</sub> 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<sub>1</sub> = 22.4, N<sub>2</sub> = 44.8, N<sub>3</sub> = 67.2 and N<sub>4</sub> = 89.7 Kg/ha.

Sub-plot treatments:
- 10 varieties: V<sub>1</sub> = ADK -36, V<sub>2</sub> = FH 42 -12, V<sub>3</sub> = FHV -2, V<sub>4</sub> = FH 196 -22, V<sub>5</sub> = FH 7 -40, V<sub>6</sub> = S.P -1, V<sub>7</sub> = FH -1147, V<sub>8</sub> = FHV -1, V<sub>9</sub> = J -442 (std) and V<sub>10</sub> = J -10 (std).

N broadcast ¼ at final puddling and ¾ 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. x 2.1 m. (b) 6.6 m. x 1.6 m. (v) 23 cm. x 15 cm. (vi) Yes.
Crop :- Paddy (Kharij).

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.O. as Super. (ii) Sand - sand.
(iii) 19.42/7.8.62. (iv) (a) ploughings both hot weather and seasonal. (b) Transplanting. (c) 37 Kg/ha.
(d) 23 cm. x 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-1180, V3=No. 2, V4=FH-1150, V5=FH-929, V6=FH-921,
V7=FH-889, V8=FH-872, V9=FH-927 and V10=FH-7121 (std).
N broadcast at final puddings and one month after transplanting.

3. DESIGN :
(i) Split-plot. (ii) 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) 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.

C.D. for V marginal means = 313.8 Kg/ha.

Ref :- Or. 62(33).
Type :- 'MV'.

Crop :- Paddy (Kharij).

Object :- To study the effect of different levels of N on different varieties of Paddy.
Crop :: Paddy (Kharif).
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_{2}O_{5} 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. Dhaillcha+33.6 Kg/ha. of P_{2}O_{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:
   9 varieties: V_{1}=FH-849, V_{2}=FH-60-124, V_{3}=FH-60-9, V_{4}=FH-60-3, V_{5}=BAM-9, V_{6}=T90, V_{7}=T-1242, V_{8}=SR-26 B and V_{9}=FR-43 B.

N broadcast at final puddling and 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.

<table>
<thead>
<tr>
<th>N_{1}</th>
<th>V_{1}</th>
<th>V_{2}</th>
<th>V_{3}</th>
<th>V_{4}</th>
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| Mean  | 1621  | 1538  | 1200  | 1969  | 1815  | 1751  | 1575  | 1619  | 1636  |      |

C.D. for V marginal means=312.0 Kg/ha.
Crop: Paddy (Kharif).  
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;11.8 62. (iv) (a) Ploughings both hot weather and seasonal. (b) Transplanting. (c) 7 Kg, ha.  
   (d) 23 cm. x 15 cm. (e) 1 to 2. (v) G.M. crop to supply 4483 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 A₁S:
   N₁ = 22.4, N₂ = 44.8, N₃ = 67.2 Kg, ha. 
   Sub-plot treatments:
   8 varieties: V₁ = FH = 1168, V₂ = FH = 1161, V₃ = BBS = 871, V₄ = BBS = 873, V₅ = Dinania, V₆ = AC =  
   1177, V₇ = 141 and V₈ = N.A. 
   N broadcast 1/4 at final puddling and 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.  
   (b) 4.0 m. 2.7 m. (v) 13 cm. 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.

<table>
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<tr>
<th>V₁</th>
<th>V₂</th>
<th>V₃</th>
<th>V₄</th>
<th>V₅</th>
<th>V₆</th>
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C.D. for V marginal means = 351.9 Kg, ha.

Crop: Paddy (Kharif).  
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) 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. x 15 cm. (e) 1. (v) 4483 Kg, ha. of green matter from Dhanicha = 33.6 Kg, ha. of P₂O₅  
   as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) 130.4 cm. (x) 19.10.53.
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: \(V_1 = FH 42-12\), \(V_2 = FH 196-22\), \(V_3 = FH 7-40\), \(V_4 = FH 1147\), \(V_5 = FHV\), \(V_6 = SP-8\) and \(V_7 = T_4-442\).

N applied \(\frac{1}{2}\) at final puddling, \(\frac{1}{2}\) one month after transplanting and \(\frac{1}{2}\) 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.

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<tr>
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<th>V_3</th>
<th>V_4</th>
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Mean: 2200

C.D. for V marginal means = 454.3 Kg/ha.

Crop: Paddy (Kharif).

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 Dhania at 4383 Kg/ha. + 43.6 Kg/ha. of \(P_2O_5\) 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: \(V_1 = FH 60-125\), \(V_2 = FH 60-3\), \(V_3 = FH -849\), \(V_4 = FH 60-90\), \(V_5 = FR-43B\), \(V_6 = BAM\) \(-9\), \(V_7 = T-90\) and \(V_8 = T-1242\).

N applied \(\frac{1}{2}\) at final puddling, \(\frac{1}{2}\) at one month after transplanting and \(\frac{1}{2}\) 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. GENERAL:
(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.

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Mean 2980 2688 2794 3065 2147 2929 2544 2598 2719
C.D. for V marginal means = 371.5 Kg/ha.

Crop :- Paddy (Kharif).
Site :- State Agri. Res. Sta., Bhubaneswar.
Ref :- Or. 63(25).
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 soil.
(ii) 31.5.63/7.7.63 (vi) (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 Dhanichhu at 448 Kg/ha. *53* Kg/ha. of P, O, as Super.
(vi) As per treatments. (vii) Irrigated. (viii) Weeding. (la) 145 cm. (l) 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 - 1492, V5 - RH - 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. x 3'2 m. (b) 3'7 m. x 2'7 m. (v) 23 cm. x 15 cm. (vi) Yes.

4. GENERAL:

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.

<table>
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Mean 1928 1297 1335 1270 1054 1450 1308 732 1484 1317
C.D. for V marginal means = 302.6 Kg/ha.
Crop: Paddy (Kharif).

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. x 23 cm. (e) 1 to 2. (v) 33.6 Kg./ha. of P_2O_5 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 ½ at final puddling, 1 one month after transplanting and ½ 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. x 3·0 m. (b) 7·9 m. x 2·5 m. (v) 15 cm. x 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.

<table>
<thead>
<tr>
<th></th>
<th>V₁</th>
<th>V₂</th>
<th>V₃</th>
<th>V₄</th>
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C.D. for V marginal means = 360·5 Kg./ha.

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Crop: Paddy (Kharif).

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. x 23 cm. (e) 2. (v) 6000 Kg/ha. of F.Y.M. (vi) As per treatments. (vii) Unirrigated. (viii) One hand weeding. (ix) 61·0 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: N₀, N₁ = 60 Kg ha⁻¹
(2) 3 levels of P₂O₅ as Super: P₀ = 0, P₁ = 22 and P₂ = 45 Kg ha⁻¹

Sub-plot treatments:

- 6 varieties: V₁ = FH, 60 - 124, V₂ = FH 60 - 123 B, V₃ = FH 849, V₄ = BAM 9 and V₅ = T = 1242.

3. DESIGN:

- Split-plot. (ii) 9 main-plots/replication, 6 sub-plots main-plot (b) N.A. (iii) 2. (iv) a) 80 m. x 40 m. (b) 70 m. x 30 m. (v) 23 cm. 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 x N are significant. (iv) Av. yield of grain in Kg./ha.

<table>
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<th>V₁</th>
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<th>V₃</th>
<th>V₄</th>
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C.D. for V marginal means = 1.1 Kg. ha⁻¹
C.D. for V means at the same level of N = 29.6 Kg ha⁻¹
C.D. for N means at the same level of V = 85.1 Kg ha⁻¹

Crop: Paddy (Kharif).
Site: Rice Res. Stn., Jeypore.
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. (x) (a) 4 ploughings and ladderings with desi plough to 15 cm. depth. (b) Transplanting. (c) 48 Kg/ha. (d) 23 cm. x 15 cm. (e) 3 to 4. (vii) 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: N₁ = 67.2, N₁ = 100.9 and N₃ = 134.5 Kg. ha⁻¹.

Sub-plot treatments:

- All combinations of (1) and (2)
  - (1) 3 varieties: V₁ = T - 141 (medium), V₂ = T - 90 (late) and V₃ = T - 812 (late).
  - (2) 3 minor elements: E₀ = Control, E₁ = CaSO₄ and E₂ = MgSO₄.

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. x 4.6 m. (iii) 2. (iv) (a) 3.7 m. x 2.3 m. (b) 3.4 m. x 1.8 m. (v) 23 cm. x 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, Endres 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 x V is significant and N x E is highly significant. (iv) Av. yield of grain in Kg./ha.

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</table>

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).
Site: Rice Res. Stn., Jeypore.

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. x 15 cm. (e) 1 to 2. (v) 37 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:
   N broadcast at planting, 1 month after planting and 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. x 3.1 m. (b) 4.6 m. x 2.7 m. (v) 15 cm. x 15 cm. (vi) Yes.
4. GENERAL:
(i) Except V4 which is lodged, other varieties were in good condition. (ii) V1 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 Kgha. (ii) (a) 469·0 Kgha. (b) 386·0 Kgha. (iii) Main effect of Valone is highly significant. (iv) Av. yield of grain in Kg/ha.

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C.D. for V marginal means is 317.7 Kgha.

Crop : Paddy (Kharif).
Site : Rice Res. Stn., Jeypore.
Ref : Or. 61(28).
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.O. +12 C1. / ha. of F.Y.M. or Dhaingha (G.M.). (ii) Loamy. (iii) 15.6.6130.7.61. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg ha. (d) 15 cm. x 23 cm. (e) 2. (f) 21 C1. ha. of F.Y.M. +29 Kg ha. of B.M. and 12329 Kg ha. of G.M. (v) As per treatments. (vi) Unirrigated. (vii) Weeding. (ix) and (x) N.A.

2. TREATMENTS:
Main-plot treatments :
2 levels of N as A : N1 = 22.4 and N2 = 67.2 Kg ha.
Sub-plot treatments :
N broadcast at planting, 1 month after planting and 15 days before flowering.

3. DESIGN:
(i) Split-plot. (ii) (a) 2 main-plots replication ; 15 sub-plots main plots. (b) N.A. (iii) 2. (iv) (a) 3·1 m. x 3·7 m. (b) 2·7 m. x 3·7 m. (v) 15 em. 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 Kgha. (ii) (a) 66·9 Kgha. (b) 40·0 Kgha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.
Crop :- Paddy (*Kharij*).
Site :- Rice Res. Stn., Jeypore.

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

1. BASAL CONDITIONS :
   (i) (a) Nil. (b) Faddy. (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) Lo. (iii) 15.6.6/14.8.6. (iv) (a) 2 plantings. (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.+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:

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. x 2.7 m. (b) 4.6 m. x 2.4 m. (v) 15 cm. x 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, V₁₁ and V₁₂ 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.
Crop :- Paddy (Kharif).
Site :- Rice Res. Stn., Jeypore.
Ref :- Or. 61(30).
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) 14.6.6.1, 20.7.6.1. (iv) (a) 2 ploughings. (b) 1 atm-planting. (c) 34 Kg/ha. (d) 15 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.

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 = F-4, V₆ = F-141, V₇ = V-II,
   V₈ = V-14 and V₉ = Hyb-7.
   N broadcast 1 month before planting and 1, 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. (v) (a) 6.4 m.
   (b) 2.0 m. (b) 5.9 m. x 1.7 m. (v) 23 cm. x 15 cm. (vii) Yes.

4. GENERAL:
   (i) Normal. (a) Attacked by leaf roller. (iii) Height, tiller count, panicle length and yield of grain (iv) 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 N alone is highly significant,
   (iv) Av. yield of grain in Kg/ha.

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C.D. for V marginal means = 517.4 Kg/ha.
Crop: Paddy (Kharif).
Site: Rice Res. Stn., Jeypore.

Ref: Or. 61(31).
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) 12.6.61/20.7.61. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm. x 15 cm. (e) 1 to 2. (v) 4 C.L./ha. of F.Y.M. + 33.6 Kg/ha. of P₂O₅ 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: N₁ = 22.4, N₂ = 44.8, N₃ = 67.2 and N₄ = 89.7 Kg/ha.
   Sub-plot treatments:
   6 varieties: V₁ = BBS-1, V₂ = T-442, V₃ = V-16, V₄ = Myl-2, V₅ = V-8 and V₆ = SP-1.

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. x 3.1 m. (b) 4.6 m. x 2.7 m. (v) 15 cm. x 15 cm. (vi) Yes.

4. GENERAL:
   (i) Good. (ii) Leaf roller attack to certain plots and varieties Viz V₁ and V₄. (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.

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C.D. for V marginal means = 458.8 Kg/ha.

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

Ref: Or. 61(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 Dhanicha (G.M.). (ii) Loamy. (iii) 15.6.61/5.8.61. (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 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: N₁ = 22.4 and N₄ = 67.2 Kg/ha.
   Sub-plot treatments:

N broadcast at planting, one month after planting and 15 days before flowering.
3. DESIGN:
(i) Split-plot. (iii) (a) 2 main-plots replication, 14 sub-plots, main-plot. (b) NA. (iii) 2. (iv) (a) 7.5 m. 
2.7 m. (b) 2.7 m. x 2.7 m. (v) 10 cm. x 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) 6140 Kg./ha. (b) 4770 Kg./ha. (iii) Significant. (iv) Av. yield of grain in Kg./ha.

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C.D. for V marginal means = 693.3 Kg./ha.

Crop: Paddy (Kharif).
Site: Rice Res. Sta., 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 as 15.6 Kg. ha. of P2O5, 12 C.I./ha. of F.Y.M. or Dhawicha 
(G.M.). (ii) 1 cumy. (iii) N.A. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg./ha. at 15 cm. x 
23 cm. (c) 1 to 2. (v) Dhawicha (G.M.): 1 C.L. ha. of F.Y.M. 33 Kg., ha. of P205 as B.M. (v) As per 
treatments. (vi) Unirrigated. (vii) Weeding and hoeing. (ix) N.A. (x) N.A.

2. TREATMENTS:
Main-plot treatments:
3 levels of N as A/N: N1 = 33.6, N2 = 56.0 and N3 = 89.7 Kg./ha.
Sub-plot treatments:
8 varieties: V1 = RDR-4, V2 = T-141, N2 = BBS-55, V1 = CR-227, V1 = JNS 973-11, V4 = J-4, V5 = 
N broadcast ¾ at planting, ¾ one month after planting and ½. 15 days before flowering

3. DESIGN:
(i) Split-plot. (ii) (a) 3 main-plots replication, 8 sub-plots main-plot. (b) NA. (iii) 4. (iv) (a) 7.5 m. 
2.7 m. (b) 7.1 m. x 1.8 m. (v) 23 cm. x 15 cm. (vi) Yes.

4. GENERAL:
Same as in Expt. No. 61(32) on page 107.

5. RESULTS:
(i) 3704 Kg./ha. (ii) (a) 12310 Kg./ha. (b) 9190 Kg./ha. (iii) None of the effects is significant. (iv) Av. 
yield of grain in Kg./ha.

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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. x 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) 11.11.61.

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:
N broadcast at planting, 1 month after planting and 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. x 3.2 m. (b) 4.3 m. x 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 x V is significant. (iv) Av. yield of grain in Kg/ha.

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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 = 3974 Kg/ha.
C.D. for N means at the same level of V = 409.2 Kg/ha.
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 F.Y.M. or Dhanica (G.M.). (ii) Leany, (iii) 15.6.61, 17.7.61. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm., 15 cm. (e) 1 to 2, (f) 12 C.I./ha. of F.Y.M. - 31/4 Kg/ha of B.M. - 15692 Kg/ha. of green matter.

2. TREATMENTS:
   Main-plot treatments: 2 levels of N as A. S: N₁ = 2.4 and N₂ = 6.7 Kg/ha.
   N broadcast ½ at planting, ½ one month after planting and ½ 5 days before flowering.

3. DESIGN:
   (i) Split-plot. (ii) 2 main-plots replication, 18 sub-plots main-plot. (iii) N.A. (iv) (a) 3.4 m. (b) 4.0 m. (c) 3.1 m. (d) 15 cm. (e) Y. (f) 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. (d) to (v) 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.

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C.D. for V marginal mean = 658.6 Kg/ha.
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) 16.6.61, 21.7.61. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm. x 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: N1 = 22.4 and N2 = 67.2 Kg/ha.

Sub-plot treatments:

N broadcast at planting, 1 month after planting and 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. x 3.1 m. (b) 4.3 m. x 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 x N is significant. (iv) Av. yield of grain in Kg/ha.

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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).
Site: Rice Res. Stn., Jeypore.
Ref: Or. 61(37).
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) 16.6.61, 29.7.61. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm. x 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: \( V_1 = \text{FH-39}, V_2 = \text{FH-37}, V_3 = \text{T-442}, V_4 = \text{A-36}, V_5 = \text{FH-12}, V_6 = \text{FH-41}, V_7 = \text{FH-5A}, V_8 = \text{FH-26}, V_9 = \text{FH-33}, V_{10} = \text{FH-48}, V_{11} = \text{FH-47}, V_{12} = \text{FH-50}, V_{13} = \text{FH-28}, \) and \( V_{14} = \text{FH-29}. \)

N broadcast \( 1 \) month after planting and \( 15 \) 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. \( \times 3.4 \) m. (b) 4·0 m. \( \times 3.1 \) m. (v) and (vi) Yes.

4. **GENERAL:**

Same as in exp. no. 06 (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.

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C.D. for V marginal means=973.2 Kg/ha.

---

Crop: Paddy (Kharij).  
Site: Rice Res. Stn., Jeypore.  
Ref: Or. bl(38).  
Type: 'MV'.
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. x 3.7 m. (b) 3.4 m. x 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.

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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 Dhanieba (G.M.). (ii) Loamy. (iii) 15.6·61/31.7·61. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm. x 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:

N broadcast, at planting, 1 month after planting and 1, 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. x 2·6 m. (b) 4·8 m. x 2·3 m. (v) 15 cm. on each side along breath. (vi) Yes.
4. GENERAL:
(i) Normal. (ii) Leaf roller attack. (iii) Height, tillers count, grain yield, and date of flowering and yield of grain. (iv) (a) Nil. (v) Nil. (vi) to (vii) Nil.

5. RESULTS:
(i) 3027 Kg/ha. (a) 3270 Kg/ha. (b) 3700 Kg/ha. (iii) Main effect of N and interaction N x V are highly significant. (iv) AV yield of grain in Kg/ha.

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C.D. for 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) 44.5 Kg/ha. of N + 33.6 Kg/ha. of P2O5 + 12 C.L ha. of F.Y.M. or Dhaimeka (G.M.). (ii) (a) Loamy. (iii) 15.6.61/5.8.61. (iv) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm. x 23 cm. (e) 1 to 2. (f) 12 C.L./ha. of F.Y.M. or Dhaimeka (G.M.) (g) As per treatments.

2. TREATMENTS:
Main-plot treatments:
2 levels of N as A/B: N1 = 22.4 and N2 = 67.2 Kg/ha.
Sub-plot treatments:
N broadcast at planting, 1 month after planting and 15 days before flowering.

3. DESIGN:
(i) Split-plot. (ii) 2 main-plots/replication; 16 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) 3.7 m. x 3.2 m. (b) 3.7 m. x 2.9 m. (v) 15 cm. on each side along breadth. (vi) Yes.

4. GENERAL:
(i) Good. (ii) Leaf roller attack. (iii) Height, tillers 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.

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Crop: Paddy (Kharif).
Site: Rice Res. Stn., Jeypore.
Ref: Or. 62(42).
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) 9·6/22.7·62. (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 1 at planting, 1, one month after planting and 1, 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) 3·0 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.

<table>
<thead>
<tr>
<th></th>
<th>V₁</th>
<th>V₂</th>
<th>V₃</th>
<th>V₄</th>
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C.D. for V marginal means = 649·1 Kg/ha.
Crop : Paddy (Kharif).
Site : Rice Res. Stn., Jyepore.

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_{2}O_{5}, 12 C.L., ha. of FYM, or Dhaichua (G.M.). (ii) Loamy. (iii) 12, 6, 62/4, 8, 62. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm. × 15 cm. (e) 2. (f) N.A. (i) As per treatments. (ii) Unirrigated. (iii) Weeding. (iv) N.A. (v) 4th week of Nov., '62.

2. TREATMENTS:
Main-plot treatments:
- 2 levels of N as N:S : N_{1} = 224 and N_{2} = 67.2 Kg/ha.
Sub-plot treatments:
- N broadcast at planting, 1; one month after planting and 1, 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. × 26 m. (b) 3:4 m. × 2:3 m. (v) 15 cm. × 15 cm. (vi) Yes.

4. GENERAL:
Same as in Exp. no. 62(42) on p. 115.

5. RESULTS:
(i) 2545 Kg/ha. (ii) (a) 1769-0 Kg/ha (b) 451-0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) A.; yield of grain in Kg/ha.

<table>
<thead>
<tr>
<th>V_{1}</th>
<th>V_{2}</th>
<th>V_{3}</th>
<th>V_{4}</th>
<th>V_{5}</th>
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CD. for M marginal means = 520.8 Kg/ha.

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

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_{2}O_{5}, 12 C.L., ha. of F.Y.M. or Dhaichua (G.M.). (ii) Loamy. (iii) 17.6, 62/10.8, 62. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 23 cm. × 23 cm. (e) 1. (f) N.A. (iv) As per treatments (late). (vii) Unirrigated. (vii) Weeding. (iv) N.A. (v) 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: \( V_1 = \text{Hyb}-7 \), \( V_2 = \text{V}-28 \), \( V_3 = \text{BAM}-3 \), \( V_4 = \text{BBS}-16 \), \( V_5 = \text{BBS}-23 \), \( V_6 = \text{J}-7 \), \( V_7 = \text{FH}-58 \) and \( V_8 = \text{FH}-849 \).

N broadcast \( \frac{1}{2} \) at planting, \( \frac{1}{2} \) month after planting and \( \frac{1}{2} \) 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) 6' \( \times \) 2'. (b) 5' \( \times \) 1.8'. (v) 23 cm. \( \times \) 23 cm. (vi) Yes.

4. GENERAL:

Same as in exp. 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.

<table>
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<th>( V_1 )</th>
<th>( V_2 )</th>
<th>( V_3 )</th>
<th>( V_4 )</th>
<th>( V_5 )</th>
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<td>2774</td>
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Crop: Paddy (Khurif).

Site: Rice Res. Sta., Jeypore.

Ref: Or. 62(45). 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, 15'6 Kg/ha. of P, 12 C.L/ha. of F.Y.M. or Dhamisha (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.

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: \( V_1 = \text{JNS}-931-50 \), \( V_2 = \text{JNS}-72 \), \( V_3 = \text{J}-4 \), \( V_4 = \text{RDR}-4 \), \( V_5 = \text{V}-16 \) and \( V_6 = \text{T}-141 \).

3. DESIGN:

(i) Split-plot. (ii) (a) 4 main-plots/replication; 8 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 exp. 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.
Crop: Paddy, Kharif
Site: Rice Res. Stn., Jeypore
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. + F.Y.M. and Dhaichha (G.M.)
(ii) Loamy. (iii) 9.6/22.7/62. (iv) (a) 3 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 15 cm. × 23 cm.
(e) 1 to 2. (v) F.Y.M. at 15 baskets/ha. to each main-treatment with 5 Kg/ha. of Super.

2. TREATMENTS:
Main-plot treatments:
3 levels of N as A:B: N1 = 22.4, N2 = 44.8 and N3 = 67.2 Kg/ha.
Sub-plot treatments:
N broadcast at planting, 1 month after planting and 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. × 2'1 m.
(b) 4'3 m. × 2'1 m. (v) Nil. (vi) Yes.

4. GENERAL:
(i) Poor. (ii) N.A. (iii) Flowering dates, growth, leaf sheath, apicules, stigmata, 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.

<table>
<thead>
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<th>V1</th>
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<tr>
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<td>1748</td>
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</table>

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.

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) 12.6.62/7.8.62. (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: N1 = 22.4, N2 = 44.8, N3 = 67.2 and N4 = 89.7 Kg/ha.
   Sub-plot treatments:
   7 varieties: V1 = FH-158, V2 = FH 42-12, V3 = FH -43, V4 = FBS-1, V5 = V1, V6 = V2 and V7 = T-442.
   N broadcast at planting, one month after planting and 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. (c) 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.

   \[
   \begin{array}{cccccccc}
   V1 & V2 & V3 & V4 & V5 & V6 & V7 & \text{Mean} \\
   \hline
   N1 & 3774 & 2279 & 3139 & 3363 & 3251 & 2541 & 2391 & 2962 \\
   N2 & 3811 & 2391 & 3213 & 3923 & 3027 & 3010 & 2653 & 3160 \\
   N3 & 3886 & 3027 & 3251 & 3662 & 3475 & 2989 & 3213 & 3357 \\
   N4 & 3998 & 2578 & 3400 & 3388 & 3363 & 2915 & 2699 & 3320 \\
   \hline
   \text{Mean} & 3867 & 2569 & 3251 & 3559 & 3279 & 2866 & 2989 & 3200 \\
   \end{array}
   \]

   C.D. for V marginal means=458.7 Kg/ha.

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

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) 14.6.62/7.8.62 (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: \(V_1 = FH-137, V_2 = FH-157, V_3 = FH-127, V_4 = FH-34, V_5 = FH-66, V_6 = FH-144, V_7 = FH-104, V_8 = T-141, V_9 = J-4, V_{10} = FH-23, V_{11} = FH-102, V_{12} = FH-141, V_{13} = FH-135, V_{14} = FH-61\) and \(V_{15} = FH-134\).

N broadcast at planting, 1 month after planting and 15 days before flowering.

3. DESIGN:
(i) Split-plot. (ii) (a) 2 main-plots/replication, 15 sub-plots/main-plot. (b) \(N\). (iii) \(3\). (iv) \(3\). 7 m. \(x\) 2.7 m. (v) \(3.4\) m. \(x\) 2.3 m. (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.

<table>
<thead>
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<th>(N_1)</th>
<th>(N_2)</th>
<th>(V_1)</th>
<th>(V_2)</th>
<th>(V_3)</th>
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C.D. for \(N\) marginal means = 528.8 Kg/ha.

C.D. for \(V\) marginal means = 780.0 Kg/ha.

---

**Crop:** Paddy (Kharif).

**Site:** Rice Res. Stn., Jeypore.

**Object:** To study the effect of different levels of \(N\) on different varieties of Paddy

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: \(V_1 = FH-101, V_2 = FH-40, V_3 = FH-88, V_4 = J-4, V_5 = T-141, V_6 = FH-106, V_7 = FH-114, V_8 = FH-62, V_9 = TNS 973-17, V_{10} = FH-70, V_{11} = FH-80, V_{12} = FH-147, V_{13} = FH-59, V_{14} = FH-111\) and \(V_{15} = FH-45\).

N broadcast at planting, 1 month after planting and 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 exp. 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) A. yield of grain in Kg/ha.

<table>
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<th>V₂</th>
<th>V₃</th>
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Crop: Rice. (Kharif).


Ref: Or. 62(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) 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. x 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:
   N broadcast ⅓ at planting, ⅓ one month after planting and ⅓, 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. x 2.7 m.
   (b) 2.7 m. x 2.3 m.
   (c) 23 cm. x 15 cm.
   (vi) Yes.

4. GENERAL:
   Same as in exp. 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.

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Mean: 4492 2738 4518 4173 4359 3375 4624

Mean: 3668 3615 3402 3721 4625 4146 3774 3774

Mean: 4040 4572 4518 3774 4572 4572 4578

Mean: 3854 4093 3960 3747 4359 4226 4088

C.D. for V marginal means -- 665.7 Kg/ha.

Crop: Paddy (Kharif).
Site: Rice Res. Stn., Jeypore.
Ref: Or. 62(51).
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 + 11 C.L. ha of F.Y.M. or Dhaincha (G.M.). (ii) Loamy. 12.66/4.86. (iv) (a) 2 ploughing. (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:
N broadcast 1st at planting, 1st one month after planting and 1st 15 days before flowering.

3. DESIGN:
(i) Split-plot. (ii) (a) 2 main-plots/repl; 10 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 2.3 m. x 2.4 m. (v) and (vii) Yet.

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.
Crop: Paddy (Kharif).


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 Dhaiucha (G.M.).
   (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 Dhaiucha (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:
   N broadcast at planting, one month after planting and 15 days before flowering.

3. DESIGN:
   (i) Split-plot. (ii) 2 main-plots/replication; 15 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 3.6 m. x 2.7 m.
   (b) 3.4 m. x 2.3 m. (v) 23 cm. x 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.

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Crop :- Paddy (Kharif).
Site :- Rice Res. Stn., Jeypore.
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 Dha niece (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 Dha niece (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 :
N broadcast at planting, 1 month after planting and 1, 15 days before flowering.

3. DESIGN : and 4. GENERAL :
Same as in Expt. no. 62(32) on page 123.

5. RESULTS :
(i) 3686 Kg/ha. (ii) (a) 1391.0 Kg/ha. (b) 677.0 Kg/ha. (iii) Main effect of V alone is significant. (iv) Av. yield of grain in Kg/ha.

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C.D. for V marginal means=184.9 Kg/ha.

Crop :- Paddy (Kharif).
Site :- Rice Res. Stn., Jeypore.
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 Dha niece (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 Dha niece (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: N₁ = 22.4 and N₂ = 67.2 Kg/ha.

**Sub-plot treatments:**

N broadcast at planting, 1 month after planting and 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 × 2.1 m. (b) 6.6 m × 1.6 m. (v) 23 cm × 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.

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C.D. for V marginal means = 858.8 Kg/ha.

**Crop:** Paddy. *(Kharif).*  
**Site:** Rice Res. Stn., Jeypore.  
**Ref:** Or. 62(55).  
**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) N.A. (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 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: N₁ = 22.4 and N₂ = 67.2 Kg/ha.

**Sub-plot treatments:**

N broadcast at planting, 1 month after planting and 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) 2.1 m. × 4.6 m. (b) 1.6 m. × 4.1 m. (v) 23 cm. × 23 cm. (vi) Yes.

4. **GENERAL:**

Same as in Expt. No. 62(52) on page 123.

5. **RESULTS:**

(i) 3132 Kg/ha. (ii) (a) 1332.0 Kg/ha. (b) 743.0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.
Crop :- Paddy (Kharif).
Site :- Rice Res. Stn., Jeypore.

Ref :- Or. 63(27).
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 :
   N broadcast 1/ at planting, 1/ month after planting and 1/ 15 days before flowering.

3. DESIGN:
   (i) Split-plot. (ii) (a) 4 main-plots replication, 8 sub-plots/main-plot. (b) N.A. (i) 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) Ycs.

4. GENERAL:
   (i) Good. (ii) Nil. (iii) Height, tiller, c.v., % yield, # yield and yield of grain. (iv) (a) N₂. (b) N₃. (c) Nil. (v) to (vii) Nil.

5. RESULTS:
   (i) 2392 Kg/ha. (ii) 836 Kg/ha. (iii) Main effect of N₄ alone is highly significant. (iv) Av. yield of grain in Kg/ha.
Crop: Paddy. (Kharij).

Site: Rice Res. Stn., Jeypore.

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<sub>2</sub>O<sub>5</sub>+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. x 23 cm. (e) 2.
   (v) 12 C.L/ha. of F.Y.M. or Dhaincha (G.M.).
   (vi) As per treatments (medium).

2. TREATMENTS:
   Main-plot treatments:
   4 levels of N as A/S: N<sub>1</sub>=22·4, N<sub>2</sub>=44·8, N<sub>3</sub>=67·2 and N<sub>4</sub>=89·7 Kg/ha.
   Sub-plot treatments:
   N broadcast at planting. 1 month after planting and 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. x 5·6 m. (b) 4·8 m. x 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.

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</tr>
</tbody>
</table>

C.D. for V marginal means—28:5 Kg/ha.
Crop :- Paddy \textit{(Kharif)}.  

Site :- Rice Res. Stn., Jeypore.  

Ref :- Or. 63(29).  

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\textsubscript{2}O\textsubscript{5}-12 C.L/ha. of F.Y.M. or \textit{Dhaincha} (G.M.).  

(ii) Loamy.  

(iii) 12 C.L/ha. of F.Y.M. or \textit{Dhaincha} (G.M.).  

(iv) (a) 15 cm.  

(b) 23 cm.  

(c) 22 C.L/ha.  

(v) Unirrigated.  

(vi) Weeding.  

(vii) Nil.  

(viii) 11.63.

2. TREATMENTS:

Main-plot treatments:

- 4 levels of N as A/S: \(N_1, N_2, N_3, N_4\)  

Sub-plot treatments:

- 9 varieties: \(V_1, V_2, V_3, V_4, V_5, V_6, V_7, V_8, V_9\)  

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

3. DESIGN:

(i) Split-plot.  

(ii) (a) 4 main-plots/replication, 9 sub-plots/main-plot.  

3. (iv) (a) \(6 \times 3 \times 3\) m.  

(b) \(6.3 \times 3.9 \times 1.5\) m.  

(v) 15 cm. on each side along length.  

(iv) Yes.

4. GENERAL:

(i) Normal.  

(ii) Nil.  

(iii) Height, tiller count, panicle length and yield of grain.  

(iv) (a) Yes.  

(b) No.  

(c) Nil.  

(v) to (vii) Nil.

5. RESULTS:

(i) 2560 Kg/ha.  

(ii) (a) 771 Kg/ha.  

(b) 439 Kg/ha.  

(iii) Main effect of \(v\) alone is significant.  

(iv) As yield of grain in Kg/ha.

<table>
<thead>
<tr>
<th>(V_1)</th>
<th>(V_2)</th>
<th>(V_3)</th>
<th>(V_4)</th>
<th>(V_5)</th>
<th>(V_6)</th>
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Mean 2399 2465 2501 2435 2485 2458 2555 3183 2555 2560  

C D. for \(V\) marginal means 440 Kg/ha.

---

Crop :- Paddy \textit{(Kharif)}.  

Site :- Rice Res. Stn., Jeypore.  

Ref :- Or. 63(30).  

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\textsubscript{2}O\textsubscript{5}-12 C.L/ha. of F.Y.M. or \textit{Dhaincha} (G.M.).  

(ii) Loamy.  

(iii) 11.63/8.7.63.  

(iv) (a) 2 ploughings.  

(b) Transplanting.  

(c) 34 Kg/ha.  

(d) 15 cm. x 23 cm.  

(e) 12 C.L/ha. of F.Y.M. or \textit{Dhaincha} (G.M.).  

(vi) As per treatments.  

(vii) Unirrigated.  

(viii) Weeding.  

(ix) N.A.  

(x) 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 at planting, one month after planting and 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. (b) 4·6 m \( \times \) 2·0 m. (v) N.A. (vi) Yes.

GENERAL:
Same as in exp. 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.

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<th>V8</th>
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</tbody>
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Crop: Paddy (Kharif).
Site: Rice Res. Stn., Jeypore.

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 \( P_2 O_5 \) +12 C.L./ha. of F.Y.M. or Dhaingha (G.M.). (ii) Loamy. (iii) 12.6.63/11.7.63. (iv) (a) 2 ploughings. (b) Transplanting. (c) 34 kg/ha. (d) 15 cm \( \times \) 22 cm. (e) 2. (v) 12 C.L./ha. of F.Y.M. or Dhaingha (G.M.) (vi) As per treatments. (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) 23.11.63.

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:
14 Varieties: \( V_1 = FH-127, V_2 = FH-157, V_3 = FH-137, V_4 = FH-122, V_5 = FH-104, V_6 = FH-35, V_7 = FH-34, V_8 = FH-114, V_9 = FH-105, V_{10} = FH-80, V_{11} = FH-143, V_{12} = JNS-913, V_{13} = FH-12, V_{14} = T-141, \) and \( V_{15} = J-4. \)

N broadcast at planting, one month after planting and 15 days before flowering.
3. DESIGN:
   (i) Split-plot. (ii) (a) 2 main-plots/replication; 14 sub-plots/main-plot. (b) N.A. (iii) (a) 4·8 m. × 3·5 m.  (b) 4·5 m × 5·5 m. (v) 15 cm. on each side along length. (vi) Yes.

4. GENERAL:
   Same as in exp. no. 63 (25) on page.

5. RESULTS:
   (i) 2372 Kg/ha.  (ii) (a) 1·5 Kg/ha. (b) 625·0 Kg/ha. (iii) Main effects of N and V are significant. (iv) Av. yield of grain in Kg/ha.

<table>
<thead>
<tr>
<th></th>
<th>V_1</th>
<th>V_2</th>
<th>V_3</th>
<th>V_4</th>
<th>V_5</th>
<th>V_6</th>
<th>V_7</th>
</tr>
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<td>2257</td>
<td>1893</td>
<td>2643</td>
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<td>2318</td>
<td>2210</td>
<td>1895</td>
<td>2213</td>
<td>2003</td>
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<tr>
<td>Mean</td>
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<td>2288</td>
<td>2052</td>
<td>1969</td>
<td>2246</td>
<td>2056</td>
</tr>
</tbody>
</table>

C.D.'s: N: marginal means = 108·0 Kg/ha.  
C.D. for V: marginal means = 493·0 Kg/ha.

---

**Crop**: Paddy (Khara).
**Site**: Rice Res. Sta., 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) Nd. (b) Paddy (c) 44·8 Kg/ha. of N=33·6 Kg/ha. of P_2O_5 =12 C.I.L/ha. of F.Y.M. or Dhaincha (G.M.) (d) 17·6.63/24.7.63. (e) (a) 2 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 23 cm. × 27 cm. (e) 12 C.I.L. ha. of F.Y.M. or Dhaincha (G.M.).  (vi) As per treatments. (vii) Unirrigated. (viii) Weedings: (x) N.A. (x) 5.12.63.

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:
   N broadcast: (a) at planting, 2 one month after planting and 1, 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. × 2·3 m.  (b) 5·7 m. × 2·3 m. (v) 15 cm. on each side along length. (vi) Yes.

4. GENERAL:
   Same as in exp. no. 63 (29) on page.
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.

<table>
<thead>
<tr>
<th></th>
<th>$V_1$</th>
<th>$V_2$</th>
<th>$V_3$</th>
<th>$V_4$</th>
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<tr>
<td>$N_2$</td>
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<td>2896</td>
<td>2181</td>
<td>2819</td>
<td>2768</td>
<td>2863</td>
</tr>
<tr>
<td>Mean</td>
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<td>3094</td>
<td>2554</td>
<td>2845</td>
<td>2920</td>
<td>3103</td>
</tr>
</tbody>
</table>

C.D. for V marginal means=469.4 Kg/ha.

Crop :- Paddy (Kharif).
Site :- Rice Res. Sta., Jeypore.

Ref :- Or. 63(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 P$_2$O$_5$+12 C.L./ha. of F.Y.M. or Dhanicha (G.M.). (ii) Loamy. (iii) 13.6.63/9.7.63. (iv) (a) 2 ploughings. (b) Transplantings. (c) 34 Kg/ha. (d) 15 cm. x 15 cm. (e) 2. (v) 12 C.L./ha. of F.Y.M. or Dhanicha (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:
4 levels of N as A/S: $N_1$=22.4 and $N_2$=67.2 Kg/ha.
Sub-plot treatments:
4 varieties: $V_1$=B=76, $V_2$=FH=168, $V_3$=FH=175 and $V_4$=FH=173.
N broadcast ½ at planting, ½ month after planting and ½, 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. x 2.1 m. (b) 5 8 m. x 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) 875 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.

<table>
<thead>
<tr>
<th></th>
<th>$V_1$</th>
<th>$V_2$</th>
<th>$V_3$</th>
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<td>1875</td>
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C.D. for N marginal means=176.6 Kg/ha.
Crop: Paddy (Kharif).

Site: Rice Res. Stn., Jeypore.

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

1. BASAL CONDITIONS:
   (a) Nil. (b) Paddy. (c) 44.8 Kg/ha. of P+33.6 Kg/ha. of F.Y.M. or Dhaincha (G.M.). (i) Loamy. (iii) 12.6.63/19.7.63. (iv) (a) 2 ploughings. (b) Transplanting. (c) 24 Kg/ha. (d) 25 cm X 15 cm. (e) 2. (a) 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:
   (a) 2 levels of N as A/S: N₁ = 22.4 and N₂ = 67.2 Kg/ha.
   Sub-plot treatments:
   N broadcast at planting, 1 month before flowering, and 15 days before flowering.

3. DESIGN:
   (i) Split-plot. (ii) 2 main-plots/replication; 22 sub-plots/main-plot. (a) N.A. (iii) 3. (iv) (a) 5·3 m. x 1·8 m. (b) 5·0 m. x 1·8 m. (c) 15 cm. on each side along length. (v) Yes.

4. GENERAL:
   (i) Normal. (ii) Nil. (vii) Flowering dates, height, tiller count, panicle length and yield of grain and straw are highly significant. (iv) Av. yield of grain in Kg/ha.

5. RESULTS:
   (a) 2282 Kg/ha. (b) 2450 Kg/ha. (c) Main effect of V and interaction N X V are highly significant. (iv) Av. yield of grain in Kg/ha.

<table>
<thead>
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<th>V₁</th>
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<th>V₃</th>
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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 = 545.4 Kg/ha.
Crop :- Paddy (Kharif).

Site :- Rice Res. Sta., Teyapore.

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) 15.66/7.86, (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: N₁ = 22.4 and N₂ = 67.2 Kg/ha.

Sub-plot treatments:
N broadcast at planting, 1 month after planting and 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>V are highly significant. (iv) Av. yield of grain in Kg/ha.

<table>
<thead>
<tr>
<th></th>
<th>V₁</th>
<th>V₂</th>
<th>V₃</th>
<th>V₄</th>
<th>V₅</th>
<th>V₆</th>
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<th>V₁₂</th>
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<td>2645</td>
<td>1823</td>
<td>2605</td>
<td>3292</td>
<td>3160</td>
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</tbody>
</table>

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.
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. x 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**:

3. **DESIGN**:
   (i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 8'5 m. x 4'6 m. (b) 8'1 m. x 4'1 m. (v) 23 cm. x 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>W₁</th>
<th>W₂</th>
<th>W₃</th>
<th>W₄</th>
<th>W₅</th>
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<td>2781</td>
<td>2474</td>
<td>2593</td>
<td>2661</td>
<td>2827</td>
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**Crop :-** Paddy (Kharij)  **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: C₄ = Local method(control), C₅ = Broadcast, C₆ = Dipping behind the plough with single seed tube, C₇ = Wooden seed drill and C₈ = Cultivator-cum-seed drill.

3. **DESIGN**:
   (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 3. (iv) (a) 12'2 m. x 3'8 m. (b) 11'7 m. x 3'4 m. (v) 23 cm. x 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>C₄</th>
<th>C₁</th>
<th>C₅</th>
<th>C₆</th>
<th>C₇</th>
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<tr>
<td>Av. yield</td>
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<td>1559</td>
<td>1644</td>
<td>1578</td>
<td>1440</td>
<td></td>
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</tbody>
</table>
Crop :- Paddy (Kharif).


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=Sabal plough, T3=Wah-wah plough, T4=Jrijar plough, T5=Konkan plough and T6=Bijayabhandar plough.

2 ploughings by each plough were done.

3. DESIGN :
   (i) R.B.D. (ii) N.A. (iii) 4. (iv) (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) 375'0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment        T1  T2  T3  T4  T5  T6
Av. yield         1399 1374 1490 1897 1671 1454

Crop :- Paddy (Kharif).


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) 443 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 cul. (v) 6.12.63.

2. TREATMENTS :
   12 cultural practices: T1=4 ploughings with deshi plough, T2=6 ploughings with deshi plough, T3=8 ploughings with deshi plough, T4=2 ploughings with deshi +2 with cultivator, T5=2 ploughings with deshi +4 with cultivator, T6=2 ploughings with deshi +6 with cultivator, T7=4 ploughings with Sabash plough, T8=6 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. (c) 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
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<th>T6</th>
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<td>1994</td>
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<td>1894</td>
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<td>2141</td>
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</table>

Crop :- Paddy (Kharif).

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 max mum yield.

1. BASAL CONDITIONS:
(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) Sandy loam. (iii) 10.7.00. (iv) (a) N.A. (b) Line sowing. (c) 22 Kg/ha. (d) 23 cm. × 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 12.60.

2. TREATMENTS:
Main-plot treatments:

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) 2 main-plots.replication and 7 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 7.3 m. × 5.5 m. (b) 6.5 m. × 5.0 m. (v) 23 cm. × 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) Nil. (vi) Nil.

5. RESULTS:
(i) 3196 Kg/ha. (ii) (a) 1470 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.

<table>
<thead>
<tr>
<th></th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>T5</th>
<th>T6</th>
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<td>3589</td>
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</table>

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).
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: D1 = 16th August, D2 = 3lst August, D3 = 15th September, D4 = 30th September and D5 = 15th October.
(2) 2 spacings: S1 = 15 cm. x 15 cm. and S2 = 15 cm. x 10 cm.
Sub-plot treatments:
All combinations of (1) and (2)
(1) 3 ages of seedling: A1 = 21 days, A2 = 42 days and A3 = 63 days.
(2) 2 types of seedling: T1 = Unsplit and T2 = Split seedling.

3. DESIGN:
(i) Split-plot. (ii) All main-plots/replication; 6 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 74 m. x 59 m. (b) 68 m. x 33 m. (v) 30 cm. x 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) 1440 Kg/ha. (b) 1230 Kg/ha. (iii) Main effects of D, A and T are highly significant and that of S is significant. The interactions D x S, T x D and T x A are highly significant. (iv) Av. yield of grain in Kg/ha.

<table>
<thead>
<tr>
<th></th>
<th>T1</th>
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<th>S1</th>
<th>S2</th>
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</tbody>
</table>

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 x S table = 139.0 Kg/ha,
C.D. for body of T x A table = 55.2 Kg/ha.
Crop: Paddy. (Kharif).


Object: To study the effect of different stages of harvesting of Jute crop on the yield of succeeding Paddy crop.

1. BASAL CONDITIONS:
(i) As per treatments. (b) Mang. (c) Nil. (ii) Clay loam. (iii) 27.4:64 (Jute) and Paddy transplantation. (iv) 3 ploughings, laddering and levelling. (b) Line sowing for Jute and transplanted for Paddy. (c) 12 Kg/ha. for Jute, N.A. for Paddy. (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 t-20 Kg/ha. of P:O as Super+35 Kg/ha. of K:O in furrows and 20 Kg/ha. of N as A/S top dressed for Jute, 30 Kg/ha. of P:O as Super+30 Kg/ha. of K:O as KCl for Paddy. (vi) As per treatments. (vii) Irrigated. (viii) Hand weeding thrice.

2. TREATMENTS:
All combinations of (1) and (2) + control (no Jute crop).
(1) 3 varieties of Jute crop: V1=D-154, V2=Funduk and V3=JRC-212
(2) 3 stages of harvesting of Jute crop: Stages of flowering for Jute, (a) at pre-flowering, (b) at flowering and (c) at post flowering. Paddy crop has been raised in all these 9 plots, 1/3 of the area of the plot is for Paddy T-90 and 1/3 of the area for Paddy MTU-15.

3. DESIGN:
(i) R.B.D. (ii) 4. (a) 7·8 m. x 1·0 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 preve.1tive spraying with Endrin against leaf eating cater pillers. (iii) Height, girth, percentage of flowering for Jute. (iv) Av. yield of Jute fibre in Kg/ha.

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.

<table>
<thead>
<tr>
<th></th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
<th>Mean</th>
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<td>1839</td>
<td>1677</td>
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</tbody>
</table>

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.

<table>
<thead>
<tr>
<th></th>
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<th>S2</th>
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<td>1526</td>
<td>1529</td>
<td>1654</td>
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</table>
II. Paddy (MTU-15)

(i) 1612 Kg/ha. (ii) 662.0 Kg/ha. (iii) Main effect of S, "Control Vs others" and interaction V x S are highly significant. (iv) Av. yield of grain in Kg/ha.

Control=2579 Kg/ha.

<table>
<thead>
<tr>
<th></th>
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C.D. for S marginal means=554.4 Kg/ha.
C.D. for body of V x 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 soil. (iii) 20.6.65/3.8.65. (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. x 15 cm., S₂=15 cm. x 12 cm., S₃=15 cm. x 9 cm. and S₄=Ordinary transplanting (9 cm. x 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) N.O. (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.

<table>
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<tr>
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C.D. for V marginal means=313.4 Kg/ha.
Crop: Paddy (Kharif).
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. x 15 cm. (e) 2 to 3. (v)
25 C.I.L/ha. of F.Y.M. + 33.6 Kg/ha. of P_O_ 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, 25, 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) 31 m. x
41 m. (b) 27 m. x 41 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) 3090 Kg/ha. (b) 5390 Kg/ha. (iii) Main effects of D and V are highly significant.
(iv) Av. yield of grain in Kg/ha.

<table>
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<tr>
<th></th>
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<th>D_2</th>
<th>D_3</th>
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<td>1005</td>
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</table>

C.D. for D marginal means= 268.7 Kg/ha.
C.D. for V marginal means= 315.9 Kg/ha.

---

Crop: Paddy (Kharif).
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. x 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:
L1 = Basal dose (5000 Kg/ha. of F.Y.M. + 35 Kg/ha. of N as C/A/N+25 Kg/ha. of P2O5 as Super.
L2 = L1 + 17.5 Kg/ha. of N + 25.0 Kg/ha. of P2O5 + 35.0 Kg/ha. of K2O.
L3 = L1 = 35.0 Kg/ha. of N + 50.0 Kg/ha. of P2O5 + 70.0 Kg/ha. of K2O.

Sub-plot treatments:
6 types of seedlings:
S1 = Narmal, S2 = 1, S3 = 2, S4 = 4, S5 = 6, and S6 = 8 splits.
N as C.A.N., P2O5 as Super and K2O as Mur. Pot. were applied.
P2O5 and K2O were given as basal dressing. N was applied at planting and 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 re-planted 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.

4. GENERAL:
(i) Normal. (ii) Nil. (iii) Height, tillers count and yield of grain. (iv) (a) 1964 only. (b) Nil. (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.

<table>
<thead>
<tr>
<th></th>
<th>S1</th>
<th>S2</th>
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<td>L2</td>
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C.D. for L marginal means = 193.6 Kg/ha.
C.D. for S marginal means = 328.8 Kg/ha.

Crop :- Paddy (Kharif).
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 Dhaingcha. (c) Nil. (ii) Sandy loam. (iii) 27.7.60. (iv) (a) 3 ploughings and one laddering. (b) Line sowing in raised bed. (c) 22 Kgf/ha. (d) 23 cm. x 23 cm. (e) 2. (f) Dhaincha was incorporated on 6.7.60. 22.4 Kg/ha. of P2O5 as Super was applied before puddling + 33.6 Kg/ha. of K2O as Mur. Pot. (vi) T-1242 (late). (vi) Unirrigated. (vii) 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: \( W_1 \) = No weeding, \( W_2 = 1 \), \( W_3 = 2 \) and \( W_4 = 3 \) weeding.

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) 8 main-plots/replication; 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 9.1 m x 4.9 m. (b) 8.7 m x 4.4 m. (c) 23 m x 23 m. (d) 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, thrashing was delayed. Crop was damaged by birds.

5. RESULTS:

(i) 1821 Kg/ha. (ii) (a) 825.0 Kg/ha. (b) 959.0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

<table>
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<th>( W_1 )</th>
<th>( W_2 )</th>
<th>( W_3 )</th>
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<td>2107</td>
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<td>1906</td>
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Crop :- Paddy (Kharif).


Ref :- Or. 62(20).

Object :-To study the residual effect of different crops with different measures on the yield of succeeding Paddy Crop.

1. BASAL CONDITIONS:

(i) (a) Black gram, Maize, Sesamum and Fallow. (b) Black gram, Maize, Sesamum, and Fallow. (c) As per treatments. (ii) Sandy loam. (iii) 15.7.62. (iv) (a) 2 plough ages. (b) Transplanting. (c) and (d) N.A. (e) 2. (f) Nil. (g) N. 136 (early). (h) Unirrigated. (i) Weeding. (ix) 32 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: \( N_1 = 0 \) and \( N_1 = 22.4 \) Kg/ha.
(3) 2 levels of \( \text{P}_2\text{O}_5 \): \( P_1 = 0 \) and \( P_1 = 22.4 \) Kg/ha.

N and \( \text{P}_2\text{O}_5 \) were applied to previous crops.

3. DESIGN:

(i) Fact in R.B.D. (ii) 13. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9.1 m x 5.0 m. (c) 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 Kgf/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha. Extra treatment—937 Kg/ha.

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Crop:— Paddy. Site:— Agri. Res. Stn., Sambalpur. Ref:— Or. 64(41) 65(4). 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)— (v) Nil. (vi) S.P.—1 (early). (vii) Unirrigated. (viii) One beamshaving followed by hand weeding and clouch 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 N₁₀ Kgf/ha. of P₂₀, M₂=40 Kgf/ha. of N₀ Kgf/ha. of P₁₀ Kgf/ha. of K₀, M₃=60 Kgf/ha. of N₁₀ Kgf/ha. of P₁₀ Kgf/ha. of K₁₀.

Sub-plot treatments
3 seed rates: R₁=40, R₂=60 and R₃=80 Kg/ha. N, P₂₀ and K₁₀ were applied as A/S, Super and Pot. chloride respectively. N applied in two doses: ½ before sowing and ½ after one month of sowing.

3. DESGN:
(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 noctuidae for 64(41); Attack of Siphis for 65(4). Kerose 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) 225·8 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.
Crop: Paddy (Kharif)

Object: To study the effect of different varieties, manures and age 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%64. (iv) (a) 3 puddings with laddering. (b) Transplanting. (c) 1' to 25 Kg/ha. (d) 15 cm. x 15 cm. (e) 1. (f) Nil. (g) As per treatments. (h) Unirrigated. (i) One hand weeding. (j) and (a) 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, 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.
   T1 = 21 days old seedling: One split, T2 = 42 days old seedling: 2 splits (21 days interval) and T3 = 63 days old seedling: 3 splits (21 days interval).
   For explanation of splits, refer exp. no 64 (13) on page 140.

3. DESIGN:
   (i) Split-plot. (ii) (a) 6 main-plots replication; 6 sub-plots in 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 grassy. (m) Height, tiller count, panicle and weight of grain and straw. (iv) (a) 1964-costal. (b) No. (c) Nilt. (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.
Crop : Paddy. (Kharif).

Site : Irrigation Res. Centre, Chakuli.

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) 6 ploughings and 2 ladderings. (b) Transplanting. (c) 38 Kg/ha. (d) 25 cm. x 10 cm. (e) 2 seedlings/hole. (v) A/S at 60 Kg/ha. of N, Super at 60 Kg/ha. of P, K at 60 Kg/ha. of K. (vi) T at one month of transplanting. (vii) T 141 (Rep. I to IV), M.T.U 15 (Rep. V and VI). (viii) Irrigated. (ix) and (x) N.A.

2. TREATMENTS:
   16 irrigated treatments
   T 1 =S 1 (G 1 , G 2 , G 3 , G 4 ), T 2 =S 2 (G 1 , G 2 , G 3 , G 4 ) + S 2 (G 1 , G 2 , G 3 , G 4 ), T 3 =S 3 (G 1 , G 2 , G 3 , G 4 ), T 4 =S 4 (G 1 , G 2 , G 3 , G 4 ) + S 4 (G 1 , G 2 , G 3 , G 4 ), T 5 =S 5 (G 1 , G 2 , G 3 , G 4 ), T 6 =S 6 (G 1 , G 2 , G 3 , G 4 ), T 7 =S 7 (G 1 , G 2 , G 3 , G 4 ), T 8 =S 8 (G 1 , G 2 , G 3 , G 4 ), T 9 =S 9 (G 1 , G 2 , G 3 , G 4 ), T 10 =S 10 (G 1 , G 2 , G 3 , G 4 ), T 11 =S 11 (G 1 , G 2 , G 3 , G 4 ), T 12 =S 12 (G 1 , G 2 , G 3 , G 4 ), T 13 =S 13 (G 1 , G 2 , G 3 , G 4 ), T 14 =S 14 (G 1 , G 2 , G 3 , G 4 ), T 15 =S 15 (G 1 , G 2 , G 3 , G 4 ), T 16 =S 16 (G 1 , G 2 , G 3 , G 4 )

[S 1 =Irrigating when soil cracks, S 2 =5 em. of standing water, G 1 =From transplanting to 1st tillering, G 2 =1st tillering to max. tillering stage, G 3 =Max. Tillering to flowering, G 4 =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. x 3 · 0 m. (b) 7 · 3 m. x 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T 1</th>
<th>T 2</th>
<th>T 3</th>
<th>T 4</th>
<th>T 5</th>
<th>T 6</th>
<th>T 7</th>
<th>T 8</th>
</tr>
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<tbody>
<tr>
<td>Av. yield</td>
<td>822</td>
<td>586</td>
<td>937</td>
<td>960</td>
<td>874</td>
<td>580</td>
<td>661</td>
<td>621</td>
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<table>
<thead>
<tr>
<th>Treatment</th>
<th>T 9</th>
<th>T 10</th>
<th>T 11</th>
<th>T 12</th>
<th>T 13</th>
<th>T 14</th>
<th>T 15</th>
<th>T 16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>891</td>
<td>1138</td>
<td>333</td>
<td>672</td>
<td>753</td>
<td>540</td>
<td>1029</td>
<td>937</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T 1</th>
<th>T 2</th>
<th>T 3</th>
<th>T 4</th>
<th>T 5</th>
<th>T 6</th>
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<tbody>
<tr>
<td>Av. yield</td>
<td>161</td>
<td>471</td>
<td>276</td>
<td>172</td>
<td>195</td>
<td>333</td>
<td>207</td>
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<table>
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<th>Treatment</th>
<th>T 9</th>
<th>T 10</th>
<th>T 11</th>
<th>T 12</th>
<th>T 13</th>
<th>T 14</th>
<th>T 15</th>
<th>T 16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>207</td>
<td>208</td>
<td>177</td>
<td>195</td>
<td>276</td>
<td>402</td>
<td>276</td>
<td>115</td>
</tr>
</tbody>
</table>
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 puddings accompanied by laddering. (b) Transplanting. (c) 25 Kg/ha. (d) 40 cm. x 40 cm. (e) 2. (v) Nil. (vi) 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: I₁ = 2'8 cm., I₂ = 6'3 cm. and I₃ = 8'9 cm. acre week.
   (2) 3 intervals of irrigations: F₁ = 4, F₂ = 6 and F₃ = 8 days interval.

   **Sub-plot treatments:**
   3 levels of manures: M₀ = No manure, M₁ = 32'9 Kg/ha. of N. 22'9 Kg/ha. of P₂O₅. 87'8 Kg/ha. of F.Y.M. and M₂ = 2 M₁.

3. DESIGN:
   (i) Split-plot. (ii) (a) 9 main-plots:replication, 3 sub-plots/main-plot. (b) N.A. (iii) 2, (iv) (a) 90 m. x 4'5 m. (b) 8'6 m. x 4'1 m. (v) 20 cm. x 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 x F are highly significant. (iv) Av. yield of grain in Kg/ha.

<table>
<thead>
<tr>
<th>F₁</th>
<th>F₂</th>
<th>F₃</th>
<th>M₀</th>
<th>M₁</th>
<th>M₂</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>I₁</td>
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<td>3469</td>
<td>3148</td>
<td>3044</td>
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<tr>
<td>I₂</td>
<td>4651</td>
<td>4056</td>
<td>3488</td>
<td>3526</td>
<td>4103</td>
<td>4566</td>
</tr>
<tr>
<td>I₃</td>
<td>5275</td>
<td>4670</td>
<td>4056</td>
<td>4112</td>
<td>4708</td>
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<tr>
<td>Mean</td>
<td>4657</td>
<td>4065</td>
<td>3564</td>
<td>3561</td>
<td>4131</td>
<td>4594</td>
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</tbody>
</table>

C.D. for I of F marginal means
C.D. for M marginal means
C.D. for means on the body of I x F table

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. x 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 = Normal, I = 8 cm., I = 15 cm., I = 23 cm. and I = 30 cm. depth.
   Sub-plot treatments:
   4 sources of P\textsubscript{2}O\textsubscript{5} at 22-4 Kg/ha.:
   S\textsubscript{0} = No P\textsubscript{2}O\textsubscript{5}, S\textsubscript{1} = Rock Phosphate, S\textsubscript{2} = Super and S\textsubscript{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. x 7'3 m. (b) 5'9 m. x 6'9 m. (v) 23 em. x 23 em. (vi) 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.

<table>
<thead>
<tr>
<th></th>
<th>I\textsubscript{1}</th>
<th>I\textsubscript{2}</th>
<th>I\textsubscript{3}</th>
<th>I\textsubscript{4}</th>
<th>Mean</th>
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<tr>
<td>S\textsubscript{0}</td>
<td>1878</td>
<td>2187</td>
<td>2309</td>
<td>2337</td>
<td>1948</td>
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<tr>
<td>S\textsubscript{1}</td>
<td>2086</td>
<td>2031</td>
<td>1975</td>
<td>1728</td>
<td>1919</td>
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<td>S\textsubscript{2}</td>
<td>1892</td>
<td>2337</td>
<td>2535</td>
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<td>S\textsubscript{3}</td>
<td>2170</td>
<td>2031</td>
<td>1725</td>
<td>2107</td>
<td>2309</td>
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<tr>
<td>Mean</td>
<td>2006</td>
<td>2146</td>
<td>2136</td>
<td>2169</td>
<td>2183</td>
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</table>

Crop :- Paddy (Kharif).
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. x 22 cm. (e) 2. (v) 224'1 Kg/ha. of N as C/A/N 168'1 Kg/ha. of P\textsubscript{2}O\textsubscript{5} as Super, 112'1 Kg/ha. of K\textsubscript{2}O as Mur. Pot. (vi) GEB-24. (vii) Irrigated. (viii) 2 hand weedicings. (ix) and (x) N.A.

2. TREATMENTS:
   5 insecticidal treatments: T\textsubscript{0} = Control, T\textsubscript{1} = Dimecron—100 (0'10%), T\textsubscript{2} = Folinel E—605 (0'06%), T\textsubscript{3} = Bidrin (0'09%) and T\textsubscript{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. x 3'5 m. (v) Nil. (vi) Yes.

4. GENERAL:
   (i) Satisfactory. (ii) Gallmidge mild attack. (iii) Tiller 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) 1954 2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T₀</th>
<th>T₁</th>
<th>T₂</th>
<th>T₃</th>
<th>T₄</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>1534</td>
<td>2262</td>
<td>2240</td>
<td>1701</td>
<td>2020</td>
</tr>
<tr>
<td>C.D.</td>
<td>-193 Kg/ha.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Crop :- Paddy (*Kharif*).
Ref :- Or. 64(7).
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. (d) Clay loam. (e) 1.6.64-29.7.64. (iv) (a) 2 summer ploughings and 2 puddlings. (b) Transplanted. (c) 17 Kg ha. (d) 23 cm < 15 cm. (e) 2. (iv) 25 C.L./ha. of F.Y.M. + 44.8 Kg/ha. of P₂O₅ as Super. (v) J₁ (medium). (vi) Unirrigated. (vii) 2 weedings by Japanese weeders. (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, 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. x 2 3 m. vi Nil. (vi) Yes.

4. GENERAL:
(i) N.A. (ii) Stem-borer attack was negligible. (iii) Percentage of affected plants. (iv) 1963-64. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Experiment was conducted by the mycology div. of the State Agri. Res., Bhubaneswar. Expt. failed in 1963.

5. RESULTS:
(i) 3281 Kg/ha. (ii) 4110 Kg ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>W₀</th>
<th>W₁</th>
<th>W₂</th>
<th>W₃</th>
<th>W₄</th>
<th>W₅</th>
<th>W₆</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>2846</td>
<td>3109</td>
<td>3373</td>
<td>3439</td>
<td>3645</td>
<td>3252</td>
<td>3301</td>
</tr>
</tbody>
</table>

Crop :- Paddy (*Kharif*).
Ref :- Or. 60(43).
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. x 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: W₀=Control, W₁=2, 4-D, W₂=2, 4, 5-T, W₃=M.C.P.A., W₄=Taficide, W₅=Tafosan, W₆=Hedonal and W₇=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. x 4·6 m. (b) 4·3 m. x 4·1 m. (v) 15 cm. x 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>W₀</th>
<th>W₁</th>
<th>W₂</th>
<th>W₃</th>
<th>W₄</th>
<th>W₅</th>
<th>W₆</th>
<th>W₇</th>
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</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>1856</td>
<td>1593</td>
<td>1986</td>
<td>1540</td>
<td>2056</td>
<td>1458</td>
<td>1641</td>
<td>1937</td>
</tr>
</tbody>
</table>

Crop :- Paddy (Kharif).
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 ladders. (b) Transplanting. (c) 37·5 Kg/ha. (d) 15 cm. x 23 cm. (e) 2. (v) 56·0 Kg/ha. of N as A/S+112·1 Kg/ha. of P₂O₅ as Super+56·0 Kg/ha. of K₂O as Mur. Pot. (vi) T 1242. (vii) Irrigated. (viii) One hand-weeding. (ix) 27·0 cm. (x) 24.12.65.

2. TREATMENTS:
   Main-plot treatments:
   10 insecticidal treatments: T₀=Control (water spray), T₁=Dimicron at 494 gm/ha., T₂=D.D.T. at 2·2 Kg/ha., T₃=Di-eldrin at 2·2 Kg/ha., T₄=Folidol at 420 gm./ha. T₅=Gamma B.H.C. at 22·4 Kg/ha., T₆=Malathion at 420 gm./ha., T₇=Rogor at 593 C.C./ha., T₈=Sevin at 2·2 Kg/ha. and T₉=Endrin at 700 gm/ha.

   Sub-plot treatments:
   2 spraying intervals: I₁=7 and I₂=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. x 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.
Crop: Paddy (kharif).

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) 241 C.L/ha, of F.Y.M. + 22.4 Kg/ha, of N as C.A/N was top dressed. (vi) 790 (late). (vii) Irrigation. (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 sprays of 2, 4 - D one at 2.2 Kg/ha. and 2nd at 1.1 Kg/ha., T7 - 2 post planting sprays of MCPA 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) 10. (b) N.A. (c) 3. (iv) (a) 8.7 m. x 5.3 m. (b) 6.8 m. x 6.3 m. (v) 23 cm. x 23 cm.
   (vi) Yes.

4. GENERAL:
   (i) N.A. (ii) Light attack of meal-ybugs. (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) 1857 Kg/ha. (ii) 2920 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

   Treatment
<table>
<thead>
<tr>
<th>T0</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>T5</th>
<th>T6</th>
<th>T7</th>
<th>T8</th>
<th>T9</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1751</td>
<td>1770</td>
<td>1897</td>
<td>1777</td>
<td>1818</td>
<td>2239</td>
<td>1744</td>
<td>1724</td>
<td>2030</td>
<td>1877</td>
<td>1804</td>
</tr>
</tbody>
</table>

   2-Weed yield
   (i) 370 Kg/ha. (ii) 3330 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of weeds in Kg/ha.

   Treatment
<table>
<thead>
<tr>
<th>T0</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>T5</th>
<th>T6</th>
<th>T7</th>
<th>T8</th>
<th>T9</th>
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<tr>
<td>1490</td>
<td>905</td>
<td>313</td>
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<td>105</td>
<td>27</td>
<td>178</td>
<td>109</td>
<td>81</td>
<td>107</td>
</tr>
</tbody>
</table>

   C.D.—5710 Kg/ha.
Crop :- Paddy (Kharif).
Site :- State Agri. Res. Sta., Bhubaneswar.

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) Sandyloam. (iii) 30.6.61. (iv) (a) 2 summer ploughings and one ploughing for sowing 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: T0 = Control (no weeding), T1 = Beaushening followed by one weeding, T2 = Beaushening followed by two weedicides at 1'1 Kg/ha of 2, 4-D, T3 = Two post emergence sprays each at 1'1 Kg/ha. of 2, 4-D, T4 = Two post emergence sprays each at 2'2 Kg/ha. of 2, 4-D, T5 = Two post emergence sprays each at 2'2 Kg/ha. of 2, 4-Done at 2'2 Kg/ha. and 2nd at 1'1 Kg/ha. T6 = Beaushening + one post emergence spray of 2, 4-D at 1'1 Kg/ha. and T7 = 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. x 5'3 m. (b) 7'2 m. x 4'8 m. (v) 23 em. x 23 em. (vi) Y's.

4. GENERAL :

(i) N.A. (ii) Attack of Rice hispae 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T0</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>T5</th>
<th>T6</th>
<th>T7</th>
<th>T8</th>
<th>T9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>1626</td>
<td>2089</td>
<td>2118</td>
<td>2138</td>
<td>1935</td>
<td>1632</td>
<td>1885</td>
<td>1506</td>
<td>2116</td>
<td>1877</td>
</tr>
</tbody>
</table>

Crop :- Paddy (Kharif).
Site :- State Agri. Res. Sta., Bhubaneswar.

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. (iv) (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 P1O5. (vi) T1242 (late). (vii) Unirrigated. (viii) As per treatments. (ix) 142 cm. (x) 25.12.64.

2. TREATMENTS :

12 weedicial treatments: T0 = Control (unweeded), T1 = One hand weeding, T2 = One beushening + two hand weedicides, T3 = Two beushenings + 2 hand weedicides, T4 = MCPA (Hedonal 40% a.e.) 1'7 Kg/ha. a.e., T5 = MCPA 2 Kg/ha. a.e., T6 = Stam F-34 (35% a.e. of DPA) 3'4 Kg/ha. a.e. and T7 = Stan F-34 at 5'6 Kg/ha. a.e., T8 = One beushening + MCPA at 1'7 Kg/ha. a.e., T9 = One beushening + MCPA at 2.0 Kg/ha. a.e., T10 = One beushening + stam F-34 at 34 Kg/ha. a.e. and T11 = One beushening + stam 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 × 5'5 m. (b) 8'0 m × 5'0 m. (v) 37 cm × 25 cm. (vi) Yes.

4. GENERAL:
   (i) No lodging. (iii) 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) 315 Kg/ha. (ii) 190·0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.
   Treatment
   \[ \begin{array}{cccccccc}
   & T_0 & T_1 & T_2 & T_3 & T_4 & T_5 & T_6 & T_7 \\
   \hline
   Av. yield & 1937 & 3625 & 3437 & 3519 & 3000 & 3025 & 3331 & 3362 & 3594 & 3412 & 3825 & 3512 \\
   \end{array} \]
   C.D. = 273·4 Kg/ha.

---

Crop :- Paddy (Kharif).
Ref :- Or. 63(37).
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 (state). (vii) Unirrigated. (viii) As per treatments. (ix) 136 cm. (x) 25.12.63.

2. TREATMENTS:
   12 weedicidal cum-cultural treatments : \( W_0 \) = Control, \( W_1 \) = Beushinging one hand weeding, \( W_2 \) = Beushinging 2 hand weedicides; \( W_3 \) = 2·2 Kg/ha. of 2, 4-D, \( W_4 \) = 1·7 Kg/ha. of MCPA, \( W_5 \) = 2·2 Kg/ha. of MCPA, \( W_6 \) = Beushimaing 2·2 Kg/ha. of 2, 4-D, \( W_7 \) = 1·7 Kg/ha. of MCPA and \( W_8 \) = Beushimaing 1·7 Kg/ha. of MCPA and \( W_9 \) = Beushimaing 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. × 1'9 m. (b) 1'8 m. × 1'7 m. (v) 9 cm × 9 cm. (vi) Yes.

4. GENERAL:
   (i) Normal. (iii) Nil. (iii) Weed. count, height, tiller count, yield of grain and straw. (iv) (a) 963 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
   \[ \begin{array}{cccccccc}
   & W_0 & W_1 & W_2 & W_3 & W_4 & W_5 & W_6 & W_7 \\
   \hline
   Av. yield & 1022 & 1337 & 1625 & 1253 & 1138 & 1095 & 1190 & 1138 & 1200 & 1106 & 1207 & 1041 \\
   \end{array} \]

---

Crop :- Paddy (Kharif).
Ref :- Or. 62(48).
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) Mung. (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$_2$O$_5$ 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 besuhaning. (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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>W1</th>
<th>W2</th>
<th>W3</th>
<th>W4</th>
<th>W5</th>
<th>W6</th>
<th>W7</th>
<th>W8</th>
<th>W9</th>
<th>W10</th>
<th>W11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>394</td>
<td>549</td>
<td>566</td>
<td>506</td>
<td>461</td>
<td>454</td>
<td>525</td>
<td>507</td>
<td>541</td>
<td>536</td>
<td>528</td>
</tr>
</tbody>
</table>

---

Crop :- Wheat (*Rabi*).

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. x 23 cm. (e) Nil. (v) 2242 Kg/ha. of F.Y.M. and 22.2 Kg/ha. of P$_2$O$_5$ 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 : S$_1$ = A/S and S$_2$ = C/A/N.
(2) 3 times of application : T$_1$ = Full dose at sowing, T$_2$ = $\frac{1}{2}$ at sowing + $\frac{1}{2}$ one month after sowing and T$_3$ = $\frac{1}{2}$ at sowing + $\frac{1}{2}$ one month after sowing + $\frac{1}{2}$ 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. x 4.0 m. (b) 7.1 m. x 3.5 m. (v) 23 cm. x 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.

<table>
<thead>
<tr>
<th></th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>Mean</th>
</tr>
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<tbody>
<tr>
<td>S1</td>
<td>548</td>
<td>864</td>
<td>553</td>
<td>655</td>
</tr>
<tr>
<td>S2</td>
<td>646</td>
<td>709</td>
<td>560</td>
<td>638</td>
</tr>
<tr>
<td>Mean</td>
<td>597</td>
<td>786</td>
<td>556</td>
<td>646</td>
</tr>
</tbody>
</table>
Crop :- Wheat. (Rabi).
Site :- Agri. Res. Sta., 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 P₂O₅ 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. (f) 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: N₀ = 0, N₁ = 22.4 and N₂ = 44.8 Kg/ha.
   (2) 2 levels of P₂O₅ as Super: P₀ = 0 and P₁ = 33.6 Kg/ha.
   Super and 1 A/S applied in furrows at sowing and remaining 1 A/S as top dressed after one month of sowing.

3. DESIGN :
   (i) Fact. in R.B.D. (ii) 6. (b) N.A. (iii) 4. (iv) (a) 8'5 m. x 6'4 m
   (b) 8'0 m. x 6'0 m. (v) 30 cm. x 23 cm. (vi) Yes

4. GENERAL :
   (i) Poor. (ii) and (iii) Nil. (iv) P = 0.62. (b) No. (c) Nil. (v) Nil. (vi) Nil.

5. RESULTS :
   (i) 1182 Kg/ha. (ii) 1160 Kg/ha. (iii) Main effects of N and P are highly significant. (iv) Av. yield of
   grain in Kg/ha.

<table>
<thead>
<tr>
<th></th>
<th>N₀</th>
<th>N₁</th>
<th>N₂</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>P₀</td>
<td>686</td>
<td>1266</td>
<td>1318</td>
<td>1090</td>
</tr>
<tr>
<td>P₁</td>
<td>823</td>
<td>1429</td>
<td>1568</td>
<td>1273</td>
</tr>
<tr>
<td>Mern</td>
<td>754</td>
<td>1348</td>
<td>1443</td>
<td>1182</td>
</tr>
</tbody>
</table>

   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 fertiliser 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: F₁ = 44.8 Kg/ha. of N as A/S, F₂ = 22.4 Kg/ha. of P₂O₅ as Super, F₃ = 44.8 Kg/ha.
   of N + 22.4 Kg/ha. of P₂O₅ and F₄ = 44.8 Kg/ha. of N + 22.4 Kg/ha. of N + 22.4 Kg/ha of K₂O.
   Sub-plot treatments:
   All combinations of (1) and (2) - 2 extra treatments.
   (1) 3 methods of application: M₁ = Soil application; M₂ = Foliar application and M₃ = Soil application and foliar application.
   (2) 2 levels of application: L₁ = ½ dose and L₂ = Full dose.
   Extra treatments: C₁ = Water spray and C₂ = 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) and (c) (v) to (vii) Nil.

<table>
<thead>
<tr>
<th>F</th>
<th>L₁M₁</th>
<th>L₂M₁</th>
<th>L₁M₂</th>
<th>L₁M₃</th>
<th>L₂M₂</th>
<th>L₂M₃</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>F₁</td>
<td>315</td>
<td>490</td>
<td>324</td>
<td>310</td>
<td>515</td>
<td>253</td>
<td>368</td>
</tr>
<tr>
<td>F₂</td>
<td>368</td>
<td>384</td>
<td>538</td>
<td>360</td>
<td>268</td>
<td>573</td>
<td>414</td>
</tr>
<tr>
<td>F₃</td>
<td>594</td>
<td>802</td>
<td>337</td>
<td>401</td>
<td>413</td>
<td>710</td>
<td>543</td>
</tr>
<tr>
<td>F₄</td>
<td>773</td>
<td>793</td>
<td>523</td>
<td>410</td>
<td>694</td>
<td>879</td>
<td>679</td>
</tr>
<tr>
<td>Mean</td>
<td>512</td>
<td>617</td>
<td>429</td>
<td>370</td>
<td>473</td>
<td>604</td>
<td>501</td>
</tr>
</tbody>
</table>

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 A₁) To study response curves of important cereal, cash and oilseed crops to phosphorus applied singly and in combination with other nutrients.

1. **BASAL CONDITIONS :**
   (i) 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 manuraii treatments
   O—Control (no manure)
   N₁=35 Kg/ha. of N.
   N₂=70 Kg/ha. of N
   P₁=35 Kg/ha. 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 :**
   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 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. (c) Nil. (v) to (vii) N.A.

5. RESULTS:

Puri
62 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>N1</th>
<th>P1</th>
<th>N1P1</th>
<th>N1P2</th>
<th>N1P2K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>206</td>
<td>226</td>
<td>270</td>
<td>207</td>
<td>416</td>
<td>468</td>
<td>515</td>
</tr>
</tbody>
</table>

Control yield—577 Kg/ha.; No. of trials 2.

63 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>N1</th>
<th>P1</th>
<th>N1P1</th>
<th>N1P2</th>
<th>N1P2K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>150</td>
<td>395</td>
<td>112</td>
<td>350</td>
<td>488</td>
<td>582</td>
<td>702</td>
</tr>
</tbody>
</table>

Control yield—429 Kg/ha.; No. of trials 6.

64 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>N1</th>
<th>P1</th>
<th>N1P1</th>
<th>N1P2</th>
<th>N1P2K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>208</td>
<td>375</td>
<td>496</td>
<td>640</td>
<td>762</td>
<td>945</td>
<td>1096</td>
</tr>
</tbody>
</table>

Control yield—183 Kg/ha.; No. of trials 2.

65 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>P1</th>
<th>N1P1</th>
<th>N1P2</th>
<th>N1P2K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>472</td>
<td>798</td>
<td>630</td>
<td>938</td>
<td>1294</td>
<td>1707</td>
</tr>
</tbody>
</table>

Control yield—461 Kg/ha.; No. of trials 7.

Mayurbhanj
63 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>P1</th>
<th>N1P1</th>
<th>N1P2</th>
<th>N1P2K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>263</td>
<td>433</td>
<td>196</td>
<td>487</td>
<td>662</td>
<td>746</td>
</tr>
</tbody>
</table>

Control yield—681 Kg/ha.; No. of trials 5.

64 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>P1</th>
<th>N1P1</th>
<th>N1P2</th>
<th>N1P2K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>99</td>
<td>191</td>
<td>82</td>
<td>210</td>
<td>319</td>
<td>303</td>
</tr>
</tbody>
</table>

Control yield—481 Kg/ha.; No. of trials 6.

65 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>P1</th>
<th>N1P1</th>
<th>N1P2</th>
<th>N1P2K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>80</td>
<td>120</td>
<td>59</td>
<td>155</td>
<td>202</td>
<td>247</td>
</tr>
</tbody>
</table>

Control yield—743 Kg/ha.; No. of trials 8.

Balasore
62 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>N1</th>
<th>P1</th>
<th>N1P1</th>
<th>N1P2</th>
<th>N1P2K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>150</td>
<td>210</td>
<td>41</td>
<td>308</td>
<td>321</td>
<td>466</td>
<td>594</td>
</tr>
</tbody>
</table>

Control yield—643 Kg/ha.; No. of trials 7.
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) 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.
   N4 = 70 Kg/ha. of N.
   P1 = 35 Kg/ha. of P2O5
   N1P1 = 35 Kg/ha. of N + 35 Kg/ha. of P2O5
   N4P1 = 70 Kg/ha. of N + 35 Kg/ha. of P2O5
   N4P2 = 70 Kg/ha. of N + 70 Kg/ha. of P2O5
   N4P2K1 = 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:
   - Cuttak

62 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>N2</th>
<th>P1</th>
<th>N1P1</th>
<th>N4P1</th>
<th>N4P2</th>
<th>N4P2K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>460</td>
<td>472</td>
<td>183</td>
<td>539</td>
<td>413</td>
<td>654</td>
<td>666</td>
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</tr>
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</table>

Control yield=923 Kg/ha.; No. of trials=1.

64 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>N2</th>
<th>P1</th>
<th>N1P1</th>
<th>N4P1</th>
<th>N4P2</th>
<th>N4P2K1</th>
<th>S.E.</th>
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</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>74</td>
<td>128</td>
<td>62</td>
<td>138</td>
<td>219</td>
<td>241</td>
<td>560</td>
<td></td>
</tr>
</tbody>
</table>

Control yield=1059 Kg/ha.; No. of trials=3

Cuttak

62 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>N2</th>
<th>P1</th>
<th>N1P1</th>
<th>N4P1</th>
<th>N4P2</th>
<th>N4P2K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>104</td>
<td>145</td>
<td>63</td>
<td>185</td>
<td>277</td>
<td>312</td>
<td>318</td>
<td>296</td>
</tr>
</tbody>
</table>

Control yield=253 Kg/ha.; No. of trials=2

Control yield=1719 Kg/ha.; No. trials=2.

Ref: - Or. 62 (S.F.T.) for Cuttak and 65 (S.F.T.) Balasore.
Balasore

65 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N₁</th>
<th>N₂</th>
<th>P₁</th>
<th>N₁P₁</th>
<th>N₂P₁</th>
<th>N₂P₂</th>
<th>N₂P₂K₁</th>
<th>S.L.</th>
</tr>
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<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>189</td>
<td>293</td>
<td>223</td>
<td>336</td>
<td>411</td>
<td>420</td>
<td>533</td>
<td></td>
</tr>
</tbody>
</table>

Control yield=634 Kg/ha.; No. of trials -6.

Crop - Wheat. (Rabi).

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

Object - To study the response curves of important cereal and oilseed crops to phosphorus applied singly and in combination with other nutrients (Type : M).

1. BASAL CONDITIONS:
   (i) N.A. (ii) Red and yellow for Puri, and Mayurbhanj (iii) Red loamy for Balasore; and Cuttack. (iv) 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 |
| N₁P₁ = 70 Kg/ha. of P₂O₅ |
| N₂P₂ = 35 Kg/ha. N=35 Kg/ha. of P₂O₅ |
| N₁P₁ = 35 Kg/ha. N=70 Kg/ha. of P₂O₅ |
| N₂P₂ = 70 Kg/ha. N=70 Kg/ha. of P₂O₅ |
| N₂P₂K₁ = 70 Kg/ha. 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 (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS:

Puri

62 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N₁</th>
<th>P₁</th>
<th>P₁</th>
<th>N₁P₁</th>
<th>N₂P₁</th>
<th>N₂P₂</th>
<th>N₂P₂K₁</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>197</td>
<td>88</td>
<td>102</td>
<td>340</td>
<td>399</td>
<td>755</td>
<td>847</td>
<td></td>
</tr>
</tbody>
</table>

Control yield=544 Kg/ha.; No. of trials -3.

63 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N₁</th>
<th>P₁</th>
<th>P₁</th>
<th>N₁P₁</th>
<th>N₂P₁</th>
<th>N₂P₂</th>
<th>N₂P₂K₁</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>149</td>
<td>129</td>
<td>170</td>
<td>303</td>
<td>400</td>
<td>595</td>
<td>696</td>
<td>54'7</td>
</tr>
</tbody>
</table>

Control yield=321 Kg/ha.; No. of trials =3.
<table>
<thead>
<tr>
<th>Treatment</th>
<th>Product</th>
<th>Av. response of grain in Kg/ha.</th>
<th>Control yield</th>
<th>No. of trials</th>
</tr>
</thead>
<tbody>
<tr>
<td>N&lt;sub&gt;1&lt;/sub&gt;</td>
<td>P&lt;sub&gt;1&lt;/sub&gt;</td>
<td>264</td>
<td>195</td>
<td>219 Kg/ha.; No. of trials=2.</td>
</tr>
<tr>
<td>N&lt;sub&gt;1&lt;/sub&gt;</td>
<td>P&lt;sub&gt;2&lt;/sub&gt;</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
Cuttack

62 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
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<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>197</td>
<td>49</td>
<td>71</td>
<td>152</td>
<td>324</td>
<td>209</td>
<td>426</td>
<td>—</td>
</tr>
</tbody>
</table>

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: A<sub>2</sub>)

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).
   N<sub>1</sub>=35 Kg/ha. of N
   P<sub>1</sub>=35 Kg/ha. of P<sub>2</sub>O<sub>5</sub>
   P<sub>2</sub>=70 Kg/ha. of P<sub>2</sub>O<sub>5</sub>
   N<sub>1</sub>P<sub>1</sub>=35 Kg/ha. of N : 35 Kg/ha. of P<sub>2</sub>O<sub>5</sub>
   N<sub>2</sub>P<sub>2</sub>=70 Kg/ha. of N : 70 Kg/ha. of P<sub>2</sub>O<sub>5</sub>
   N<sub>1</sub>P<sub>2</sub>=70 Kg/ha. of N : 70 Kg/ha. of P<sub>2</sub>O<sub>5</sub>
   N<sub>1</sub>P<sub>1</sub>—70 Kg/ha. of N : 70 Kg/ha. of P<sub>2</sub>O<sub>5</sub> + 70 Kg/ha. of K<sub>2</sub>O
   N applied as A/S : P<sub>2</sub>O<sub>5</sub> as Super and K<sub>2</sub>O as Mur. of Pot.

3. DESIGN:
   Same as in Type A<sub>1</sub> (Irrigated) on page 155.

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

65 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;K&lt;sub&gt;2&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>551</td>
<td>—33</td>
<td>107</td>
<td>339</td>
<td>234</td>
<td>373</td>
<td>466</td>
<td>—</td>
</tr>
</tbody>
</table>

Control yield = 658 Kg/ha.; No. of trials = 2.

Balasore

65 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>179</td>
<td>66</td>
<td>97</td>
<td>239</td>
<td>312</td>
<td>445</td>
<td>589</td>
<td>63'6</td>
</tr>
</tbody>
</table>

Control yield = 648 Kg/ha.; No. 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 manurai 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 K1O
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 P2O5+35 Kg/ha. of K1O
N applied as A/S, P2O5 as Super and K2O as Mor. 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 :

<table>
<thead>
<tr>
<th>District</th>
<th>Treatment</th>
<th>N1</th>
<th>K1</th>
<th>K2</th>
<th>N1K1</th>
<th>N1K2</th>
<th>N2K2</th>
<th>N1P1K1</th>
<th>S.E.</th>
<th>Av. response of grain in Kg/ha.</th>
<th>Control yield</th>
<th>No. of trials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mayurbhanj 62 (S.F.T.)</td>
<td>N1</td>
<td>298</td>
<td>138</td>
<td>276</td>
<td>229</td>
<td>482</td>
<td>460</td>
<td>401</td>
<td>-</td>
<td>[369 Kg/ha. ; No. of trials=1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63 (S.F.T.)</td>
<td>N1</td>
<td>345</td>
<td>276</td>
<td>468</td>
<td>633</td>
<td>714</td>
<td>728</td>
<td>886</td>
<td>-</td>
<td>[1119 Kg/ha. ; No. of trials=3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>64 (S.F.T.)</td>
<td>N1</td>
<td>257</td>
<td>87</td>
<td>150</td>
<td>256</td>
<td>302</td>
<td>346</td>
<td>397</td>
<td>55</td>
<td>[499 Kg/ha. ; No. of trials=3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65 (S.F.T.)</td>
<td>N1</td>
<td>162</td>
<td>90</td>
<td>134</td>
<td>204</td>
<td>308</td>
<td>276</td>
<td>322</td>
<td>-</td>
<td>[743 Kg/ha. ; No. of trials=3.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Puri

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. response of grain in Kg/ha.</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>542 Kg/ha.</td>
<td></td>
</tr>
</tbody>
</table>

### Balasore

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. response of grain in Kg/ha.</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>488 Kg/ha.</td>
<td></td>
</tr>
</tbody>
</table>

---

**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 oilseed 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 material treatments:  
   - **O** = Control (no manure)  
   - **N₁ = 35 Kg/ha. of N**  
   - **K₁ = 35 Kg/ha. of K₂O**  
   - **K₂ = 70 Kg/ha. of K₂O**  
   - **N₂K₁ = 35 Kg/ha. of N₁ + 35 Kg/ha. of K₂O**  
   - **N₂K₂ = 70 Kg/ha. of N₂ + 70 Kg/ha. of K₂O**  
   - **N₁P₂K₁ = 25 Kg/ha. of N₁ + 35 Kg/ha. of P₂O₅ + 35 Kg/ha. of K₂O**  
   N applied as A/S: P₂O₅ as Super and K₂O as Muri. 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.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N₁K₁K₁</th>
<th>N₁K₁K₂</th>
<th>N₁K₂K₁</th>
<th>N₁K₂K₂</th>
<th>N₁P₁K₁</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>124</td>
<td>20</td>
<td>69</td>
<td>328</td>
<td>437</td>
<td>258</td>
</tr>
</tbody>
</table>

Control yield = 614 Kg/ha.; No. of trials = 3.

65 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N₁K₁K₁</th>
<th>N₁K₁K₂</th>
<th>N₁K₂K₁</th>
<th>N₁K₂K₂</th>
<th>N₁P₁K₁</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>124</td>
<td>63</td>
<td>105</td>
<td>240</td>
<td>262</td>
<td>373</td>
</tr>
</tbody>
</table>

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 ana 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 163.

3. DESIGN:

Same as page in type A₁ (irrigated) above.

4. GENERAL:

(i) to (iii) N.A.  (iv) (a) 1350 to 1951 for Balasore, Bolangir, Cuttack and Mayurbhanj and 1959 only for others. (b) N.A.  (c) Nil. (v) to (vii) N.A.

5. RESULTS:
### Av. response of grain in Kg/ha.

<table>
<thead>
<tr>
<th>District</th>
<th>No. of trials</th>
<th>Control yield Kg/ha.</th>
<th>N</th>
<th>P</th>
<th>K</th>
<th>S.E.</th>
<th>N</th>
<th>P</th>
<th>N</th>
<th>K</th>
<th>PK</th>
<th>NPK</th>
<th>S.F.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balasore</td>
<td>4</td>
<td>890</td>
<td>280</td>
<td>110</td>
<td>100</td>
<td>29.0</td>
<td>20</td>
<td>10</td>
<td>-20</td>
<td>10</td>
<td>30</td>
<td>30.0</td>
<td></td>
</tr>
<tr>
<td>Bolangngir</td>
<td>4</td>
<td>1560</td>
<td>1230</td>
<td>450</td>
<td>300</td>
<td>132.0</td>
<td>210</td>
<td>50</td>
<td>-60</td>
<td>20</td>
<td>67</td>
<td>67.0</td>
<td></td>
</tr>
<tr>
<td>Cuttack</td>
<td>4</td>
<td>880</td>
<td>220</td>
<td>80</td>
<td>50</td>
<td>32.0</td>
<td>-10</td>
<td>20</td>
<td>0</td>
<td>40</td>
<td>9.0</td>
<td>9.0</td>
<td></td>
</tr>
<tr>
<td>Dhankanal</td>
<td>8</td>
<td>770</td>
<td>160</td>
<td>140</td>
<td>190</td>
<td>58.0</td>
<td>-30</td>
<td>60</td>
<td>-20</td>
<td>10</td>
<td>40</td>
<td>40.0</td>
<td></td>
</tr>
<tr>
<td>Kalahandi</td>
<td>6</td>
<td>840</td>
<td>220</td>
<td>210</td>
<td>70</td>
<td>53.0</td>
<td>30</td>
<td>-10</td>
<td>-30</td>
<td>40</td>
<td>18</td>
<td>18.0</td>
<td></td>
</tr>
<tr>
<td>Mayurbhanj</td>
<td>13</td>
<td>430</td>
<td>260</td>
<td>230</td>
<td>180</td>
<td>37.0</td>
<td>-20</td>
<td>20</td>
<td>60</td>
<td>20</td>
<td>21</td>
<td>21.0</td>
<td></td>
</tr>
<tr>
<td>Sambalpur</td>
<td>2</td>
<td>760</td>
<td>180</td>
<td>140</td>
<td>90</td>
<td>59.0</td>
<td>-20</td>
<td>40</td>
<td>-60</td>
<td>110</td>
<td>43</td>
<td>43.0</td>
<td></td>
</tr>
</tbody>
</table>

### 61 (S.F.T.)

<table>
<thead>
<tr>
<th>District</th>
<th>No. of trials</th>
<th>Control yield Kg/ha.</th>
<th>N</th>
<th>P</th>
<th>K</th>
<th>S.E.</th>
<th>N</th>
<th>P</th>
<th>N</th>
<th>K</th>
<th>PK</th>
<th>NPK</th>
<th>S.F.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balasore</td>
<td>3</td>
<td>1010</td>
<td>270</td>
<td>180</td>
<td>130</td>
<td>34.0</td>
<td>-30</td>
<td>0</td>
<td>10</td>
<td>6</td>
<td>29</td>
<td>29.0</td>
<td></td>
</tr>
<tr>
<td>Bolangngir</td>
<td>2</td>
<td>830</td>
<td>710</td>
<td>120</td>
<td>-130</td>
<td>55.0</td>
<td>-70</td>
<td>-20</td>
<td>10</td>
<td>40</td>
<td>65</td>
<td>65.0</td>
<td></td>
</tr>
<tr>
<td>Cuttack</td>
<td>2</td>
<td>470</td>
<td>210</td>
<td>170</td>
<td>160</td>
<td>63.0</td>
<td>70</td>
<td>50</td>
<td>-10</td>
<td>10</td>
<td>40</td>
<td>40.0</td>
<td></td>
</tr>
<tr>
<td>Mayurbhanj</td>
<td>5</td>
<td>360</td>
<td>240</td>
<td>270</td>
<td>250</td>
<td>63.0</td>
<td>0</td>
<td>-20</td>
<td>50</td>
<td>-30</td>
<td>36</td>
<td>36.0</td>
<td></td>
</tr>
</tbody>
</table>

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.

4. GENERAL:
(i) to (iii) N.A. (iv) (a) 1960 to 1961. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS:

<table>
<thead>
<tr>
<th>District</th>
<th>Control yield</th>
<th>N</th>
<th>P</th>
<th>K</th>
<th>NK</th>
<th>NP</th>
<th>NPK</th>
<th>S.E.</th>
<th>N.P.K.</th>
<th>As. response of grain in kg/ha.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balasore</td>
<td>14 2560 420 200 160</td>
<td>24.0</td>
<td>30</td>
<td>10</td>
<td>0</td>
<td>10</td>
<td>1570</td>
<td>350 260</td>
<td>230</td>
<td>76.0</td>
</tr>
<tr>
<td>Bolangir</td>
<td>8 2300 470 310 260</td>
<td>90.0</td>
<td>30</td>
<td>0</td>
<td>50</td>
<td>10</td>
<td>0</td>
<td>250</td>
<td>100</td>
<td>140</td>
</tr>
<tr>
<td>Cuttack</td>
<td>10 2520 650 300 250</td>
<td>70.0</td>
<td>0</td>
<td>0</td>
<td>40</td>
<td>10</td>
<td>0</td>
<td>350</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td>Dhenkanal</td>
<td>12 3200 450 500 450</td>
<td>160.0</td>
<td>10</td>
<td>0</td>
<td>30</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>100</td>
<td>150</td>
</tr>
<tr>
<td>Ganjam</td>
<td>9 3010 760 560 180</td>
<td>46.0</td>
<td>0</td>
<td>40</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>100</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>Kalahandi</td>
<td>7 4090 570 500 400</td>
<td>169.0</td>
<td>10</td>
<td>0</td>
<td>30</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>100</td>
<td>150</td>
</tr>
<tr>
<td>Mayurbhanj</td>
<td>8 4070 700 530 450</td>
<td>56.0</td>
<td>10</td>
<td>0</td>
<td>30</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>100</td>
<td>150</td>
</tr>
<tr>
<td>Puri</td>
<td>10 2960 650 280 230</td>
<td>76.0</td>
<td>0</td>
<td>0</td>
<td>50</td>
<td>0</td>
<td>10</td>
<td>100</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>Sambalpur</td>
<td>4 1570 350 260</td>
<td>76.0</td>
<td>0</td>
<td>50</td>
<td>100</td>
<td>100</td>
<td>150</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

60(S.F.T.)
Crop: Paddy.
Site: As per results.

Object: To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

TREATMENTS

Object: (RASA) Conditions
1. N.A. (i) Other
   (ii) General:
   a) Oilseed crop and oil to effect post-winter year. The type of crop is changed every two years. The field assistant conducts the trials in one revenue circle per year and oilseed crop and 3 on a leguminous crop. Half the number of trials conducted are of type A and the remainder 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, 4 on each 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 phosphates 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 selected fields in randomly selected villages in each of the 4 zones at the rate of one experiment per village. (iii) to (v) N.A.

2. DESIGN:
   (i) and (ii): The district has been divided into four agronomically homogeneous zones and one field assistant posted in each zone. The field assistant conducts the trials in one revenue circle per year and oilseed crop and 3 on a leguminous crop. Half the number of trials conducted are of type A and the other half 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, 4 on each 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 phosphates 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 selected fields in randomly selected villages in each of the 4 zones at the rate of one experiment per village. (iii) to (v) N.A.

3. GENERAL:
   (i) to (iii) N.A. (iv) 1960 only.

4. GENERAL:
   (i) to (iii) N.A. (iv) 1960 only.

   Ref: Or. 60(SFR).

   Type: "M".
Crop: Wheat (Rabi).
Site: As per results.

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:

\[
\begin{array}{|c|c|c|c|c|c|c|c|c|c|}
\hline
\text{District} & \text{Soil class} & \text{No. of trials} & \text{Control} & n_1 & n_3 & n_4 & n_5 & n_6 & n_7 \text{ G.M.} & \text{S.E./Mean} \\
\hline
\text{Balasore} & \text{Saline} & 3 & 930 & 940 & 1260 & 1140 & 1400 & - & - & 1150 & 1520 & 1191 & 48.1 \\
\text{Bolangir} & \text{Red} & 3 & 670 & 1240 & 1250 & 1040 & 1470 & - & - & 1340 & 1440 & 1213 & 50.9 \\
\text{Mayurbhanj} & \text{Red} & 4 & 470 & 780 & 1500 & - & - & 640 & 1370 & 900 & 1670 & 1047 & 91.9 \\
\text{Sambalpur} & \text{Red and black} & 2 & 450 & - & - & 510 & 600 & 730 & 750 & 640 & 650 & 612 & 101.8 \\
\hline
\end{array}
\]

Crop: Wheat. (Rabi).

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 P_2O_5+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: D_1=21.10.60, D_2=21.11.60, D_3=21.11.60, D_4=4.12.60, D_5=21.12.60 and D_6=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. x 4.6 m. (v) N.A. (vi) Y es.

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.
Crop: Wheat, (Rabi).
Site: M.A.E. Centre, Barpali.
Type: CM.

Object: To study the effect of cultural practices 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 harrowings.
(b) Line sowing. (c) As per treatments. (d) 23 cm. between rows. (c) (v) 5600 Kg/ha. of F.Y.M.
(vi) NP.-18. (vii) Irrigated for 60 and 61. Unirrigated for 62. (viii) Nil (ix) N.A. 43 cm. , N.A. (x) N A., 63 cm., 21.3.64

2. TREATMENTS:
(a) 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.

(b) 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.
(1) 3 levels of Ca 9. D1 20.11.60, D2 5.12.60 and D3 20.12.60.

3. DESIGN:
(a) Split-plot. (b) N/A. (c) 9 sub-plots/main-plot. (b) N/A. (c) 2. (b) and (a) N.A.

4. GENERAL:

5. RESULTS:
1960
(a) 243 Kg/ha. (b) 166.9 Kg/ha. (c) 149.4 Kg/ha. (d) Main effect of P alone is significant. (iv) Av. yield of grain in Kg/ha.

<table>
<thead>
<tr>
<th></th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
<th>N0</th>
<th>N1</th>
<th>N2</th>
<th>P0</th>
<th>P1</th>
<th>P2</th>
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<td>249</td>
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<tr>
<td>D2</td>
<td>203</td>
<td>205</td>
<td>229</td>
<td>194</td>
<td>295</td>
<td>294</td>
<td>261</td>
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<tr>
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<td>228</td>
<td>224</td>
<td>197</td>
<td>286</td>
<td>245</td>
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<td>243</td>
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</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th></th>
<th>S₁</th>
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<th>S₃</th>
<th>N₁</th>
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<td>591</td>
<td>446</td>
<td>624</td>
<td>710</td>
<td>498</td>
<td>621</td>
<td>661</td>
<td>593</td>
</tr>
</tbody>
</table>

C.D. for N or P marginal means = 96 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.

<table>
<thead>
<tr>
<th></th>
<th>S₁</th>
<th>S₂</th>
<th>S₃</th>
<th>D₁</th>
<th>D₂</th>
<th>D₃</th>
<th>N₁</th>
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<td>P₂</td>
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<td>699</td>
<td>957</td>
<td>257</td>
<td>480</td>
<td>537</td>
<td>896</td>
<td>438</td>
</tr>
</tbody>
</table>

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 body of SxD table = 263.1 Kg/ha.
C.D. for body of SxP table = 223.0 Kg/ha.
Crop: Wheat (Rabi).


Ref: Or. 60(41).

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) to (c) Nil. (ii) Sand loam. (iii) 20.11.60 and 21.12.60. (iv) Ploughing followed by hand levelling and breaking of clods. (b) Line sowing. (c) 112 Kga. (d) 23 cm x 23 cm. (e) N.A. (f) N.P. 718 (medium). (g) Irrigated. (h) Nil. (i) 13 cm. (x) 26, 27, 3, 61.

2. TREATMENTS:

Main-plot treatments:

All combinations of (1) and (2)

(i) 3 intensities of irrigation: \( I_1 = 7.1 \), \( I_2 = 10.1 \) and \( I_3 = 13.1 \) em. deep.

Sub-plot treatments:

All combinations of (1) and (2)

(i) 3 levels of N as A/S: \( N_0 = 0 \), \( N_1 = 33.6 \) and \( N_2 = 67.2 \) Kg/ha.

(ii) 3 levels of \( P_0 \) as Super: \( P_1 = 0 \), \( P_2 = 33.6 \) and \( P_3 = 67.2 \) Kg/ha.

P.O. was applied at the time of sowing on 19.11.1960.

3. DESIGN:

(i) Split-plot. (ii) 9 main-plots/replication, 9 sub-plots/main-plot. (iii) N.A. (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) N.A. (iv) 1960 only. (b) No. (c) Nil. (v) and (vi) Nil. (vii) The exp. was analysed as R.B.D. as all the main-plots treatments have been vitiated and therefore taken as replications.

5. RESULTS:

(i) 31 Kg/ha. (ii) 161.8 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

<table>
<thead>
<tr>
<th>( P_0 )</th>
<th>( P_1 )</th>
<th>( P_2 )</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>( N_0 )</td>
<td>260</td>
<td>366</td>
<td>335</td>
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<tr>
<td>( N_1 )</td>
<td>333</td>
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</tr>
<tr>
<td>( N_2 )</td>
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<tr>
<td>Mean</td>
<td>323</td>
<td>332</td>
<td>296</td>
</tr>
</tbody>
</table>

Crop: Wheat (Rabi).

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

Ref: Gr. 60(MAE).

Type: 'IM'.

Object 1: 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) 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: \( F_0 = 4 \), \( F_1 = 5 \) and \( F_2 = 6 \) 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 \( P_0 \) as Super: \( P_0 = 0 \), \( P_1 = 33.6 \) and \( P_2 = 67.2 \) Kg/ha.
3. DESIGN:
(i) 3^4 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.

<table>
<thead>
<tr>
<th></th>
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<th>I_2</th>
<th>I_3</th>
<th>N_1</th>
<th>N_2</th>
<th>N_3</th>
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<td>781</td>
</tr>
<tr>
<td>F_2</td>
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<td>544</td>
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<td>784</td>
<td>590</td>
<td>636</td>
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<td>670</td>
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<td>775</td>
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<td>660</td>
<td>861</td>
<td>742</td>
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</tbody>
</table>

C.D. for N marginal means = 216.0 Kg/ha.

Crop: - Maize. (Rabi).
Ref: - Or. 61(23), 62(8).
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 furrows. (c) N.A. (d) 30 cm x 15 cm. for 61(23), 68 cm. x 23 cm. for 62(8). (e) Nil. (vi) 483 Kg/ha. of P, Y, M, + 44.8 Kg/ha. of P_2O_5 and 44.8 Kg/ha. of K_2O applied in furrows at the time of sowing. (vi) Kanduguuda (local). (vii) Unirrigated. (viii) Hoeing and earthing up for 61(23), weeding for 62(8). (vii) 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 : S_1 = A/S and S_2 = C/A/N.
(2) 2 levels of N : N_1 = 44.8 and N_2 = 67.2 Kg/ha.
(3) 2 times of application : T_1 = Full dose at sowing furrows and T_2 = ½ at planting furrows + ½ at earthing up.

3 DESIGN:
(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) 5 g 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 x 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 x years interaction). (iii) Main effect of T alone is significant. (iv) Av. yield of grain in Kg/ha.

<table>
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<th></th>
<th>N1</th>
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<th>T1</th>
<th>T2</th>
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C.D for T marginal means = 344.4 Kg/ha.

Crop :- Maize (Kharif).
Site :- State Agri. Res. Sta., Baubanewar.
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) 4 to 5 ploughings. (b) Hand dibbling in line. (c) 15 Kg/ha. (d) 61 cm × 30 cm. (e) Nil. (v) 12554 Kg/ha. of F.Y M.+ 146.3 Kg/ha. K4 of P2O5 + 148.3 Kg/ha. of K2O (ii) Ganga Hyb. 101. (vi) Irrigated. (vii) One hoeing, weeding and earthing up. (ix) 89.2 cm. (x) 10.10.65.

2. TREATMENTS:
7 sources of N at 60 Kg/ha. : S1-Control (No N), S2-A/S, S3-A/C, S4-Phosphate, S5-Urea, S6-Nitro phosphate.
Ca:N applied in two splits ½ as basal and ½ one month after.

3. DESIGN:
(i) R.B.D. (ii) 7. (b) N.A. (iii) 3. (iv) (a) 6.4 m × 6.6 m. (b) 5.8 m. × 3.4 m. (v) 30 cm. × 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) 1 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>S0</th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
<th>S4</th>
<th>S5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>2359</td>
<td>4649</td>
<td>4149</td>
<td>3150</td>
<td>4578</td>
<td>3310</td>
</tr>
<tr>
<td>C.D=1232.6 Kg/ha.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Crop :- Maize (Kharif).
Site :- State Agri. Res. Sta., Bhubaneswar.
Object :- To study the manurial requirements for Maize.

Crop :- Maize (Kharif).
Site :- State Agri. Res. Sta., Bhubaneswar.
Object :- To study the manurial requirements for Maize.

Ref :- Or. 65(21).
Type :- 'M'.

Ref :- Or. 62(16).
Type :- 'M'.
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 x 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: N1 = 44.8, N2 = 89.7, N3 = 134.5 and N4 = 179.4 Kgf/ha.
   Sub-plot treatments:
   All combinations of (1) and (2)
   (1) 3 levels of P2O5 as Super: P2 = 0, P1 = 44.8 and P0 = 89.7 Kgf/ha.
   (2) 3 levels of K2O as KCI: K2 = 0, K1 = 56.0 and K0 = 112.1 Kgf/ha.

3. DESIGN:
   (i) Split-plot. (ii) (a) 4 main-plots/replication, 9 sub-plots/main-plot. (iii) 4. (iv) (a) 6.7 m x 5.5 m. (b) 6.1 cm x 5.2 cm. (v) 30 cm x 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 Kgf/ha. (ii) (a) 675 Kgf/ha. (b) 427 Kgf/ha. (iii) Main effect of N is significant. Main effects of P, K and interactions N x P, P x K and N x P x K are highly significant. (iv) Av. yield of grain in Kgf/ha.
2. TREATMENTS:
8 manurial treatments:
0 = Control (no manure)
N1 = 60 Kg/ha of N
P1 = 35 Kg/ha of P2O5
N1P1 = 60 Kg/ha of N + 35 Kg/ha of P2O5
N2P1 = 60 Kg/ha of N + 70 Kg/ha of P2O5
N2P2 = 120 Kg/ha of N + 70 Kg/ha of P2O5
N2P3K2 = 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:
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 and 3 are of type C. The eleven experiments under type A1, A2 and A4 are distributed as 3 on a Kharif cereal, 3 on a cash crop and 2 on oil seeds. 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) 1964 and 1965. (b) N.A (c) N/A. (v) to (vii) N/A.

5. RESULTS:
64 (S.F.T.) (Kharif)
Treatment N1 N1 P1 N1P1 N1P2 N1P3 N1P3K2 S.E.
Av. response of grain in Kg/ha. 689 1105 367 666 1219 375 190
Control yield 923 Kg/ha., No. of trials 1.

65 (S.F.T.)(Kharif)
Treatment N1 N1 P N1P1 N1P2 N1P3 N1P3K2 S.E.
Av. yield of grain in Kg/ha. 260 425 55 155 345 375 455 912
Control yield 445 Kg/ha., No. of trials 2.

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 oleoed crops to phosphorus applied singly and in combination with other nutrients (Type: A).

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
P1 = 35 Kg/ha of P2O5
N1P1 = 60 Kg/ha of N + 35 Kg/ha of P2O5
N2P1 = 60 Kg/ha of N + 70 Kg/ha of P2O5
N2P2 = 120 Kg/ha of N + 70 Kg/ha of P2O5
N2P3K2 = 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 (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.)**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N₁</th>
<th>P₁</th>
<th>P₂</th>
<th>N₁P₁</th>
<th>N₁P₂</th>
<th>N₂P₂</th>
<th>N₁P₁K₁</th>
<th>Av. response of grain in Kg/ha.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>85</td>
<td>460</td>
<td>229</td>
<td>460</td>
<td>689</td>
<td>952</td>
<td>644</td>
<td>666</td>
</tr>
</tbody>
</table>

S.E. = - , Control yield = 1199 Kg/ha., No. of trials = 1.

**65(S.F.T.)**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N₁</th>
<th>P₁</th>
<th>P₂</th>
<th>N₁P₁</th>
<th>N₁P₂</th>
<th>N₂P₂</th>
<th>N₁P₁K₁</th>
<th>Av. response of grain in Kg/ha.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>220</td>
<td>—56</td>
<td>33</td>
<td>80</td>
<td>216</td>
<td>533</td>
<td>573</td>
<td>933</td>
</tr>
</tbody>
</table>

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 : A₁).

1. BASAL CONDITIONS:

(i) N.A.  (ii) Red loamy.  (iii) to (vi) N.A.  (vii) Irrigated.  (viii) to (x) N.A.

2. TREATMENTS:

8 manural treatments :

0 = Control (no manure).

N₁ = 60 Kg/ha. of N.

K₁ = 35 Kg/ha. of K₂O.

K₂ = 70 Kg/ha. of K₂O.

N₁K₁ = 60 Kg/ha. of N + 35 Kg/ha. of K₂O.

N₁K₂ = 60 Kg/ha. of N + 70 Kg/ha. of K₂O.

N₁K₄ = 20 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 A₃/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.)**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N₁</th>
<th>K₁</th>
<th>K₂</th>
<th>N₁K₁</th>
<th>N₁K₂</th>
<th>N₂K₂</th>
<th>N₁P₁K₁</th>
<th>Av. response of grain in Kg/ha.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>666</td>
<td>644</td>
<td>596</td>
<td>725</td>
<td>737</td>
<td>921</td>
<td>1429</td>
<td>923</td>
</tr>
</tbody>
</table>

Control yield = 923 Kg/ha., No. of trials = 1.
Crop : Maize (Kharif).

Object : To determine the frequency and intensity of irrigation with different doses of N, P and K for Maize crop.

Ref : Or. 64(15).
Type : ‘IM’.

———

165 (S.F.T.)

Treatment : N_1 \quad K_1 \quad K_1 \quad N_1K_1 \quad N_1K_1 \quad N_1P_1K_1 \quad S.E.

Av. response of grain in Kg/ha. : 383 - 33 146 300 353 566 520 137.0

Control yield = 899 Kg/ha., No. of trials = 3.

———

Crop : Maize (Kharif).

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) Sows he in cm. (iii) 25.7.63. (iv) (a) 6 ploughings followed by ladderings. (b) Line sowing by dibbling. (c) 35.5 Kg/ha. (d) 61 cm x 30 cm. (e) —. (f) 25 C.L./ha. of F.Y.M. and 89.7 Kg/ha. of P_2O_5. (vi) As per treatments. (vii) Unirrigated. (ix) Hoeing weeding and earthing up. (ix) 75 cm. (x) Last week of Sept. ; 63.

2. TREATMENTS :

   Main-plot treatments
   3 levels of N : N_1 = 89.7, N_2 = 112.1 and N_3 = 134.5 Kg/ha.

Sub-plot treatments
9 varieties : V_1 = V.L. - 54, V_2 = O.P.1, hybrid, V_3 = Rajjai, V_4 = L.2/14 = 141, V_5 = Ganga 101, V_6 = Hybrid II, V_7 = Ganga-L, V_8 = Kanjappala and V_9 = Ganga II.

N as A/S applied in 2 equal doses, 1 after 3 weeks of sowing and 1 at flowering ; after 15 days of the 1st application.

3. DESIGN :
   (i) Split-plot. (ii) (a) 3 m \times 0.3 m. (b) 3 m \times 0.6 m. (c) 3 m \times 1.8 m. (d) 30 cm \times 61 cm. (e) —.

4. GENERAL :
   (i) Normal. (ii) Nil. (iii) Plant height, ear-height, no. of Cob, no. of leaves, length of the tassel, Cob length Cob girth. (iv) (a) 19.13 cm. (b) Nil. (c) Nil. (v) 13.11 m. (vi) 15 days of the 1st application.

5. RESULTS :

   (i) 2568 Kg/ha. (ii) (a) 3032.0 Kg/ha. (b) 3350.0 Kg/ha. (iii) N_1 + N_2 + N_3 is significant. (iv) Av. yield of grain in Kg/ha.

<table>
<thead>
<tr>
<th></th>
<th>V_1</th>
<th>V_2</th>
<th>V_3</th>
<th>V_4</th>
<th>V_5</th>
<th>V_6</th>
<th>V_7</th>
<th>V_8</th>
<th>Mean</th>
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<tbody>
<tr>
<td>N_1</td>
<td>2506</td>
<td>2960</td>
<td>2248</td>
<td>2607</td>
<td>2392</td>
<td>1734</td>
<td>1064</td>
<td>1692</td>
<td>2691</td>
</tr>
<tr>
<td>N_2</td>
<td>2189</td>
<td>3761</td>
<td>4168</td>
<td>2601</td>
<td>3151</td>
<td>2111</td>
<td>1154</td>
<td>1728</td>
<td>2105</td>
</tr>
<tr>
<td>N_3</td>
<td>3014</td>
<td>4652</td>
<td>2727</td>
<td>2781</td>
<td>2410</td>
<td>2912</td>
<td>2120</td>
<td>1662</td>
<td>3989</td>
</tr>
</tbody>
</table>

Mean : 2570 3791 3048 2663 2651 2232 1913 1694 2238 2568
1. BASAL CONDITIONS:

(i) (a) Nil. (b) Cowpea. (c) 22.4 Kg/ha. of P2O5 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 x 30 cm. (e) N.A. (v) Nil. (vi) Hybrid Ganga 101. (vii) Irrigated. (viii) Hoeing by wheel hoe and earthing up. (ix) 2 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 P2O5 + 78.5 Kg/ha. of K2O, \( M_2 = 134.4 \) Kg/ha. of N+89.7 Kg/ha. of P2O5 + 112.1 Kg/ha. of K2O and \( M_3 = 179.3 \) Kg/ha. of N+112.1 Kg/ha. of P2O5 + 145.7 Kg/ha. of K2O.

3. DESIGN:
(i) Split-plot. (ii) (a) 6 main-plots/replication; 3 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) 67 m. x 3.4 m. (b) 5.5 m. x 2.7 m. (v) 61 cm. x 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.

<table>
<thead>
<tr>
<th></th>
<th>( M_1 )</th>
<th>( M_2 )</th>
<th>( M_3 )</th>
<th>( I_1 )</th>
<th>( I_2 )</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>( F_1 )</td>
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<td>3943</td>
<td>3754</td>
<td>3388</td>
<td>4238</td>
<td>3913</td>
</tr>
<tr>
<td>( F_2 )</td>
<td>3468</td>
<td>3577</td>
<td>3821</td>
<td>3545</td>
<td>3699</td>
<td>3622</td>
</tr>
<tr>
<td>( F_3 )</td>
<td>4375</td>
<td>3810</td>
<td>3633</td>
<td>3766</td>
<td>4113</td>
<td>3939</td>
</tr>
<tr>
<td>Mean</td>
<td>3962</td>
<td>3777</td>
<td>3736</td>
<td>3633</td>
<td>4017</td>
<td>3825</td>
</tr>
<tr>
<td>( I_1 )</td>
<td>3958</td>
<td>3574</td>
<td>3367</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>( I_2 )</td>
<td>3966</td>
<td>3980</td>
<td>4105</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Crop :- Maize (Rabi).
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 x 30 cm. (e) 2. (f) 25 C.L./ha. of F.Y.M. + 112.1 Kg/ha. of N as A/S+89.7 Kg/ha. of P2O5 as Super. (vi) Kenduguda (local). (vii) Irrigated. (viii) As per treatments. (ix) 12 cm. (x) 9.4.65.

2. TREATMENTS:
6 weedidal 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. \( W_4 = W_5 + \) one earthing and \( W_6 = \) 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. x 5·5 m. (b) 4·0 m. x 4·3 m. (x) 30 cm. x 61 cm.
(v) Yes.

4. GENERAL:
(i) Normal. (ii) In early s.tage, there was attack of leaf-eating caterpillar, 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.

Ref: - Or. 62(14), 63(38), 64(26).
Site: - State Agri. Res. Sta., Bhubaneswar. Type: - 'D'.
Object :- To study the effect of weeds in controlling of weeds in Maize cropl.

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. x 15 cm. for 62 (14); 61 em. x 30 cm. for others. (e) -.
(f) 2329 Kg/ha. of F.Y.M. (g) 22·4 Kg/ha. of P 2 O 5 as Super+67·2 Kg/ha. of K 2 O as Mur. Pot. for 62 (14); 44·1 Kg/ha. of N as A/S+1152 Kg/ha. of F.Y.M.+67·2 Kg/ha. of Mur. Pot. for 63 (38). (vii) Kendruguda local (medium). (viii) As per treatments. (ix) 75 em., 108 em., 131 em.

2. TREATMENTS:
12 weedseed treatments:
W 0 =No weeding (Control), W 1 =Local practice, W 2 =1·7 Kg/ha. of M.C.P.A. 3 days before sowing, W 3 =1·1 Kg/ha. of M.C.P.A. 3 weeks after sowing, W 4 =W 3 +W 5 , W 5 =1·7 Kg/ha. of M.C.P.A. 3 days before sowing; W 6 =1·1 Kg/ha. of M.C.P.A. 3 weeks after sowing; W 7 =0·6 Kg/ha. of 2, 4-D 3 days before sowing, W 8 =1·1 Kg/ha. of 2, 4-D 3 weeks after sowing; W 9 =W 7 +W 8 , W 10 =0·6 Kg/ha. of 2, 4-D 3 days before sowing; 1 hand weeding and W 11 =1·1 Kg/ha. of 2, 4-D 3 weeks after sowing at 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. x 4·6 m. for others. (b) 1/476·8 Kg/ha. for 64 (26); 6·4 m. x 4·3 m. for others. (v) N.A. for 64 (26); 30 cm. x 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) 294·0 Kg/ha. (22 d.f. made up of Treatments x years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Crop :- Maize (Kharij).
Site :- State Agri. Res. Sta., Bhubaneswar. Type :- 'D'.

Object :- To study the effect of weedicides in controlling of weeds in Maize crop.
Crop :- Paddy (Kharif).
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) Hard-Dibbling in lines. (c) 15 Kg/ha. (d) 61 cm. x 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_{2}O_{5} and 57.2 Kg/ha. of K_{2}O. (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. x 4.0 m. (b) 8.8 m. x 3.4 m. (v) 61 cm. x 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.

<table>
<thead>
<tr>
<th></th>
<th>T_{1}</th>
<th>T_{2}</th>
<th>T_{3}</th>
<th>C_{0}</th>
<th>C_{1}</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>W_{1}</td>
<td>3170</td>
<td>2652</td>
<td>3002</td>
<td>2398</td>
<td>3485</td>
<td>2941</td>
</tr>
<tr>
<td>W_{2}</td>
<td>2619</td>
<td>2547</td>
<td>2653</td>
<td>2114</td>
<td>3099</td>
<td>2606</td>
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<tr>
<td>Mean</td>
<td>2894</td>
<td>2599</td>
<td>2828</td>
<td>2256</td>
<td>3292</td>
<td>2774</td>
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<tr>
<td>C_{0}</td>
<td>2451</td>
<td>1956</td>
<td>2562</td>
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<td></td>
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<tr>
<td>C_{1}</td>
<td>3339</td>
<td>3243</td>
<td>3293</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C.D. for W or C marginal means=232.9 Kg/ha.

---

Crop :- Paddy (Kharif).
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 1.3.1962; 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. x 15 cm. (e) 1. (v) Nil. (vi) AR=256-1-2(lat). (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 Ca(NO₃)₂: N₁ = 33·6, N₂ = 67·2 and N₃ = 100·9 Kg/ha.
(2) 3 levels of P₂O₅ as Super: P₁ = 0, P₂ = 22·4 and P₃ = 44·8 Kg/ha.
(3) 3 levels of K₂O as Muri. Pot.: K₁ = 0, K₂ = 33·6 and K₃ = 67·2 Kg/ha.

N was applied at-planting and one month after P and K were applied at planting.

3. DESIGN:

(i) 3 conf. (NP'K and NPK were confd.) (ii) 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. (c) 46 cm. × 30 cm. (d) 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) 424·4 Kg/ha. (18 d.f. made up of various components of Treatments × years interaction). (i) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.

<table>
<thead>
<tr>
<th></th>
<th>P₁</th>
<th>P₂</th>
<th>P₃</th>
<th>K₁</th>
<th>K₂</th>
<th>K₃</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>N₁</td>
<td>1740</td>
<td>1820</td>
<td>1780</td>
<td>1736</td>
<td>1807</td>
<td>1783</td>
<td></td>
</tr>
<tr>
<td>N₂</td>
<td>2320</td>
<td>2262</td>
<td>2240</td>
<td>2176</td>
<td>2240</td>
<td>2245</td>
<td>2274</td>
</tr>
<tr>
<td>N₃</td>
<td>2495</td>
<td>2449</td>
<td>2562</td>
<td>2436</td>
<td>2497</td>
<td>2573</td>
<td>2582</td>
</tr>
<tr>
<td>Mean</td>
<td>2185</td>
<td>2177</td>
<td>2197</td>
<td>2116</td>
<td>2235</td>
<td>2208</td>
<td>2186</td>
</tr>
<tr>
<td>K₁</td>
<td>2059</td>
<td>2027</td>
<td>2262</td>
<td>2059</td>
<td>2262</td>
<td>2246</td>
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<tr>
<td>K₂</td>
<td>2213</td>
<td>2346</td>
<td>2146</td>
<td>2213</td>
<td>2346</td>
<td>2146</td>
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</tr>
<tr>
<td>K₃</td>
<td>2253</td>
<td>2158</td>
<td>2183</td>
<td>2253</td>
<td>2158</td>
<td>2183</td>
<td></td>
</tr>
</tbody>
</table>

C.D. for N marginal means = 29·72 Kg/ha.

Crop :- Ragi (Kharif).
Site :- (District) : Cuttack.

Ref :- Or. 63, 65(S.F.T.).
Type :- 'M'.

Object :-Type A₁ : 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) 1 x 3 of N.A. (b) Red loamy. (c) to (vi) N.A. (vi) Unirrigated. (vii) to (x) N.A.

2. TREATMENTS:

8 factorial 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,
N₁P₂ = 70 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.
N applied as A.S. P₂O₅ as super and K₂O as Muri. 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.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>N2</th>
<th>P1</th>
<th>N1P1</th>
<th>N2P1</th>
<th>N3P1</th>
<th>N3P3K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>664</td>
<td>766</td>
<td>662</td>
<td>689</td>
<td>1041</td>
<td>1055</td>
<td>1138</td>
<td>—</td>
</tr>
</tbody>
</table>

Control yield = 1282 Kg/ha.; No. of trials = 1

65(S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>N2</th>
<th>P1</th>
<th>N1P1</th>
<th>N2P1</th>
<th>N3P1</th>
<th>N2P2</th>
<th>N2P2K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>1013</td>
<td>3386</td>
<td>—13</td>
<td>1326</td>
<td>2466</td>
<td>2653</td>
<td>3206</td>
<td>1569</td>
<td></td>
</tr>
</tbody>
</table>

Control yield = 1493 Kg/ha.; No. of trials = 3.

Crop: Ragi (Rabi)
Site: (District) Ganjam
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 manurial treatments
O = Control (no manure).
N1 = 35 Kg/ha. of N.
P1 = 50 Kg/ha. of P2O5.
P2 = 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 Muri. 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:

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>P2</th>
<th>P1</th>
<th>N1P1</th>
<th>N2P1</th>
<th>N3P1</th>
<th>N3P3K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>816</td>
<td>—6</td>
<td>383</td>
<td>1296</td>
<td>2996</td>
<td>2219</td>
<td>3336</td>
<td>1682</td>
</tr>
</tbody>
</table>
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: A4).

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 mineral treatments:
   - Control (no manure).
   - N1 = 35 Kg/ha. of N.
   - P2 = 35 Kg/ha. of P2O5.
   - K1 = 70 Kg/ha. of K2O.
   - N1P2 = 35 Kg/ha. of N + 35 Kg/ha. of P2O5.
   - N1P1 = 35 Kg/ha. of N + 70 Kg/ha. of P2O5.
   - N2P2 = 70 Kg/ha. of N + 70 Kg/ha. of P2O5.
   - N4P2K1 = 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 A4 (unirrigated) on page 180.

4. GENERAL:
   (i) to (iii) N.A.  (iv) to (vii) N.A.  (viii) to (ix) N.A.

5. RESULTS:
   Treatment: Average response of grain in Kg/ha.
   N1  P2  P1  N1P1  N1P2  N1P2K1  S.E.
   691  217  405  484  840  976  1037

Control yield = 1433 Kg/ha.; No. of trails = 1.

Crop: Ragi.
Site: (District) Ganjam.  Ref: Or. 65(SFT).
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: A5).

1. BASAL CONDITIONS:
   (i) N.A.  (ii) Red loamy.  (iii) to (vi) N.A.  (vii) Irrigated.  (viii) to (x) N.A.

2. TREATMENTS:
   8 mineral treatments:
   - Control (no manure).
   - N1 = 35 Kg/ha. of N.
   - K1 = 70 Kg/ha. of K2O.
   - N1K1 = 35 Kg/ha. of N + 70 Kg/ha. of K2O.
   - N2K1 = 70 Kg/ha. of N + 70 Kg/ha. of K2O.
   - N1P2K1 = 35 Kg/ha. of N + 35 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 A5 (unirrigated) on page 180.

4. GENERAL:
   (i) to (iii) N.A.  (iv) 1965 to 1966.  (v) N.A.  (vi) Nil.  (vii) to (ix) N.A.
5. RESULTS:

<table>
<thead>
<tr>
<th>Treatment</th>
<th>$N_1$</th>
<th>$K_1$</th>
<th>$K_2$</th>
<th>$N_1K_1$</th>
<th>$N_1K_2$</th>
<th>$N_2K_2$</th>
<th>$N_1P_1K_1$</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>830</td>
<td>-73</td>
<td>590</td>
<td>1313</td>
<td>900</td>
<td>1146</td>
<td>1666</td>
<td>1724</td>
</tr>
</tbody>
</table>

Control yield = 1216 Kg/ha.; No. of trials = 3.

**Crop:** Ragi.  
**Site:** (District) Cuttack.

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) N.A. (ii) Red loamy. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS:

8 manurial treatments:

- Control (no manure).
- $N_1 = 35$ Kg/ha. of $N_1$.
- $K_1 = 35$ Kg/ha. of $K_2O$.
- $K_2 = 70$ Kg/ha. of $K_2O$.
- $N_1K_1 = 35$ Kg/ha. of $N+35$ Kg/ha. of $K_2O$.
- $N_1K_2 = 70$ Kg/ha. of $N+70$ Kg/ha. of $K_2O$.
- $N_2K_2 = 70$ Kg/ha. of $N+70$ Kg/ha. of $K_2O$.
- $N_1P_1K_1 = 35$ Kg/ha. of $N+35$ Kg/ha. of $P_2O_5+35$ Kg/ha. of $K_2O$.
- $N$ applied as A/S, $P_2O_5$ as Super and $K_2O$ 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:

<table>
<thead>
<tr>
<th>Treatment</th>
<th>$N_1$</th>
<th>$K_1$</th>
<th>$K_2$</th>
<th>$N_1K_1$</th>
<th>$N_1K_2$</th>
<th>$N_2K_2$</th>
<th>$N_1P_1K_1$</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>444</td>
<td>148</td>
<td>247</td>
<td>642</td>
<td>593</td>
<td>1235</td>
<td>648</td>
<td>—</td>
</tr>
</tbody>
</table>

Control yield = 889; No. of trials = 1.

---

**Crop:** Ragi.  
**Site:** (District) Bolangir and Ganjam.

Object: To study the response of Ragi to different levels of $N$, $P_2O_5$ and $K_2O$ applied individually and in combination (Type: A).

1. BASAL CONDITIONS:

(i) N.A. (ii) Red soil. (iii) to (x) N.A.

2. TREATMENTS:

- 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. of $K_2O$ as Mur. Pot.
3. DESIGN:
Same as in type A1 (irrigated) on page 180.

4. GENERAL:
(i) to (iv) N.A. (iv) to 1960 only (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS:

Av. response in kg ha

<table>
<thead>
<tr>
<th>District</th>
<th>No. of trials</th>
<th>Control yield</th>
<th>N</th>
<th>P</th>
<th>K</th>
<th>S.E.</th>
<th>NP</th>
<th>NPK</th>
<th>PK</th>
<th>NPK</th>
<th>SE.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolangir</td>
<td>2</td>
<td>290</td>
<td>280</td>
<td>210</td>
<td>160</td>
<td>300</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Ganjam</td>
<td>3</td>
<td>300</td>
<td>0</td>
<td>140</td>
<td>-120</td>
<td>140</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Crop: Ragi (khanf).
Ref: Or. 62(23).
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) Ragi. (c) 115.4 Kg/ha. of N as A.S. and 89.7 Kg ha. of P.O. (d) Sandy loam. (ii) 15.65:13.65:66. (iv) (a) 6 ploughings followed by laddering. (b) Transplanting. (c) 9 Kg ha. (d) 30 cm. x 15 cm. (e) N.A. (v) 12 C.L. ha. of F.Y.M. - 44.8 Kg/ha. of P.O. (vi) As per treatments (site). (vii) Irrigated. (viii) hoeing and weeding. (a) 10.5 cm. (b) Last week of Sept., 62.

2. TREATMENTS:
Main-plot treatments:
3 levels of N: $N_1 = 22.4$, $N_2 = 44.8$ and $N_3 = 89.7$ Kg/ha.

Sub-plot treatments:
7 varieties: $V_1$, $V_2$, $V_3$, $V_4$, $V_5$, $V_6$, $V_7$. 

N as A.S. 1/2 as basal and remaining as top dressing 2 months after planting put 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 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) Nil. (iii) Yield of grain. (iv) (a) 1962 on. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS:
(i) 1610 Kg/ha. (ii) 2500 Kg/ha. (b) 1208 Kg/ha. (d) Main effects of N and V are highly significant. (iv) Av. yield of grain in Kg/ha.

<table>
<thead>
<tr>
<th>$V_1$</th>
<th>$V_2$</th>
<th>$V_3$</th>
<th>$V_4$</th>
<th>$V_5$</th>
<th>$V_6$</th>
<th>$V_7$</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>N 1</td>
<td>140</td>
<td>1590</td>
<td>917</td>
<td>1419</td>
<td>746</td>
<td>106</td>
<td>860</td>
</tr>
<tr>
<td>N 2</td>
<td>2014</td>
<td>1847</td>
<td>1223</td>
<td>200</td>
<td>866</td>
<td>106</td>
<td>1280</td>
</tr>
<tr>
<td>N 3</td>
<td>4493</td>
<td>1686</td>
<td>1447</td>
<td>2210</td>
<td>105</td>
<td>176</td>
<td>146</td>
</tr>
</tbody>
</table>

Mean: 2656, 2774, 1996, 1710, 836, 148, 1212, 346

C.D. for N marginal means= 600.2 Kg/ha.
C.D. for V marginal means = 989.6 Kg/ha.
Crop - Ragi (Rabi).


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) 4.10.62/31.10.62. (iv) (a) 6 ploughings followed by laddering. (b) Transplanting. (c) 9 Kg/ha. (d) 30 cm. x 15 cm. (e) N.A. (v) 12 C.L./ha. of F.Y.M.+44.8 Kg/ha. of P₂O₅. (vi) As per treatment (late). (vii) Irrigated. (viii) Hoeing and weeding. (ix) 28.5 cm. (x) Last week of Jan., 1963.

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.

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<th>V₂</th>
<th>V₃</th>
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C.D. for N marginal means = 230.2 Kg/ha.
C.D. for V marginal means = 309.7 Kg/ha.
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. (v) Main-plot and sub-plot error variances are homogeneous and treatments x years interaction are present in both.

5. RESULTS:
(i) 2075 Kg/ha (ii) (a) 703.8 Kg/ha. (b) 413.9 Kg/ha. (15 d.f. made up of various components of Treatment x years interaction). (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in Kg/ha.

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C.D. of V marginal means 51.7 Kg/ha.

Crop: Ragi (Rabi).
Ref: Or. 62(28), 63(10).
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) 13.5 Kg/ha. of N as A'S 33.7 Kg/ha. of P2O5. (ii) Sandy loam.
(ii) 4.10.62/30.10.62/22.10.63/22.10.63. (iv) (a) 6 ploughings followed by laddering. (b) Transplanting. (c) 9 Kg/ha. (d) 23 cm. x 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) 25 cm., 35 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 = 67.7 Kg/ha.
Sub-plot treatments:

3. DESIGN:
(i) Split-plot. (ii) (a) 3 main-plots; replication. (b) 5 sub-plots/main-plot. (b) N.A. (ii) 4. (iv) (a) 3 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 (28). Ex: 0.01% w. sprays to control stem borers in 63 (10). (iii) Grain yield. (iv) (a) 1962-1963. (b) Yes. (c) No. (d) N.A. (e) Nil. (f) Error variances for sub-plot treatments are heterogeneous.

5. RESULTS:
62/2(8)
(i) 408.2 Kg/ha. (ii) (a) 282.0 Kg/ha. (b) 465.9 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.
Crop : Ragi (Kharif).


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. X 15 cm. (e) Nil. (v) 12 C.I./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. X 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=F. 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. 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) 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.
Crop: Ragi (Khary).


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

1. BASAL CONDITIONS:

(i) Ragi-Maize for 62(27), Ragi-Maize-Ragi for 63(11).
(ii) Maize, (c) 134.5 Kg/ha of N as A.S + 89.7 Kg/ha of P₂O₅.
(iii) Sandy loam.
(v) 6 ploughing followed by laddering.
(vi) Transplanting.
(vii) Nil.
(viii) 30 cm x 15 cm.
(ix) 9 kg/ha.
(x) 3-7 m x 2-4 m.

2. TREATMENTS:

Main-plot treatments:
3 levels of N: N₁ = 22.4, N₂ = 44.8 and N₃ = 89.7 Kg/ha.

Sub-plot treatments:

3. DESIGN:

(i) Split-plot. (ii) 3 main-plots/replication, 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) 3-7 m x 2-4 m. (b) 3-4 m x 1-9 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) 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.

<table>
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<tr>
<th></th>
<th>V₁</th>
<th>V₂</th>
<th>V₃</th>
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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.

<table>
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<tr>
<th></th>
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</table>

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).
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 ladderings. (b) Transplanting. (c) 9 Kg/ha. (d) 30 cm. x 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) 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 Beovani, M₂ = Transplanting and M₃ = Broadcasting.
Sub-plot treatments :

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. 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) 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 (vii) Nil.

5. RESULTS:

(i) 1282 Kg/ha. (ii) (a) 5380 Kg/ha. (b) 3290 Kg/ha. (iii) Main effects of M and V are highly significant. (iv) Av. yield of grain in Kg/ha.

<table>
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<th></th>
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</tbody>
</table>

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

5. RESULTS:

(i) 355 Kg/ha. (ii) (a) 1250 Kg/ha. (b) 1020 Kg/ha. (iii) Main effect of D and interaction D × V are highly significant. (iv) Av. yield of grain in Kg/ha.

Crop: ∶ Ragi (Kharif).
Type ∶ CV.

Object: To find out the optimum time for transplanting different var. cv. of ∶ Ragi.

Crop: ∶ Ragi (Kharif).
Type: ∶ CV.

Object: To find out the optimum time for transplanting different var. cv. of ∶ Ragi.

1. BASAL CONDITIONS:

(i) (a) Ragi-Maize. (b) Maize. (c) 13+5 Kg/ha. of N as A.S. + 89.7 Kg/ha. of P₂O₅. (a) Sandy loam. (ii) 10.5.6 to 20.7.63 as per treatments. (a) 6 ploughings followed by laddering. (b) Transplanting. (c) 9 Kg/ha. (d) 30 cm x 15 cm. (a) N.A. (y) 12 C.L/ha. of P₂O₅. ±44.3 Kg/ha. of P₂O₅. (a) As per treatments. (b) Irrigated. (c) Sunlight and weeding. (d) 13 cm. (e) 1.3.6 for early. (f) 5.6.5 for medium and late varieties.

2. TREATMENTS:

Main-plot treatments:
6 dates of planting: D₁ = 1st June, D₂ = 16th June, D₃ = 1st July, D₄ = 15th July, D₅ = 1st July and D₆ = 15th Aug.

Sub-plot treatments:

3. DESIGN:

(i) Split-plot. (ii) (a) 6 main-plots replications, 6 sub-plots main-plot. (b) V.A. (iii) 4. (iv) (a) 8 m. x 1.9 m. (b) 1.5 m. x 2. (v) 30 cm. x 1.5 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-only. (b) No. (c) Nil. (d) to (vii) Nil.

5. RESULTS:

(i) 1282 Kg/ha. (ii) (a) 5380 Kg/ha. (b) 3290 Kg/ha. (iii) Main effects of M and V are highly significant. (iv) Av. yield of grain in Kg/ha.
Crop : Ragi (Kharif).


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 P₀₆. (ii) Sandy loam.
(iii) 15th and 25th of every month from May to July/per treatments. (iv) (a) 6 ploughings followed by
laddering. (b) Transplanting. (c) 9 Kg/ha. (d) 30 cm. x 15 cm. (e) N.A. (v) 12 C.L./ha. of F.Y.M.+448 Kg/ha. of P₀₆. (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 = 26.64, D₃ = 17.7.64, D₄ = 7.8.64, D₅ = 28.8.64 and D₆ = 18.9.64.

Sub-plot treatments :

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:

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C.D. for D marginal means = 224·6 Kg/ha.
Crop: Bhindi (Kharif).

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) 12.11.62; 28.5.1963. (iv) (a) 2 ploughings. (b) Sowing in lines. (c) N.A. (d) 61 cm. x 30 cm. (e) - (v) 37 C.L. ha. of F.Y.M. + 224 Kg/ha. of A/S in 3 doses + 236 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: T₁ - Control, T₂ - Ekatin 0.1%, T₃ - Ekatin 0.2%, T₄ - Metasystox 0.1%, T₅ = Metasystox 0.2%, T₆ = Rogor 0.1%, T₇ = Rogor 0.2%, T₈ = Endrex 0.025%, and T₉ = Endrex 0.05%.

3. DESIGN:
   (i) R.B.D. (ii) N.A (iii) 4. (iv) (a) 37 m. x 24 m. (b) 3.11.: 1.1 m (v) 30 cm. x 15 cm. . (vi) Yes.

4. GENERAL:
   (i) Normal. (ii) Attack of bhindi jassids. Control measures as per treatments. (iii) Yield of bhindi. (iv) (a) 1961-1963. (b) No. (c) As per results given under 3. (v) N.A. (vi) Nil. (vii) Expt. for 1961(56) failed. Variances are heterogeneous and Treatment x years interaction is absent.

5. RESULTS:
   62(59)
   - 2775 Kg/ha. (ii) 8750 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of bhindi in Kg/ha.

   Treatment
   T₁  T₂  T₃  T₄  T₅  T₆  T₇  T₈  T₉
   Av. yield 2391 2969 1817 2894 2584 2660 2515 3416 3697

   63(40)
   - 4852 Kg/ha. (ii) 17300 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of bhindi in Kg/ha.

   Treatment
   T₁  T₂  T₃  T₄  T₅  T₆  T₇  T₈  T₉
   Av. yield 5764 5565 3888 4308 5470 5021 4326 4855 4423

Crop: Potato (Rabi).

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. x 23 cm. (e) 1. (v) 95-3 Kg/ha. of Pot. Sul. was applied before planting. (vi) Rep Patn. (vii) Irrigated. (viii) Hoeing and two earthings up. (ix) 3 cm. (x) 28.2.65.
2. TREATMENTS:

6 manurial treatments:
- **M₀**: Control, applied to the soil.
- **M₁**: 89.7 Kg/ha. of N, 179.3 Kg/ha. of P₂O₅ sprayed in 2 splits.
- **M₂**: 44.8 Kg/ha. of N, 179.3 Kg/ha. of P₂O₅ sprayed in 3 splits.
- **M₃**: 89.7 Kg/ha. of N, 179.3 Kg/ha. of P₂O₅ applied to the soil and 44.8 Kg/ha. of P₂O₅ sprayed in 3 splits.
- **M₄**: 44.8 Kg/ha. of N, 89.7 Kg/ha. of P₂O₅ applied to the soil and 44.8 Kg/ha. of P₂O₅ sprayed in 2 splits.
- **M₅**: 44.8 Kg/ha. of N, 44.8 Kg/ha. of P₂O₅ applied to the soil and 44.8 Kg/ha. of P₂O₅ sprayed in 4 splits.

N was applied as Urea and P₂O₅ as Super.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) 6.7 m. x 3.4 m. (v) 5.6 m. x 2.9 m. (v) 53 cm. x 23 cm.

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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>M₀</th>
<th>M₁</th>
<th>M₂</th>
<th>M₃</th>
<th>M₄</th>
<th>M₅</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>23.6</td>
<td>22.8</td>
<td>22.7</td>
<td>25.7</td>
<td>25.9</td>
<td>23.0</td>
</tr>
</tbody>
</table>

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. (O) 53 cm. x 23 cm. (e) 1. (v) 125 C.L./ha. of F.Y.M. + 134.5 Kg/ha. of P₂O₅ as Super + 67.2 Kg/ha. of K₂O as Mur. of Pot. (vi) Patna red. (vii) Irrigated. (viii) 2 hoings and earthing up. (ix) 10 cm. (x) 15.2.65.

2. TREATMENTS:

7 sources of 67.2 Kg/ha. of N:
- **S₀**: Control (No N), **S₁**: A/S, **S₂**: A/C, **S₃**: Amm. Phos., **S₄**: C/A/N, **S₅**: Urea and **S₆**: Nitro. Phos.

½ 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. x 3.5 m. (v) N.A. (vi) Yec.

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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>S₀</th>
<th>S₁</th>
<th>S₂</th>
<th>S₃</th>
<th>S₄</th>
<th>S₅</th>
<th>S₆</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>49.5</td>
<td>63.4</td>
<td>58.7</td>
<td>61.8</td>
<td>63.0</td>
<td>66.9</td>
<td>72.6</td>
</tr>
</tbody>
</table>

C.D. = 12.3 Q/ha.
Crop :- Potato. (Rabi).


Object :- To study the requirements of Potato.

1. BASAL CONDITIONS:
   (i) (a) Nil. (b) and (c) N.A. (a) Sandy loam. (iii) 9, 10, 11, 60. (iv) (z) 3 ploughings, levelling and breaking the clods. (b) and (c) N.A. (d) 46 cm. x 23 cm. (c) 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 : N0=0, N1=46.1 and N2=168.1 Kg/ha.
   (2) 3 levels of P2O5 as Super. P0=0, P1=89.7 and P2=179.3 Kg/ha.
   (3) 3 levels of K2O as Mur. Pot : K0=0, K1=89.7 and K2=179.3 Kg/ha.
   Super and Mur. of Potash were applied in lines before planting on 9, 10, 11, 60 A S tep dressed on 9, 12, 60.

3. DESIGN:
   (i) 30 confd. (ii) 9 plots/block and 3 blocks/replication. (iii) 2. (iv) (a) 6.7 m. 4.6 m. (b) 5.6 m. > 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 endects on 10, 12, 60. Attack of writing 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 3.61. (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) 4.6 m. (iv) 7.0 cm. (v) Effect of K is highly significant and that of P is significant (vi) Av. yield of tuber in Q/ha.

<table>
<thead>
<tr>
<th></th>
<th>P0</th>
<th>P1</th>
<th>P2</th>
<th>K0</th>
<th>K1</th>
<th>K2</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>N0</td>
<td>25.3</td>
<td>31.3</td>
<td>29.3</td>
<td>214</td>
<td>30.5</td>
<td>34.0</td>
<td>25.6</td>
</tr>
<tr>
<td>N1</td>
<td>27.8</td>
<td>34.9</td>
<td>32.7</td>
<td>232</td>
<td>34.0</td>
<td>37.2</td>
<td>31.8</td>
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<tr>
<td>N2</td>
<td>24.0</td>
<td>29.2</td>
<td>32.9</td>
<td>230</td>
<td>30.0</td>
<td>33.2</td>
<td>28.7</td>
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<tr>
<td>Mean</td>
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<td>31.7</td>
<td>31.6</td>
<td>22.5</td>
<td>31.8</td>
<td>34.8</td>
<td>29.7</td>
</tr>
</tbody>
</table>

C.D. for P or K marginal means = 4.3 Q/ha.

---

Crop :- Potato (Rabi).


Object :- To find out the optimum dose of N, P and K for Potato.

1. BASAL CONDITIONS:
   (i) (a) G.M.—Potato. (b) Datura indica (S.M.). (c) Nil. (ii) Sandy loam. (iii) 17, 11, 62. (iv) (a) 4 ploughings and 2 laddering. (b) and (c) N.A. (d) 15 cm. x 46 cm. (e) Nil. (v) Nil. (vi) Patna-red (medium). (vii) Irrigated. (viii) Weeding. (x) Nil. (x) 16 and 17.2.63.
2. TREATMENTS:
All combinations of (1), (2) and (3)
(1) 3 levels of N as A/S: \( N_0 = 89.7 \), \( N_1 = 179.3 \) and \( N_2 = 269.0 \) Kg/ha.
(2) 3 levels of \( P_0 \) as Super: \( P_0 = 0 \), \( P_1 = 89.7 \) and \( P_2 = 179.3 \) Kg/ha.
(3) 3 levels of \( K_0 \) as KCl: \( K_0 = 0 \), \( K_1 = 89.7 \) and \( K_2 = 179.3 \) Kg/ha.

3. DESIGN:
(i) 3\(^3\) 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 \( P \times K \) is significant. (iv) Av. yield of tuber in Q/ha.

<table>
<thead>
<tr>
<th>( P_0 )</th>
<th>( P_1 )</th>
<th>( P_2 )</th>
<th>( K_0 )</th>
<th>( K_1 )</th>
<th>( K_2 )</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>( N_0 )</td>
<td>37.6</td>
<td>55.9</td>
<td>66.1</td>
<td>50.1</td>
<td>49.7</td>
<td>59.8</td>
</tr>
<tr>
<td>( N_1 )</td>
<td>45.5</td>
<td>60.5</td>
<td>62.3</td>
<td>56.5</td>
<td>55.4</td>
<td>53.2</td>
</tr>
<tr>
<td>( N_2 )</td>
<td>38.0</td>
<td>60.5</td>
<td>62.3</td>
<td>44.5</td>
<td>53.0</td>
<td>63.3</td>
</tr>
<tr>
<td>Mean</td>
<td>40.4</td>
<td>60.8</td>
<td>60.7</td>
<td>50.4</td>
<td>52.7</td>
<td>58.8</td>
</tr>
<tr>
<td>( K_0 )</td>
<td>45.7</td>
<td>54.9</td>
<td>50.5</td>
<td>45.7</td>
<td>54.9</td>
<td>50.5</td>
</tr>
<tr>
<td>( K_1 )</td>
<td>34.6</td>
<td>57.8</td>
<td>65.7</td>
<td>54.7</td>
<td>57.8</td>
<td>65.7</td>
</tr>
<tr>
<td>( K_2 )</td>
<td>40.7</td>
<td>69.9</td>
<td>65.7</td>
<td>50.7</td>
<td>69.9</td>
<td>65.7</td>
</tr>
</tbody>
</table>

C.D. for P marginal means = 7.1 Q/ha.
C.D. for means in the body of \( P \times K \) table = 12.2 Q/ha.

Crop: Potato. (Raódi).
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) Darjiling 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: \( N_0 = 89.7 \), \( N_1 = 179.3 \) and \( N_2 = 269.0 \) Kg/ha.
(2) 3 levels of \( P_0 \) as Super: \( P_0 = 0 \), \( P_1 = 89.7 \) and \( P_2 = 179.3 \) Kg/ha.
(3) 3 levels of \( K_0 \) as KCl: \( K_0 = 0 \), \( K_1 = 89.7 \) and \( K_2 = 179.3 \) Kg/ha.

3. DESIGN:
(i) 3\(^3\) 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 cadres 28 gm. in 25 litres of water. (iii) Height: plinth 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 in Q/ha.

<table>
<thead>
<tr>
<th></th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>K1</th>
<th>K2</th>
<th>K3</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>N0</td>
<td>22.9</td>
<td>28.1</td>
<td>28.3</td>
<td>30.7</td>
<td>24.2</td>
<td>27.4</td>
<td>27.4</td>
</tr>
<tr>
<td>N1</td>
<td>43.7</td>
<td>46.1</td>
<td>41.0</td>
<td>38.2</td>
<td>48.7</td>
<td>43.8</td>
<td>43.6</td>
</tr>
<tr>
<td>N2</td>
<td>50.3</td>
<td>44.9</td>
<td>44.3</td>
<td>43.4</td>
<td>44.5</td>
<td>51.7</td>
<td>46.5</td>
</tr>
<tr>
<td>Mean</td>
<td>41.3</td>
<td>38.4</td>
<td>37.9</td>
<td>37.4</td>
<td>39.1</td>
<td>41.0</td>
<td>39.2</td>
</tr>
</tbody>
</table>

C.D. for N marginal means = 8.3 Q/ha.

**Crop**: Potato. (Rabi)

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

**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) Sannberam. (c) Nil. (iii) Sandy loam. (iii) 13, 4.11.60. (iv) (a) 3 ploughings, 2 laddings and breaking clods. (b) Line sowing. (c) N.A. (d) 46 cm. X 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. (a) 5 cm. (b) 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 2nd earthing.

3. DESIGN:
(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 6.9 m. X 3.8 m. (b) 5.9 m. X 3.5 m. (c) 46 cm. 15 cm. (v) 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 endres. 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 interaction S x T is significant. (iv) Av. yield of tuber in Q/ha.
Crop :- Potato *Rabi*.

Ref :- Or. 62(17).


Type :- 'M'.

Object :- To study the effect of different time of application of C/A/N on the yield of 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. x 15 cm.
   
   (e) Nil.
   
   (v) 4483 Kg/ha. of F.Y.M.+44·8 Kg/ha. of P<sub>2</sub>O<sub>5</sub> as Super and 67·2 Kg/ha. of K<sub>2</sub>O as Mur. of Pot.
   
   (vi) D.D.R.
   
   (vii) Unirrigated.
   
   (viii) Weeding.
   
   (ix) Nil.
   
2. **TREATMENTS**:
   
   All combinations of (1) and (2)
   
   (1) 2 sources of N at 67·2 Kg/ha. : S<sub>1</sub>=A/S and S<sub>2</sub>=C/A/N.
   
   (2) 2 times of application : T<sub>1</sub>=Full at the time of planting and T<sub>2</sub>=½ at planting+½ one month after planting.

3. **DESIGN**:
   
   (i) Fact. in R.B.D.
   
   (j) (a) 4.
   
   (b) N.A.
   
   (iii) 6.
   
   (iv) (a) 5·9 m. x 4·6 m.
   
   (b) 5·0 m. x 3·7 m.
   
   (v) 46 cm. x 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.

<table>
<thead>
<tr>
<th></th>
<th>T&lt;sub&gt;1&lt;/sub&gt;</th>
<th>T&lt;sub&gt;2&lt;/sub&gt;</th>
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<td>64·7</td>
<td>63·7</td>
<td>64·2</td>
</tr>
<tr>
<td>Mean</td>
<td>58·2</td>
<td>59·3</td>
<td>58·8</td>
</tr>
</tbody>
</table>

C.D. for S marginal means=9·0 Q/ha.
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. x 13 cm. (e) 89.7 Kg/ha. of P₂O₅ as Super+89.7 Kg/ha. of K₂O 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 : T₁ - Full dose at planting, T₂ - Full dose at first earthing, T₃ = ½ at planting and ½ at 2nd earthing and T₄ = ½ at first earthing + ½ at 2nd earthing.

3. DESIGN:
   (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 3. (iv) (a) 5.5 m. x 2.9 m. (b) 4.6 m. 2.6 m. (v) 4.5 cm. > 15 cm. (vi) Yes.

4. GENERAL:
   (i) Good. (ii) Attack of epilachna beetle. Spraying of Endrex 18 Jlm. m 18 litres of water per ha. Attack of slight wilting disease. (iii) Tuber yield. (iv) (a) 960 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T₁</th>
<th>T₂</th>
<th>T₃</th>
<th>T₄</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>53'3</td>
<td>38'4</td>
<td>49'1</td>
<td>42'1</td>
</tr>
</tbody>
</table>

Crop : Potato (Rahi).
Ref : Or. 63(51).
Type : 'M'.

Object : To study the effect of time of application of different sources of N on the yield of Potatoes.

1. BASAL CONDITIONS:
   (i) (a) Nil. (b) Fallow. (c) Nil. (d) Sandy loam. (ii) 12.12.62. (iii) (a) 6 ploughings. (b) Planting. (c) N.A. (d) 61 cm. x 15 cm. (e) N.A. (v) 89.7 Kg/ha. of P₂O₅ as Super+89.7 Kg/ha. of K₂O as KCl 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 34.5 Kg/ha. of N : S₁ = C/A/N and S₂ = A/S.
   (2) 2 times of application : T₁ - Full dose at planting and T₄ = ½ at planting + ½ 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. x 4.3 m. (b) 5.5 m. x 4.0 m. (v) 64 cm. x 15 cm. (vi) Yes.

4. GENERAL:
   (i) Poor. (ii) Attack of early blight and 2 propylectic 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) 4'9 Q/ha. (iii) Main effects of T and interaction T x S are significant. (iv) Av. yield of tuber in Q/ha.
Crop : Potato (Rabi).


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/F. (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. x 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:

(i) 3 levels of N as A/F: N₁ = 67.2, N₂ = 89.7 and N₃ = 112.1 Kg/ha.

(ii) 3 levels of P₂O₅ as Super: P₁ = 22.4, P₂ = 44.8 and P₃ = 67.2 Kg/ha.

(iii) 3 levels of K₂O as Mur. Pot.: K₁ = 22.4, K₂ = 44.8 and K₃ = 67.2 Kg/ha.

3. DESIGN:

(i) 3² confd. with NPK³ and NPK² confd. (ii) (a) 9 plots/block; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 5.6 m. x 4.6 m. (b) 5.2 m. x 3.7 m. (v) 20 cm. x 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.

<table>
<thead>
<tr>
<th>K₁</th>
<th>K₂</th>
<th>K₃</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>N₁</td>
<td>31.6</td>
<td>33.8</td>
<td>37.8</td>
</tr>
<tr>
<td>N₂</td>
<td>41.7</td>
<td>41.1</td>
<td>46.0</td>
</tr>
<tr>
<td>N₃</td>
<td>43.3</td>
<td>43.8</td>
<td>40.4</td>
</tr>
<tr>
<td>Mean</td>
<td>38.9</td>
<td>39.6</td>
<td>41.4</td>
</tr>
</tbody>
</table>

C.D. for N, P or K marginal means = 1.5 Q/ha.
C.D. for body of N x P, P x K or N x K table = 2.5 Q/ha.
Crop :- Potato (Rab).  
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) Samkenp (C.M.).  (c) Nil.  (d) Sandy loam. (iii) 21 to 25, 18.6.  (iv) (a) 6 ploughings.  
(b) Planting.  (c) 5.5 Qt/ha.  (d) 61 cm. x 15 cm.  (e) 2.  (f) Nil.  (g) D.R.R.  (h) Irrigated.  
(vii) Earthing up twice.  (h) 2.1 em.  (x) 3.43.1964.

2. TREATMENTS :  
All combinations of (1), (2) and (3)  
(1) 3 levels of N as Ca(NH)2 : N1 : 89.7 and N2 : 179.3 and N3 : 269.0 Kg/ha.  
(2) 3 levels of P2O5 as Super P : P1 : 44'8, P2 : 89.7 and P3 : 134'5 Kg/ha.  
(3) 3 levels of K2O as Muri. Pot. : K1 : 44'8, K2 : 89.7 and K3 : 134'5 Kg/ha.

3. DESIGN :  
(i) 32 conf.  (a) and (c) 2 plots/block; 3 blocks/replication.  (b) N.A.  (k) 3 (v) 5.5 m. x 4.6 m.  
(b) 4.3 m. x 4.3 m.  (vi) 61 cm. x 15 cm.  (vi) Yes.

4. GENERAL :  
(i) Poor.  (ii) Slight attack of blight - endores was sprayed as a prophylactic spray.  (iii) Yield of tuber.  
(iv) (a) 1962—contd. with modification.  (b) Nil.  (c) Nil.  (v) and (vi) Nil.  (vii) One replication was rejected due to poor germination.

5. RESULTS :  
(i) 40.1 Q/ha.  (ii) 10.4 Q/ha.  (iii) Main effects of N, P and K are highly significant.  (iv) As yield of tuber in Q/ha.

<table>
<thead>
<tr>
<th></th>
<th>K1</th>
<th>K2</th>
<th>K3</th>
<th></th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>N1</td>
<td>38'2</td>
<td>36'9</td>
<td>32'9</td>
<td></td>
<td>33'0</td>
<td>32'8</td>
<td>42'3</td>
<td>36'9</td>
</tr>
<tr>
<td>N2</td>
<td>38'1</td>
<td>44'6</td>
<td>46'2</td>
<td></td>
<td>34'8</td>
<td>44'0</td>
<td>50'1</td>
<td>43'0</td>
</tr>
<tr>
<td>N3</td>
<td>40'0</td>
<td>77'9</td>
<td>46'4</td>
<td></td>
<td>39'4</td>
<td>44'4</td>
<td>40'6</td>
<td>41'4</td>
</tr>
<tr>
<td>Mean</td>
<td>38'8</td>
<td>39'8</td>
<td>41'8</td>
<td></td>
<td>35'7</td>
<td>40'4</td>
<td>44'3</td>
<td>40'1</td>
</tr>
<tr>
<td>P1</td>
<td>37'5</td>
<td>34'2</td>
<td>35'4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P2</td>
<td>39'5</td>
<td>40'0</td>
<td>41'7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P3</td>
<td>39'3</td>
<td>45'2</td>
<td>48'4</td>
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<td></td>
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</tr>
</tbody>
</table>

C.D. for N, P or K marginal means 6 ± Q/ha.

Crop :- Potato (Rab).  
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.  (c) 1.  (x) Nil.  (xl) Up-date.  (xii) Irrigated.  (xiii) 2 hand weedicings and earthing up.  (x) 51 em.  (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 = 69.0 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 Muri. 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, ½ in furrow and ½ broadcasted. C/A/N ½ at planting, remaining after one month.

3. DESIGN:

(i) 3^e confd. (ii) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 3. (iv) (a) 5.5 m. x 4.5 m. (b) 5.2 m. x 3.1 m. (v) 15 cm. x 61 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Light attack of blight. 3 Kg. of endrin and 1 Kg. of Ca. 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) 144 Q/ha. (iii) Main effects of N and P are highly significant. (iv) Av. yield of tubers in Q/ha.

<table>
<thead>
<tr>
<th></th>
<th>K_1</th>
<th>K_2</th>
<th>K_3</th>
<th>P_1</th>
<th>P_2</th>
<th>P_3</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>N_1</td>
<td>110/2</td>
<td>119/3</td>
<td>117/7</td>
<td>109/3</td>
<td>115/3</td>
<td>122/6</td>
<td>115/7</td>
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<tr>
<td>N_2</td>
<td>141/6</td>
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<td>137/4</td>
<td>128/4</td>
<td>140/7</td>
<td>149/2</td>
<td>139/4</td>
</tr>
<tr>
<td>N_3</td>
<td>149/1</td>
<td>154/5</td>
<td>145/9</td>
<td>144/8</td>
<td>147/1</td>
<td>157/6</td>
<td>149/8</td>
</tr>
<tr>
<td>Mean</td>
<td>133/6</td>
<td>137/7</td>
<td>133/6</td>
<td>127/5</td>
<td>134/4</td>
<td>143/1</td>
<td>135/0</td>
</tr>
</tbody>
</table>

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

- 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
- N1P2=120 Kg/ha. of N+35 Kg/ha. of P2O5
- N2P1=120 Kg/ha. of N+70 Kg/ha. of P2O5
- N2P2=120 Kg/ha. of N+70 Kg/ha. of P2O5

N applied as NH4, P as Super and K2O as Muri 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 30—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 type 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 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 Kalabandi. (b) and (c) N.A. (v) to (vii) N.A.

5. RESULTS:

Mayurbhanj

62 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>N2</th>
<th>P1</th>
<th>N1P1</th>
<th>N2P1</th>
<th>N1P2</th>
<th>N2P2</th>
<th>N1P2K1</th>
<th>S.E.</th>
<th>Av. response of Potato in Kg/ha.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>781</td>
<td>257</td>
<td>2342</td>
<td>385</td>
<td>682</td>
<td>899</td>
<td>899</td>
<td>748</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Control yield=3706 Kg/ha.; No. of trials=2.

63 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>N2</th>
<th>P1</th>
<th>N1P1</th>
<th>N2P1</th>
<th>N1P2</th>
<th>N2P2</th>
<th>N1P2K1</th>
<th>S.E.</th>
<th>Av. response of Potato in Kg/ha.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>383</td>
<td>1190</td>
<td>1018</td>
<td>1588</td>
<td>2359</td>
<td>2685</td>
<td>2058</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Control yield=3112 Kg/ha.; No. of trials=7.

64 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>N2</th>
<th>P1</th>
<th>N1P1</th>
<th>N2P1</th>
<th>N1P2</th>
<th>N2P2</th>
<th>N1P2K1</th>
<th>S.E.</th>
<th>Av. response of Potato in Kg/ha.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>703</td>
<td>1272</td>
<td>709</td>
<td>1125</td>
<td>1222</td>
<td>1575</td>
<td>1981</td>
<td>2441</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Control yield=1957 Kg/ha.; No. of trials=6.

Puri

62 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>N2</th>
<th>P1</th>
<th>N1P1</th>
<th>N2P1</th>
<th>N1P2</th>
<th>N2P2</th>
<th>N1P2K1</th>
<th>S.E.</th>
<th>Av. response of Potato in Kg/ha.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1735</td>
<td>2900</td>
<td>621</td>
<td>2800</td>
<td>4772</td>
<td>4395</td>
<td>5189</td>
<td>560</td>
<td></td>
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</tbody>
</table>

Control yield=3115 Kg/ha.; No. of trials=5.
<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>N2</th>
<th>P1</th>
<th>N1P1</th>
<th>N2P1</th>
<th>N1P2</th>
<th>N2P2</th>
<th>N1P3</th>
<th>K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potato in Kg/ha.</td>
<td>2543</td>
<td>3176</td>
<td>1113</td>
<td>2161</td>
<td>3038</td>
<td>3051</td>
<td>3954</td>
<td>679.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control yield=4191 Kg/ha.; No. of trials=3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>63 (S.F.T.)</td>
<td>Treatment</td>
<td>N1</td>
<td>N2</td>
<td>P1</td>
<td>N1P1</td>
<td>N2P1</td>
<td>N1P2</td>
<td>N2P2</td>
<td>N1P3</td>
<td>K1</td>
</tr>
<tr>
<td>Potato in Kg/ha.</td>
<td>2914</td>
<td>4168</td>
<td>852</td>
<td>3581</td>
<td>4701</td>
<td>5112</td>
<td>6136</td>
<td>298.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control yield=4358 Kg/ha.; No. of trials=9.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65 (S.F.T.)</td>
<td>Treatment</td>
<td>N1</td>
<td>N2</td>
<td>P1</td>
<td>N1P1</td>
<td>N2P1</td>
<td>N1P2</td>
<td>N2P2</td>
<td>N1P3</td>
<td>K1</td>
</tr>
<tr>
<td>Potato in Kg/ha.</td>
<td>780</td>
<td>1008</td>
<td>978</td>
<td>1423</td>
<td>1650</td>
<td>2559</td>
<td>2708</td>
<td>1510.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control yield=11821 Kg/ha.; No. of trials=3.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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</table>
Crop: Potato.

Re:- 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 : A).

1. HASAL 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:

Manural treatments

- Control (no manure)
- N = 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
- N₂P₂ = 60 Kg/ha. of N+70 Kg/ha. of P₂O₅
- N₁P₂K₂ = 120 Kg/ha. of N+70 Kg/ha. of P₂O₅+120 Kg/ha. of K₂O

N applied as A/S, P₂O₅ as Super and K₂O as Mur. of Pot.
3. **DESIGN:**
   
   Same as in Type A₁ (Irrigated) on page 202.

4. **GENERAL:**
   
   (i) to (iii) N.A.  
   (b) N.A.  
   (c) Nil.  
   (v) to (vii) N.A.

5. **RESULTS:**

   **Cuttack**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N₁</th>
<th>P₁</th>
<th>P₂</th>
<th>N₁P₁</th>
<th>N₁P₂</th>
<th>N₂P₂</th>
<th>N₃P₄K₄</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>2029</td>
<td>962</td>
<td>1384</td>
<td>2675</td>
<td>3202</td>
<td>3123</td>
<td>3000</td>
<td>658 1</td>
</tr>
<tr>
<td>Control yield=5443 Kg/ha.; No. of trials=3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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</table>

   **Puri**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N₁</th>
<th>P₁</th>
<th>P₂</th>
<th>N₁P₁</th>
<th>N₁P₂</th>
<th>N₂P₂</th>
<th>N₃P₄K₄</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>1478</td>
<td>218</td>
<td>102</td>
<td>2383</td>
<td>2898</td>
<td>4145</td>
<td>5202</td>
<td>700 0</td>
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<tr>
<td>Control yield=3784 Kg/ha.; No. of trials=4.</td>
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<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N₁</th>
<th>P₁</th>
<th>P₂</th>
<th>N₁P₁</th>
<th>N₁P₂</th>
<th>N₂P₂</th>
<th>N₃P₄K₄</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>1818</td>
<td>-116</td>
<td>-21</td>
<td>1599</td>
<td>1676</td>
<td>3022</td>
<td>3614</td>
<td>573 5</td>
</tr>
<tr>
<td>Control yield=3907 Kg/ha.; No. of trials=5.</td>
<td></td>
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<table>
<thead>
<tr>
<th>Treatment</th>
<th>N₁</th>
<th>P₁</th>
<th>P₂</th>
<th>N₁P₁</th>
<th>N₁P₂</th>
<th>N₂P₂</th>
<th>N₃P₄K₄</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>2556</td>
<td>19</td>
<td>171</td>
<td>3321</td>
<td>3406</td>
<td>5535</td>
<td>6253</td>
<td>348 3</td>
</tr>
<tr>
<td>Control yield=3393 Kg/ha.; No. of trials=3.</td>
<td></td>
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### Balasore

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<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;2&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>1917</td>
<td>929</td>
<td>1631</td>
<td>2847</td>
<td>3183</td>
<td>4547</td>
<td>6098</td>
</tr>
</tbody>
</table>

Control yield = 3608 Kg/ha.; No. of trials = 3.

### 64 (S.F.T.)

<table>
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<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;2&lt;/sub&gt;</th>
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<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
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<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>894</td>
<td>370</td>
<td>953</td>
<td>706</td>
<td>1398</td>
<td>1670</td>
<td>3706</td>
</tr>
</tbody>
</table>

Control yield = 8329 Kg/ha.; No. of trials = 4.

### 65 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;2&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>773</td>
<td>286</td>
<td>686</td>
<td>813</td>
<td>910</td>
<td>1833</td>
<td>1986</td>
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</table>

Control yield = 6586 Kg/ha.; No. of trials = 6.

### Mayurbhanj

#### 62 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;2&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>1997</td>
<td>1888</td>
<td>1028</td>
<td>-99</td>
<td>771</td>
<td>1987</td>
<td>2273</td>
</tr>
</tbody>
</table>

Control yield = 3459 Kg/ha.; No. of trials = 2.

#### 63 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;2&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>618</td>
<td>620</td>
<td>1208</td>
<td>1827</td>
<td>2101</td>
<td>2502</td>
<td>3106</td>
</tr>
</tbody>
</table>

Control yield = 3260 Kg/ha.; No. of trials = 8.

#### 64 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;2&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of Potato in Kg/ha.</td>
<td>722</td>
<td>573</td>
<td>889</td>
<td>1142</td>
<td>1370</td>
<td>1447</td>
<td>1939</td>
</tr>
</tbody>
</table>

Control yield = 2306 Kg/ha.; No. of trials = 6.

### Ganjam

#### 65 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;2&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of Potato in Kg/ha.</td>
<td>380</td>
<td>1250</td>
<td>1650</td>
<td>1180</td>
<td>2450</td>
<td>3520</td>
<td>3630</td>
</tr>
</tbody>
</table>

Control yield = 2620 Kg/ha.; No. of trials = 2.

### Sambalpur

#### 65 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;2&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of Potato in Kg/ha.</td>
<td>800</td>
<td>400</td>
<td>650</td>
<td>850</td>
<td>450</td>
<td>1050</td>
<td>2200</td>
</tr>
</tbody>
</table>

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(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 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 manural 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 A3 (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 N1 K1 K2 N1K1 N1K2 N1P1K1 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 N1 K1 K2 N1K1 N1K2 N1P1K1 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 N1 K1 K2 N1K1 N1K2 N1P1K1 S.E.
   Av. response of tuber in Kg/ha. 2783 2140 2549 3253 4780 5796 6076 374 4
   Control yield = 6096 Kg/ha; No. of trials = 7.

   65(S.F.T.)
   Treatment N1 K1 K2 N1K1 N1K2 N1P1K1 S.E.
   Av. response of tuber in Kg/ha. 311 1128 1446 3437 3713 5008 4726 560 3
   Control yield = 3968 Kg/ha; No. of trials = 7.
<table>
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<th>Puri</th>
<th>62(S.F.T.)</th>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>K&lt;sub&gt;1&lt;/sub&gt;</th>
<th>K&lt;sub&gt;2&lt;/sub&gt;</th>
<th>NtK&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;2&lt;/sub&gt;</th>
<th>S.E.</th>
<th>Av. response of tuber in Kg/ha.</th>
<th>Control yield &lt;span class=&quot;highlight&quot;&gt;-1898&lt;/span&gt; Kg/ha.; No. of trials = 2.</th>
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<tbody>
<tr>
<td>63(S.F.T.)</td>
<td>Treatment</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;</td>
<td>K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>K&lt;sub&gt;2&lt;/sub&gt;</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;2&lt;/sub&gt;</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;3&lt;/sub&gt;</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>S.E.</td>
<td>Av. response of tuber in Kg/ha.</td>
<td>Control yield &lt;span class=&quot;highlight&quot;&gt;-3118&lt;/span&gt; Kg/ha.; No. of trials = 3.</td>
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<tr>
<td>64(S.F.T.)</td>
<td>Treatment</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;</td>
<td>K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>K&lt;sub&gt;2&lt;/sub&gt;</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;2&lt;/sub&gt;</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;3&lt;/sub&gt;</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>S.E.</td>
<td>Av. response of tuber in Kg/ha.</td>
<td>Control yield &lt;span class=&quot;highlight&quot;&gt;-6319&lt;/span&gt; Kg/ha.; No. of trials = 3.</td>
</tr>
<tr>
<td>Mayurbhanj</td>
<td>62(S.F.T.)</td>
<td>Treatment</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;</td>
<td>K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>K&lt;sub&gt;2&lt;/sub&gt;</td>
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<td>N&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;2&lt;/sub&gt;</td>
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<td>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>S.E.</td>
<td>Av. response of tuber in Kg/ha.</td>
</tr>
<tr>
<td>63(S.F.T.)</td>
<td>Treatment</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;</td>
<td>K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>K&lt;sub&gt;2&lt;/sub&gt;</td>
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<td>N&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;3&lt;/sub&gt;</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>S.E.</td>
<td>Av. response of tuber in Kg/ha.</td>
<td>Control yield &lt;span class=&quot;highlight&quot;&gt;-2908&lt;/span&gt; Kg/ha.; No. of trials = 5.</td>
</tr>
<tr>
<td>64(S.F.T.)</td>
<td>Treatment</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;</td>
<td>K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>K&lt;sub&gt;2&lt;/sub&gt;</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;2&lt;/sub&gt;</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;3&lt;/sub&gt;</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>S.E.</td>
<td>Av. response of tuber in Kg/ha.</td>
<td>Control yield &lt;span class=&quot;highlight&quot;&gt;-4413&lt;/span&gt; Kg/ha.; No. of trials = 6.</td>
</tr>
<tr>
<td>Balasore</td>
<td>62(S.F.T.)</td>
<td>Treatment</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;</td>
<td>K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>K&lt;sub&gt;2&lt;/sub&gt;</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;1&lt;/sub&gt;</td>
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<td>N&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;3&lt;/sub&gt;</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>S.E.</td>
<td>Av. response of tuber in Kg/ha.</td>
</tr>
<tr>
<td>64(S.F.T.)</td>
<td>Treatment</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;</td>
<td>K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>K&lt;sub&gt;2&lt;/sub&gt;</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;2&lt;/sub&gt;</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;3&lt;/sub&gt;</td>
<td>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;K&lt;sub&gt;1&lt;/sub&gt;</td>
<td>S.E.</td>
<td>Av. response of tuber of Kg/ha.</td>
<td>Control yield &lt;span class=&quot;highlight&quot;&gt;-9449&lt;/span&gt; Kg/ha.; No. of trials = 2.</td>
</tr>
</tbody>
</table>
### Crop: Potato.

**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 A (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:

<table>
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<tr>
<th>District</th>
<th>No. of trials</th>
<th>Control yield</th>
<th>Av. response in Q/ha.</th>
<th>S.E.</th>
<th>NP</th>
<th>NK</th>
<th>PK</th>
<th>NPK</th>
<th>S.E.</th>
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</thead>
<tbody>
<tr>
<td>Balasore</td>
<td>5</td>
<td>54'0</td>
<td>26'6 26'6 8'2 4'3</td>
<td>6'1</td>
<td>-2'7</td>
<td>-0'6</td>
<td>-4'5</td>
<td>2'4</td>
<td></td>
</tr>
<tr>
<td>Cuttack</td>
<td>4</td>
<td>22'6</td>
<td>36'2 9'7 8'0 1'1</td>
<td>-5'1</td>
<td>-3'0</td>
<td>-3'7</td>
<td>3'7</td>
<td>0'6</td>
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</tr>
<tr>
<td>Dhankanal</td>
<td>6</td>
<td>42'1</td>
<td>10'1 5'3 10'1 2'1</td>
<td>2'5</td>
<td>1'7</td>
<td>0'9</td>
<td>3'0</td>
<td>1'7</td>
<td></td>
</tr>
<tr>
<td>Ganjam</td>
<td>6</td>
<td>44'0</td>
<td>14'4 10'2 4'8 2'2</td>
<td>-3'6</td>
<td>2'7</td>
<td>-0'8</td>
<td>2'2</td>
<td>2'7</td>
<td></td>
</tr>
<tr>
<td>Mayurbhanj</td>
<td>5</td>
<td>41'8</td>
<td>16'5 16'5 11'2 1'7</td>
<td>-0'6</td>
<td>-1'5</td>
<td>0'1</td>
<td>-0'6</td>
<td>0'7</td>
<td></td>
</tr>
<tr>
<td>Puri</td>
<td>13</td>
<td>44'0</td>
<td>18'7 6'4 4'9 2'1</td>
<td>0'3</td>
<td>-1'8</td>
<td>-0'6</td>
<td>3'2</td>
<td>1'1</td>
<td></td>
</tr>
</tbody>
</table>
Crop :- Potato.  
Site :- As per results.  
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)  
   \( n_1 = 56 \text{ Kg/ha. of N as A/S.} \)  
   \( n_2 = 112 \text{ Kg/ha. of N as A/S.} \)  
   \( n_1' = 56 \text{ Kg/ha. of N as Urea.} \)  
   \( n_2' = 112 \text{ Kg/ha. of N as } \text{Urea.} \)  
   \( n_1'' = 56 \text{ Kg/ha. of N as } \text{C/A/N.} \)  
   \( n_2'' = 112 \text{ Kg/ha. of N as } \text{C/A/N.} \)

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 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 a cash crop, 4 on an oilseed crop and 3 on a leguminous crop. Half of 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) 180 ac. (b) 140 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 tuber in Q/ha.

<table>
<thead>
<tr>
<th>District</th>
<th>No. of trial</th>
<th>Control yield</th>
<th>( n_1 )</th>
<th>( n_1' )</th>
<th>( n_2 )</th>
<th>( n_2' )</th>
<th>( n_1'' )</th>
<th>( n_2'' )</th>
<th>G.M.</th>
<th>S.E. mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balasore</td>
<td>3</td>
<td>56/3</td>
<td>69/2</td>
<td>85/8</td>
<td>69/7</td>
<td>75/2</td>
<td>63/7</td>
<td>80/7</td>
<td>7/5</td>
<td>0/7</td>
</tr>
<tr>
<td>Cuttack</td>
<td>4</td>
<td>24/0</td>
<td>60/9</td>
<td>70/1</td>
<td>59/5</td>
<td>66/9</td>
<td>57/2</td>
<td>66/4</td>
<td>57/9</td>
<td>0/6</td>
</tr>
<tr>
<td>Ganjam</td>
<td>3</td>
<td>38/6</td>
<td>55/8</td>
<td>63/2</td>
<td>59/5</td>
<td>68/1</td>
<td>68/4</td>
<td>76/7</td>
<td>61/4</td>
<td>2/8</td>
</tr>
<tr>
<td>Mayurbhanj</td>
<td>4</td>
<td>32/7</td>
<td>55/8</td>
<td>70/5</td>
<td>54/4</td>
<td>63/1</td>
<td>55/3</td>
<td>63/1</td>
<td>56/4</td>
<td>4/8</td>
</tr>
<tr>
<td>Puri</td>
<td>13</td>
<td>50/4</td>
<td>71/2</td>
<td>77/5</td>
<td>67/2</td>
<td>76/2</td>
<td>71/9</td>
<td>84/5</td>
<td>71/3</td>
<td>2/3</td>
</tr>
<tr>
<td>Balasore</td>
<td>2</td>
<td>57/2</td>
<td>71/0</td>
<td>82/1</td>
<td>74/7</td>
<td>81/0</td>
<td>74/7</td>
<td>101/5</td>
<td>77/7</td>
<td>0/2</td>
</tr>
<tr>
<td>Dhenkanal</td>
<td>6</td>
<td>30/6</td>
<td>40/4</td>
<td>46/1</td>
<td>44/4</td>
<td>56/4</td>
<td>56/8</td>
<td>61/8</td>
<td>46/4</td>
<td>5/8</td>
</tr>
<tr>
<td>Mayurbhanj</td>
<td>2</td>
<td>60/9</td>
<td>73/8</td>
<td>96/9</td>
<td>83/0</td>
<td>54/1</td>
<td>75/7</td>
<td>88/6</td>
<td>81/9</td>
<td>1/5</td>
</tr>
</tbody>
</table>

Crop :- Potato (Rabi).  
Object :- To study the effect of polythene 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 > 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 polythene mulch covered, $T_2$ = Planting on flat bed, ridged immediately, followed by hand weeding after six weeks and polythene mulch covered, $T_3$ = Planting on flat bed, followed by ridging after six weeks and polythene mulch covered and $T_4$ = Planting on flat bed followed by ridging after 3 weeks, earthing up after 6 weeks with polythene mulch covered.

Polythene 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) $6\times 3.4$ m. (b) $5.8\times 3.1$ m. (v) $46\times 15$ 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>$T_1$</th>
<th>$T_2$</th>
<th>$T_3$</th>
<th>$T_4$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>75.1</td>
<td>83.0</td>
<td>138.8</td>
<td>131.3</td>
</tr>
</tbody>
</table>

C.D. = 12.6 Q/ha.

Crop :- Potato (Rabi).


Object :- To study the moisture conservation by polythene 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) $46\times 23$ 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 polythene.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) $6.7\times 3.4$ m. (b) $6.3\times 2.4$ m. (v) $23\times 46$ 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.

Ref :- Or. 64(14).

Type :- ‘C’.
Crop :- Potato (*Rabi*).


Ref :- Or. 64(24).

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.J). (c) Nil. (ii) Sandy loam. (iii) 27.10.64. (iv) (a) 4 ploughings with laddering. (b) Tuber were planted in lines (c) and (d) N.A. (c) Nil. (v) Nil. (vi) Red pataoa. (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 : 1, 1 1/2 and 2 acre inches.
   (2) 3 intervals of irrigation : F1, 3, F3= 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=270·0 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. x 3·2 m. (b) 6·0 m. x 3·0 m. (v) 20 cm. x 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.

<table>
<thead>
<tr>
<th>F1</th>
<th>F2</th>
<th>M1</th>
<th>M2</th>
<th>M3</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1</td>
<td>97·1</td>
<td>68·6</td>
<td>56·5</td>
<td>63·3</td>
<td>77·7</td>
</tr>
<tr>
<td>I2</td>
<td>59·6</td>
<td>74·7</td>
<td>57·3</td>
<td>66·0</td>
<td>75·8</td>
</tr>
<tr>
<td>I3</td>
<td>97·3</td>
<td>76·4</td>
<td>50·5</td>
<td>63·2</td>
<td>80·0</td>
</tr>
<tr>
<td>Mean</td>
<td>94·7</td>
<td>73·2</td>
<td>54·8</td>
<td>64·2</td>
<td>77·8</td>
</tr>
</tbody>
</table>

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).
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) 66 cm. x 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 4.2 Kg/ha. and T5 = 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. x 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T0</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>T5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>76.5</td>
<td>127.4</td>
<td>139.0</td>
<td>118.9</td>
<td>141.5</td>
<td>146.3</td>
</tr>
</tbody>
</table>

Crop :- Potato (Rabi).
Site :- Agri. Res. Sta., Sambalpur.

Ref :- Or. 63(55).
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. x 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 25.7 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 (3.6 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. x 4'9 m. (b) 1'8 m. x 4'9 m. (v) 0 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) 17.3 Q/ha. (b) 14.8 Q/ha. (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.

<table>
<thead>
<tr>
<th></th>
<th>A_0</th>
<th>A_1</th>
<th>A_2</th>
<th>A_3</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>T_0</td>
<td>91.1</td>
<td>105.5</td>
<td>102.5</td>
<td>41.1</td>
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<td>T_1</td>
<td>78.0</td>
<td>100.4</td>
<td>116.1</td>
<td>43.6</td>
<td>84.5</td>
</tr>
<tr>
<td>T_2</td>
<td>104.7</td>
<td>99.6</td>
<td>82.6</td>
<td>49.6</td>
<td>84.1</td>
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<tr>
<td>Mean</td>
<td>91.3</td>
<td>101.8</td>
<td>100.4</td>
<td>44.8</td>
<td>84.6</td>
</tr>
</tbody>
</table>

C.D. for A marginal means = 19.8 Q/ha.

---


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. x 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) D.R.R. (vii) Irrigated. (viii) Weedings and hoeing. (ix) 2.1 m. (x) 18.3.63.

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

(i) 3 fungicidal treatments: F_1 = 4:4 Kg/ha. of shall copper fungicide, F_2 = B. mixture (4 : 4 : 50) and F_3 = 0:2% of Dithane - 28.

(ii) 2 levels of D.D.T.: D_0 = 0 and D_1 = 5.6 g.m./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. x 4.3 m. (b) 4.3 m. x 4.0 m. (v) 61 cm. x 15 cm. (vi) Yes.

4. GENERAL:
(i) Good. (ii) Attack of Epilachna; control measure as per treatments. (iii) Yield of tuber. (iv) (a) and (b) Nil. (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.

<table>
<thead>
<tr>
<th></th>
<th>F_1</th>
<th>F_2</th>
<th>F_3</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>D_0</td>
<td>170.1</td>
<td>198.6</td>
<td>162.4</td>
<td>177.0</td>
</tr>
<tr>
<td>D_1</td>
<td>160.0</td>
<td>172.0</td>
<td>164.5</td>
<td>165.5</td>
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<tr>
<td>Mean</td>
<td>165.0</td>
<td>185.3</td>
<td>163.4</td>
<td>171.2</td>
</tr>
</tbody>
</table>
Crop :- Potato (Rabi).

Object:—To find out the effect of different weedicides on the growth and yield of Potato.

1. BASAL CONDITIONS:
   (i) (a) Nil. (b) Sanohemp (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. x 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 P₂O₅ + 179.3 Kg/ha. of K₂O as Mur. of Pot. as Super. (vi) Up-to-date. (vii) Irrigated. (viii) As per treatments. (ix) 3 em. (x) 24.2.65.

2. TREATMENTS:
   10 weedicidal treatments:  
   W₀ = Unweeded (control), W₁ = One hoeing and one earthing up, W₂ = One hoeing and one earthing followed by a second earthing, W₃ = 1.7 Kg/ha. a.e. of Sod. salt of 2, 4—D at pre-emergence state i.e., 5 days after planting, W₄ = 4.2 Kg/ha. a.e. of Sod. salt of 2, 4—D at pre emergence stage, W₅ = 3.4 Kg/ha. of Dowpon (Sod. salt of 2, 2 Dicloropropionic acid) at pre emergence stage; W₆ = 2W₅, W₇ = 3W₅, W₈ = 0.6 Kg/ha. a.e. of MCPA at pre-emergence stage and W₉ = 2W₈.

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. x 4'6 m. (b) 6'4 m. x 3'7 m. (v) 15 cm. x 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 (viii) 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
   \[\begin{array}{cccccccc}
   W₀ & W₁ & W₂ & W₃ & W₄ & W₅ & W₆ & W₇ & W₈ \\
   63'5 & 57'9 & 60'0 & 53'4 & 47'4 & 61'1 & 44'1 & 59'2 & 65'6 & 47'4 \\
   \end{array}\]

Crop :- Sugarcane.
Site :- Sugarcane Res. Stn., Bhubaneswar.

Object:—To study the response of Sugarcane to N, P₂O₅ and K₂O 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 : N₀ = 0, N₁ = 89.7 and N₂ = 179.3 Kg/ha.
   (2) 3 levels of P₂O₅ : P₀ = 0, P₁ = 89.7 and P₂ = 179.3 Kg/ha.
   (3) 3 levels of K₂O : K₀ = 0, K₁ = 56.0 and K₂ = 112.1 Kg/ha.

N as A/S applied in three splits, \(\frac{j}{j}\) at planting, \(\frac{j}{j}\) 45 days and \(\frac{j}{j}\) 90 days of planting.
3. **DESIGN**:  
(i) 3\(^{rd}\) confd.  
(ii) (a) 9 plots/block, 3 blocks/replication.  
(b) 1/24\(^{rd}\) ha.  
(iii) 3.  
(iv) (a) N.A.  
(b) 1/224\(^{nd}\) ha.  
(v) N.A.

4. **GENERAL**:  
(i) Normal.  
(ii) Sets were treated with Areton at the cut end.  
(iii) GammaMax applied at 22.4 Kg/ha.  
(iv) Germination and yield of stripped canes.  
(v) (a) 1959-1960.  
(b) No.  
(c) No.  
(vi) 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.

<table>
<thead>
<tr>
<th></th>
<th>P(_0)</th>
<th>P(_1)</th>
<th>P(_2)</th>
<th>K(_0)</th>
<th>K(_1)</th>
<th>K(_2)</th>
<th>Mean</th>
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<tr>
<td>N(_0)</td>
<td>161.7</td>
<td>203.5</td>
<td>149.6</td>
<td>158.5</td>
<td>158.7</td>
<td>204.5</td>
<td>171.6</td>
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<tr>
<td>N(_1)</td>
<td>193.3</td>
<td>241.7</td>
<td>216.6</td>
<td>237.0</td>
<td>218.5</td>
<td>196.1</td>
<td>217.2</td>
</tr>
<tr>
<td>N(_2)</td>
<td>195.2</td>
<td>234.2</td>
<td>246.3</td>
<td>228.6</td>
<td>224.0</td>
<td>223.1</td>
<td>225.2</td>
</tr>
<tr>
<td>Mean</td>
<td>183.4</td>
<td>226.9</td>
<td>204.2</td>
<td>205.7</td>
<td>200.5</td>
<td>307.9</td>
<td>204.7</td>
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<table>
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<th></th>
<th>K(_0)</th>
<th>K(_1)</th>
<th>K(_2)</th>
<th>Mean</th>
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</thead>
<tbody>
<tr>
<td>K(_0)</td>
<td>188.7</td>
<td>240.7</td>
<td>187.7</td>
<td></td>
</tr>
<tr>
<td>K(_1)</td>
<td>180.3</td>
<td>185.0</td>
<td>236.2</td>
<td></td>
</tr>
<tr>
<td>K(_2)</td>
<td>181.2</td>
<td>253.7</td>
<td>188.0</td>
<td></td>
</tr>
</tbody>
</table>

_Crop:_ Sugarcane.  
_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) 1.5 to 2.0%.  
(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 sets planted in rows of 10.1 m. length.  
(f) Nil.  
(g) Co-872.  
(h) Irrigated.  
(i) Weeding and earthing up.  
(ii) 141 cm.  
(iii) 28 to 30.3.1963.

2. **TREATMENTS**:  
All combinations of (1), (2), (3) and (4)  
(1) 3 levels of N as A.S: N\(_2\) = 179.3, N\(_3\) = 269.0 and N\(_1\) = 358.7 Kg/ha.  
(2) 3 levels of P\(_2\)O\(_5\) as Super: P\(_1\) = 89.7, P\(_2\) = 134.5 and P\(_3\) = 179.3 Kg/ha.  
(3) 3 levels of K\(_2\)O as Mur. Pot: K\(_1\) = 56.0, K\(_2\) = 84.1 and K\(_3\) = 112.0 Kg/ha.  
(4) 2 levels of slacked lime: L\(_1\) = 0 and L\(_2\) = 560.4 Kg/ha.

3. **DESIGN**:  
(i) 3\(^{rd}\) · 2 confd.  
(ii) (a) 9 plots/block and 6 blocks/replication.  
(b) 1/16.5 ha.  
(iii) 1.  
(iv) (a) 10.1 m. \times 6.7 m.  
(b) 10.1 m. \times 4.9 m.  
(v) 91 cm. on either side lengthwise.  
(vi) 7, 8.

4. **GENERAL**:  
(i) Normal.  
(ii) Nil but the seed sets were dipped in 0.5% solution of Agallol and GammaMax 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 \times P alone is significant.  
(iv) Av. yield of cane in Q/ha.
Crop: Sugarcane.

Site: Sugarcane Res. Stn., Bhubaneswar.

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 P<sub>2</sub>O<sub>5</sub>. (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 110 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: N<sub>1</sub> = 89.7, N<sub>2</sub> = 134.5 and N<sub>3</sub> = 179.3 Kg/ha.
   (2) 3 sources of N: S<sub>1</sub> = A/S, S<sub>2</sub> = Urea and S<sub>3</sub> = C/A/N.
   Fertilizers were applied ½ at planting in furrows and ½ at the time of earthing up in July.

3. DESIGN:
   (i) Fert. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 11.0 m. x 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.
Crop :- Sugarcane.  
Site :- Sugarcane Res. Stn., Bhubaneswar.  
Object :- To study the effect of growing maize and dhaincha as mixed crops on the yield of Sugarcane.

1. BASAL CONDITIONS :
   (a) Nil.  
   (b) Sugarcane.  
   (c) N.A.  
   (d) Sandy loam.  
   (e) 13'4 m. • 4'6 m.  
   (f) 91 cm. between rows.  
   (g) 40 sets were planted in the row of 13'4 m. length.  
   (h) 19.3.1960 : 3.4.1960.  
   (i) 138'3 Q/ha. of F.Y.M.; 19''Kg/ha. of P_2O_5 as Super for 62(1); 40 C.S. ha. of F.Y.M. 89'7 Kg/ha. of P_2O_5 as Super for 62(2).

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) 1/3R.

4. 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.  
Site :- Sugarcane Res. Stn., Bhubaneswar.  
Object :- To find out the optimum time of application of N to Sugarcane.

1. BASAL CONDITIONS :
   (a) Nil.  
   (b) Sugarcane.  
   (c) N.A.  
   (d) Sandy loam.  
   (e) 13'4 m. • 4'6 m.  
   (f) 91 cm. between rows.  
   (g) Nil.  
   (h) 138'3 Q/ha. of F.Y.M.; 19''Kg/ha. of P_2O_5 as Super for 62(1); 40 C.S. ha. of F.Y.M. 89'7 Kg/ha. of P_2O_5 as Super for 62(2).

2. TREATMENTS :
   5 times of application of N : T_0 = Full dose at planting, T_1 = 1/2 at planting; T_2 = 1/2 at planting; T_3 = 1/2 at planting; T_4 = 1/2 at planting; T_5 = 1/2 at planting; T_6 = 1/2 at planting; T_7 = 1/2 at planting; T_8 = 1/2 at planting; T_9 = 1/2 at planting; T_10 = 1/2 at planting.  
   N at 139'3 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).  
   (c) 80'2 m. x 4'2 m. for 61(1); 10'4 m. • 7'3 m. for 62(2).  
   (d) 5 times of application of N; (e) 91 cm. on either side.  
   (f) Yes.

Ref :- Or. 61(22).  
Type :- 'M'.
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 Gammaxine 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×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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T₁</th>
<th>T₂</th>
<th>T₃</th>
<th>T₄</th>
<th>T₅</th>
</tr>
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<tbody>
<tr>
<td>Av. yield</td>
<td>107·4</td>
<td>242·0</td>
<td>265·6</td>
<td>226·7</td>
<td>247·2</td>
</tr>
<tr>
<td>C.D. = 90·9 Q/ha.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</table>

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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T₁</th>
<th>T₂</th>
<th>T₃</th>
<th>T₄</th>
<th>T₅</th>
</tr>
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<tbody>
<tr>
<td>Av. yield</td>
<td>208·1</td>
<td>327·8</td>
<td>443·0</td>
<td>268·0</td>
<td>335·4</td>
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<tr>
<td>C.D. = 11·1 Q/ha.</td>
<td></td>
<td></td>
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<td></td>
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</tbody>
</table>

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, § at planting, § after 2 to 3 months of planting, § after 2 to 3 months of the 2nd application. F.Y.M. applied as basal.

3. DESIGN:

(i) 3×3 confd. (ii) (a) 9 plots/block; 6 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 9·1 m.×3·5 m. (b) 8·2 m.×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.

<table>
<thead>
<tr>
<th>N</th>
<th>N₂</th>
<th>P₁</th>
<th>P₂</th>
<th>P₃</th>
<th>K₁</th>
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<th>K₃</th>
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<tr>
<td>F₀</td>
<td>745.2</td>
<td>734.5</td>
<td>815.4</td>
<td>731.0</td>
<td>787.5</td>
<td>776.6</td>
<td>747.4</td>
<td>704.0</td>
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<td>F₁</td>
<td>724.1</td>
<td>877.3</td>
<td>920.6</td>
<td>854.4</td>
<td>812.2</td>
<td>855.4</td>
<td>745.2</td>
<td>927.1</td>
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<tr>
<td>Mean</td>
<td>734.7</td>
<td>805.9</td>
<td>868.0</td>
<td>792.7</td>
<td>799.9</td>
<td>816.0</td>
<td>746.3</td>
<td>838.7</td>
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C.D. for N marginal means 94.1 Q/ha.

Crop :- Sugarcane.
Site :- Sugarcane Res. Sub-Stn., Rayagada.
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 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 : L₁  No lime and L₂  1120 Kg/ha.
(2) 3 levels of N as C₃N : 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 Mar. Pott. : K₁  112.1, K₂  224.2 and K₃  336.3 Kg/ha.

Lime applied at planting, N in three splits, ½ at planting, ½ 2 to 3 months after planting and remaining ½ to 3 months of the 2nd application. P₂O₅ and K₂O applied at planting.

3. DESIGN :
(i) 3×2 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) N.A.  (v) Nil.  (vi) 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.
Crop :- Sugarcane.
Site :- Sugarcane Res. Sub-stn., Rayagada.
Ref :- Or. 65(16).
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) 50·20/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 Superphosphate+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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T₀</th>
<th>T₁</th>
<th>T₂</th>
<th>T₃</th>
<th>T₄</th>
<th>T₅</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>839·0</td>
<td>766·3</td>
<td>845·7</td>
<td>907·1</td>
<td>840·8</td>
<td>997·2</td>
</tr>
</tbody>
</table>
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) 51 cm (e) 3 budded setts. (v) 49 C.L./ha. of F.Y.M. - 89.7 Kg/ha. of P,F,O,= 112 1 Kg/ha. of K,O at planting + 179.3 Kg/ha. of N as C.A/N. N applied in 3 splits, 1 at planting, 1 to 2 months after planting and remaining 1, 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 $M_4$ - 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. x 11'9 m. (b) 10'1 m. x 10'1 m. (v) 46 cm. x 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>$M_0$</th>
<th>$M_1$</th>
<th>$M_2$</th>
<th>$M_4$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>831.5</td>
<td>693.9</td>
<td>870.2</td>
<td>974.2</td>
</tr>
<tr>
<td>C.D.=85.7 Q/ha.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

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. = 1.21 Kg/ha. of K,O as Mur. P.t. - 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 bengatir to 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. x 12'0 m. for 64 (47); 15'5 m. x 11'6 m. for 65(15). (b) 10'1 m. x 10'1 m. for 64(47); 13'7 m. x 10'7 m. for 65 (15). (v) 46 cm. x 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 x 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 x years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>M_0</th>
<th>M_1</th>
<th>M_2</th>
<th>M_3</th>
<th>M_4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>672'0</td>
<td>687'8</td>
<td>808'6</td>
<td>838'7</td>
<td>945'2</td>
</tr>
<tr>
<td>C.D. = 72.9 Kg/ha.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 : A) .

1. BASAL CONDITIONS:
(i) (a) to (c) N.A. (ii) Red loamy, Red and yellow. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (a) N.A.

2. TREATMENTS:
8 manurial treatment :
O = Control (no manure).
N_0 = 15 Kg/ha. of N
N_1 = 30 Kg/ha. of N
P_1 = 30 Kg/ha. of P_2O_5
N_1 P_1 = 15 Kg/ha. of N + 30 Kg/ha. of P_2O_5
N_1 P_2 = 30 Kg/ha. of N + 30 Kg/ha. of P_2O_5
N_2 P_2 K_1 = 30 Kg/ha. of N + 60 Kg/ha. of P_2O_5 + 30 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 and 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) 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.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N₁</th>
<th>N₂</th>
<th>P₁</th>
<th>N₁P₁</th>
<th>N₂P₁</th>
<th>N₂P₂</th>
<th>N₂P₁K₁</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of cane in Q/ha.</td>
<td>21'3</td>
<td>21'9</td>
<td>27'9</td>
<td>10'1</td>
<td>17'8</td>
<td>30'8</td>
<td>33'2</td>
<td>10'2</td>
</tr>
</tbody>
</table>

Control yield = 435'9 Q/ha.; No. of trials = 3

65 (S.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N₁</th>
<th>N₂</th>
<th>P₁</th>
<th>N₁P₁</th>
<th>N₂P₁</th>
<th>N₂P₂</th>
<th>N₂P₁K₁</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of cane in Q/ha.</td>
<td>158'0</td>
<td>148'7</td>
<td>31'3</td>
<td>150'7</td>
<td>199'3</td>
<td>160'0</td>
<td>218'3</td>
<td>34'1</td>
</tr>
</tbody>
</table>

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 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 treatments

O = Control (no manure)

\(N₁ = 15\) Kg/ha. of N
\(P₁ = 30\) Kg/ha. of \(P₂O₅\)
\(P₁ = 60\) 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 \(P₂O₅\)
\(N₂P₁ = 30\) 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 (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.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N₁</th>
<th>P₁</th>
<th>P₂</th>
<th>N₁P₁</th>
<th>N₁P₂</th>
<th>N₂P₁</th>
<th>N₂P₂</th>
<th>N₂P₁K₁</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of cane in Kg/ha.</td>
<td>1304</td>
<td>237</td>
<td>59</td>
<td>-237</td>
<td>474</td>
<td>1126</td>
<td>948</td>
<td>1259'9</td>
<td></td>
</tr>
</tbody>
</table>

Control yield = 42224 Kg/ha.; No. of trials = 3

Puri 65 (S.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N₁</th>
<th>P₁</th>
<th>P₂</th>
<th>N₁P₁</th>
<th>N₁P₂</th>
<th>N₂P₁</th>
<th>N₂P₂</th>
<th>N₂P₁K₂</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of cane in Kg/ha.</td>
<td>12600</td>
<td>-3400</td>
<td>15200</td>
<td>13300</td>
<td>7100</td>
<td>17100</td>
<td>18100</td>
<td>5091'0</td>
<td></td>
</tr>
</tbody>
</table>

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  
   N2K1=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.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>K1</th>
<th>K2</th>
<th>N1K1</th>
<th>N1K2</th>
<th>N1K2</th>
<th>N1P1K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of cane in Kg/ha.</td>
<td>761</td>
<td>573</td>
<td>217</td>
<td>662</td>
<td>395</td>
<td>751</td>
<td>929</td>
<td>818.3</td>
</tr>
</tbody>
</table>

Control yield=45772 Kg/ha.; No of trials=2.

Puri
65(S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>K1</th>
<th>K2</th>
<th>N1K1</th>
<th>N1K2</th>
<th>N1K2</th>
<th>N1P1K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of cane in Kg/ha.</td>
<td>3466</td>
<td>66</td>
<td>3266</td>
<td>5999</td>
<td>600</td>
<td>2333</td>
<td>8733</td>
<td>6002.6</td>
</tr>
</tbody>
</table>

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)

- Control (no manure)

\[ n = 67.3 \text{ kg/ha. of N of A} \text{S} \]
\[ p = 44.8 \text{ kg/ha. of P}_{2}O_{5} \text{ as Super} \]
\[ k = 44.8 \text{ kg/ha. of K}_{2}O \text{ as Mur. Pot.} \]

\[ np = 67.3 \text{ kg/ha. of N as A} \text{S} + 44.8 \text{ kg/ha. of P}_{2}O_{5} \text{ as Super} \]
\[ nk = 67.3 \text{ kg/ha. of N as A} \text{S} + 44.8 \text{ kg/ha. of K}_{2}O \text{ as Mur. Pot.} \]
\[ npk = 67.3 \text{ kg/ha. of N as A} \text{S} + 44.8 \text{ kg/ha. of P}_{2}O_{5} \text{ as Super} + 44.8 \text{ kg/ha. of K}_{2}O \text{ as Mur. Pot.} \]

3. DESIGN:

Same as in type A (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 Q1/ha.

<table>
<thead>
<tr>
<th>District</th>
<th>No. of trials</th>
<th>Control yield</th>
<th>N</th>
<th>P</th>
<th>K</th>
<th>S.E.</th>
<th>NP</th>
<th>NK</th>
<th>PK</th>
<th>NPK</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolangir</td>
<td>2</td>
<td>368'9</td>
<td>124'3</td>
<td>62'4</td>
<td>32'5</td>
<td>23'6</td>
<td>5'7</td>
<td>-</td>
<td>14'0</td>
<td>23'3</td>
<td>7'7</td>
</tr>
<tr>
<td>Dhenkanal</td>
<td>4</td>
<td>670'1</td>
<td>96'8</td>
<td>69'4</td>
<td>73'3</td>
<td>32'6</td>
<td>7'2</td>
<td>n/5</td>
<td>-6'3</td>
<td>8'1</td>
<td>10'3</td>
</tr>
<tr>
<td>Ganjam</td>
<td>2</td>
<td>1773'6</td>
<td>63'2</td>
<td>113'9</td>
<td>104'4</td>
<td>6'5</td>
<td>-28'6</td>
<td>-19'4</td>
<td>-38'7</td>
<td>0'5</td>
<td>0'4</td>
</tr>
<tr>
<td>Mayurbhanj</td>
<td>3</td>
<td>573'2</td>
<td>73'0</td>
<td>112'7</td>
<td>97'0</td>
<td>15'1</td>
<td>-1'4</td>
<td>35'0</td>
<td>4'6</td>
<td>9'0</td>
<td>15'4</td>
</tr>
<tr>
<td>Puri</td>
<td>7</td>
<td>631'6</td>
<td>187'9</td>
<td>116'6</td>
<td>35'6</td>
<td>15'3</td>
<td>14'5</td>
<td>20'7</td>
<td>45'9</td>
<td>92'0</td>
<td>17'1</td>
</tr>
</tbody>
</table>

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 (ix) N.A.

2. TREATMENTS:

O - Control (no manure)

\[ n = 67.3 \text{ kg/ha. of N of A} \text{S} \]
\[ n_1 = 134'6 \text{ kg/ha. of N as A} \text{S} \]
\[ n_2 = 67.3 \text{ kg/ha. of N as Urea.} \]

\[ np = 67.3 \text{ kg/ha. of N as A} \text{S} + 134'6 \text{ kg/ha. of N as A} \text{S} + 67.3 \text{ kg/ha. of N as Urea.} \]

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:**

<table>
<thead>
<tr>
<th>District</th>
<th>No. of Control trials</th>
<th>n₁</th>
<th>n₂</th>
<th>n₁</th>
<th>n₂</th>
<th>n₁&quot;</th>
<th>n₂&quot;</th>
<th>G.M.</th>
<th>S.E./mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolangir</td>
<td>2</td>
<td>349'6</td>
<td>—</td>
<td>534'1</td>
<td>611'5</td>
<td>487'0</td>
<td>523'0</td>
<td>486'1</td>
<td>528'5</td>
</tr>
<tr>
<td>Dhenkanal</td>
<td>2</td>
<td>534'9</td>
<td>—</td>
<td>564'4</td>
<td>584'7</td>
<td>565'3</td>
<td>572'7</td>
<td>532'1</td>
<td>573'6</td>
</tr>
<tr>
<td>Mayurbhanj</td>
<td>4</td>
<td>482'4</td>
<td>—</td>
<td>536'8</td>
<td>683'0</td>
<td>612'4</td>
<td>766'9</td>
<td>601'8</td>
<td>778'3</td>
</tr>
<tr>
<td>Puri</td>
<td>4</td>
<td>625'8</td>
<td>—</td>
<td>779'4</td>
<td>992'4</td>
<td>948'1</td>
<td>1052'4</td>
<td>896'0</td>
<td>1065'7</td>
</tr>
<tr>
<td>Puri</td>
<td>4</td>
<td>875'7</td>
<td>1059'7</td>
<td>1179'6</td>
<td>1038'0</td>
<td>1113'7</td>
<td>—</td>
<td>1060'6</td>
<td>1119'2</td>
</tr>
</tbody>
</table>

**Crop :- Sugarcane.**  
**Site :- Sugarcane Res. Stn., Bhubaneswar.**  
**Ref :- Or. 65(9).**  
**Type :- 'MV'.**

Object :- To study the optimum N requirement of different varieties of Sugarcane with the application of manurial doses.

1. **BASAL CONDITIONS :**

(i) 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) 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 : V₁=Co. 997 (early), V₂=Co. 1053 and V₃=Co. 419 (late).

(2) 3 levels of manures : M₁=89'7 Kg/ha. of N as A/S+89'7 Kg/ha. of P₂O₅ as Super+56'0 Kg/ha. of K₂O as Mur. Pot., M₂=179'0 Kg/ha. of N+89'7 Kg/ha. of P₂O₅+56'0 Kg/ha. of K₂O as Mur. Pot., and M₃=269'0 Kg/ha. of N+89'7 Kg/ha. of P₂O₅+56'0 Kg/ha. of K₂O.

N as A/S, P₂O₅ as Super and K₂O 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. x 11'0 m.  (b) 7'6 m. x 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.

<table>
<thead>
<tr>
<th></th>
<th>V₁</th>
<th>V₂</th>
<th>V₃</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>N₁</td>
<td>500'6</td>
<td>448'1</td>
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<tr>
<td>N₂</td>
<td>613'4</td>
<td>518'7</td>
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<td>599'0</td>
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<tr>
<td>N₃</td>
<td>629'2</td>
<td>556'1</td>
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<tr>
<td>Mean</td>
<td>581'1</td>
<td>507'6</td>
<td>590'2</td>
<td>559'6</td>
</tr>
</tbody>
</table>
Crop :- Sugarcane.
Site :- Sugarcane Res. Stn., Bhubaneswar.

Object :-To study the comparative suitability of top, bottom and middle bud; for seed.

1. BASAL CONDITIONS :
(i) (a) Nil. (b) Sugarcane. (c) N.A. (ii) Sandy loam. (iii) 8.3.1960. (iv) (i) 5 ploughings with laddering. (b) In furrows of 10 cm. depth. (c) 46'1 Q/ha. (d) 91 cm. between rows. (e) 22 sets 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/B = 89'7 Kg/ha. of P.O₃ as Super.

2. TREATMENTS:
4 sources of seed material : S₀ =Control (All types of buds), S₁ =Top 6 bud, S₂ =Middle 6 bud and S₃ = 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 cane.
(iv) (a) 1960 only. (b) and (c) Nil. (v) and (vi) Nil. (vii) At the time of planting the sets 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>S₀</th>
<th>S₁</th>
<th>S₂</th>
<th>S₃</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>368'1</td>
<td>252'4</td>
<td>545'1</td>
<td>496'2</td>
</tr>
<tr>
<td>C.D.=205'4 Kg/ha.</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Crop :- Sugarcane.
Site :- Sugarcane Res. Stn., Bhubaneswar.

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 ± Kg/ha. N 33 ± Kg/ha. of P₂O₅ for 63(1). (ii) Sandy loam. (iii) 22.2 1963, 16.4 1963. (iv) (a) 5 to 7 ploughings with laddergings. (b) In furrows of depth 8 to 10 cm. (c) 46'1 Q/ha. (d) 91 cm. between rows. (e) Nil. (f) N was applied in two doses of 89'7 Kg/ha. each at 45th and 60th days of planting; 49 C.L./ha. of F.Y.M. = 89'7 Kg/ha. of P₂O₅ as Super for 62(1), 49 C.L./ha. of urban compost + 89'7 Kg/ha. of P₂O₅ as Super for 63(1). (vi) Co. 527. (vii) Irrigated. (viii) Weeding and earthing up. (ix) 141 cm., 186 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 : M₁ = Dry planting and M₂ = Wet planting.
(2) 2 depths of planting : D₁ = 10 and D₂ = 20 cm.
(3) 2 cultural practices : E₀ = No earthing and E₁ = 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) J. (iv) (a) 6'7 m. x 6'4 m for 62(1), 15'5 m. x 11'6 m. for 63(1), (b) 6'7 m. x 4'6 m for 62(1), 13'7 m. x 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 agallol 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 x years) and (DE x years) interactions are present and (EM x 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 x years interaction). (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

\[ T = 202.2 \text{ Q/ha.} \]

<table>
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<tr>
<th></th>
<th>D1</th>
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<tr>
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<td>298.6</td>
<td>236.0</td>
<td>267.3</td>
</tr>
<tr>
<td>M2</td>
<td>258.6</td>
<td>220.2</td>
<td>239.4</td>
</tr>
<tr>
<td>Mean</td>
<td>278.6</td>
<td>223.1</td>
<td>253.4</td>
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<table>
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<td>M1</td>
<td>286.9</td>
<td>213.9</td>
<td>250.4</td>
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<td>M2</td>
<td>270.4</td>
<td>242.3</td>
<td>256.3</td>
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<td>288.7</td>
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<td>274.3</td>
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S.E. of body of the table = 30.9 Q/ha.

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<td>393.3</td>
<td>388.9</td>
<td>391.1</td>
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<td>M2</td>
<td>384.1</td>
<td>331.0</td>
<td>357.5</td>
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<tr>
<td>Mean</td>
<td>388.7</td>
<td>360.0</td>
<td>374.3</td>
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</table>

S.E. of body of the table = 13.6 Q/ha.

Crop :- Sugarcane.
Site :- Sugarcane Res. Stn., Bhubaneswar.

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 P\(_2\)O\(_5\) as Super+56.0 Kg/ha. of K\(_2\)O 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:
S₀ = Sugarcane alone, S₁ = Sugarcane with Potato, S₂ = Sugarcane with Dhaincha and S₃ = Sugarcane with Maize.

4. DESIGN:
(i) R.B.D.  (ii) (a) 4.  (b) N.A.  (iii) 5.  (iv) (a) 9'1 m. x 7'6 m.  (b) 7'3 m. x 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-contrd.  (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.

<table>
<thead>
<tr>
<th>Treatments</th>
<th>S₀</th>
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<th>S₂</th>
<th>S₃</th>
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<tr>
<td>Av. yield</td>
<td>687'4</td>
<td>655'1</td>
<td>732'5</td>
<td>467'1</td>
</tr>
<tr>
<td>C.D.</td>
<td>129'4 Q/ha.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Crop** := Sugarcane *(Rettoon).*  
**Site** := Sugarcane Res. Sub-Stn., Rayagada.  
**Ref** := Or. 60(9).  
**Type** := 'C'.

Object := To test the effect of different seed rates and spraying on Sugarcane.

1. BASAL CONDITIONS:
(i) (a) Nil.  (b) Sugarcane.  (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: S₁ = 61, S₂ = 76 and S₃ = 91 cm.

Sub-plot treatments:
3 seed rates: R₁ = 16000, R₂ = 20000 and R₃ = 24000 three budded setts at 14'7, 18'5 and 22'1 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. x 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.

<table>
<thead>
<tr>
<th></th>
<th>R₁</th>
<th>R₂</th>
<th>R₃</th>
<th>Mean</th>
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<tr>
<td>S₀</td>
<td>618'6</td>
<td>501'6</td>
<td>549'8</td>
<td>556'7</td>
</tr>
<tr>
<td>S₁</td>
<td>542'6</td>
<td>538'3</td>
<td>545'8</td>
<td>542'2</td>
</tr>
<tr>
<td>S₂</td>
<td>502'1</td>
<td>558'1</td>
<td>552'8</td>
<td>537'7</td>
</tr>
<tr>
<td>Mean</td>
<td>554'4</td>
<td>532'6</td>
<td>549'5</td>
<td>545'5</td>
</tr>
</tbody>
</table>
Crop :- Sugarcane.  
Ref :- Or. 62(74).  
Type :- 'C'.

Site :- Sugarcane Res. Sub-stn., Raygada.  
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 P2O5 as Super+112.1 Kg/ha. of K2O at planting+179.3 Kg/ha. of N as C/A/N in three splits, ½ at planting, ½ at 2 to 3 months after and remaining 2 to 3 months after the 2nd application. (vi) Co-617. (vii) Irrigated. (viii) 3 hand-weedicings. (ix) N.A. (x) 27.3.63.

2. TREATMENTS :

6 dates of planting : D1=30.10.61, D2=28.11.61, D3=28.12.61, D4=31.1.62, D5=27.2.62 and D6=27.3.1962.

3. DESIGN :

(i) R.B.D. (ii) 6. (b) N.A. (iii) 4. (iv) (a) 11'0 m. x 11'9 m. (b) 10'1 m. x 10'1 m. (v) 46 cm. x 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. 

<table>
<thead>
<tr>
<th>Treatment</th>
<th>D1</th>
<th>D2</th>
<th>D3</th>
<th>D4</th>
<th>D5</th>
<th>D6</th>
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<tbody>
<tr>
<td>Av. yield</td>
<td>998.8</td>
<td>913.8</td>
<td>825.8</td>
<td>883.6</td>
<td>622.9</td>
<td>495.0</td>
</tr>
<tr>
<td>C.D. =</td>
<td>248.3 Q/ha.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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</table>

Crop :- Sugarcane.  
Ref :- Or. 64(46).  
Type :- 'C'.

Site :- Sugarcane Res. Sub-stn., Raygada.  
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) 49.4 C.I./ha. of F.Y.M.+89.7 Kg/ha. of P2O5 as Super+112.1 Kg/ha. of K2O as Mur. Pot. at planting 179.3 Kg/ha. of N as C/A/N in three splits. ½ at planting, ½ at 2 to 3 months after and ½ at 2 to 3 months after the 2nd application. (vi) Co-617. (vii) Irrigated. (viii) 3 hand-weedicings. (ix) N.A. (x) 26.2.65.

2. TREATMENTS :

4 dates of planting : D1=19.10.63, D2=31.12.63, D3=31.1.63, D4=8.2.63 and D5=15.4.64.

3. DESIGN :

(i) R.B.D. (ii) 4. (b) N.A. (iii) 5. (iv) (a) 11'0 m. x 11'9 m. (b) 10'1 m. x 10'1 m. (v) 46 cm. x 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>D1</th>
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<th>D4</th>
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<tbody>
<tr>
<td>Av. yield</td>
<td>733.9</td>
<td>591.3</td>
<td>474.3</td>
<td>258.8</td>
</tr>
</tbody>
</table>

C.D. = 134.4 Q/ha.

**Crop:** Sugarcane.  
**Site:** Sugarcane Res. Stn., Bhubaneswar.

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 sets planted in a row of 10.1 m. length.  (v) 49 C.L. ha. of F.Y.M. and 89.7 Kg/ha. of P.O. as Super, 179.3 Q/ha. of N at planting, 1 at 45th day and 1 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 'CV': 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) 1.371 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) Nil.  (vi) 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.

<table>
<thead>
<tr>
<th>Variety</th>
<th>S1</th>
<th>S2</th>
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<tr>
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<td>294.6</td>
<td>355.1</td>
<td>465.9</td>
<td>270.5</td>
<td>346.5</td>
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<tr>
<td>V2</td>
<td>356.9</td>
<td>469.6</td>
<td>820.2</td>
<td>227.2</td>
<td>468.6</td>
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<tr>
<td>V3</td>
<td>399.8</td>
<td>259.0</td>
<td>534.4</td>
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<td>357.3</td>
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<td>Mean</td>
<td>350.5</td>
<td>361.2</td>
<td>606.8</td>
<td>244.6</td>
<td>390.8</td>
</tr>
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</table>

C.D. for S marginal means = 93.9 Q/ha.

**Crop:** Sugarcane.  
**Site:** Sugarcane Res. Stn., Bhubaneswar.

Object: To study the effect of spacing on different varieties of Sugarcane.
1. **BASAL CONDITIONS**:
   (i) Nil. (b) Fallow. (c) Nil. (iii) Sandy loam. (iv) 5 ploughings by country plough. (b) Planting. (c) 25 C.L./ha. of P₂O₅ at planting+61.6 Kg/ha. of N as A/S top dressed 45 days and 90 days after transplanting. (v) 3 hand weedications. (vi) Irrigated. (vii) 3 hand weedications. (viii) 30.6.65.

2. **TREATMENTS**:
   **Main-plot treatments**:
   4 spacings: S₁ = 46, S₂ = 76, S₃ = 91 and S₄ = 122 cm.
   **Sub-plot treatments**:
   3 varieties; V₁ = Co-527 (early), V₂ = Co-897 (medium) and V₃ = 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. x 6.7 m. (b) S₁ = 6.7 m. x 9.1 m., S₂ = 6.7 m. x 8.5 m., S₃ = 6.7 m. x 8.2 m. and S₄ = 6.7 m. x 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.

<table>
<thead>
<tr>
<th></th>
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<th>S₂</th>
<th>S₃</th>
<th>S₄</th>
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<td>182.8</td>
<td>166.9</td>
</tr>
<tr>
<td>V₂</td>
<td>117.4</td>
<td>64.6</td>
<td>51.9</td>
<td>55.0</td>
<td>70.7</td>
</tr>
<tr>
<td>V₃</td>
<td>102.7</td>
<td>139.2</td>
<td>163.1</td>
<td>103.3</td>
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<tr>
<td>Mean</td>
<td>132.6</td>
<td>130.1</td>
<td>109.9</td>
<td>113.7</td>
<td>121.6</td>
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</tbody>
</table>

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 P₂O₅ as Super+56.0 Kg/ha. of K₂O 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 P₂O₅ as Super+201.7 Kg/ha. of N as A/S. (vi) Co. 997. (vii) Irrigated. (viii) Hand weeding thrice. (ix) 20.11.1965.

2. **TREATMENTS**:
   All combinations of (1) and (2)
   (1) 3 intensities of irrigations : I₁=2, I₂=3 and I₃=4 acre inches.
   (2) 3 intervals of irrigations : Q₁=1, Q₂=2 and Q₃=3 weeks interval.

3. **DESIGN**:
   (i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a) 7.3 m. x 8.5 m. (b) 7.3 m. x 7.3 m. (v) 61 cm. on either side along length. (vi) Yes.
4. GENERAL:
(i) Normal. (iii) Nil, but sugarcane sets were treated with 0.5% agallol. (iii) Biometric observations.
(a) 1965 –conid. (b) Na. (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.

<table>
<thead>
<tr>
<th></th>
<th>$I_1$</th>
<th>$I_2$</th>
<th>$I_3$</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>$Q_1$</td>
<td>682.2</td>
<td>554.9</td>
<td>592.0</td>
<td>610.0</td>
</tr>
<tr>
<td>$Q_2$</td>
<td>656.5</td>
<td>576.6</td>
<td>575.6</td>
<td>602.9</td>
</tr>
<tr>
<td>$Q_3$</td>
<td>611.6</td>
<td>813.0</td>
<td>636.5</td>
<td>687.0</td>
</tr>
<tr>
<td>Mean</td>
<td>650.1</td>
<td>648.2</td>
<td>601.7</td>
<td>633.3</td>
</tr>
</tbody>
</table>

Crop : Sugarcane.
Site : Sugarcane Res. Sub-Stn., Rayagada.
Ref : Or. 61(64), 62(76).
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. (iii) 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 P$_2$O$_5$ as Super $112.1$ Kg/ha. of K$_2$O as Mur. Pot. (vi) Co–617. (vii) As per treatments. (viii) 3 hand weedicings. (ix) N.A. (x) 14.4.1962 ; 31.3.1963.

2. TREATMENTS:
Main-plots treatments:
3 intervals of irrigation : $I_1$=1, $I_2$=2 and $I_3$=3 weeks.
Sub-plots treatments:
3 levels of N as C/A/N : $N_1$=134.5, $N_2$=179 3 and $I_3$=224.2 Kg/ha.
C/A/N was applied in 3 splits : ½ at planting, ½ after 2 to 3 months of planting and remaining ½ after 2 to 3 months of the second application.

3. DESIGN:
(i) Split-plot. (ii) 3 main-plots, replication. 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. for 61(64); 11.9 m. 11.9 m. for 62(76). (b) 22.0 m. + 2.7 m. for 61(64); 10.1 m. for 62(76). (v) N A for 61(64); 45 cm. 91 cm. for 62(76). (vi) Yes.

4. GENERAL:
(i) Good. (ii) N.A. (iii) Yield of Sugarcane. (iv) (a) 1961 – 1963 (The crop for 1963 was completely destroyed by fire). (b) No. (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:
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.
(i) 1137.3 Q/ha. (ii) 225.7 Q/ha. (b) 92.5 Q/ha. (iii) Main effect of N is highly significant and interaction I x N is significant. (iv) Av. yield of cane in Q/ha.

<table>
<thead>
<tr>
<th></th>
<th>N1</th>
<th>N2</th>
<th>N3</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1</td>
<td>1105.0</td>
<td>1266.1</td>
<td>1315.6</td>
<td>1228.9</td>
</tr>
<tr>
<td>I2</td>
<td>1085.2</td>
<td>960.0</td>
<td>1141.1</td>
<td>1062.1</td>
</tr>
<tr>
<td>I3</td>
<td>996.7</td>
<td>1212.5</td>
<td>1153.9</td>
<td>1121.0</td>
</tr>
<tr>
<td>Mean</td>
<td>1062.3</td>
<td>1146.2</td>
<td>1203.5</td>
<td>1137.3</td>
</tr>
</tbody>
</table>

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.
Site :- Sugarcane Res. Stn., Bhubaneswar.
Ref :- Or. 60(20).
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 sets 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 7.2 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 weedings were not done but earthing up was done in proper time.

3. DESIGN:
(i) R.B.D. (ii) 6. (b) 1/10'9 ha. (iii) 4. (iv) (a) 7'3 m. x 8'1 m., (b) 5'5 m. x 7'2 m. (v) 91 cm. x 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) Sets were dipped in aretol before planting and Gammaxine applied at 22.4 Kg/ha. in furrows. Two acre of 30 cm. x 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.
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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T₀</th>
<th>T₁</th>
<th>T₂</th>
<th>T₃</th>
<th>T₄</th>
<th>T₅</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>111.7</td>
<td>28.0</td>
<td>37.2</td>
<td>31.5</td>
<td>64.5</td>
<td>16.0</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T₀</th>
<th>T₁</th>
<th>T₂</th>
<th>T₃</th>
<th>T₄</th>
<th>T₅</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean count</td>
<td>12.7</td>
<td>9.0</td>
<td>3.0</td>
<td>4.2</td>
<td>4.5</td>
<td>1.5</td>
</tr>
</tbody>
</table>

C.D. = 4.3

(c) Monocot count after 110 days of planting (on 24.7.1960).

(i) 66.4 (ii) 40.9. (iii) Treatment differences are highly significant (iv) Mean count of monocot.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T₀</th>
<th>T₁</th>
<th>T₂</th>
<th>T₃</th>
<th>T₄</th>
<th>T₅</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean count</td>
<td>220.0</td>
<td>75.0</td>
<td>79.0</td>
<td>57.0</td>
<td>111.7</td>
<td>35.5</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T₀</th>
<th>T₁</th>
<th>T₂</th>
<th>T₃</th>
<th>T₄</th>
<th>T₅</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean count</td>
<td>3.2</td>
<td>2.6</td>
<td>1.0</td>
<td>1.7</td>
<td>2.4</td>
<td>0.2</td>
</tr>
</tbody>
</table>


1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (d) Sandy loam. (ii) 24.2.1960. (iii) 7 ploughings with laddering.

(b) In furrows of 10 cm. depth. (c) 46.1 Q/ha. (d) 91 cm. between rows. (e) 25 sets were planted in 6.7 m. length. (f) 49 C.I./ha. of F.Y.M. - 89.7 Kg/ha. of P₂O₅ as Super. (g) 89.7 Kg/ha. of N as A.S. (h) Co-881. (i) Irrigated. (j) Weeding and earthing up. (k) 116 cm. (l) 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., T₄ = 2.2 Kg/ha. of Aldrin 30 E.C., T₅ = 2.2 Kg/ha. of Aldrin 30 E.C.

3. DESIGN:

(i) R.B.D. (ii) 5 (a) 1/21.3 ha. (iii) 4 (a) 11.0 m. x 8.5 m. (b) 11.0 m. x 6.7 m. (v) 91 cm. on either side lengthwise. (vi) Yes.
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.

RESULTS:
1. 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T₀</th>
<th>T₁</th>
<th>T₂</th>
<th>T₃</th>
<th>T₄</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>366.2</td>
<td>404.8</td>
<td>406.8</td>
<td>449.9</td>
<td>396.7</td>
</tr>
</tbody>
</table>

2. % 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T₀</th>
<th>T₁</th>
<th>T₂</th>
<th>T₃</th>
<th>T₄</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of shoot borers</td>
<td>4.7</td>
<td>4.3</td>
<td>7.5</td>
<td>3.2</td>
<td>8.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T₀</th>
<th>T₁</th>
<th>T₂</th>
<th>T₃</th>
<th>T₄</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of top borers</td>
<td>0.9</td>
<td>0.7</td>
<td>0.8</td>
<td>0.1</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Crop :- Sugarcane.

Site :- Sugarcane Res. Stn., Bhubaneswar.

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) 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 sets 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 tilex in 4.5 litres of water and F₂=454 gms of agallol in 91 litres of water.

Sets 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.
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 borers in Sugarcane.

1. BASAL CONDITIONS :

   (i) (a) Paddy-Sugarcane. (ii) Fallow. (c) Nil. (iii) Sandy loam. (iii) 17, 19, 20, 5.64 ; 22,12.64. (iv) (a) 5 to 8 ploughings by bullock drawn plough. (b) Transplanting. (c) 30 to 40.1 Q/ha. (d) 91 cm. (e) 3 budded sets. (v) 50 C.L.,ha. of F.Y.M. (vi) 44% Kg/ha. of P.O₃ as Super and 67.2 Kg/ha. of N. (vii) Irrigated. (viii) 3 hand weedings. (x) 8.3.65 ; 18.2.66.

2. TREATMENTS :


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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Iₐ</th>
<th>I₁</th>
<th>I₂</th>
<th>I₃</th>
<th>I₄</th>
<th>I₅</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>655.5</td>
<td>527.0</td>
<td>615.0</td>
<td>638.7</td>
<td>603.9</td>
<td>615.3</td>
</tr>
</tbody>
</table>

65(8) (i) 619.9 Q/ha. (ii) 172.2 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Iₐ</th>
<th>I₁</th>
<th>I₂</th>
<th>I₃</th>
<th>I₄</th>
<th>I₅</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>650.3</td>
<td>564.9</td>
<td>630.1</td>
<td>632.3</td>
<td>712.4</td>
<td>523.3</td>
</tr>
</tbody>
</table>

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) 30 to 40.1 Q/ha. (d) 91 cm. (e) 3 budded sets. (v) 79.7 Kg/ha. of P.O₃ as Super and 44% Kg/ha. of N as C/A/N +494 C.L./ha of F.Y.M. (vi) Co. 697. (vii) Irrigated. (viii) 3 hand weedings. (x) 12.0 E.C. (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 20 E.C. spraying twice at 8th and 12th weeks after planting. F₄ = Endrin 0·1 E.C. spraying twice at 8th and 12th weeks after planting.

3. DESIGN:

(i) R.B.D. (ii) 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>F₀</th>
<th>F₁</th>
<th>F₂</th>
<th>F₃</th>
<th>F₄</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>578·6</td>
<td>561·5</td>
<td>496·2</td>
<td>582·4</td>
<td>609·0</td>
</tr>
</tbody>
</table>

Crop :- Sugarcane.
Site :- Sugarcane Res. Stn., Bhubaneswar.

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 sets line; bud to bud planting. (v) Co-527. (vi) Irrigated (vii) 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) 5. (b) N.A. (iii) 4. (iv) (a) 10·7 m. × 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:

(i) 667·6 Q/ha. (ii) 53·2 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>C₀</th>
<th>C₁</th>
<th>C₂</th>
<th>C₃</th>
<th>C₄</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>431·4</td>
<td>607·5</td>
<td>697·5</td>
<td>718·3</td>
<td>883·1</td>
</tr>
</tbody>
</table>

C.D. = 81·9 Q/ha.
II. Weed count: (3 areas of 30 x 30 cm. had been selected randomly in each plot and the weed counts were averaged out). (i) 67.4, (ii) 49.7. (iii) Treatment differences are highly significant. (iv) Av. weed count.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>C_1</th>
<th>C_2</th>
<th>C_3</th>
<th>C_4</th>
<th>C_5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>141.7</td>
<td>130.0</td>
<td>53.5</td>
<td>7.0</td>
<td>4.8</td>
</tr>
</tbody>
</table>

C.D. = 62.7

Crop := Sugarcane. Site := Sugarcane Res. Stn., Bhubaneswar. Object := Control of weeds in sugarcane by intercultural operations alone and in combination with different weedical applications.

1. BASAL CONDITIONS:
   (i) (a) Nil. (b) Paddy, (c) 67.2 Kg ha. of P.O. as Super 112.1 Kg ha. of N as A.S. (ii) Sandy loam (iii) 28.3 cm. depth by country plough. (b) Planting. (c) 49.4 Q/ha. (d) 76 cm. between rows. (e) 5 puddled sets. (vi) 49.4 C.L. ha. of F Y M. 173:3 Kg ha. of N as Ca, N: 89.7 Kg ha. of P.O. as Super at the time of planting. (vii) Irrigated. (viii) As per treatments. (ix) 132.1 cm. (x) 28.4 cm.

2. TREATMENTS:

Maip-plot treatments:
All combinations of (1) and (2)
(1) Four pre-emergence treatments : S_1 = None, S_2 = Planted and immediately ridged and later harrowed before germination, S_3 = Sinauzine at 3.6 Kg, S_4 = Sinauzine at 6.7 Kg ha.
(2) 3 post-emergence cultural treatments : I_1 = None, I_2 = Inter-row cultivation and weeding along and within rows followed by ridging at proper stage of plant growth and I_3 = Inter-col cultivation and weeding along and within rows followed by ridging.

Sub-plot treatments:
H_0 = No post emergence herbicidal treatment, H_1 = 2, 4-D at 11 Kg ha and H_2 = 2, 4-D at 22 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 x 3.1 m. (v) 38 cm x 76 cm. (vi) Yes.

4. GENERAL:
(i) Normal. (ii) Early shoot borer ; spraying of endrin 20 E.C. conc. acction 0.5 % in 1121 litres ha.
(iii) Germination, tillers and weed pop. and yield of cane. (iv) (a) 1965-90 and (b) Yes. (c) Nil. (v) 0 (viii) Nil.

5. RESULTS:
(i) 508.8 Q/ha. (ii) 98.0 Q/ha. (iii) 130.4 Q/ha. (iii) None of the effects is significant. (iv) Av. yield in Q/ha.

<table>
<thead>
<tr>
<th></th>
<th>I_1</th>
<th>I_2</th>
<th>I_3</th>
<th>H_0</th>
<th>H_1</th>
<th>H_2</th>
<th>Mean</th>
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<tbody>
<tr>
<td>S_1</td>
<td>483.4</td>
<td>482.4</td>
<td>573.6</td>
<td>485.8</td>
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<td>457.2</td>
<td>513.1</td>
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<td>S_2</td>
<td>495.0</td>
<td>493.8</td>
<td>528.5</td>
<td>480.0</td>
<td>465.4</td>
<td>519.9</td>
<td>505.8</td>
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<td>S_3</td>
<td>488.7</td>
<td>521.2</td>
<td>567.7</td>
<td>493.6</td>
<td>566.8</td>
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<td>497.4</td>
<td>477.1</td>
<td>466.9</td>
<td>507.1</td>
<td>502.8</td>
<td>492.3</td>
</tr>
<tr>
<td>Mean</td>
<td>492.4</td>
<td>498.7</td>
<td>535.5</td>
<td>481.6</td>
<td>533.9</td>
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<td>467.3</td>
<td>487.6</td>
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<tr>
<td>H_1</td>
<td>510.2</td>
<td>500.0</td>
<td>591.6</td>
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<tr>
<td>H_2</td>
<td>477.1</td>
<td>528.9</td>
<td>527.1</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Crop :- Sugarcane.  
Site :- Sugarcane Res. Sub- Sta., Rayagada.  
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 Kgf/ha. of P2O5 as Super+112.1 Kg/ha. of K2O as Muri. Pot. +179.3 Kg/ha. of N as C/A/N.  
   (vi) 16 to 18.2.1965; 6.2.1966.

2. TREATMENTS:
   6 insecticidal treatments: T0=Control, T1=Heptachlora 20 E.C. at 1.7 Kg/ha., T2=1.1 Kg/ha. of W.L. 1650 E.C., T3=1.1 Kg/ha. of Endrin 20 E.C., T4=Detrashing and mulching and T6=Trash covering.

The insecticides were applied in 561.5 litres of water/ha.

3. DESIGN:
   (i) R.B.D.  
   (ii) (a) Nil.  
   (iii) 4.  
   (iv) 9.5 m. x 1.3 m.  
   (v) 46 cm. x 91 cm.

4. GENERAL:
   (i) Good.  
   (ii) Nil.  
   (iii) Early shoot borer, infection and yield of cane.  
   (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 x years interaction).  
   (iii) Treatment differences are not significant.  

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T0</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>T6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>863.8</td>
<td>789.5</td>
<td>820.9</td>
<td>800.0</td>
<td>923.2</td>
<td>906.2</td>
</tr>
</tbody>
</table>

Crop :- Cotton (Rabi).  
Site :- M.A.E. Centre, Barpali.  
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 P2O5 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 : S1=A/S and S2=Urea.  
   (2) 6 times of application : T1=At sowing, T2=At first interculture, T3=At flowering, T4=At sowing+ 1/4 at flowering, T5=At sowing+1/4 at first interculture+1/4 at flowering and T6=1/4 at flowering+1/4 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 Kapor.  
   (iv) (a) 1956-1960.  
   (b) No.  
   (c) I.  
   (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 Kapor in Kg/ha.
Crop: Cotton (Kharif).
Ref.: Or. 62(11).
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 cm. (iv) (a) 3 ploughings followed by laddering. (b) and (c) N.A. (d) As per treatments. (e) Nil (v) 4483 Kg/ha. of FYM. (vi) P-216-F. (vii) Unirrigated. (viii) Two hand weedicings and one earthing. (ix) 105 cm. (x) N.A.

2. TREATMENTS:
   All combinations of (1), (2) and (3)
   (1) 3 spacings: S1 = 61 cm. x 30 cm., S2 = 61 cm. x 46 cm., and S3 = 61 cm. x 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 : P1 = 0, P2 = 33.6 and P3 = 67.2 Kg/ha.

3. DESIGN:
   (i) 3^3 confd. (ii) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 5.5 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 (vi) Nil.

5. RESULTS:
   (i) 356 Kg/ha. (ii) 90.0 Kg/ha. (iii) Main effects of P, N and interaction P x N are highly significant. Main effect of S is significant. (iv) Av. yield of kapas in Kg/ha.

<table>
<thead>
<tr>
<th></th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>T5</th>
<th>T6</th>
<th>Mean</th>
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<tbody>
<tr>
<td>S1</td>
<td>332</td>
<td>350</td>
<td>240</td>
<td>249</td>
<td>360</td>
<td>304</td>
<td>300</td>
</tr>
<tr>
<td>S2</td>
<td>240</td>
<td>590</td>
<td>277</td>
<td>304</td>
<td>360</td>
<td>258</td>
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<tr>
<td>Mean</td>
<td>286</td>
<td>470</td>
<td>258</td>
<td>276</td>
<td>360</td>
<td>281</td>
<td>322</td>
</tr>
</tbody>
</table>

C.D. for T marginal means = 142.9 Kg/ha.

C.D. for P, N or S marginal means = 62.2 Kg/ha.
C.D. for body of P x N table = 107.8 Kg/ha.
Crop: Jute (Kharif).
Ref: Or. 63(48), 64(37), 65(42).
Type: 'M'.

Site: Jute Res. Sta., Kendrapara.

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. (f) 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 em., 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: 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.
   (3) 3 levels of K₂O as Mur. Pot.: K₀ = 0, K₁ = 22.4 and K₂ = 44.8 Kg/ha.

3. DESIGN:
   (i) 3² confd. (ii) (a) 9 plots/block ; 3 blocks/repetition. (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.

<table>
<thead>
<tr>
<th></th>
<th>P₀</th>
<th>P₁</th>
<th>P₂</th>
<th>K₀</th>
<th>K₁</th>
<th>K₂</th>
<th>Mean</th>
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<td>N₀</td>
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<td>787</td>
<td>788</td>
<td>710</td>
<td>628</td>
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<td>720</td>
</tr>
<tr>
<td>N₁</td>
<td>1780</td>
<td>1840</td>
<td>2002</td>
<td>1882</td>
<td>1868</td>
<td>1873</td>
<td>1874</td>
</tr>
<tr>
<td>N₂</td>
<td>2440</td>
<td>2494</td>
<td>2528</td>
<td>2468</td>
<td>2491</td>
<td>2503</td>
<td>2487</td>
</tr>
<tr>
<td>Mean</td>
<td>1602</td>
<td>1707</td>
<td>1773</td>
<td>1687</td>
<td>1663</td>
<td>1733</td>
<td>1694</td>
</tr>
</tbody>
</table>

C.D. for N marginal means=160.7 Kg/ha.

Crop: Jute (Kharif).
Ref: Or. 63(46), 64(33), 65(37).
Type: 'M'.

Site: Jute Res. Sta., Kendrapara.

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; A/S 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) 44'8 Kg/ha. N/A/S for 63; A/S per treatments for 64; Nil for 65. (v) 4.75'8 Kg/ha. of F.Y.M. for 64 and 25 C/L/ha. of compost for 65. (vi) JRC. (vii) Irrigated. (viii) 3 seedlings and 2 hoeings. (ix) 3, 166 cm., 134 cm., 104 cm.

2. TREATMENTS:
   5 levels of Urea: M 1---Nomanun. (control), M 1 One foliar spray of Urea at 12'2 Kg/ha. of N as 2% solution after 35 days of sowing:
   15.5.63; 22.4.64; 26.4 65. (i) 3 to 5 ploughing and laddering. (b) Linesowing by seed drill. (c) 2Kg/ha. of N as 2% solution after 35 and 70 days of sowing + 22'4 Kg/ha. of NaNO3 sowing, M 3--12.10.1963; 21.11.1964; 8.10.1965. 5 em., 134 em., 104 em.

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 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 3'2 Kg/ha. in 180 litres of water per hectare for 64; Semi looper attack for 65, end in sprayed. (iii) He got measurements and yield. (iv) (a) 1963--considered. (b) Yes. (c) Nil. (v) to (vii) Nil

5. RESULTS:
63(46) (i) 789 Kg/ha. (ii) 264 0 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of no-c in Kg/ha.
   Treatment M 1 M 1 M 1 M 1 M 1 381 846 911 873 935 Av. yield C.D. = 380'7 Kg/ha.

64(33) (i) 236 Kg/ha. (ii) 97'0 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of fibres in Kg/ha.
   Treatment M 1 M 1 M 1 M 1 M 1 113 211 295 199 310 Av. yield C.D. = 130'1 Kg/ha.

65(37) (i) 513 Kg/ha. (ii) 214'0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of fibres in Kg/ha.
   Treatment M 1 M 1 M 1 M 1 M 1 119 955 647 633 560 Av. yield C.D. = 329'7 Kg/ha.

Crop -- Jute Kharif.
Site -- Jute Res. Stn., Kendrapara
Object -- To find out the effect of Urea as foliar spray on the yield of Capsularis Jute.

Ref -- Or. 64(32), 65(38).
Type -- 'M'.
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 laddings 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. x 8 cm. for 64; 30 cm. between rows for 65. (e) Nil. (v) 25 C.L. 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 manural 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 3.i 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 A/S applied to soil 35 days after sowing.

3. DESIGN:

(i) R.B.D. (ii) 20. (b) N.A. (iii) 4. (iv) (a) 4'3 m. x 2'1 m. for 64; N.A. for 65. (b) 3.7 m. x 1'5 m. for 64; N.A. for 65. (v) 30 cm. x 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—cond. (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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>M_5</th>
<th>M_6</th>
<th>M_7</th>
<th>M_8</th>
<th>M_9</th>
<th>M_10</th>
<th>M_11</th>
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<tbody>
<tr>
<td>Av. yield</td>
<td>65</td>
<td>89</td>
<td>187</td>
<td>210</td>
<td>147</td>
<td>181</td>
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<td>69</td>
<td>67</td>
<td>92</td>
<td>160</td>
<td>150</td>
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</tr>
</tbody>
</table>

M_15 =156, M_16 =192, M_17 =105, M_18 =114, M_19 =203, M_20 =139, M_21 =294, M_22 =207

C.D.=80.8 Kg/ha.

65(38)

(i) 102.4 Kg/ha. (ii) 212 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of fibre in Kg/ha.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>M_5</th>
<th>M_6</th>
<th>M_7</th>
<th>M_8</th>
<th>M_9</th>
<th>M_10</th>
<th>M_11</th>
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<tbody>
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<td>Av. yield</td>
<td>487</td>
<td>1030</td>
<td>1187</td>
<td>834</td>
<td>730</td>
<td>1170</td>
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<td>733</td>
<td>650</td>
<td>932</td>
<td>1068</td>
<td>1325</td>
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</tbody>
</table>

M_15 =1265, M_16 =1430, M_17 =782, M_18 =847, M_19 =1208, M_20 =1170, M_21 =1279, M_22 =1199

C.D.=300.5 Kg/ha.

Crop: Jute (Kharif), Site: Jute Res. Stn., Kendrapara. 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 laddings. (b) Line sowing by seed drill. (c) 2 Kg/ha. (d) 30 cm. x 8 cm. (e) —. (v) Nil. (vi) JRC—212. (vii) Irrigated. (viii) 3 seedings; 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, $M_2 = 2M_0$, $M_3 = 3M_0$, $M_4 = 4M_0$, $M_5 = 8M_0$, $M_6 = 11.2$ Kg/ha of P; $M_7 = 11.2$ Kg/ha. of K, O, $M_8 = M_0$, $M_9 = M_1$, $M_{10} = 2M_0$, $M_{11} = -M_0$, $M_{12} = -M_1$, $M_{13} = -3M_0$, $M_{14} = -4M_0$, and $M_{15} = -8M_0$.

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. 7 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. m. 1 40 litres of water/ha. (iii) Yield of fibre. (iv) 1959 - 1964 (Expts. for 1959, 1961 are N.A. Expt. for 1964 leded). (b) Yes. (c) Results of combined analysis are given under 5. (vi) N.A. (vii) Heavy rain and flood affected the crop for 62(64). (vi) Expt. conducted in 1963 failed. Error variances are homogeneous and Treatments x 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 x years interaction) (iii) Treatment differences are highly significant. (iv) Av. yield of fibre in Kg/ha.

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, O as Super - 22.4 Kg/ha. of K, O as Pot. Sul. for 62(73); Nil for others. (ii) Sandy loams for 62(73); Clay loams for others. (iii) 2.5, 1961; 16 and 17.4, 1962. 10.4.1963. (iv) 4. (a) 4 to 6 ploughings, (b) Line sowing (c) 13 Kg/ha. (d) 23 cm between rows. (e) Nil. (f) 92.2 Q/ha. of compost for 61(63), 12 C.L. ha. of F. Y. M. for 63(53); Nil for 62(73). (g) 10.4.1963. (h) JRC-212. (v) Irrigated. (vi) 1 to 2 weedicings - 1 to 2 hoeings. (vii) 249 cm., 132 cm., 155 cm. (ix) 27.9.1961; 7, 8, 10, 1961; 11, 14, 1962; 9 to 20.9, 1963.

2. TREATMENTS:
All combinations of (1), (2) and (3)
(i) 3 levels of N as A.S.: $N_0$ - 0, $N_1$ = 33.6 and $N_2$ = 67.2 Kg ha.
(ii) 3 levels of P, O, as Super: $P_0$ = 0, $P_1$ = 22.4 and $P_2$ = 44.8 Kg ha
(iii) 3 levels of K, O as Pot. Sul.: $K_0$ = 0, $K_1$ = 22.4 and $K_2$ = 44.8 Kg ha.

3. DESIGN:
(i) 3 rep. conf. (ii) 9 plots, block, 3 blocks, replication. (iii) N.A. (iv) 3. (v) (a) 32 m. x 31 m. for 61(63); 46 m. x 37 m. for others. (b) 2.7 m. x 2.7 m. for 61(63); 1 m. x 3.4 m. for 62(73); 4.0 m. x 3.4 m. for 63(53). (vi) 23 cm. x 15 cm. for 61(63) and 62(73); 30 cm. x 15 cm. for 63(53). (vii) 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 nuts for 63(53). (iii) Yield of use fibre. (iv) 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.
RESULTS:

(i) 2527 Kg/ha. (ii) 376.6 Kg/ha. (28 d.f. made up of various components of Treatments x years interaction).
(iii) Main effect of N alone is highly significant. (iv) Av. yield of fibre in Kg/ha.

<table>
<thead>
<tr>
<th></th>
<th>P₀</th>
<th>P₁</th>
<th>P₂</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>N₀</td>
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<td>1759</td>
<td>1696</td>
<td>1699</td>
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<tr>
<td>N₁</td>
<td>2679</td>
<td>2546</td>
<td>2569</td>
<td>2375 1775 1898</td>
</tr>
<tr>
<td>N₂</td>
<td>3242</td>
<td>3125</td>
<td>3207</td>
<td>3244 3208 3122</td>
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<tr>
<td>Mean</td>
<td>2613</td>
<td>2477</td>
<td>2491</td>
<td>2439 2571 2570</td>
</tr>
</tbody>
</table>

C.D. for N marginal means=363.6 Kg/ha.

<table>
<thead>
<tr>
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<td>K₀</td>
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<tr>
<td>K₂</td>
<td>3292</td>
<td>3060</td>
<td>2999</td>
<td>3117</td>
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<tr>
<td>Mean</td>
<td>3144</td>
<td>2905</td>
<td>2889</td>
<td>2979</td>
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</table>

S.E. of body of the table=230.0 Kg/ha.

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<tr>
<td>K₀</td>
<td>1860</td>
<td>1904</td>
<td>1703</td>
<td>1822</td>
</tr>
<tr>
<td>K₁</td>
<td>1938</td>
<td>1878</td>
<td>1965</td>
<td>1927</td>
</tr>
<tr>
<td>K₂</td>
<td>1950</td>
<td>1931</td>
<td>1977</td>
<td>1953</td>
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<tr>
<td>Mean</td>
<td>1916</td>
<td>1904</td>
<td>1882</td>
<td>1901</td>
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</tbody>
</table>

S.E. of body of the table=115.7 Kg/ha.

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<td>K₂</td>
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<tr>
<td>Mean</td>
<td>2778</td>
<td>2621</td>
<td>2700</td>
<td>2700</td>
</tr>
</tbody>
</table>

S.E. of body of the table=132.3 Kg/ha.

Crop: Jute (Kharij).
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 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. (vii) 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.
N1P2 = 60 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 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 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 | N1 | N2 | P1 | N1P1 | N2P1 | N2P2 | N2P2K1 | S.E.
--- | --- | --- | --- | --- | --- | --- | --- | ---
Av. response of Jute in Kg/ha. | 969 | 1990 | 771 | 1516 | 2076 | 1852 | 5166 | 867.8
Control yield = 6517 Kg/ha. No. of trials =...

64(S.F.T.)
Treatment | N1 | N2 | P1 | N1P1 | N2P1 | N2P2 | N2P2K1 | 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 | N1 | N2 | P1 | N1P1 | N2P1 | N2P2 | N2P2K1 | S.E.
--- | --- | --- | --- | --- | --- | --- | --- | ---
Av. response of Jute in Kg/ha. | 5753 | 9373 | 613 | 6713 | 12153 | 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 oil seed crops to phosphorus applied singly and in combination with other nutrients. (Type : A.)

1. BASAL CONDITIONS:
(i) N.A. (ii) Red loamy. (iii) to (vii) N.A. (vii) Unirrigated. (viii) to (x) N.A.
2. TREATMENTS:

8 manurial treatments:

- 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.
- P₁P₂ = 120 Kg/ha. of N+70 Kg/ha. of P₂O₅.
- N₁P₁P₂K₂ = 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) 1962 to 1966 [1963—N.A.]. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS:

62(S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N₁</th>
<th>P₁</th>
<th>P₂</th>
<th>N₁P₁</th>
<th>N₁P₂</th>
<th>N₂P₁</th>
<th>N₂P₂</th>
<th>N₂P₂K₂</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of Jute in Kg/ha.</td>
<td>1977</td>
<td>751</td>
<td>217</td>
<td>3618</td>
<td>3331</td>
<td>4331</td>
<td>7571</td>
<td>680 9</td>
<td></td>
</tr>
</tbody>
</table>

Control yield = 7373 Kg/ha.; No. of trials = 2.

64(S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N₁</th>
<th>P₁</th>
<th>P₂</th>
<th>N₁P₁</th>
<th>N₁P₂</th>
<th>N₂P₁</th>
<th>N₂P₂</th>
<th>N₂P₂K₂</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of Jute in Kg/ha.</td>
<td>3143</td>
<td>1571</td>
<td>1383</td>
<td>3271</td>
<td>3498</td>
<td>3894</td>
<td>4932</td>
<td>621 8</td>
<td></td>
</tr>
</tbody>
</table>

Control yield = 9864 Kg/ha.; No. of trials = 2.

65(S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N₁</th>
<th>P₁</th>
<th>P₂</th>
<th>N₁P₁</th>
<th>N₁P₂</th>
<th>N₂P₁</th>
<th>N₂P₂</th>
<th>N₂P₂K₂</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of Jute in Kg/ha.</td>
<td>9070</td>
<td>700</td>
<td>-210</td>
<td>11925</td>
<td>11385</td>
<td>18980</td>
<td>19760</td>
<td>3647 8</td>
<td></td>
</tr>
</tbody>
</table>

Control yield = 16820 Kg/ha.; No. of trials = 3.

Crop :- Jute.

Site :- (District) Cuttack.

Object :- To study the response curves of important cereal, cash and oilseed crops to potash applied singly and in combination with other nutrients (Type : A₅).

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:

- 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.
- N₁P₁K₂ = 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:

<table>
<thead>
<tr>
<th>Treatment</th>
<th>( N_1 )</th>
<th>( K_1 )</th>
<th>( K_2 )</th>
<th>( N_1K_1 )</th>
<th>( N_1K_2 )</th>
<th>( N_2K_2 )</th>
<th>( N_1P_1K_1 )</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jute in Kg/ha.</td>
<td>180</td>
<td>1937</td>
<td>1838</td>
<td>1463</td>
<td>1838</td>
<td>0.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Control yield=8125 Kg/ha.; No. of trials=1.

---

**Crop:** Jute (Kharif).

**Site:** (District) Cuttack.

Object: To study the response curves of important cereal, cash and oilseed crops to potash applied singly and in combination with other nutrients (Type: \( A_3 \)).

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)
   
   \( N_1=60 \) Kg/ha. of \( N \)
   
   \( K_1=35 \) Kg/ha. of \( K_2 \)
   
   \( K_1=70 \) Kg/ha. of \( K_2 \)
   
   \( N_1K_1=60 \) Kg/ha. of \( K_2 \)
   
   \( N_1K_2=120 \) Kg/ha. of \( K_2 \)
   
   \( N_1P_1K_1=60 \) Kg/ha. of \( P_2O_5 \)
   
   \( K_1=35 \) Kg/ha. of \( K_2 \)

   \( N \) applied as A/S, \( P_2O_5 \) as Super, and \( K_2 \) as Mur. of Pot.

3. DESIGN:

   Same as in type \( A_1 \) (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.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>( N_1 )</th>
<th>( K_1 )</th>
<th>( K_2 )</th>
<th>( N_1K_1 )</th>
<th>( N_1K_2 )</th>
<th>( N_2K_2 )</th>
<th>( N_1P_1K_1 )</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jute in Q/ha.</td>
<td>21'1</td>
<td>9'4</td>
<td>5'3</td>
<td>45'3</td>
<td>30'4</td>
<td>34'5</td>
<td>44'2</td>
<td>11'6</td>
</tr>
</tbody>
</table>

Control yield=104·1 Q/ha.; No. of trials=2.

65(S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>( N_1 )</th>
<th>( K_1 )</th>
<th>( K_2 )</th>
<th>( N_1K_1 )</th>
<th>( N_1K_2 )</th>
<th>( N_2K_2 )</th>
<th>( N_1P_1K_1 )</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jute in Q/ha.</td>
<td>186'8</td>
<td>3'2</td>
<td>1'6</td>
<td>143'2</td>
<td>145'0</td>
<td>234'0</td>
<td>150'4</td>
<td>—</td>
</tr>
</tbody>
</table>

Control yield=245 Kg/ha.; No. of trials=1.
Crop: Jute.  
Site: (District) Cuttack.  
Object: To study the response of Jute to different levels of N, P$_2$O$_5$, and K$_2$O 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.
   k = 22.4 Kg/ha. of K$_2$O as Superk.
   np = 44.8 Kg/ha. of N as A/S + 22.4 Kg/ha. of P$_2$O$_5$ as Super.
   nk = 44.8 Kg/ha. of N as A/S + 22.4 Kg/ha. of K$_2$O as Superk.
   npk = 44.8 Kg/ha. of N as A/S + 22.4 Kg/ha. of P$_2$O$_5$ as Super + 22.4 Kg/ha. of K$_2$O as Superk.

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.
   Control means = 10.6 Q/ha.; No. of trials = 4.

Crop: Jute.  
Site: (District) Cuttack.  
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).
   n = 44.8 Kg/ha. of N as A/S.
   n' = 89.6 Kg/ha. of N as Urea.
   n'' = 44.8 Kg/ha. of N as C/A/N.
   n'' = 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 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) 1961 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5 RESULTS:

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Control</th>
<th>n₁</th>
<th>n₂</th>
<th>n₁'</th>
<th>n₂'</th>
<th>n₁''</th>
<th>n₂''</th>
<th>Δ.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield of Jute in Q/ha,</td>
<td>292.4</td>
<td>373.5</td>
<td>549.2</td>
<td>333.5</td>
<td>510.2</td>
<td>41.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

G.M. = 427.6 Q/ha.; No. of trials = 3.

Crop := Jute (Kharif)

Site := Agri. Res. Stn., Sambalpur

Obj.- To find out the optimum date of sowing for Jute.

Ref := Or. 61(60), 62(67), 63(50).

Type := 'C'.

1. BASAL CONDITIONS:
   (i) Nil. (b) Linseed for 61(60); Wheat for others. (c) 22.4 Kg/ha. of N as (N) for 61(60); N.A. for 62(67); 22.4 Kg/ha. of N as S for 63(50). (ii) Sandy loam for 61(60); Clay loam for others. (iii) 10 kg/ha. of P₂O₅ for 62(67); 22.4 Kg/ha. of P₂O₅ for 63(50). (iv) 3 to 5 ploughings. (b) Line sowing.

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 D₈ were tried only in expt. No. 63(50).

3. DESIGN:
   (i) R.B.D. (ii) 8 for 63(50); 6 for others. (b) N.A. (iii) 4. (iv) (a) 3.7 m. x 2.7 m. for 61(60); 0.4 m. x 4.7 m. for 62(67); 6 m. x 4.6 m. for 63(50). (b) 3.2 m. x 2.4 m. for 61(60); 5.4 m. x 4.4 m. for 62(67); 5.9 m. x 4.3 m. for 63(50). (v) 23 cm. x 15 cm. (vi) Yes.

4. GENERAL:
   (i) Fair. (ii) Nil. (iii) Yield of fibre. (iv) (a) 1961—1963. (b) N.A. (c) Nil. (c) Nil. (d) Nil. (e) Nil. (f) Nil. (g) Nil. Cr.n't a led in treatments D₁ and D₈ due to heavy rains for 61(60); Treatment D₇, D₈ rejected because of low yield for 62(67).

5. RESULTS:

61(60)

(i) 2519 Kg/ha. (ii) 3470 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of fibre in Kg/ha.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>D₁</th>
<th>D₄</th>
<th>D₇</th>
<th>D₈</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>2355</td>
<td>3760</td>
<td>1807</td>
<td>1153</td>
</tr>
</tbody>
</table>

C.D. = 619.1 Kg/ha.

62(67)

(i) 1372 Kg/ha. (ii) 2990 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of fibre in Kg/ha.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>D₁</th>
<th>D₄</th>
<th>D₇</th>
<th>D₈</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>1720</td>
<td>1589</td>
<td>1563</td>
<td>1157</td>
</tr>
</tbody>
</table>

C.D. = 460.7 Kg/ha.
Object:—To find out the optimum period of sowing Jute in low lands under irrigated conditions.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) Clay. (iii) As per treatments. (iv) (a) 5 ploughings by dechi plough at 15 cm. depth intermittent 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 P_{2}O_{5} as Super +45.9 Kg/ha. of K_{2}O as Pot. Sul. and top dressing with 44.8 Kg/ha. of N as C/A/N. (vi) IRC-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: D_{1}=15.3.1960, D_{2}=1.4.1960, D_{3}=15.4.60, D_{4}=1.5.1960, D_{5}=15.5.1960 and D_{6}=1.6.1960.

3. DESIGN:

(i) R.B.D. (ii) 6. (b) N.A. (iii) 4. (iv) (a) 7.9 m. x 4.0 m. (b) 7.6 m. x 3.5 m. (v) 15 cm. x 26 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Attack of semi-loopers 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) 269 Kg/ha. (ii) 422.6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of fibre in Kg/ha.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>D_{1}</th>
<th>D_{2}</th>
<th>D_{3}</th>
<th>D_{4}</th>
<th>D_{5}</th>
<th>D_{6}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>3074</td>
<td>3717</td>
<td>2963</td>
<td>2746</td>
<td>2485</td>
<td>1149</td>
</tr>
<tr>
<td>C.D. = 636.7 Kg/ha.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 P_{2}O_{5} +45.9 Kg/ha. of K_{2}O 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<sub>1</sub> = 1.3.1961, D<sub>2</sub> = 15.3.1961, D<sub>3</sub> = 14.4.61, D<sub>4</sub> = 15.4.61, D<sub>5</sub> = 15.5.61 and D<sub>6</sub> = 15.5.61.

3. DESIGN:

(i) R.B.D. (ii) T.D. (b) N.A. (iii) 4. (iv) (a) 5'5 m. x 3'7 m. (b) 5 0 m. x 3'4 m. (v) 23 cm > 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) 4810 Kg/ha. (iii) Treatment difference are highly significant. (iv) Av. yield of fibre in Kg/ha.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>D&lt;sub&gt;1&lt;/sub&gt;</th>
<th>D&lt;sub&gt;2&lt;/sub&gt;</th>
<th>D&lt;sub&gt;3&lt;/sub&gt;</th>
<th>D&lt;sub&gt;4&lt;/sub&gt;</th>
<th>D&lt;sub&gt;5&lt;/sub&gt;</th>
<th>D&lt;sub&gt;6&lt;/sub&gt;</th>
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<tr>
<td>Av. yield</td>
<td>2149</td>
<td>3064</td>
<td>4180</td>
<td>3987</td>
<td>2463</td>
<td>1695</td>
</tr>
<tr>
<td>C.D. =738 Kg/ha.</td>
<td></td>
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</tr>
</tbody>
</table>

Crop: Jute (kharij).
Site: Jute Res. Stn., Kendrapara.

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 x 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<sub>1</sub> = JRC-321 harvested at maturity of its own.
T<sub>2</sub> = D-154 harvested at maturity of JRC-321.
T<sub>3</sub> = JRC-206 harvested at maturity of JRC-321.
T<sub>4</sub> = JRC-206 harvested at maturity of D-154.
T<sub>5</sub> = JRC-206 harvested at maturity of JRC-321.
T<sub>6</sub> = JRC-321 harvested at maturity of JRC-321.
T<sub>7</sub> = JRC-321 harvested at maturity of JRC-206.
T<sub>8</sub> = JRC-321 harvested at maturity of its own (10.5.63).
T<sub>9</sub> = JRC-321 harvested at maturity of its own (21.8.63).
T<sub>10</sub> = JRC-206 harvested at maturity of its own (10.5.63).
T<sub>11</sub> = JRC-321 harvested at maturity of its own (21.8.63).
T<sub>12</sub> = JRC-206 harvested at maturity of its own (25.8.63).
T<sub>13</sub> = JRC-321 harvested at maturity of its own (25.8.63).
T<sub>14</sub> = JRC-321 harvested at maturity of its own (20.8.63).
T<sub>15</sub> = JRC-321 harvested at maturity of its own (21.8.63).
T<sub>16</sub> = JRC-321 harvested at maturity of its own (22.8.63).
T<sub>17</sub> = JRC-206 harvested at maturity of its own (25.8.63).
T<sub>18</sub> = JRC-321 harvested at maturity of its own (25.8.63).
T<sub>19</sub> = JRC-321 harvested at maturity of its own (20.8.63).
T<sub>20</sub> = JRC-321 harvested at maturity of its own (21.8.63).
T<sub>21</sub> = JRC-321 harvested at maturity of its own (22.8.63).
T<sub>22</sub> = JRC-321 harvested at maturity of its own (23.8.63).
T<sub>23</sub> = JRC-321 harvested at maturity of its own (24.8.63).
T<sub>24</sub> = JRC-321 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. x 4'6 m. (b) 6'7 m. x 4'0 m. (v) 30 cm > 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T₁</th>
<th>T₂</th>
<th>T₃</th>
<th>T₄</th>
<th>T₅</th>
<th>T₆</th>
<th>T₇</th>
<th>T₈</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>404</td>
<td>646</td>
<td>662</td>
<td>573</td>
<td>634</td>
<td>950</td>
<td>650</td>
<td>561</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T₁₀</th>
<th>T₁₁</th>
<th>T₁₃</th>
<th>T₁₄</th>
<th>T₁₅</th>
<th>T₁₆</th>
<th>T₁₇</th>
<th>T₁₈</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>472</td>
<td>615</td>
<td>462</td>
<td>534</td>
<td>584</td>
<td>535</td>
<td>701</td>
<td>736</td>
</tr>
</tbody>
</table>

Crop: Jute (Kharift).
Site: Jute Res. Stn., Kendapara.

Ref: Or. 65(40).
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 em. (x) 5, 12, 18.9.65; 23.10.65.

2. TREATMENTS:
Main-plot treatments:
Sub-plot treatments:
3 stages of harvest: H₁ = At the harvest stage of JRC. 32', 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. x 5'4 m. (v) 30 cm. x 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.

<table>
<thead>
<tr>
<th>V₁</th>
<th>V₂</th>
<th>V₃</th>
<th>V₄</th>
<th>V₅</th>
<th>V₆</th>
<th>V₇</th>
<th>V₈</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>543</td>
<td>862</td>
<td>1300</td>
<td>1503</td>
<td>1018</td>
<td>1125</td>
<td>773</td>
<td>1405</td>
<td>1066</td>
</tr>
<tr>
<td>739</td>
<td>993</td>
<td>1223</td>
<td>1437</td>
<td>1073</td>
<td>1337</td>
<td>847</td>
<td>1368</td>
<td>1127</td>
</tr>
<tr>
<td>715</td>
<td>1071</td>
<td>1167</td>
<td>2037</td>
<td>1063</td>
<td>1233</td>
<td>840</td>
<td>1515</td>
<td>1208</td>
</tr>
<tr>
<td>Mean</td>
<td>666</td>
<td>975</td>
<td>1230</td>
<td>1659</td>
<td>1051</td>
<td>1238</td>
<td>820</td>
<td>1429</td>
</tr>
</tbody>
</table>

C.D. for V marginal means = 377.7 Kg/ha.
Crop :- Jute (Kharij).
Site :- Jute Res. Stn., Kendrapara.
Object :- To study the flowering behaviour yield and quality of fibre at different capularies 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 desha bullock drawn plough. (b) Hand sowing. (c) 6 to 7 Kg. (d) 30 cm. between lines. (e) Nil. (v) Compost at 24-7 C. (vi) As per treatments. (vii) 2 hoeings and 2 hand weedicings. 
   (viii) 119.4 cm. (x) 11, 24.9, 6.5; 16, 18.10.65.

2. TREATMENTS:
   Main-plot treatments :
      2 varieties : V₁ = D₁ = 154 and V₂ = JRC = 206.
   Sub-plot treatments :
      6 dates of sowing : D₁ = 21st March, D₂ = 5th April, D₃ = 21st April, D₄ = 5th May, D₅ = 21st May and D₆ = 5th June.

3. DESIGN:
   (i) Split-plot. (ii) (a) 2 main-plots/repl. : 6 sub-plots/main-plot. (b) N A (iii) 4. (iv) (a) 10.7 m. (b) 10.1 m. x 3.4 m. (c) 30 cm. x 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 x V is significant. (iv) Av. yield of fibre in Kg/ha.

\[
\begin{array}{ccccccc|c}
   & D_1 & D_2 & D_3 & D_4 & D_5 & D_6 & Mean \\
V_1 & 1590 & 1989 & 1898 & 2071 & 1270 & 257 & 1512 \\
V_2 & 2493 & 2958 & 2784 & 2880 & 1417 & 539 & 2178 \\
\hline
Mean & 2041 & 2473 & 2341 & 2476 & 1343 & 398 & 1845
\end{array}
\]

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 (Kharij).
Site :- Jute Res. Stn., Kendrapara.
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. (e) 2 Kg/ha. (d) 30 cm. x 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: \( V_1 = \text{JRC-321} \) and \( V_2 = \text{JRC-212} \).

Sub-plot treatments:
6 dates of sowing: \( S_1 = \text{1st March}, \ S_2 = \text{21st March}, \ S_3 = \text{10th April}, \ S_4 = \text{1st May}, \ S_5 = \text{21st May and} \ S_6 = \text{10th June} \).

3. DESIGN:
(i) Split-plot. (ii) 2 main-plots/replication; 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 40 \( \times \) 10\( \times \)7 m. (b) 3\( \times \)4 m. \( \times \)10\( \times \)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) \( V_1 S_1, V_2 S_1 \) and \( V_2 S_1 \) plots were completely damaged by heavy rains for 61(57); \( V_1 S_1 \) and \( V_2 S_1 \) 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.

\( V_1 S_1 = 1600, V_2 S_1 = 2190 \).

<table>
<thead>
<tr>
<th></th>
<th>( S_2 )</th>
<th>( S_3 )</th>
<th>( S_4 )</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>( V_1 )</td>
<td>2500</td>
<td>2579</td>
<td>2511</td>
<td>2530</td>
</tr>
<tr>
<td>( V_2 )</td>
<td>3360</td>
<td>3653</td>
<td>3472</td>
<td>3495</td>
</tr>
<tr>
<td>Mean</td>
<td>2930</td>
<td>3116</td>
<td>2992</td>
<td>3012</td>
</tr>
</tbody>
</table>

C.D. for \( V \) marginal means=349·7 Kg/ha.

62(63)
(i) 1678 Kg/ha. (ii) (a) 750·9 Kg/ha. (b) 371·0 Kg/ha. (iii) Main effect of \( S \) alone is highly significant.
(iv) Av. yield of fibre in Kg/ha.

<table>
<thead>
<tr>
<th></th>
<th>( S_2 )</th>
<th>( S_3 )</th>
<th>( S_4 )</th>
<th>( S_5 )</th>
<th>( S_6 )</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>( V_1 )</td>
<td>-</td>
<td>1436</td>
<td>1703</td>
<td>1854</td>
<td>1333</td>
<td>492</td>
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<tr>
<td>( V_2 )</td>
<td>-</td>
<td>2181</td>
<td>2446</td>
<td>2677</td>
<td>1723</td>
<td>936</td>
</tr>
<tr>
<td>Mean</td>
<td>-</td>
<td>1808</td>
<td>2075</td>
<td>2265</td>
<td>1528</td>
<td>714</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th></th>
<th>( S_3 )</th>
<th>( S_4 )</th>
<th>( S_5 )</th>
<th>( S_6 )</th>
<th>( S_7 )</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>( V_1 )</td>
<td>1323</td>
<td>1266</td>
<td>400</td>
<td>391</td>
<td>676</td>
<td>44</td>
</tr>
<tr>
<td>( V_2 )</td>
<td>1995</td>
<td>2088</td>
<td>1527</td>
<td>634</td>
<td>1457</td>
<td>233</td>
</tr>
<tr>
<td>Mean</td>
<td>1659</td>
<td>1677</td>
<td>963</td>
<td>512</td>
<td>1075</td>
<td>138</td>
</tr>
</tbody>
</table>

C.D. for \( S \) marginal means=358·4 Kg/ha.
Crop :- Jute (Kharif).

Site :- Jute Res. Stn., Kendrapara.

Ref :- Or. 64(35).

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 laddering. (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: V1 - J.R.C. - 311 and V2 - J.R.C. - 212.

   Sub-plot treatments:
   6 dates of sowing: D1 - 21st March, D2 - 5th April, D3 - 21st April, D4 - 5th May, D5 - 21st May and D6 - 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, (b) 10·1 m. (c) 3·4 m. (d) 30 cm. (e) 30 cm. (f) Yes.

4. GENERAL :

   (i) Better. (ii) Attack of Jute semi looper; spraying of Endrex at 1 Kg in 73 litres of water ha. (iii) Height, base diameter and yield of Jute. (iv) (a) 1960-contrf. (modified in 1964). (b) Yes. (c) Nil. (d) (e) Nil.

5 RESULTS :

   (i) 1185 Kga/ha. (ii) (a) 360·0 Kga/ha. (b) 280·0 Kga/ha. (iii) Main effect of V is highly significant and that of D is highly significant. (iv) Av. yield of fibre in Kga/ha.

<table>
<thead>
<tr>
<th>V1</th>
<th>D1</th>
<th>D2</th>
<th>D3</th>
<th>D4</th>
<th>D5</th>
<th>Mean</th>
</tr>
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<tbody>
<tr>
<td>1316</td>
<td>1620</td>
<td>796</td>
<td>1428</td>
<td>400</td>
<td>92</td>
<td>952</td>
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<tr>
<td>2107</td>
<td>2239</td>
<td>118g</td>
<td>1689</td>
<td>1157</td>
<td>126</td>
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<tr>
<td>Mean</td>
<td>1712</td>
<td>1929</td>
<td>992</td>
<td>1558</td>
<td>808</td>
<td>109</td>
</tr>
</tbody>
</table>

   C.D. for V marginal means=330·6 Kga/ha.
   C.D. for D marginal means=285·9 Kga/ha.

---

Crop Jute (Kharif).

Site :- Jute Res. Stn., Kendrapara.

Ref :- Or. 62(65), 63(47), 64(36), 65(41).

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 (i) Heavy clay. (ii) As per treatments. (iv) (a) 3 to 4 ploughings and laddering. (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, 53, 64; 25 C.L./ha. of compost for 65. (vi) As per treatments. (vii) Irrigated. (viii) 3 weedings and 2 hoeings. (ix) 81 cm. - 329 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) $4.6 \text{ m} \times 2.1 \text{ m}$. (b) $4.0 \text{ m} \times 1.5$. (v) Yes. (vi) Yes.

4. GENERAL:

(i) Good for 62, 64; Not good for 63; Poor for 65. (ii) Attack of Jute semnilooper; 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 x V is significant. (iv) Av. yield of fibre in Kg/ha.

<table>
<thead>
<tr>
<th></th>
<th>$D_1$</th>
<th>$D_2$</th>
<th>$D_3$</th>
<th>$D_4$</th>
<th>$H_1$</th>
<th>$H_2$</th>
<th>$H_3$</th>
<th>$H_4$</th>
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</tr>
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<tbody>
<tr>
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<td>2724</td>
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<td>2471</td>
<td>2548</td>
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<tr>
<td>$V_2$</td>
<td>3224</td>
<td>3346</td>
<td>3026</td>
<td>1810</td>
<td>2147</td>
<td>2750</td>
<td>3148</td>
<td>3361</td>
<td>2852</td>
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<tr>
<td>$V_3$</td>
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<td>2978</td>
<td>1678</td>
<td>1148</td>
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<td>3508</td>
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<td>2194</td>
<td>2803</td>
<td>3032</td>
<td>3113</td>
<td>2786</td>
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</tbody>
</table>

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) 821.0 Kg/ha. (b) 808.0 Kg/ha. (c) 291.0 Kg/ha. (iii) Main effects of D, H and interaction V x H are highly significant. (iv) Av. yield of fibre in Kg/ha.

<table>
<thead>
<tr>
<th></th>
<th>$D_1$</th>
<th>$D_2$</th>
<th>$D_3$</th>
<th>$D_4$</th>
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<td>605</td>
<td>668</td>
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<td>546</td>
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<tr>
<td>$V_2$</td>
<td>1523</td>
<td>1059</td>
<td>249</td>
<td>290</td>
<td>481</td>
<td>727</td>
<td>989</td>
<td>924</td>
<td>780</td>
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<tr>
<td>$V_3$</td>
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<td>1461</td>
<td>264</td>
<td>573</td>
<td>573</td>
<td>865</td>
<td>1166</td>
<td>1124</td>
<td>932</td>
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<tr>
<td>Mean</td>
<td>1377</td>
<td>1060</td>
<td>210</td>
<td>364</td>
<td>528</td>
<td>732</td>
<td>941</td>
<td>810</td>
<td>753</td>
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<td>$H_1$</td>
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<td>874</td>
<td>136</td>
<td>111</td>
<td>531</td>
<td>605</td>
<td>668</td>
<td>382</td>
<td>546</td>
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<tr>
<td>$H_2$</td>
<td>1483</td>
<td>1008</td>
<td>161</td>
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<td>481</td>
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<tr>
<td>$H_3$</td>
<td>1600</td>
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<td>573</td>
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<td>$H_4$</td>
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<td>528</td>
<td>732</td>
<td>941</td>
<td>810</td>
<td>753</td>
</tr>
</tbody>
</table>
(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 x V is significant.  (iv) Av. yield of fibre in Kg/ha.

### Table 1: Yield Data

<table>
<thead>
<tr>
<th></th>
<th>D₁</th>
<th>D₂</th>
<th>D₃</th>
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<tr>
<td>V₂</td>
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<td>1126</td>
<td>1892</td>
<td>560</td>
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<tr>
<td>V₃</td>
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<td>820</td>
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<tr>
<td>Mean</td>
<td>2896</td>
<td>1186</td>
<td>2000</td>
<td>560</td>
<td>1503</td>
</tr>
</tbody>
</table>

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.

(i) 1153 Kg/ha.  (ii) (a) 590 Kg/ha.  (b) 654 Kg/ha.  (c) 280 Kg/ha.  (iii) Main effects of D and H are highly significant.  (iv) Av. yield of fibre in Kg/ha.

### Table 2: Yield Data

<table>
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<tr>
<th></th>
<th>D₁</th>
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<th>D₃</th>
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<tr>
<td>V₂</td>
<td>1953</td>
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<td>753</td>
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<td>727</td>
</tr>
<tr>
<td>V₃</td>
<td>2011</td>
<td>1371</td>
<td>570</td>
<td>808</td>
<td>701</td>
</tr>
<tr>
<td>Mean</td>
<td>1780</td>
<td>1371</td>
<td>680</td>
<td>780</td>
<td>709</td>
</tr>
</tbody>
</table>

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.

Crop: Jute (Kharif).
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 P₂O₅ as Super+30 Kg/ha. of 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 V₂, 3.8.65 to 25.8.65 for V₁ and 14.8.65 to 6.9.65 for V₃.

2. TREATMENTS:

All combinations of (1) and (2) + a control (fallow prior to paddy).

(1) 3 varieties of Jute crop : V₁ = D 154, V₂ = Funduk and V₃ = JRC-212.

(2) 3 stages of harvesting of Jute crop : H₁ = Preflowering stage, H₂ = at flowering and H₃ = 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. X 7·0 m. (b) 7·3 m. X 6·7 m. (v) 25 em. X 15 cm. (vi) Yes.

4. GENERAL:

(i) Normal. (ii) Jute semilooper attack, 2 sprayings of Metasystox and foliol. (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.

<table>
<thead>
<tr>
<th>H₁</th>
<th>H₂</th>
<th>H₃</th>
<th>Mean</th>
</tr>
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<tr>
<td>Mean</td>
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<td>2230</td>
<td>2317</td>
</tr>
</tbody>
</table>

C.D. for H marginal means=237·6 Kg/ha.

_Crop :- Tobacco (Rahi).
Site :- State Agri. Res. Stn., Bhubaneswar._

Ref :- Or. 61(3).

_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. X 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 : L₁=6·3, L₂=8·4 and L₃=12·6 Q/ha.

(2) 3 levels of K₂O as Mur. Pot. : K₁=44·8, K₂=89·7 and K₃=134·5 Kg/ha.

(3) 3 levels of N as A/S : N₁=67·2, N₂=112·1 and N₃=156·9 Kg/ha.

3. DESIGN:

(i) 3 confd. (ii) 9 plots/block, 3 blocks/replication. (iii) 1. (iv) (a) 3'8 m. X 3'8 m. (b) 2'3 m. X 2'3 m. (v) 76 cm. X 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) Nil. (c) Nil. (v) to (vii) Nil.

5. RESULTS:
(i) 1266 Kg/ha. (ii) 4990 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of leaf in Kg/ha.

<table>
<thead>
<tr>
<th></th>
<th>K1</th>
<th>K2</th>
<th>K3</th>
<th>L1</th>
<th>L2</th>
<th>L3</th>
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<td>1244</td>
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<td>950</td>
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<td>1378</td>
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</tr>
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</table>

Crop: Groundnut (Kharif).

Ref: Or. 62(19).
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 hum. (b) Line sowing (c) N.A. (d) 15 cm. x 15 cm. (e) Nil. (f) Nil. (g) T.M.V. 3 (late). (h) Unirrigated. (i) 2 weedings, one hoeing and gap filling. (ii) 105 cm. (iii) 11 to 16.12.62

2. TREATMENTS:
Main-plot treatments:
All combinations of (1) and (2)
(1) 2 levels of lime: L0 = 0 and L= 56.4 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:
(ii) Split-plot. (ii) (a) 6 main-plots replication, 6 sub-plots, main plot. (b) N.A. (iii) 3. (iv) (a) 4.9 m. x 3.1 m. (b) 4.3 m. x 2.4 m. (c) 30 cm. x 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.
Crop := Groundnut (*Kharif*).  

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 P₀₆ as Super: P₁ =33·6, P₂ =67·2 and P₃ =100·9 Kg/ha.
   (3) 3 levels of K₂ O as Mur. Pot.: K₀ =0, K₁ =50·4 and K₂ =100·9 Kg/ha.

3. DESIGN:
   (i) 3³ confd. (NPK, NPK² and NPK are confd.) (ii) 9 plots/block and 3 blocks/replication. (b) N.A.  
   (iii) 3.  (iv) (a) 7·4 m. x 3·8 m.  (b) 7·0 m. x 3·4 m.  (v) 19 cm. x 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) 1903 K₂/ha.  (ii) 281·0 Kg/ha.  (iii) None of the effects is significant.  (iv) Av. yield of pods in Kg/ha.

<table>
<thead>
<tr>
<th></th>
<th>P₁</th>
<th>P₂</th>
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<td>1251</td>
<td>1135</td>
<td>1193</td>
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<td>Mean</td>
<td>1208</td>
<td>1227</td>
<td>1243</td>
<td>1236</td>
<td>1216</td>
<td>1199</td>
<td>1240</td>
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<tr>
<td>K₁</td>
<td>1184</td>
<td>1224</td>
<td>1189</td>
<td>1235</td>
<td>1163</td>
<td>1190</td>
<td>1290</td>
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<tr>
<td>K₂</td>
<td>1185</td>
<td>1220</td>
<td>1316</td>
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<tr>
<td>Mean</td>
<td>1255</td>
<td>1238</td>
<td>1223</td>
<td></td>
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<tr>
<td>N₁</td>
<td>1175</td>
<td>1193</td>
<td>1340</td>
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<tr>
<td>N₂</td>
<td>1241</td>
<td>1262</td>
<td>1145</td>
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Mean 1896 1961 1843

<table>
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<tr>
<th></th>
<th>P₁</th>
<th>P₂</th>
<th>P₃</th>
<th>N₁</th>
<th>N₂</th>
<th>N₃</th>
<th>K₁</th>
<th>K₂</th>
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<td>1948</td>
<td>2088</td>
<td>1891</td>
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<tr>
<td>N₂</td>
<td>1906</td>
<td>1909</td>
<td>1829</td>
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<tr>
<td>N₃</td>
<td>1835</td>
<td>1886</td>
<td>1810</td>
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<tr>
<td>Mean</td>
<td>1896</td>
<td>1961</td>
<td>1843</td>
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<td>K₁</td>
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<td>1849</td>
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<tr>
<td>K₂</td>
<td>1984</td>
<td>2093</td>
<td>1894</td>
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<tr>
<td>K₃</td>
<td>1815</td>
<td>1811</td>
<td>1785</td>
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</table>

Mean 1932 2137 1858 1976

<table>
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<th>K₂</th>
<th>K₃</th>
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<td>K₁</td>
<td>1932</td>
<td>2137</td>
<td>1858</td>
<td>1976</td>
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<tr>
<td>K₂</td>
<td>1928</td>
<td>1961</td>
<td>1754</td>
<td>1881</td>
</tr>
<tr>
<td>K₃</td>
<td>1858</td>
<td>1873</td>
<td>1799</td>
<td>1844</td>
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<tr>
<td>Mean</td>
<td>1906</td>
<td>1990</td>
<td>1804</td>
<td>1900</td>
</tr>
</tbody>
</table>
Crop: Groundnut (Rabi)


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

1. BASAL CONDITIONS:
   (i) (a) Nil, (b) Loamy, (c) Sandy loam, (d) 21 cm. and 41 cm.
   (iv) (a) 4 ploughings.
   (b) Line sowing. (c) 90 Kg/ha (d) 23 cm. between lines.
   (c) Nil. (v) Nil. (vi) FM x 2. (vii) Irrigated.
   (viii) Horing and weeding. (ix) Nil. (x) 24/4.64.

2. TREATMENTS:
   Same as in expnr. no. 62(72) on page 263.

3. DESIGN:
   (i) 3° confd. with NP and NPK being confd. (ii) (a) 9 plots block; 3 blocks/replcation. (b) N.A.
   (iii) 2. (iv) (a) and (b) 4.9 m. 5.8 m. (v) Nil. (vi) Yes.

4. GENERAL:
   (i) Poor. (ii) Spraying endhex and phyllocline. (iv) (a) 1964 only (b) Nil. (v) to (vii) Nil

5. RESULTS:
   (i) 1716 Kg/ha. (ii) 1710 Kg/ha. (iii) None of the effects is significant (iv) Av. yield of pods in Kg/ha.

<table>
<thead>
<tr>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>K0</th>
<th>K1</th>
<th>K2</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>N1</td>
<td>1602</td>
<td>1705</td>
<td>1677</td>
<td>1658</td>
<td>1717</td>
<td>1609</td>
</tr>
<tr>
<td>N2</td>
<td>1641</td>
<td>1824</td>
<td>1752</td>
<td>1746</td>
<td>1707</td>
<td>1744</td>
</tr>
<tr>
<td>N3</td>
<td>1747</td>
<td>1593</td>
<td>1908</td>
<td>1928</td>
<td>1698</td>
<td>1622</td>
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<tr>
<td>Mean</td>
<td>1663</td>
<td>1707</td>
<td>1779</td>
<td>1777</td>
<td>1707</td>
<td>165.5</td>
</tr>
</tbody>
</table>

K0 1720 1728 1883
K1 1690 1682 1750
K2 1580 1712 1703

Crop: Groundnut.

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

Object: To study the response curves of important cereal, cash and oilseed crops to nitrogen applied singly and in combination with other nutrients (Type: A4).

1. BASAL CONDITIONS:
   (i) (a) to (c) N.A. (ii) Red and yellow for Mayurbhanj and Sambalpur and red oamy for Cuttack and Ganjam. (iii) to (vi) N.A. (vii) Unirrigated (viii) to (x) N.A.

2. TREATMENTS:
   8 manural 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 + 30 Kg/ha. of P2O5
   N1P2 = 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 Muri. 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; (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS:

Mayurbhanj

62 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. response of pods in Kg/ha.</th>
<th>N1</th>
<th>N2</th>
<th>P1</th>
<th>N1P1</th>
<th>N1P2</th>
<th>N1P3</th>
<th>N1P4K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of pods in Kg/ha.</td>
<td>150</td>
<td>254</td>
<td>103</td>
<td>207</td>
<td>127</td>
<td>150</td>
<td>219</td>
<td>-</td>
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</tr>
<tr>
<td>Control yield=380 Kg/ha.; No. of trials=2.</td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

63 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. response of pods in Kg/ha.</th>
<th>N1</th>
<th>N2</th>
<th>P1</th>
<th>N1P1</th>
<th>N1P2</th>
<th>N1P3</th>
<th>N1P4K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of pods in Kg/ha.</td>
<td>88</td>
<td>189</td>
<td>377</td>
<td>514</td>
<td>495</td>
<td>647</td>
<td>720</td>
<td>58.0</td>
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<tr>
<td>Control yield=885 Kg/ha.; No. of trials=5.</td>
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<td></td>
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</tbody>
</table>

64 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. response of pods in Kg/ha.</th>
<th>N1</th>
<th>N2</th>
<th>P1</th>
<th>N1P1</th>
<th>N1P2</th>
<th>N1P3</th>
<th>N1P4K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of pods in Kg/ha.</td>
<td>267</td>
<td>320</td>
<td>137</td>
<td>499</td>
<td>651</td>
<td>868</td>
<td>981</td>
<td>403.4</td>
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</tr>
<tr>
<td>Control yield=1582 Kg/ha.; No. of trials=6.</td>
<td></td>
<td></td>
<td></td>
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</table>

65 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. response of pods in Kg/ha.</th>
<th>N1</th>
<th>N2</th>
<th>P1</th>
<th>N1P1</th>
<th>N1P2</th>
<th>N1P3</th>
<th>N1P4K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of pods in Kg/ha.</td>
<td>357</td>
<td>405</td>
<td>516</td>
<td>599</td>
<td>615</td>
<td>796</td>
<td>1023</td>
<td>205.5</td>
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<tr>
<td>Control yield=1202 Kg/ha.; No. of trials=4.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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</tbody>
</table>

66 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. response of pods in Kg/ha.</th>
<th>N1</th>
<th>N2</th>
<th>P1</th>
<th>N1P1</th>
<th>N1P2</th>
<th>N1P3</th>
<th>N1P4K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of pods in Kg/ha.</td>
<td>620</td>
<td>826</td>
<td>-13</td>
<td>566</td>
<td>740</td>
<td>780</td>
<td>882</td>
<td>93.2</td>
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<tr>
<td>Control yield=1533 Kg/ha.; No. of trials=3.</td>
<td></td>
<td></td>
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Ganjam

65 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. response of pods in Kg/ha.</th>
<th>N1</th>
<th>N2</th>
<th>P1</th>
<th>N1P1</th>
<th>N1P2</th>
<th>N1P3</th>
<th>N1P4K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of pods in Kg/ha.</td>
<td>-77</td>
<td>-15</td>
<td>200</td>
<td>120</td>
<td>135</td>
<td>490</td>
<td>555</td>
<td>413.7</td>
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<tr>
<td>Control yield=790 Kg/ha.; No. of trials=4.</td>
<td></td>
<td></td>
<td></td>
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Sambalpur

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;K&lt;sub&gt;1&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of pods in Kg/ha.</td>
<td>100</td>
<td>100</td>
<td>74</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>200</td>
<td>-</td>
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</tbody>
</table>

Control yield—150 Kg/ha. ; No. of trials—1

Crop :- Groundnut.

Site :- (District) : Sambalpur.

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<sub>2</sub>)

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)
   - N<sub>1</sub> : 15 Kg/ha. of N
   - P<sub>1</sub> : 30 Kg/ha. of P<sub>2</sub>O<sub>5</sub>
   - N<sub>1</sub>P<sub>1</sub> : 15 Kg/ha. of N : 30 Kg/ha. of P<sub>2</sub>O<sub>5</sub>
   - N<sub>2</sub>P<sub>1</sub> : 15 Kg/ha. of N : 60 Kg/ha. of P<sub>2</sub>O<sub>5</sub>
   - N<sub>1</sub>P<sub>2</sub> : 30 Kg/ha. of N : 60 Kg/ha. of P<sub>2</sub>O<sub>5</sub>
   - N<sub>2</sub>P<sub>2</sub> : 30 Kg/ha. of N : 60 Kg/ha. of P<sub>2</sub>O<sub>5</sub>
   - N<sub>2</sub>P<sub>2</sub>K<sub>2</sub> : 30 Kg/ha. of N : 60 Kg/ha. of P<sub>2</sub>O<sub>5</sub> : 60 Kg/ha. of K<sub>2</sub>O

   N applied as A/S, P<sub>2</sub>O<sub>5</sub> as Super and K<sub>2</sub>O as Mur. of Pot.

3. DESIGN:
   Same as in type A<sub>1</sub> (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<sub>1</sub> | P<sub>1</sub> | N<sub>1</sub>P<sub>1</sub> | N<sub>2</sub>P<sub>1</sub> | N<sub>1</sub>P<sub>2</sub> | N<sub>2</sub>P<sub>2</sub> | N<sub>2</sub>P<sub>2</sub>K<sub>2</sub> | 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).

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

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<sub>2</sub>)

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 = 15 Kg/ha. of N

P1 = 20 Kg/ha. of P2O5

P2 = 40 Kg/ha. of P2O5

N1P1 = 15 Kg/ha. of N + 20 Kg/ha. of P2O5

N1P2 = 15 Kg/ha. of N + 40 Kg/ha. of P2O5

N1P3 = 30 Kg/ha. of N + 40 Kg/ha. of P2O5

N1P2K2 = 30 Kg/ha. of N + 40 Kg/ha. of P2O5 + 40 Kg/ha. of K2O

N applied as A/S, P2O5 as Super and K2O as Mur. Pot.

3. DESIGN:

Same as in type A1 (Unirrigated) on page 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 | N1 | P1 | P2 | N1P1 | N1P2 | N2P2 | N1P2K2 | S.E. | Av. response of pods in Kg/ha.
----------|----|----|----|------|------|-------|--------|----|------------------------
Control    |    |    |    |      |      |       |        |    | 136
N1P1       | 136| 205| 332| 298  | 308  | 367   | 436    |    | Control yield=462 Kg/ha.; No. of trials=1.

63 (S.F.T.)

Treatment | N1 | P1 | P2 | N1P1 | N1P2 | N2P2 | N1P2K2 | S.E. | Av. response of pods in Kg/ha.
----------|----|----|----|------|------|-------|--------|----|------------------------
Control    |    |    |    |      |      |       |        |    | 67
N1P1       | 67 | 108| 139| 299  | 361  | 433   | 67 3   |    | Control yield=896 Kg/ha.; No. of of trials=6.

64 (S.F.T.)

Treatment | N1 | P1 | P2 | N1P1 | N1P2 | N2P2 | N1P2K2 | S.E. | Av. response of pods in Kg/ha.
----------|----|----|----|------|------|-------|--------|----|------------------------
Control    |    |    |    |      |      |       |        |    | 258
N1P1       | 258| 239| 195| 547  | 753  | 921   | 1130   |    | Control yield=1509 Kg/ha.; No. of trials=8.

65 (S.F.T.)

Treatment | N1 | P1 | P2 | N1P1 | N1P2 | N2P2 | N1P2K2 | S.E. | Av. response of pods in Kg/ha.
----------|----|----|----|------|------|-------|--------|----|------------------------
Control    |    |    |    |      |      |       |        |    | 170
N1P1       | 170| 239| 195| 547  | 619  | 738   | 950    |    | Control yield=929 Kg/ha.; No. of trials=5.

Cuttack

65 (S.F.T.)

Treatment | N1 | P1 | P2 | N1P1 | N1P2 | N2P2 | N1P2K2 | S.E. | Av. response of pods in Kg/ha.
----------|----|----|----|------|------|-------|--------|----|------------------------
Control    |    |    |    |      |      |       |        |    | 132
N1P1       | 132| 493| 253| 186  | 626  | 733   | 760    |    | Control yield=1466 Kg/ha.; No. of trials=3.
Ganjam
65 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N,</th>
<th>P,</th>
<th>N,P,</th>
<th>N,P,</th>
<th>N,P,K,</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of pods in Kg/ha.</td>
<td>-20</td>
<td>180</td>
<td>440</td>
<td>187</td>
<td>265</td>
<td>392</td>
</tr>
</tbody>
</table>

Control yield = 570 Kg/ha; No. of trials = 4.

---

Crop :- Groundnut.  
Site :- (District) : Sambalpur.  

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) (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).
   N, = 15 Kg/ha of N.
   K, = 30 Kg/ha of K,0.
   N,K, = 60 Kg/ha of K,0.
   N,K, = 15 Kg/ha of N+30 Kg/ha of K,0.
   N,K, = 15 Kg/ha of N+60 Kg/ha of K,0.
   N,K, = 30 Kg/ha of N+60 Kg/ha of K,0.
   N,P,K, = 15 Kg/ha of N+30 Kg/ha of P,0 30 Kg/ha of K,0.
   N applied as A/S, P,0 3 as Super and K,0 as Murr. of Pot.

3. DESIGN:
   Same as in type A3 (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:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of pods in Kg/ha.</td>
<td>-500</td>
<td>-400</td>
<td>-800</td>
<td>-350</td>
<td>-350</td>
<td>474</td>
<td>174</td>
</tr>
</tbody>
</table>

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 (vii) N.A.  (viii) Unirrigated.  (viii) to (x) N.A.
2. TREATMENTS:
- 8 manural treatments
- O = Control (no manure)
- \( N_1 = 15 \text{ Kg/ha. of } N \)
- \( K_1 = 20 \text{ Kg/ha. of } K_2O \)
- \( K_2 = 40 \text{ Kg/ha. of } K_2O \)
- \( N_1K_1 = 15 \text{ Kg/ha. of } N + 20 \text{ Kg/ha. of } K_2O \)
- \( N_1K_2 = 15 \text{ Kg/ha. of } N + 40 \text{ Kg/ha. of } K_2O \)
- \( N_2K_1 = 30 \text{ Kg/ha. of } N + 40 \text{ Kg/ha. of } K_2O \)
- \( N_1P_1K_1 = 15 \text{ Kg/ha. of } N + 20 \text{ Kg/ha. of } P_2O_5 + 20 \text{ Kg/ha. of } K_2O \)
- \( N \) applied as A/S, \( P_2O_5 \) as Super and \( K_2O \) as Mur. of Pot.

3. DESIGN:
- Same as in Type A1 (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:

<table>
<thead>
<tr>
<th>Mayurbhanj</th>
</tr>
</thead>
<tbody>
<tr>
<td>62 (S.F.T.)</td>
</tr>
<tr>
<td>Treatment</td>
</tr>
<tr>
<td>Av. response of pods in Kg/ha.</td>
</tr>
<tr>
<td>Control yield = 369 Kg/ha.; No. of trials = 1.</td>
</tr>
</tbody>
</table>

| 63 (S.F.T.)|
| Treatment | \( N_1 \) | \( K_1 \) | \( K_2 \) | \( N_1K_1 \) | \( N_1K_2 \) | \( N_1K_2 \) | \( N_1P_1K_1 \) | S.E. |
| Av. response of pods in Kg/ha. | 276 | 426 | 388 | 363 | 496 | 603 | 426 |
| Control yield = 849 Kg/ha.; No. of trials = 6. |

| 64 (S.F.T.)|
| Treatment | \( N_1 \) | \( K_1 \) | \( K_2 \) | \( N_1K_1 \) | \( N_1K_2 \) | \( N_1K_2 \) | \( N_1P_1K_1 \) | S.E. |
| Av. response of pods in Kg/ha. | 186 | 286 | 632 | 639 | 666 | 1054 | 962 |
| Control yield = 1463 Kg/ha.; No. of trials = 4. |

| Cuttack |
| 65 (S.F.T.)|
| Treatment | \( N_1 \) | \( K_1 \) | \( K_2 \) | \( N_1K_1 \) | \( N_1K_2 \) | \( N_1K_2 \) | \( N_1P_1K_1 \) | S.E. |
| Av. response of pods in Kg/ha. | 197 | 156 | 430 | 292 | 452 | 553 | 628 |
| Control yield = 866 Kg/ha.; No. of trials = 3. |

| 65 (S.F.T.)|
| Treatment | \( N_1 \) | \( K_1 \) | \( K_2 \) | \( N_1K_1 \) | \( N_1K_2 \) | \( N_1K_2 \) | \( N_1P_1K_1 \) | S.E. |
| Av. response of pods in Kg/ha. | 576 | 140 | 260 | 833 | 903 | 950 | 1066 |
| Control yield = 1373 Kg/ha.; No. of trials = 3. |
## Crop: Groundnut.

**Site:** (District) : Balasore, Mayurbhanj and Sambalpur.

**Object:** To study the response of Groundnut to different levels of N, P, K and 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:

- Control (no manure)
- N : 22.4 Kg/ha. of N as A.S.
- P : 13.6 Kg/ha. of P₂O₅ as Super.
- K : 33.4 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 : 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:

<table>
<thead>
<tr>
<th>District</th>
<th>No. of trials</th>
<th>Control yield in Q/ha.</th>
<th>Av. response in Q/ha.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balasore</td>
<td>2</td>
<td>66.4 14 0 9 1 1 6 1 5 3 4 0 -0.2 2 7 2 2</td>
<td></td>
</tr>
<tr>
<td>Mayurbhanj</td>
<td>4</td>
<td>23 1 11 5 17 5 10 6 2 9 0 7 0 8 2 3 4 5 1 1</td>
<td></td>
</tr>
<tr>
<td>Sambalpur</td>
<td>2</td>
<td>6 6 3 8 3 9 15 0 3 0 1 1 6 0 4 0 1 0 5</td>
<td></td>
</tr>
</tbody>
</table>

---

## Crop: Groundnut.

**Site:** As per results.

**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.

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 cash crop, 4 on an oilseed crop and 3 on a legumes 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:

<table>
<thead>
<tr>
<th>District</th>
<th>No. of trials</th>
<th>Control</th>
<th>$n_1$</th>
<th>$n_2$</th>
<th>$n_1'$</th>
<th>$n_2'$</th>
<th>$n_1''$</th>
<th>$n_2''$</th>
<th>G.M.</th>
<th>S.E(mean)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balasore</td>
<td>2</td>
<td>46.1</td>
<td>73.0</td>
<td>73.0</td>
<td>64.5</td>
<td>72.8</td>
<td>68.2</td>
<td>77.0</td>
<td>67.8</td>
<td>4.1</td>
</tr>
<tr>
<td>Mayurbhanj</td>
<td>2</td>
<td>12.5</td>
<td>17.8</td>
<td>17.3</td>
<td>16.8</td>
<td>21.2</td>
<td>17.5</td>
<td>19.7</td>
<td>17.5</td>
<td>0.8</td>
</tr>
<tr>
<td>Mayurbhanj</td>
<td>2</td>
<td>23.5</td>
<td>---</td>
<td>30.8</td>
<td>50.5</td>
<td>28.7</td>
<td>37.3</td>
<td>61.7</td>
<td>40.8</td>
<td>4.8</td>
</tr>
<tr>
<td>Sambalpur</td>
<td>2</td>
<td>6.1</td>
<td>---</td>
<td>15.8</td>
<td>14.7</td>
<td>15.9</td>
<td>17.7</td>
<td>19.0</td>
<td>15.0</td>
<td>0.8</td>
</tr>
</tbody>
</table>

Crop: Groundnut (Kharif).


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 ladders. (b) Line sowing. (c) 112 Kg/ha. (d) As per treatments. (e) 2 (v) 26.9 Kg/ha. of P₂O₅ 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) (a) 2 weedings, 1 hoeing and 2 earthing up. (ix) N.A. (x) 28th Nov. 1960.

2. TREATMENTS:

6 spacings: $S_1=23$ cm. x 46 cm., $S_2=23$ cm. x 38 cm., $S_3=23$ cm. x 30 cm., $S_4=23$ cm. x 23 cm., $S_5=23$ cm. x 15 cm. and $S_6=15$ cm. x 15 cm.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) 23.2 m. x 11.0 m. (iii) 4. (iv) (a) 7.3 m. x 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.
Crop :- Gingely (Til).

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 : A).

1. BASAL CONDITIONS :
(i) N.A. (ii) Red and yellow for Puri and Mayurbhanj and Red loamy for Cuttack. (iii) to (v) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :
8 manurial treatments :

0 = Control (no manure).
N1 = 25 Kg/ha. of N.
N1P1 = 50 Kg/ha. of N.
P1 = 25 Kg/ha. of P2O5.
N1P1 = 25 Kg/ha. of N + 25 Kg/ha. of P2O5.
N1P1 = 50 Kg/ha. of N + 50 Kg/ha. of P2O5.
N1P1 = 50 Kg/ha. of N + 50 Kg/ha. of P2O5.

N, P1, K2 = 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 1 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 are conducted on 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 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.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>N2</th>
<th>P1</th>
<th>N1P1</th>
<th>N2P1</th>
<th>NP</th>
<th>N1P1K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Til in Kg/ha.</td>
<td>62</td>
<td>70</td>
<td>72</td>
<td>80</td>
<td>90</td>
<td>146</td>
<td>203</td>
<td>28.3</td>
</tr>
</tbody>
</table>

Control yield=145 Kg/ha. : No. of trials=4.

63 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>N2</th>
<th>P1</th>
<th>N1P1</th>
<th>N2P1</th>
<th>NP</th>
<th>N1P1K1</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Til in Kg/ha.</td>
<td>83</td>
<td>124</td>
<td>15</td>
<td>126</td>
<td>156</td>
<td>173</td>
<td>154</td>
<td>—</td>
</tr>
</tbody>
</table>

Control yield=25 Kg/ha. : No. of trials=1.
**64 (S.F.T.)**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of Til in Kg/ha.</td>
<td>172</td>
<td>180</td>
<td>246</td>
<td>318</td>
<td>375</td>
<td>416</td>
<td>11:1</td>
<td></td>
</tr>
</tbody>
</table>

Control yield = 90 Kg/ha.; No. of trials = 4.

**65 (S.F.T.)**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of Til in Kg/ha.</td>
<td>209</td>
<td>116</td>
<td>232</td>
<td>327</td>
<td>467</td>
<td>582</td>
<td>30:4</td>
<td></td>
</tr>
</tbody>
</table>

Control yield = 82 Kg/ha.; No. of trials = 2.

Mayurbhanj

**62 (S.F.T.)**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of Til in Kg/ha.</td>
<td>219</td>
<td>288</td>
<td>264</td>
<td>243</td>
<td>310</td>
<td>310</td>
<td>357</td>
<td>—</td>
</tr>
</tbody>
</table>

Control yield = 288 Kg/ha.; No. of trials = 1.

**63 (S.F.T.)**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of Til in Kg/ha.</td>
<td>162</td>
<td>185</td>
<td>114</td>
<td>185</td>
<td>324</td>
<td>347</td>
<td>387</td>
<td>—</td>
</tr>
</tbody>
</table>

Control yield = 183 Kg/ha.; No. of trials = 1.

Cuttack

**63 (S.F.T.)**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of Til in Kg/ha.</td>
<td>110</td>
<td>244</td>
<td>108</td>
<td>216</td>
<td>288</td>
<td>358</td>
<td>491</td>
<td>—</td>
</tr>
</tbody>
</table>

Control yield = 166 Kg/ha.; No. of trials = 4.

**65 (S.F.T.)**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of Til in Kg/ha.</td>
<td>100</td>
<td>280</td>
<td>100</td>
<td>200</td>
<td>250</td>
<td>250</td>
<td>400</td>
<td>88:3</td>
</tr>
</tbody>
</table>

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 phosphatic applied singly and in combination with other nutrients (Type: A 2).

1. **BASAL CONDITIONS**;
   (i) N.A.  (ii) Red and yellow for Puri and Mayurbhanj and Red for Cuttack. (iii) to (vi) N.A.  (vii) Unirrigated.  (viii) to (x) N.A.
2. TREATMENTS:

- 8 manural treatments
  - O = Control (no manure).
  - N<sub>1</sub> = 25 Kg/ha. of N.
  - P<sub>1</sub> = 25 Kg/ha. of P<sub>2</sub>O<sub>5</sub>.
  - P<sub>2</sub> = 50 Kg/ha. of P<sub>2</sub>O<sub>5</sub>.
  - N<sub>1</sub>P<sub>1</sub> = 25 Kg/ha. of N + 25 Kg/ha. of P<sub>2</sub>O<sub>5</sub>.
  - N<sub>1</sub>P<sub>2</sub> = 25 Kg/ha. of N + 50 Kg/ha. of P<sub>2</sub>O<sub>5</sub>.
  - N<sub>2</sub>P<sub>2</sub> = 50 Kg/ha. of N + 50 Kg/ha. of P<sub>2</sub>O<sub>5</sub>.
  - N<sub>2</sub>P<sub>2</sub>K<sub>2</sub> = 50 Kg/ha. of N + 50 Kg/ha. of P<sub>2</sub>O<sub>5</sub> + 50 Kg/ha. of K<sub>2</sub>O.
  - N applied as A/S, P<sub>2</sub>O<sub>5</sub> as Super and K<sub>2</sub>O as Mur. of Pot.

3. DESIGN:

- Same as in Type A (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**

<table>
<thead>
<tr>
<th>Year</th>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;K&lt;sub&gt;2&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>62</td>
<td>Gr.</td>
<td>38</td>
<td>16</td>
<td>42</td>
<td>69</td>
<td>77</td>
<td>115</td>
<td>150</td>
<td>23.4</td>
</tr>
<tr>
<td></td>
<td>Av. response of</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ty. in Kg/ha.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control yield=135 Kg/ha., No. of trials=3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;K&lt;sub&gt;2&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>63</td>
<td>Gr.</td>
<td>29</td>
<td>-7</td>
<td>9</td>
<td>11</td>
<td>47</td>
<td>90</td>
<td>160</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Av. response of</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>grain in Kg/ha.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control yield=98 Kg/ha., No. of trials=1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Mayurbhanj**

<table>
<thead>
<tr>
<th>Year</th>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;K&lt;sub&gt;2&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>62</td>
<td>Gr.</td>
<td>229</td>
<td>138</td>
<td>241</td>
<td>298</td>
<td>276</td>
<td>345</td>
<td>345</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Av. yield of</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ty. in Kg/ha.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control yield=369 Kg/ha., No. of trials=1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Treatment</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;P&lt;sub&gt;2&lt;/sub&gt;K&lt;sub&gt;2&lt;/sub&gt;</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>63</td>
<td>Gr.</td>
<td>140</td>
<td>128</td>
<td>71</td>
<td>164</td>
<td>233</td>
<td>360</td>
<td>428</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Av. response of</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>grain in Kg/ha</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control yield=298 Kg/ha.; No. trials=1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Crop: Gingelly

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) 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.
     - **N1K2** = 25 Kg/ha. of N + 25 Kg/ha. of K₂O.
     - **N2K2** = 25 Kg/ha. of N + 50 Kg/ha. of K₂O.
     - **N2K4** = 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.  
   - (b) N.A.  
   - (c) Nil.  
   - (v) to (vii) N.A.

5. **RESULTS**:

#### Puri

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N₁</th>
<th>K₁</th>
<th>K₂</th>
<th>NₐK₁</th>
<th>NₐK₂</th>
<th>NₐK₄</th>
<th>NₐP₁K₁</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of Ti in Kg/ha.</td>
<td>138</td>
<td>45</td>
<td>69</td>
<td>69</td>
<td>90</td>
<td>207</td>
<td>183</td>
<td>—</td>
</tr>
</tbody>
</table>

Control yield = 138 Kg/ha.; No. of trials = 1.

#### Cuttack

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N₁</th>
<th>P₁</th>
<th>P₂</th>
<th>NₐP₁</th>
<th>NₐP₂</th>
<th>NₐP₄</th>
<th>NₐP₁K₄</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of pods in Kg/ha.</td>
<td>0</td>
<td>–11</td>
<td>–6</td>
<td>52</td>
<td>105</td>
<td>117</td>
<td>79</td>
<td>32.1</td>
</tr>
</tbody>
</table>

Control yield = 89 Kg/ha.; No. of trials = 2.

#### Mayurbhanj

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N₁</th>
<th>P₁</th>
<th>P₂</th>
<th>NₐP₁</th>
<th>NₐP₂</th>
<th>NₐP₄</th>
<th>NₐP₁K₄</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of grain in Kg/ha.</td>
<td>140</td>
<td>100</td>
<td>140</td>
<td>300</td>
<td>340</td>
<td>500</td>
<td>600</td>
<td>—</td>
</tr>
</tbody>
</table>

Control yield = 100 Kg/ha.; No. of trials = 1.

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.
<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. response of ( T_{II} ) in Kg/ha.</th>
<th>Control yield</th>
<th>No. of trials</th>
</tr>
</thead>
<tbody>
<tr>
<td>63 (S.F.T.)</td>
<td>( N_1K_1K_2N_1K_2N_2K_2N_2P_2K_3 ) S.E.</td>
<td>94 17 -1 86 49 170 116</td>
<td>1</td>
</tr>
<tr>
<td>64 (S.F.T.)</td>
<td>( N_1K_1K_2N_1K_2N_2K_2N_2P_2K_3 ) S.E.</td>
<td>103 114 166 259 358 495 714 52:3</td>
<td>2</td>
</tr>
<tr>
<td>65 (S.F.T.)</td>
<td>( N_1K_1K_2N_1K_2N_2K_2N_2P_2K_3 ) S.E.</td>
<td>123 106 269 281 380 537 659 52:2</td>
<td>2</td>
</tr>
</tbody>
</table>

**Mayurbhanj**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. response of ( T_{II} ) in Kg/ha.</th>
<th>Control yield</th>
<th>No. of trials</th>
</tr>
</thead>
<tbody>
<tr>
<td>62(S.F.T.)</td>
<td>( N_1K_1K_2N_1K_2N_2K_2N_2P_2K_3 ) S.E.</td>
<td>23 162 221 276 300 185 393</td>
<td>1</td>
</tr>
<tr>
<td>63(S.F.T.)</td>
<td>( N_1K_1K_2N_1K_2N_2K_2N_2P_2K_3 ) S.E.</td>
<td>116 -69 -39 162 128 116 278</td>
<td>1</td>
</tr>
<tr>
<td>65(S.F.T.)</td>
<td>( N_1K_1K_2N_1K_2N_2K_2N_2P_2K_3 ) S.E.</td>
<td>51 14 24 68 120 146 120 42:6</td>
<td>2</td>
</tr>
</tbody>
</table>

**Cuttack**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. response of ( T_{II} ) in Kg/ha.</th>
<th>Control yield</th>
<th>No. of trials</th>
</tr>
</thead>
<tbody>
<tr>
<td>63(S.F.T.)</td>
<td>( N_1K_1K_2N_1K_2N_2K_2N_2P_2K_3 ) S.E.</td>
<td>163 40 100 200 340 500 400</td>
<td>1</td>
</tr>
</tbody>
</table>

**Crop**: Gingelly.  
**Site**: (District): Bolangir, Ganjam and Puri.  
**Ref**: Or. 60(S.F.T).  
**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 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 K₀ as Mur. Pot.

pk = 22.4 Kg/ha. of P₂O₅ as Super + 22.4 Kg/ha. of K₀ 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) above.

4. GENERAL:

(i) to (iii) N.A.  (iv) (a) 1960 only.  (b) N.A.  (c) Nil.  (v) to (vii) N.A.

5. RESULTS:

<table>
<thead>
<tr>
<th>District</th>
<th>No. of trials</th>
<th>Control yield</th>
<th>N</th>
<th>P</th>
<th>K</th>
<th>S.E.</th>
<th>NP</th>
<th>NK</th>
<th>PK</th>
<th>NPK</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolanigir</td>
<td>2</td>
<td>380</td>
<td>340</td>
<td>180</td>
<td>190</td>
<td>67.0</td>
<td>50</td>
<td>70</td>
<td>40</td>
<td>80</td>
<td>25.0</td>
</tr>
<tr>
<td>Ganjam</td>
<td>3</td>
<td>200</td>
<td>50</td>
<td>60</td>
<td>70</td>
<td>8.3</td>
<td>30</td>
<td>10</td>
<td>20</td>
<td>60</td>
<td>45.0</td>
</tr>
<tr>
<td>Puri</td>
<td>2</td>
<td>360</td>
<td>100</td>
<td>60</td>
<td>20</td>
<td>14.0</td>
<td>10</td>
<td>10</td>
<td>0</td>
<td>-20</td>
<td>42.0</td>
</tr>
</tbody>
</table>

Crop :- Gingely.  
Site :- (District) Balosore and Puri.

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 = 22.4 Kg/ha. of N as A/S

n₁ = 44.8 Kg/ha. of N as A/S

n₂ = 22.4 Kg/ha. of N as Urea

nₛ = 44.8 Kg/ha. of N as Urea

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 raai 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 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:

<table>
<thead>
<tr>
<th>District</th>
<th>No. of Control</th>
<th>( n_1 )</th>
<th>( n_2 )</th>
<th>( n_3 )</th>
<th>( n_4 )</th>
<th>( n_5 )</th>
<th>( n_6 )</th>
<th>G.M.</th>
<th>S.E.</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolangir</td>
<td>2</td>
<td>370</td>
<td>610</td>
<td>700</td>
<td>810</td>
<td>830</td>
<td>870</td>
<td>880</td>
<td>681</td>
<td>112.4</td>
</tr>
<tr>
<td>Puri</td>
<td>4</td>
<td>260</td>
<td>350</td>
<td>400</td>
<td>330</td>
<td>350</td>
<td>390</td>
<td>350</td>
<td>23</td>
<td>23.3</td>
</tr>
</tbody>
</table>

Crop: Gingely (Kharif).


Object: To study the effect of different fungicides in controlling Fusarium leaf spot disease in Sesamum.

1. BASAL CONDITIONS:
   (i) (a) Nil. (b) and (c) N.A.
   (ii) Sandy loam. (iii) 28.6.62. (iv) 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 P2O5.

2. TREATMENTS:
   9 Fungical treatments: 
   \( T_1 = \) Control, \( T_2 = \) Bordeaux Mixture 3% , \( T_3 = \) Fat 0.2% , \( T_4 = \) Cuprivit 0.2% , 
   \( T_5 = \) Blitox 0.2 , \( T_6 = \) Shell copper 0.2% , \( T_7 = \) Mieop 0.2% , \( T_8 = \) Ziram 0.2% , 
   \( T_9 = \) 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.- (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) 90 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of seed different in Kg/ha.

\[
\begin{array}{cccccccc}
\text{Treatment} & T_1 & T_2 & T_3 & T_4 & T_5 & T_6 & T_7 & T_8 \\
\text{Av. yield} & 86 & 126 & 102 & 107 & 121 & 115 & 106 & 92 & 103 \\
\text{C.D.} & 15.4 & \\
\end{array}
\]

Disease index
   (i) 22.82 degrees. (ii) 4.42 degrees. (iii) Treatment differences are highly significant. (iv) Mean disease index in degrees.

\[
\begin{array}{cccccccc}
\text{Treatment} & T_1 & T_2 & T_3 & T_4 & T_5 & T_6 & T_7 & T_8 \\
\text{C.D.} & 7.68 & \\
\end{array}
\]

Ref: Or. 62(30).

Type: 'D'.
Crop: Gingelly (Rabi).


Object: To study the effect of fungicides in controlling alternaria blight disease of Sesamum.

1. BASAL CONDITIONS:
   (i) (a) Nil. (b) Sandy loam. (c) 25 C.L./ha. of F.Y.M. +33·6 Kg/ha. of P₂O₅ +33·6 Kg/ha. of N as N.P.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. x 33 cm. 
   (25 C.L./ha. of F.Y.M. +22·4 Kg/ha. of P₂O₅ +33·6 Kg/ha. of N as N.P.S.
   (vi) Selection 14. (vii) Irrigated. (viii) 2 hoeings, 1 weeding and earthing up after top dressing.

2. TREATMENTS:
   9 fungicidal treatments: T₀ = Control, T₁ = Bordeaux mixture 3: 3 : 50, T₂ = Bliton 0·3%, T₃ = Cupramar 0·3%, T₄ = Micop, W - 50, 0·3%, T₅ = Dithane Z-78 (Hexathane) 0·2%, T₆ = Shell copper 0·3%, T₇ = Copper Sendoz 0·3% and T₈ = 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. x 4·0 m. (b) 4·3 m. x 3·5 m. (v) 23 cm. x 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
<table>
<thead>
<tr>
<th>T₀</th>
<th>T₁</th>
<th>T₂</th>
<th>T₃</th>
<th>T₄</th>
<th>T₅</th>
<th>T₆</th>
<th>T₇</th>
<th>T₈</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>38</td>
<td>40</td>
<td>29</td>
<td>32</td>
<td>27</td>
<td>38</td>
<td>35</td>
<td>28</td>
</tr>
</tbody>
</table>

   Mean disease Index
   (i) 16·7 degrees. (ii) 0·9 degrees. (iii) Treatment differences are highly significant. (iv) Mean disease index in degrees.

   Treatment
<table>
<thead>
<tr>
<th>T₀</th>
<th>T₁</th>
<th>T₂</th>
<th>T₃</th>
<th>T₄</th>
<th>T₅</th>
<th>T₆</th>
<th>T₇</th>
<th>T₈</th>
</tr>
</thead>
<tbody>
<tr>
<td>21·5</td>
<td>13·1</td>
<td>14·4</td>
<td>18·4</td>
<td>15·0</td>
<td>18·3</td>
<td>15·9</td>
<td>15·9</td>
<td>18·0</td>
</tr>
</tbody>
</table>

   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).


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. x 30 cm. (e) Nil. (v) 25 C.L./ha. of F.Y.M. +33·6 Kg/ha. of P₂O₅ +33·6 Kg/ha. of N as N.P.S. (vi) Selection 14. (vii) Irrigated. (viii) 2 hoeings, 1 weeding and earthing up.

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. x 4’4 m. (b) 4’1 m. x 3’8 m. (v) 4’6 m. x 30 cm. (vi) Yes.

4. GENERAL:
   (i) Poor. (ii) Attack by 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T_1</th>
<th>T_2</th>
<th>T_3</th>
<th>T_4</th>
<th>T_5</th>
<th>T_6</th>
<th>T_7</th>
<th>T_8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>87</td>
<td>118</td>
<td>106</td>
<td>109</td>
<td>106</td>
<td>99</td>
<td>13</td>
<td>99</td>
</tr>
<tr>
<td>C.D.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>17</td>
<td>2</td>
</tr>
</tbody>
</table>

Disease Index
   (i) 14°2 degrees. (ii) 0°4 degrees. (iii) Treatment differences are highly significant. (iv) Mean disease index in degrees.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T_1</th>
<th>T_2</th>
<th>T_3</th>
<th>T_4</th>
<th>T_5</th>
<th>T_6</th>
<th>T_7</th>
<th>T_8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean angle</td>
<td>18.3</td>
<td>11.7</td>
<td>13.8</td>
<td>14.1</td>
<td>12.7</td>
<td>15.0</td>
<td>11.7</td>
<td>14.6</td>
</tr>
<tr>
<td>C.D.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.7</td>
<td></td>
</tr>
</tbody>
</table>

Transformation back to °:
9°9 4°1 5 7 5°9 4°8 6° 4°1 6°4 7°6

Crop Gingelly (Kharif).

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

Object :- To study the effect of fungicides on control of Cercospora leaf spot of Sesamum caused by Cercospora sesamica.

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 ladderings. (b) Line sowing. (c) 5’6 Kg/ha. (d) 45 cm. x 30 cm. (e) Nil. (v) 33’6 Kg/ha. of P_2O_5 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 : T_1 = Control, T_2 = Bordeaux mixture 3:3:50, T_3 = Blitox—50 (0.3%), T_4 = Copper Sendox 0.3%, T_5 = Shell cu-fungicide 0.3%, T_6 = Cupravil 0.3%, T_7 = Hexathane 0.2%, T_8 = Captan 0.2%, T_9 = Cupramar 0.3%, T_10 = Blitane 0.3%, T_11 = Cuman (Ziran) and T_12 = 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. x 3’0 m. (b) 3’7 11. x 2’7 m. (v) 15 cm. x 15 cm. (vi) Yes.

4. GENERAL:
   (i) Good. (ii) Moderate incidence. (iii) Incidence of disease and yield. (v) (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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T₀</th>
<th>T₁</th>
<th>T₂</th>
<th>T₃</th>
<th>T₄</th>
<th>T₅</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>605</td>
<td>733</td>
<td>683</td>
<td>633</td>
<td>721</td>
<td>633</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T₀</th>
<th>T₁</th>
<th>T₂</th>
<th>T₃</th>
<th>T₄</th>
<th>T₅</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>637</td>
<td>627</td>
<td>590</td>
<td>652</td>
<td>675</td>
<td>624</td>
</tr>
</tbody>
</table>

II. Incidence of Cercospora leaf spot

(i) 14°66 degrees. (ii) 1·16 degrees. (iii) Treatment differences are highly significant. (iv) Av. incidence of cercospora leaf spot in degrees.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T₀</th>
<th>T₁</th>
<th>T₂</th>
<th>T₃</th>
<th>T₄</th>
<th>T₅</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>16'98</td>
<td>15'00</td>
<td>13'34</td>
<td>13'54</td>
<td>12'00</td>
<td>14'55</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T₀</th>
<th>T₁</th>
<th>T₂</th>
<th>T₃</th>
<th>T₄</th>
<th>T₅</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>14'09</td>
<td>15'36</td>
<td>15'56</td>
<td>15'71</td>
<td>13'30</td>
<td>13'56</td>
</tr>
</tbody>
</table>

C.D.=1°96 degrees.

Crop :- Gingelly (Kharif).

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 laddering. (b) Line sowing. (c) 5'6 Kg/ha. (d) 45 cm × 30 cm. (e) Nil. (f) 148·3 Q/ha. of F.Y.M. and 33·6 Kg/ha. of P₂O₅ before sowing. (g) Selection-14. (h) Irrigated. (i) 2 weedings, hoeings and earthing up. (g) 70·7 cm. (h) 25.8.65 and 10.9.65.

2. TREATMENTS:
5 dates of sowing : D₀=26.5.65, D₁=10.6.65, D₂=25.6.65 and D₅=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 sesameum in Kg/ha.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>D₀</th>
<th>D₁</th>
<th>D₃</th>
<th>D₄</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield</td>
<td>157</td>
<td>635</td>
<td>507</td>
<td>192</td>
</tr>
</tbody>
</table>

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 (Rahi).
Site :- State Agri. Res. Sta., Bhubaneswar.
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. (d) Sandy loam. (ii) 13.11.61.
(iv) (a) 4 ploughings followed by ladderings. (b) Line sowing. (c) 28 Kg/ha. (d) 30 cm. x 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 P are Super: P_1 = 22.4, P_2 = 44.8, P_3 = 67.2 and P_4 = 89.7 Kg/ha.
Sub-plot treatments:
2 varieties of Linseed: V_1 = Karanja-2 and V_2 = 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. (b) 3-4 m. x 1-8 m. (v) 15 cm. x 30 cm. (vi) Yes.

4. GENERAL:
(i) Good. (ii) Attack of rust. (iii) Height and yield of grain. (iv) (a) 1961 only (f) and (e) No. (v) to (vii) Nil.

5. RESULTS:
(i) 1035 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.

<table>
<thead>
<tr>
<th>P_1</th>
<th>P_2</th>
<th>P_3</th>
<th>P_4</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1133</td>
<td>1061</td>
<td>800</td>
<td>1240</td>
<td>1058</td>
</tr>
<tr>
<td>1028</td>
<td>1069</td>
<td>1193</td>
<td>1232</td>
<td>1131</td>
</tr>
<tr>
<td>Mean</td>
<td>1081</td>
<td>1065</td>
<td>997</td>
<td>1236</td>
</tr>
</tbody>
</table>

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.
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) (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 manurai 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
   - **N1P2** = 50 Kg/ha. of N+50 Kg/ha. of P2O5
   - **N2P2** = 50 Kg/ha. of N+50 Kg/ha. of P2O5

   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 and 3 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  
   N1  N2  P1  N1P1  N1P2  N1P1K1  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  
   N1  N2  P1  N1P1  N1P2  N1P1K1  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  
   N1  N2  P1  N1P1  N1P2  N1P1K1  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  
   N1  N2  P1  N1P1  N1P2  N1P1K1  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.
<table>
<thead>
<tr>
<th>Crop</th>
<th>Mustard (Rabi).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site</td>
<td>(District): Balasore.</td>
</tr>
<tr>
<td>Object</td>
<td>To study the response curves of important cereal, cash and oil seed crops to</td>
</tr>
<tr>
<td></td>
<td>phosphorus applied singly and in combination with other nutrients. (Type: A3).</td>
</tr>
</tbody>
</table>

1. BASAL CONDITIONS:
   (i) to (c) N.A. (ii) Red loamy. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS:
   8 manurai treatments
   O = Control (no manure).
   N1 = 35 Kg/ha. of N,
   P1 = 25 Kg/ha. of P2O5,
   N1P1 = 35 Kg/ha. of N+25 Kg/ha. of P2O5,
   N2P1 = 35 Kg/ha. of N+50 Kg/ha. of P2O5,
   N1P1K1 = 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) 1355 ov1s. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS:
   Treatment  N1  P1  N1P1  N2P1  N3P1  N4P1  S.E.
   Av. response of grain in Kg/ha. 115 14 122 90 100 11 225 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 manuriial treatments :
   O=Control (no manure)
   \( \frac{N_1}{P_1} = 25 \) Kg/ha. of \( N \)
   \( \frac{P_1}{P_2} = 25 \) Kg/ha. of \( P_2O_5 \)
   \( \frac{P_2}{P_2} = 50 \) Kg/ha. of \( P_2O_5 \)
   \( \frac{N_P}{N_P} = 25 \) Kg/ha. of \( N+25 \) Kg/ha. of \( P_2O_5 \)
   \( \frac{N_P}{N_P} = 25 \) Kg/ha. of \( N+50 \) Kg/ha. of \( P_2O_5 \)
   \( \frac{N_P}{N_P} = 50 \) Kg/ha. of \( N+50 \) Kg/ha. of \( P_2O_5 \)
   \( \frac{N_P}{N_P} = 50 \) Kg/ha. of \( N+50 \) Kg/ha. of \( P_2O_5+50 \) 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 (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 | \( N_1 \) | \( P_1 \) | \( P_3 \) | \( N_P \) | \( P_1 \) | \( N_2 \) | \( P_2 \) | \( N_P \) | \( P_2 \) | \( K_2 \) | 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 | \( N_1 \) | \( P_1 \) | \( P_3 \) | \( N_P \) | \( P_1 \) | \( N_2 \) | \( P_2 \) | \( N_P \) | \( P_2 \) | \( K_2 \) | S.E.
   Av. response of mustard in Kg/ha. | 59 | 56 | 49 | 155 | 155 | 133 | 205 | 52 | —
   Control yield=472 Kg/ha.; No. of trials=2.

   Cuttack
   62 (S.F.T.)
   Treatment | \( N_1 \) | \( P_1 \) | \( P_3 \) | \( N_P \) | \( P_1 \) | \( N_2 \) | \( P_2 \) | \( N_P \) | \( P_2 \) | \( K_2 \) | 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 | \( N_1 \) | \( P_1 \) | \( P_3 \) | \( N_P \) | \( P_1 \) | \( N_2 \) | \( P_2 \) | \( N_P \) | \( P_2 \) | \( K_2 \) | S.E.
   Av. response of mustard in Kg/ha. | -4 | 34 | -19 | 59 | 39 | 93 | 108 | 39 | —
   Control yield=355 Kg/ha.; No. of trials=2.
Ganjam

64 (S.F.T.)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>( N_1 )</th>
<th>( P_1 )</th>
<th>( P_2 )</th>
<th>( N_1P_1 )</th>
<th>( N_1P_2 )</th>
<th>( N_2P_2 )</th>
<th>( N_1P_2K_2 )</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of mustard in Kg/ha.</td>
<td>444</td>
<td>563</td>
<td>899</td>
<td>563</td>
<td>909</td>
<td>859</td>
<td>1230</td>
<td>220:2</td>
</tr>
</tbody>
</table>

Control yield = 859 Kg/ha.; No. of trials = 2.

Crop :- Mustard.  
Site :- (District) : Balasore.  
Ref :- Or. 65(S.F.T.).  
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 : A).

1. BASAL CONDITIONS :
   (i) to (c) N.A.  (ii) Red loamy.  (iii) to (vi) N.A.  (vii) Irrigated.  (viii) to (x) N.A.

2. TREATMENTS :
   8 manural treatments
   \( O = \) Control (no manure).
   \( N_1 = 35 \) Kg/ha. of N.
   \( K_1 = 25 \) Kg/ha. of K.
   \( N_1K_1 = 35 \) Kg/ha. of \( N+50 \) Kg/ha. of \( K_2O \).
   \( N_1K_2 = 35 \) Kg/ha. of \( N+50 \) Kg/ha. of \( K_2O \).
   \( N_2K_1 = 70 \) Kg/ha. of \( N+50 \) Kg/ha. of \( K_2O \).
   \( N_2K_2 = 35 \) Kg/ha. of \( \) plus \( 25 \) Kg/ha. of \( K_2O \).
   \( N_1P_1K_1 = 35 \) Kg/ha. of \( N+25 \) Kg/ha. of \( K_2O \) 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) 1965 only.  (b) N.A.  (c) Nil.  (v) to (vii) N.A.

5. RESULTS :
   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. | 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 : A).

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).
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 P₂O₅.
N₁K₂ = 25 Kg/ha. of N + 50 Kg/ha. of P₂O₅.
N₂K₂ = 50 Kg/ha. of N + 50 Kg/ha. of P₂O₅.
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 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:

<table>
<thead>
<tr>
<th>Balasore</th>
<th>62(S.F.T.)</th>
<th>Treatment</th>
<th>Av. response of Mustard in Kg/ha.</th>
<th>N₁</th>
<th>K₁</th>
<th>K₂</th>
<th>N₁K₁</th>
<th>N₁K₂</th>
<th>N₂K₂</th>
<th>N₁P₁K₁</th>
<th>S.E.</th>
<th>Control yield=118 Kg/ha.; No. of trials=1.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>64(S.F.T.)</td>
<td>Treatment</td>
<td>Av. response of Mustard in Kg/ha.</td>
<td>N₁</td>
<td>K₁</td>
<td>K₂</td>
<td>N₁K₁</td>
<td>N₁K₂</td>
<td>N₂K₂</td>
<td>N₁P₁K₁</td>
<td>S.E.</td>
<td>Control yield=597 Kg/ha.; No. of trials=2.</td>
</tr>
<tr>
<td>Cuttack</td>
<td>64(S.F.T.)</td>
<td>Treatment</td>
<td>Av. response of Mustard in Kg/ha.</td>
<td>N₁</td>
<td>K₁</td>
<td>K₂</td>
<td>N₁K₁</td>
<td>N₁K₂</td>
<td>N₂K₂</td>
<td>N₁P₁K₁</td>
<td>S.E.</td>
<td>Control yield=345 Kg/ha.; No. of trials=2.</td>
</tr>
<tr>
<td>Ganjam</td>
<td>64(S.F.T.)</td>
<td>Treatment</td>
<td>Av. response of Mustard in Kg/ha.</td>
<td>N₁</td>
<td>K₁</td>
<td>K₂</td>
<td>N₁K₁</td>
<td>N₁K₂</td>
<td>N₂K₂</td>
<td>N₁P₁K₁</td>
<td>S.E.</td>
<td>Control yield=642 Kg/ha.; No. of trials=2.</td>
</tr>
<tr>
<td>Mayurbhanj</td>
<td>65(S.F.T.)</td>
<td>Treatment</td>
<td>Av. response of Mustard in Kg/ha.</td>
<td>N₁</td>
<td>K₁</td>
<td>K₂</td>
<td>N₁K₁</td>
<td>N₁K₂</td>
<td>N₂K₂</td>
<td>N₁P₁K₁</td>
<td>S.E.</td>
<td>Control yield=110 Kg/ha.; No. of trials=1.</td>
</tr>
</tbody>
</table>
Crop : Mustard.  
Ref : Or. 60(SFT).  
Type : 'M'.

Site : (District) : Balasore and Dhenkanal.  
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:
   0 = 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 (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.

<table>
<thead>
<tr>
<th>District</th>
<th>No. of trials</th>
<th>Control yield</th>
<th>N</th>
<th>P</th>
<th>K</th>
<th>S.E.</th>
<th>NP</th>
<th>NK</th>
<th>PK</th>
<th>NPK</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balasore</td>
<td>3</td>
<td>450</td>
<td>130</td>
<td>60</td>
<td>70</td>
<td>170</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Dhenkanal</td>
<td>4</td>
<td>670</td>
<td>120</td>
<td>80</td>
<td>60</td>
<td>30'0</td>
<td>-20</td>
<td>-10</td>
<td>20</td>
<td>30</td>
<td>13'0</td>
</tr>
</tbody>
</table>

---

Crop : Mustard (Rabi).  
Ref : Or. 60(SFT).  
Type : 'M'.

Site : (District) : Balasore and Dhenkanal.  
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:
   0 = Control (No manure).
   n₁ = 22.4 Kg/ha. of N as A/S.
   n₂ = 22.4 Kg/ha. of N as A/S.
   n₁' = 22.4 Kg/ha. of N as Urea.
   n₂' = 22.4 Kg/ha. of N as Urea.
   n₁'' = 44.8 Kg/ha. of N as A/S.
   n₂'' = 44.8 Kg/ha. of N as Urea.
   n₁ ''' = 44.8 Kg/ha. of N as Urea.

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 2 on a leguminous crop. The number of trials conducted is 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:

Av. response in Kg/ha.

<table>
<thead>
<tr>
<th>District</th>
<th>No.</th>
<th>Control</th>
<th>n1</th>
<th>n2</th>
<th>n1'</th>
<th>n2'</th>
<th>n1''</th>
<th>n2''</th>
<th>G.M.</th>
<th>S.E./Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balasore</td>
<td>3</td>
<td>560</td>
<td>—</td>
<td>—</td>
<td>630</td>
<td>640</td>
<td>620</td>
<td>660</td>
<td>730</td>
<td>644</td>
</tr>
<tr>
<td>Dhekanal</td>
<td>7</td>
<td>700</td>
<td>—</td>
<td>—</td>
<td>750</td>
<td>850</td>
<td>760</td>
<td>890</td>
<td>960</td>
<td>823</td>
</tr>
<tr>
<td>Balasore</td>
<td>2</td>
<td>270</td>
<td>410</td>
<td>520</td>
<td>390</td>
<td>490</td>
<td>—</td>
<td>—</td>
<td>410</td>
<td>430</td>
</tr>
</tbody>
</table>

Crop: Mustard (Rabi).


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 ploughings by country plough and 2 laddering. (b) Broadcasted. (c) 12 Kg/ha. (d) N.A. (e) Nil. (v) 10 Kg/ha. of N as A/S+30 Kg/ha. of P2O5 as Super+30 Kg/ha. of K2O 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 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: D1=15.9.64; D2=1.10.64; D3=15.10.64; D4=1.11.64; D5=15.11.64 and D6=1.12.64.

Sub-plot treatments:


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 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

<table>
<thead>
<tr>
<th></th>
<th>D1</th>
<th>D2</th>
<th>D3</th>
<th>D4</th>
<th>D5</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1</td>
<td>128</td>
<td>165</td>
<td>205</td>
<td>303</td>
<td>464</td>
<td>273</td>
</tr>
<tr>
<td>V2</td>
<td>168</td>
<td>56</td>
<td>179</td>
<td>399</td>
<td>423</td>
<td>245</td>
</tr>
<tr>
<td>V3</td>
<td>231</td>
<td>159</td>
<td>312</td>
<td>520</td>
<td>425</td>
<td>329</td>
</tr>
<tr>
<td>V4</td>
<td>103</td>
<td>120</td>
<td>359</td>
<td>317</td>
<td>369</td>
<td>254</td>
</tr>
</tbody>
</table>

| 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).

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 ladderrings. (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; D_5 = 1.12.65.

   Sub-plot treatments:

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. > 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.

<table>
<thead>
<tr>
<th></th>
<th>D_1</th>
<th>D_2</th>
<th>D_3</th>
<th>D_4</th>
<th>D_5</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>V_1</td>
<td>377</td>
<td>482</td>
<td>550</td>
<td>295</td>
<td>182</td>
<td>377</td>
</tr>
<tr>
<td>V_2</td>
<td>202</td>
<td>345</td>
<td>445</td>
<td>252</td>
<td>42</td>
<td>257</td>
</tr>
<tr>
<td>V_3</td>
<td>287</td>
<td>372</td>
<td>532</td>
<td>180</td>
<td>72</td>
<td>289</td>
</tr>
<tr>
<td>V_4</td>
<td>373</td>
<td>359</td>
<td>393</td>
<td>208</td>
<td>72</td>
<td>281</td>
</tr>
<tr>
<td>Mean</td>
<td>310</td>
<td>389</td>
<td>480</td>
<td>234</td>
<td>92</td>
<td>301</td>
</tr>
</tbody>
</table>

   C.D. for D marginal means = 206'3 Kg/ha.
   C.D. for V marginal means = 89'9 Kg/ha.

Crop: Niger.
Site: (District): Kalahandi.

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 and 3 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) 1961 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  280  -120  -40  -60  60  18  0
   Control yield=370 Kg/ha.; No. of trials=2.

Crop :- Niger.
Site :- (District) : Mayurbhanj.
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=22.4 Kg/ha. of N as A/S
   p=44.8 Kg/ha. of N as A/S
   n'=22.4 Kg/ha. of N as Urea
   n''=44.8 Kg/ha. of N as Urea
   np'=22.4 Kg/ha. of N as C/A/N.
   np''=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 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 (viii) N.A.

5. RESULTS:

<table>
<thead>
<tr>
<th>Treatment</th>
<th>O</th>
<th>n₁</th>
<th>n₂</th>
<th>n₃</th>
<th>n₄</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. yield in Kg/ha.</td>
<td>300</td>
<td>290</td>
<td>420</td>
<td>500</td>
<td>360</td>
<td>340</td>
</tr>
<tr>
<td>G.M.</td>
<td>394 Kg/ha.</td>
<td>No. of trials</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Crop:** Onion *(Rabi)*  
**Site:** Agri. Res. Stn., Sambalpur  
**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) Litterite-light sandy loam. (iii) 27.1.65. (iv) (a) 6 cross-ploughings and 2 laddering. (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) 3² 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 parathon 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.

<table>
<thead>
<tr>
<th>K₁</th>
<th>K₂</th>
<th>K₃</th>
<th>P₁</th>
<th>P₂</th>
<th>P₃</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>N₁</td>
<td>6985</td>
<td>9855</td>
<td>8530</td>
<td>5485</td>
<td>9714</td>
<td>10170</td>
</tr>
<tr>
<td>N₂</td>
<td>9399</td>
<td>9786</td>
<td>10037</td>
<td>6924</td>
<td>1088.8</td>
<td>11400</td>
</tr>
<tr>
<td>N₃</td>
<td>8845</td>
<td>10173</td>
<td>9623</td>
<td>7228</td>
<td>8574</td>
<td>12880</td>
</tr>
</tbody>
</table>

| Mean | 8409 | 9938 | 9396 | 6545 | 9715 | 11483 | 9248 |

| P₁ | 6309 | 7398 | 5929 |
| P₂ | 8962 | 9577 | 10606 |
| P₃ | 9957 | 12838 | 11654 |

C.D. for P or K marginal means - 393.3 Kg/ha.
Crop :- Chilli (Rabi).
Site :- (District) Mayurbhanj.

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 = 20 Kg/ha. of P2O5.
N1P1 = 60 Kg/ha. of N+30 Kg/ha. of P2O5.
N1P2 = 120 Kg/ha. of N+60 Kg/ha. of P2O5.
N2P2 = 120 Kg/ha. of N+60 Kg/ha. of P2O5.
N1P2K1 = 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 select d 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 :

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N1</th>
<th>N2</th>
<th>P1</th>
<th>N1P1</th>
<th>N1P2</th>
<th>N2P2</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of Chilli in Kg/ha.</td>
<td>60</td>
<td>2</td>
<td>2</td>
<td>134</td>
<td>222</td>
<td>262</td>
<td>362</td>
</tr>
</tbody>
</table>

Control yield=210 Kg/ha., No. of trials=1.

Crop :- Chilli.
Site :- (District) Mayurbhanj.

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 = 20 Kg/ha. of P2O5.
N1P1 = 60 Kg/ha. of N+30 Kg/ha. of P2O5.
N1P2 = 120 Kg/ha. of N+60 Kg/ha. of P2O5.
N2P2 = 120 Kg/ha. of N+60 Kg/ha. of P2O5.
N1P2K1 = 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:
   Same as 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:

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N₁</th>
<th>K₁</th>
<th>K₂</th>
<th>N₁K₁</th>
<th>N₁K₂</th>
<th>N₂P₁</th>
<th>N₂P₂</th>
<th>N₂P₂K₂</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of chillies in Kg/ha.</td>
<td>100</td>
<td>100</td>
<td>2</td>
<td>200</td>
<td>302</td>
<td>240</td>
<td>502</td>
<td></td>
<td>---</td>
</tr>
</tbody>
</table>

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: 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 manural treatments:
   O = Control (no manure).
   N₁ = 60 Kg/ha. of N.
   K₁ = 60 Kg/ha. of K₂O.
   N₁K₁ = 60 Kg/ha. of N + 60 Kg/ha. of K₂O.
   N₂K₁ = 60 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:

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N₁</th>
<th>K₁</th>
<th>K₂</th>
<th>N₁K₁</th>
<th>N₁K₂</th>
<th>N₂P₁</th>
<th>N₂P₂</th>
<th>N₂P₂K₂</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. response of chillies in Kg/ha.</td>
<td>100</td>
<td>100</td>
<td>2</td>
<td>200</td>
<td>302</td>
<td>240</td>
<td>502</td>
<td></td>
<td>---</td>
</tr>
</tbody>
</table>

Control yield = 210 Kg/ha.; No. of trials = 1.

---

Crop: Berseem (Rabi).  
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_{2}O_{5} as Super + 44.8 Kg/ha. of K_{2}O 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 Kgf/ha. (d) Nil. (e) -. (v) 12 C.L./ha. of F.Y.M. + 11.2 Kgf/ha. of N as A/S + 22.4 Kgf/ha. of N as A/S top dressed for 62(70); Nil for others. (vi) N.A. (vii) Irrigated. (viii) One weeding + one hoeing for 62(70); Nil for others. (ix) 4 em., 1 em., 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} = 168\text{Kg/ha.} and L_{2} = 336\text{Kg/ha.}

Sub-plot treatments:
All combinations of (1) and (2)
(1) 3 levels of P_{2}O_{5} as Super: P_{1} = 56\text{Kg/ha.}, P_{2} = 112.1\text{Kg/ha.} and P_{3} = 168.1\text{Kg/ha.}
(2) 3 levels of K_{2}O: K_{1} = 28.0\text{Kg/ha.}, K_{2} = 56.0\text{Kg/ha.} and K_{3} = 84.1\text{Kg/ha.}
K_{2}O 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) 2 main-plots/replication; 9 sub-plots/main-plot. (b) N.A. (iii) 4-8 m. x 4.4 m. for 62(70); 4.8 m. x 4.5 m. for others. (b) 3.9 m. x 4.2 m. for 62(70); 4.6 m. x 4.3 m. for others. (v) 44 em. x 12 em. for 62(70), 10 cm. x 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 heterogenous.

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.

<table>
<thead>
<tr>
<th></th>
<th>P_{1}</th>
<th>P_{2}</th>
<th>P_{3}</th>
<th>K_{1}</th>
<th>K_{2}</th>
<th>K_{3}</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>L_{1}</td>
<td>50.6</td>
<td>56.2</td>
<td>73.7</td>
<td>58.9</td>
<td>56.4</td>
<td>63.0</td>
<td>60.1</td>
</tr>
<tr>
<td>L_{2}</td>
<td>52.9</td>
<td>59.1</td>
<td>80.2</td>
<td>64.1</td>
<td>63.8</td>
<td>65.1</td>
<td>64.1</td>
</tr>
<tr>
<td>Mean</td>
<td>51.7</td>
<td>57.6</td>
<td>76.9</td>
<td>61.5</td>
<td>60.8</td>
<td>64.0</td>
<td>62.1</td>
</tr>
</tbody>
</table>

C.D. for P marginal means=4.7 Q/ha.

63(52)
(i) 212.8 Q/ha. (ii) (a) 17.6 Q/ha. (b) 8.0 Q/ha. (iii) Main effect of P alone is highly significant. (iv) Av. yield of fodder in Q/ha.

<table>
<thead>
<tr>
<th></th>
<th>P_{1}</th>
<th>P_{2}</th>
<th>P_{3}</th>
<th>K_{1}</th>
<th>K_{2}</th>
<th>K_{3}</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>L_{1}</td>
<td>182.0</td>
<td>209.8</td>
<td>235.9</td>
<td>205.6</td>
<td>210.8</td>
<td>211.4</td>
<td>209.2</td>
</tr>
<tr>
<td>L_{2}</td>
<td>187.9</td>
<td>223.2</td>
<td>238.1</td>
<td>214.1</td>
<td>218.7</td>
<td>216.3</td>
<td>216.4</td>
</tr>
<tr>
<td>Mean</td>
<td>185.0</td>
<td>216.5</td>
<td>237.0</td>
<td>209.8</td>
<td>214.8</td>
<td>213.8</td>
<td>212.8</td>
</tr>
</tbody>
</table>

C.D. for P marginal means=7.9 Q/ha.
(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 × K is significant.  (iv) Av. yield of fodder in Q/ha.

<table>
<thead>
<tr>
<th></th>
<th>P₁</th>
<th>P₂</th>
<th>P₃</th>
<th>K₁</th>
<th>K₂</th>
<th>K₃</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>L₁</td>
<td>132.5</td>
<td>159.0</td>
<td>184.9</td>
<td>152.4</td>
<td>162.4</td>
<td>161.7</td>
<td>158.8</td>
</tr>
<tr>
<td>L₂</td>
<td>137.7</td>
<td>159.2</td>
<td>160.3</td>
<td>146.8</td>
<td>150.6</td>
<td>159.8</td>
<td>152.4</td>
</tr>
<tr>
<td>Mean</td>
<td>135.1</td>
<td>159.1</td>
<td>172.6</td>
<td>149.6</td>
<td>156.5</td>
<td>160.7</td>
<td>155.6</td>
</tr>
<tr>
<td>K₁</td>
<td>139.3</td>
<td>148.1</td>
<td>161.4</td>
<td>149.6</td>
<td>156.5</td>
<td>160.7</td>
<td>155.6</td>
</tr>
<tr>
<td>K₂</td>
<td>140.0</td>
<td>159.7</td>
<td>169.7</td>
<td>149.6</td>
<td>156.5</td>
<td>160.7</td>
<td>155.6</td>
</tr>
<tr>
<td>K₃</td>
<td>126.0</td>
<td>169.5</td>
<td>186.7</td>
<td>149.6</td>
<td>156.5</td>
<td>160.7</td>
<td>155.6</td>
</tr>
</tbody>
</table>

C.D. for P marginal means = 10.3 Q/ha.
C.D. for means in the body of P × K table = 18.0 Q/ha.

**Crop :-** Legumes *(Rabi).*

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

**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. × 15 cm.; Field pea and groundnut at 46 cm. × 23 cm.  (e) Nil.  (f) Nil.  (v) Local varieties; groundnut AK 12–24.  (vi) Irrigated.  (vii) 2 hoeings and weedings.  (ix) 1.8 cm. (x) 2nd week of Feb., 1965.

2. **TREATMENTS :**
   Main-plot treatments:
   (i) 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)
   (i) 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. × 2.7 m.  (v) N.A.  (vi) Yes.

4. **GENERAL :**
   (i) Not good.  (ii) Tikka disease, control measures N.A.  (iii) Counting of affected 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.
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.

<table>
<thead>
<tr>
<th></th>
<th>T₀</th>
<th>T₁</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>P₀</td>
<td>74</td>
<td>97</td>
<td>86</td>
</tr>
<tr>
<td>P₁</td>
<td>85</td>
<td>106</td>
<td>96</td>
</tr>
<tr>
<td>Mean</td>
<td>80</td>
<td>102</td>
<td>91</td>
</tr>
</tbody>
</table>

C.D. for T marginal means = 14.9 Kg/ha.

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.

<table>
<thead>
<tr>
<th></th>
<th>T₀</th>
<th>T₁</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>P₀</td>
<td>110</td>
<td>147</td>
<td>128</td>
</tr>
<tr>
<td>P₁</td>
<td>108</td>
<td>135</td>
<td>122</td>
</tr>
<tr>
<td>Mean</td>
<td>109</td>
<td>141</td>
<td>125</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th></th>
<th>T₀</th>
<th>T₁</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>P₀</td>
<td>499</td>
<td>599</td>
<td>449</td>
</tr>
<tr>
<td>P₁</td>
<td>519</td>
<td>725</td>
<td>622</td>
</tr>
<tr>
<td>Mean</td>
<td>509</td>
<td>662</td>
<td>536</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th></th>
<th>T₀</th>
<th>T₁</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>P₀</td>
<td>1637</td>
<td>1877</td>
<td>1757</td>
</tr>
<tr>
<td>P₁</td>
<td>1664</td>
<td>2103</td>
<td>1884</td>
</tr>
<tr>
<td>Mean</td>
<td>1650</td>
<td>1990</td>
<td>1820</td>
</tr>
</tbody>
</table>

C.D. for T marginal mean = 211.4 Kg/ha.
Nodules count (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.

<table>
<thead>
<tr>
<th></th>
<th>T₀</th>
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<th>Mean</th>
</tr>
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<tr>
<td>P₀</td>
<td>19.5</td>
<td>18.1</td>
<td>18.8</td>
</tr>
<tr>
<td>P₁</td>
<td>22.7</td>
<td>40.2</td>
<td>31.4</td>
</tr>
<tr>
<td>Mean</td>
<td>21.1</td>
<td>37.1</td>
<td>29.1</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
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<th>Mean</th>
</tr>
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<tbody>
<tr>
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<td>18.1</td>
<td>14.1</td>
</tr>
<tr>
<td>P₁</td>
<td>12.8</td>
<td>24.0</td>
<td>18.4</td>
</tr>
<tr>
<td>Mean</td>
<td>11.4</td>
<td>21.0</td>
<td>16.2</td>
</tr>
</tbody>
</table>

C.D. for T marginal mean = 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.

<table>
<thead>
<tr>
<th></th>
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<th>T₁</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>P₀</td>
<td>12.8</td>
<td>20.8</td>
<td>16.8</td>
</tr>
<tr>
<td>P₁</td>
<td>14.8</td>
<td>22.3</td>
<td>18.6</td>
</tr>
<tr>
<td>Mean</td>
<td>13.8</td>
<td>21.6</td>
<td>17.7</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th></th>
<th>T₀</th>
<th>T₁</th>
<th>Mean</th>
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</thead>
<tbody>
<tr>
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<td>6.9</td>
<td>5.8</td>
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<tr>
<td>P₁</td>
<td>5.2</td>
<td>7.2</td>
<td>6.4</td>
</tr>
<tr>
<td>Mean</td>
<td>4.9</td>
<td>7.1</td>
<td>6.1</td>
</tr>
</tbody>
</table>

C.D. for T marginal mean = 1.4.

Groundnut

(i) 42.8. (ii) 3.3. (iii) Main effect of T alone is highly significant. (iv) Av. number of effective nodules.
To T1

<table>
<thead>
<tr>
<th></th>
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<th>Mean</th>
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<tbody>
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<td>51'0</td>
<td>42'0</td>
</tr>
<tr>
<td>P₁</td>
<td>32'2</td>
<td>55'1</td>
<td>43'6</td>
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<tr>
<td>Mean</td>
<td>32'6</td>
<td>53'0</td>
<td>42'8</td>
</tr>
</tbody>
</table>

C.D. for T marginal means = 4.7.

Crop :- Mossabique.

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. x 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 P₀ 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. P₀ and K₂O applied as basal.

3. DESIGN :
   (i) Fact. in R.B.D. (ii) 9. (b) N.A. (iii) 3. (iv) (a) 6'7 m. x 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.

<table>
<thead>
<tr>
<th></th>
<th>P₁</th>
<th>P₂</th>
<th>P₃</th>
<th>Mean</th>
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<tbody>
<tr>
<td>N₁</td>
<td>988</td>
<td>6424</td>
<td>1433</td>
<td>2948</td>
</tr>
<tr>
<td>N₂</td>
<td>1952</td>
<td>2001</td>
<td>2520</td>
<td>2158</td>
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<tr>
<td>N₃</td>
<td>6078</td>
<td>4472</td>
<td>3089</td>
<td>4546</td>
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<tr>
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<td>3006</td>
<td>4299</td>
<td>2347</td>
<td>3217</td>
</tr>
</tbody>
</table>
Crop :- Guava.  
Object :- To find out suitable doses of N and P alone and in combination 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 Sattika. (v) 3.8.1960, square system with 61 m. x 0.1 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 per plot. (viii) One tractor ploughing, making basins, hoeing and earthing up at the time of manuring during kharif. (x) Unirrigated. (xi) 122.7 cm. (xii) November/December 65.

2. TREATMENTS:

All combinations of (1) and (2):

(1) 3 levels of N as C.A.N : N₀ = 0, N₁ = 56.0 and N₂ = 112.1 Kg. ha.
(2) 3 levels of P₂O₅ as Super : P₀ = 0, P₁ = 44.8 and P₂ = 56.0 Kg/h.a.
44.8 Kg/ha. of K₂O as KCI was applied to all treatment combinations. N applied in two splits, 1/2 in kharif and remaining 1/2 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) 61 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.

<table>
<thead>
<tr>
<th></th>
<th>P₀</th>
<th>P₁</th>
<th>P₂</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>N₀</td>
<td>1007</td>
<td>906</td>
<td>974</td>
<td>962</td>
</tr>
<tr>
<td>N₁</td>
<td>790</td>
<td>333</td>
<td>1186</td>
<td>770</td>
</tr>
<tr>
<td>N₂</td>
<td>726</td>
<td>1493</td>
<td>1280</td>
<td>1166</td>
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<tr>
<td>Mean</td>
<td>841</td>
<td>911</td>
<td>1147</td>
<td>966</td>
</tr>
</tbody>
</table>

Crop :- Pineapple.  
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 : M₀ = No mulch (open) and M₁ = Black polythene mulch

Sub-plot treatments:
8 varieties : V₁ = Giant Kew, V₂ = Green, V₃ = Queen, V₄ = Smooth Cyennes, V₅ = Red Riply, V₆ = Singapore, V₇ = Local (horticulture) and V₈ = 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/ha. (iii) None of the effects is significant. (iv) Av. yield of fruit in Kg/ha.

<table>
<thead>
<tr>
<th></th>
<th>V₁</th>
<th>V₂</th>
<th>V₃</th>
<th>V₄</th>
<th>V₅</th>
<th>V₆</th>
<th>V₇</th>
<th>V₈</th>
<th>Mean</th>
</tr>
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<tbody>
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<td>M₀</td>
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<td>680</td>
<td>1666</td>
<td>1743</td>
<td>655</td>
<td>1845</td>
<td>680</td>
<td>1084</td>
<td>1163</td>
</tr>
<tr>
<td>M₁</td>
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<td>1609</td>
<td>1371</td>
<td>1866</td>
<td>939</td>
<td>925</td>
<td>1224</td>
<td>2185</td>
<td>1476</td>
</tr>
<tr>
<td>Mean</td>
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<td>1144</td>
<td>1518</td>
<td>1804</td>
<td>797</td>
<td>1385</td>
<td>952</td>
<td>1634</td>
<td>1319</td>
</tr>
</tbody>
</table>

**Crop :- Paddy (Kharif).**

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

Ref :- Or. 62(69).

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 C₅ to C₆. (iv) (c) 3 ploughings. (b) Transplanted for C₄ to C₅. (c) 67·3 Kg/ha. for broadcasting and 37 Kg/ha. for transplanting. (d) 23 cm. x 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. x 7·9 m. (b) 5·5 m. x 7·6 m. (v) 30 cm. x 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>C₁</th>
<th>C₂</th>
<th>C₃</th>
<th>C₄</th>
<th>C₅</th>
<th>C₆</th>
<th>C₇</th>
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<tbody>
<tr>
<td>Av. yield</td>
<td>1078</td>
<td>359</td>
<td>371</td>
<td>332</td>
<td>281</td>
<td>314</td>
<td></td>
</tr>
</tbody>
</table>

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 and 20, 21.8.1963. (iv) (a) 3 to 6 ploughings and one laddering. (b) Transplanting. (v) 37 Kg/ha. (vi) (a) 23 em. x 15 em. (vii) 3322 3344 C.D. - 1145'3 Kg/ha. (viii) 2524 Kg/ha. (iii) 653.9 Kg/ha. (iv) (a) 8′2 m. (b) 37 m. (c) 22 Kg/ha. (d) 23 cm. x 15 cm. (e) 3 to 3, (f) 922 2 Q ha. of compost. (g) 1 Kg ha. of P4O5 as Super 46 0 Kg/ha. or K2O as Pot. Sul. 1121 Kg/ha. of N as A S and top dressing with 22.4 Kg/ha. of N as A S and 22.4 Kg/ha. of K2O as Kcl and top dressing with 11.2 Kg/ha. of N as A S and 22.4 Kg/ha. of K2O as Kcl and top dressing with 11.2 Kg/ha. of N as A S.

2. TREATMENTS:

3. DESIGN:
   (i) R.B.D. (ii) (a) 8 (b) N.A. (iii) 4. (iv) (a) 8′2 m. : 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) Variance are homogeneous and Treatments x years interaction is present.

5. RESULTS:
   (i) 2524 Kg/ha. (ii) 653.9 Kg/ha. (iii) 37 m. (iv) (a) 8′2 m. (b) 37 m. (c) 22 Kg/ha. (d) 23 cm. x 15 cm. (e) 3 to 3, (f) 922 2 Q ha. of compost. (g) 1 Kg ha. of P4O5 as Super 46 0 Kg/ha. or K2O as Pot. Sul. 1121 Kg/ha. of N as A S and top dressing with 22.4 Kg/ha. of N as A S, P,0 5 as Super 46 0 Kg/ha. or K2O as Kcl and top dressing with 11.2 Kg/ha. of N as A S and 22.4 Kg/ha. of K2O as Kcl and top dressing with 11.2 Kg/ha. of N as A S.

Object :-To evolve a most suitable cropping and manuring pattern to obtain maximum yield without depleting the soil fertility.

Crop :- Paddy (Kharif).  
Ref :- Or. 60(36), 61(22), 62(22).

Type :- 'R'.

Object :-To find out a suitable cropping pattern for Paddy.
2. TREATMENTS:

All combinations of (1) and (2)

(1) 3 cropping patterns:
- A₁ = Dhaincha-Paddy
- A₂ = Paddy-Maize + Cowpea
- A₃ = Jute-Paddy-Mung

(2) 8 manuring systems:

<table>
<thead>
<tr>
<th>Year</th>
<th>S₁</th>
<th>S₂</th>
<th>S₃</th>
<th>S₄</th>
<th>S₅</th>
<th>S₆</th>
<th>S₇</th>
<th>S₈</th>
</tr>
</thead>
<tbody>
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<td>M</td>
<td>M</td>
<td>M</td>
<td>O</td>
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</tr>
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<td>O</td>
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<td>M</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>1962-63</td>
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<td>M</td>
<td>M</td>
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<td>O</td>
</tr>
</tbody>
</table>

Manuring schedule:

<table>
<thead>
<tr>
<th>Crop</th>
<th>N (Kg/ha.)</th>
<th>P (Kg/ha.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jute</td>
<td>44'8</td>
<td>22'4</td>
</tr>
<tr>
<td>Paddy</td>
<td>44'8</td>
<td>28'0</td>
</tr>
<tr>
<td>Maize</td>
<td>44'8</td>
<td>22'0</td>
</tr>
<tr>
<td>Dhaincha</td>
<td>0</td>
<td>22'0</td>
</tr>
<tr>
<td>Mung</td>
<td>0</td>
<td>33'6</td>
</tr>
<tr>
<td>Groundnut</td>
<td>22'4</td>
<td>33'6</td>
</tr>
</tbody>
</table>

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. x 5'3.  (b) 8.0 m. x 4.8 m.  (v) 23 cm. x 23 cm.  (vi) Yes.

4. GENERAL:

(i) Normal, Partial lodging for 61(22).  (ii) Attack of mealy bug, casewarm, stent borer and rice hispa for 60(36). Attack of gallfly, souring cater 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 x years interaction). (iii) Main effect of A alone is highly significant.  (iv) Av. yield of grain in Kg/ha.

<table>
<thead>
<tr>
<th>S₁</th>
<th>S₂</th>
<th>S₃</th>
<th>S₄</th>
<th>S₅</th>
<th>S₆</th>
<th>S₇</th>
<th>S₈</th>
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<td>A₂</td>
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<td>2231</td>
<td>2270</td>
<td>2091</td>
<td>2057</td>
<td>2033</td>
<td>2053</td>
<td>1857</td>
</tr>
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<td>1847</td>
<td>1869</td>
<td>1740</td>
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C.D. for A marginal means=238'1 Kg/ha.

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Crop :- As per treatments (Kharif) and (Rabi).

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

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. + 224 Kg/ha. of N + 224 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. x 23 cm.

2. TREATMENTS:

6 cropping pattern : C1 - Green manure (Dhaincha) - Paddy T1145- Cotton P 216 F, C2 - Green manure (Dhaincha) - Paddy T1145 - Groundnut TMV, C3 - Green manure (Dhaincha) - Paddy T1145 - Wheat NP - 718, C4 - Green manure (Dhaincha) - Paddy T1145 - Chilli G-2, C5 - Green manure (Dhaincha) - Paddy T1145 - Onion, C6 - Green manure (Dhaincha) - Paddy T1145 - Cowpea for fodder S.E. it 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. (iv) (a) No. (b) No. (vi) and (vii) Nil. (viii) This exp. 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>C1</th>
<th>C2</th>
<th>C3</th>
<th>C4</th>
<th>C5</th>
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<td>Av. profit</td>
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<td>1370</td>
<td>659</td>
<td>2682</td>
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<tr>
<td>C.D. - 852.2 Rs/ha.</td>
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Crop :- As per treatments (Kharif and Rabi).


Object :- To evolve suitable cropping pattern of irrigated high lands and to study the economics of different patterns.

1. BASAL CONDITIONS:

(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 P.O. as Super. (d) Sandy loam. (e) Varies from crop to crop and treatment to treatment. (f) 2 ploughings. (g) to (d) N.A. (e) 1 to 2 for Paddy and N.A. for others. (f) Varies from crop to crop and treatment to treatment. (v) Varies from crop to crop treatment to treatment. (vi) Varies from crop to crop treatment to treatment. (vi) Irrigated. (vii) Hoeing and weeding for all crops except (G.M.) potato and cowpea ; for potato 2 harrowings and casting up. (viii) 150 3 cm. (b) 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 (v) or less (-) in Rs/ha.
305

Crop: As per treatments (Kharif and Rabi).

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:

3. DESIGN:
   (i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 10'0 m. x 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) Av. profit or less in Rs/ha. (v) Nil. (vi) Yes. (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.

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<tr>
<th>Treatment</th>
<th>C₁</th>
<th>C₂</th>
<th>C₃</th>
<th>C₄</th>
<th>C₅</th>
<th>C₆</th>
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<td>1707.4</td>
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<td>1192.3</td>
<td>164.9</td>
<td>690.1</td>
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C.D.=386.1 Rs/ha.
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