

KERALA AGRICULTURAL UNIVERSITY
RICE RESEARCH STATION, MONCOMPU

Faculty of Agriculture

Department of Agronomy

- Name of Research Centre : Rice Research Station,
Moncompu.
- Project Number : AG.1.5. Agron.7 (ii)
- Title of the Project : Trials with 'Phosmak' for
acid soils of Kuttanad
- Name(s) and designation of
- a) Project Leader : P.J.Ittyavirah, Asst.Professor
(Agronomy)
- b) Associate(s) : P.S.John, Junior Instructor

5. Objective

For testing the efficiency of 'Phosmak' a cheap source of rock phosphate of marine origin in the acid soils of Kuttanad.

6. Practical utility

The findings of this trial is expected to help the rice cultivators of Kuttanad to use a cheap phosphate for this peculiar tract.

7. Short review of literature

Phosmak is a rock phosphate of marine origin and it contains 30 to 31% P₂O₅. It is rich in minor and trace elements. As a water insoluble fertilizer it is broadcast, incorporated and mixed with soil. More than 90% of P₂O₅ content is extracted under conditions existing in acid soils, where as water soluble fertilisers such as super phosphate tend to become insoluble and fixed by the formation of iron or aluminium phosphates. (Literature published by NEGEV Phosphates Ltd). The international Rice Conference at IRRI during 1976 has also decided to study and evaluate phosphate rocks for Agronomic and economic effectiveness in flooded rice on selected rice soil and environment. (International Net work on Fertiliser Efficiency in Rice - IRRI - 1977 Publication). This project has been prepared based on letter and technical programme given by AICRIP - Hyderabad.



(Contd.)

KERALA AGRICULTURAL UNIVERSITY

Faculty of Agriculture

Department of Agronomy

1. Name of Research Centre : Agronomic Research Station,
Chalakydy.
2. Project No. : AG.1.3.Agron.13 (i)
3. Title of the Project : NPK requirement of rice in
sequential cropping of Rice -
Rice - Daincha.
4. Name and designation of
 - a) Project Leader : Dr.U.P.Bhaskaran,
Assoc.Professor (Agronomy)
 - b) Associates : Sri.N.N.Ramankutty,
Assoc.Prof.(Agrl.Chemistry)
Sri.N.K.Ramachandran,
Junior Instructor

5. Objective

1. To assess the yield response of rice at different levels of NPK and find out an economic dose of NPK for Rice ~~xxx~~ preceded by Daincha~~x~~ crop ploughed insitu.
2. To estimate the input reduction possible in each season and work out the cost benefit ratio of this cropping sequence.

6. Practical utility

Utilising the residual moisture and Summer showers it would be possible to raise a Daincha crop or other green manures after a two crop or three crop sequence of rice. This may yield 15-20 tons of green matter after 2 crop sequence and 8-10 tons of green matter after 3 crop sequence of rice. With such high organic base rich in nitrogen and other nutrients, the input cost in fertilisers, which is about 16% of the cost of cultivation of paddy can be reduced.

7. Short review of literature

The beneficial effect of green manure cropping on soil enrichment is well known. In this study attempt is made to assess it's role in reducing the cost of production of rice grown in sandy loam soil during the succeeding two cropping seasons.

(Contd..)

KERALA AGRICULTURAL UNIVERSITY

Faculty of Agriculture

Department of Agronomy

1. Name of Research Centre : Rice Research Station, Kayamkulam.
2. Project No. : AG.1.6. Agron 13 (ii)
3. Title of the Project : The optimum level of NPK for rice crop in sandy tract.
4. Name(s) & Designation of
 - a) Project Leader : Assistant Professor (Ag.)
 - b) Associates : Associate Professor.

5. Objective

To study the optimum level of NPK for rice crop in sandy tracts.

6. Practical utility

In the sandy tract of Onattukara, the performance of Rice crop during first crop season and 2nd crop season is very poor, as a considerable amount of fertiliser is lost by leaching. Hence the fertiliser applied is not utilised by the crop fully. The results of the Moderate Nitrogen Technology is also in support of this. Hence studies were undertaken to found out the optimum level of NPK for rice crop, so that rice yield can be enhanced.

7. A short review of literature

The results of permanent manurial trial conducted at the station from 1964-65 indicate that application of phosphorus and potash in sandy soil is essential for higher rice yields. The results of the Moderate Nitrogen Technology indicate that 50% of the recommended dose of N and full dose of N_2 do not give any significant difference in yield of Rice in sandy tracts due to leaching loss. In the soil amendment trial potash at higher dose of 67.5 kgm/ha has given maximum yield. The K status of sandy soil in Alleppey District is low (K.P.Nambiar and M.T. Alexander). The poor status of K in sandy soils is due to the open texture and heavy leaching of soil.

Hence studies were undertaken to find out the effect of different ratios of NPK, altering the present recommended package of practices for Rice.

8. Technical programme : Layout : 12 x 3 RBD
Plotsize: 4 m x 5 m
Ist Crop: Jyothi (70:35:35)
IIInd Crop: Jaya (90:45:45)

KERALA AGRICULTURAL UNIVERSITY

Rice Research Station, Moncompu

Faculty of Agriculture Department of Agronomy

1. Name of Research Centre : Rice Research Station,
Moncompu.
2. Project No. : AG.1.5. Agron.22 (iii)
3. Title of the Project : Experiment on method of
sowing.

4. Name(s) and designation of

- a) Project leader : K.Sivasankara Pillai
Assoc. Prof. (Agronomy)
- b) Associate : P.J.Ittyavirah,
Asst.Professor (Agronomy)

5. Objective

To evaluate the different methods of sowing of rice and to select a suitable one under the cropping conditions in Kuttanad.

6. Practical utility : The most economic method of
sowing could be recommended
to the cultivators of Kuttanad.

7. Short review of literature

The normal method of cultivation of rice in Kuttanad is by transplanting the seedlings in lower Kuttanad and by sowing in Kayal areas. In certain areas of Southern Kerala, a ~~xxx~~ peculiar system of sowing rice - dibbling seeds in a paste of cowdung under ~~ix~~ wet condition is also practised for better vigorous seedling emergence, nutrient absorbtions in early stage and survival during periods of water scarcity (M.R.C.Pillay, IRRI - News letter Vol.3/ No.2-78 p.14), Rice in Kerala P.C.Sahadevan P.48). The dapog method of sowing is prevalent in Thailand, Philippines and other east Asian countries. This method is widely used when there is scarcity for land for raising nursery. The seedlings are transplanted when they attain an age of 14 days. (Rice production manual published by IRRI 1968 P.88).

8. Technical programme : Design RBD (5x5)
Treatments - 5
Replications - 5
Plot size 36 M
Variety Jaya

KERALA AGRICULTURAL UNIVERSITY

Rice Research Station, Moncompu

Faculty of Agriculture

Department of Agronomy

1. Name of Research Centre : Rice Research Station,
Moncompu
2. Project No. : AG.1.5 24 (i)
3. Title of the Project : Production potential of
rice crop.
4. Name(s) and designation of
 - a) Project Leader : P.J.Ittyavirah,
Asst.Professor (Agro)
 - b) Associate : K.Sivamankara Pillai
Assoc.Prof.(Agronomy)
John P.S., Jr.Instructor.

5. Objective

Consequent to the construction of Thaneermukkom bund the Kuttanad land can be brought under cultivation year round. The present experiment is proposed to find out the possibilities of increasing the production of rice to the maximum by suitable combination of short and medium duration varieties of rice.

6. Practical utility

Based upon the findings the cultivators could be advised if the production of rice is increased by adopting this system of cultivation.

7. Short review of literature

Five early duration rice varieties were tested for their adaptability and Nitrogen response at two levels of Nitrogen at Rice Research Station, Pattambi. The result showed that the effect due to levels of Nitrogen was not significant indicating that the lower dose of 70 kg N was ample to meet the nutrient requirement of the varieties tried. (Annual report R.R.S., Pattambi 76-77 p.39). Work on this line has also been done at C.R.R.A., Cuttack (Annual report 1974 p 169).

8. Technical programme

- | | | |
|----------------------|---|-------------|
| Design of experiment | : | RBD (5 x 5) |
| No.of treatments | : | 5 |
| Plot size | : | 5 x 4 M |
| Replications | : | 5 |

<u>Puncha</u> (October-January)	<u>Summer</u> (February-April)	<u>Addl. Crop</u> (April - September)
1. Triveni	Triveni	Triveni
2. Triveni	Triveni	Jaya
3. 57-5-1	Triveni	Jaya
4. 57-5-1	Fallow	Jaya
5. 57-5-1	Jaya	Triveni

Observations

1. Height of plant
 2. Number of tillers and productive tillers
 3. Days to flowering
 4. Panicle length
 5. Weight of panicle
 6. Grains/panicle
 7. 1000 grain weight
 8. Yield of grain
 9. Yield of straw.
-
9. Date of start : October 1977
 10. Likely date of completion : September 1980
 11. Additional facilities required : Existing facilities
 12. Approximate cost : Rs.750/- season
 13. Signature of

Sd/
Project Leader

Sd/-
Head of Department

Sd/-
Special Officer
Eco-system

Sd/-
Director of Research

Fourth FRC S.No.56.

Interim assessment may be made and decided whether to be continued.

KERALA AGRICULTURAL UNIVERSITY

Model Agronomic Research Station, Karamana, Trivandrum.

1. Title of the Scheme : Long range effect of continuous cropping.
2. Project No. : Ag.1.7 Agron.26
3. Location : Model Agronomic Res.Station, Karamana.
4. Principal investigator : Project Co-ordinator, AICARP.
5. Associate Investigator : Associate Professor, Model Agronomic Res.Station.
6. Objective : To study the long range effect of a crop rotation with High Yielding varieties at graded fertiliser levels on the yield stability and soil fertility.
7. Practical Utility : The changes that are brought about in soils and the yield stability by continuous cropping of paddy, say for 10 years, can be found out.
8. Review of Research :
9. Technical Programme :

Treatments:- All 18 combinations of (1) (2) and (3) + one control plot in each block.

(1) 3 levels of N

- N1 - 40 Kg/ N/ha
- N2 - 80 Kg/ N/ha
- N3 - 120 Kg N/ha.

(2) 3 levels of P_2O_5

- P2 - No application of P_2O_5
- P1 - 40 Kg P_2O_5 /ha.
- P2 - 80 Kg P_2O_5 /ha.

(3) 2 levels of K_2O

- K_0 - No application of K_2O
- K_1 - 40 K_2O 20 /ha

+ One control plot (No P_0K_0) in each block.

The Eighteen treatment combinations will be allocated in three blocks per replication with one control plot added in each block.

Design : $3^2 \times 2$ factorial partially confounded design with one control plot in each block

Replication: Four

Gross Plot size : 30 sq.M.

Observation to be recorded:

1. 50% flowering
2. Tiller counts both productive & unproductive
3. Plant height
4. Yield of grain and straw
5. No. of per panicle
6. Sterility percentage.
7. 1000 grains weight.
8. soil and plant analysis.

(b) Arrangement for the Analysis of data

Statistical analysis will be done by the Director, Institute of Agrl. Research Statistics, New Delhi.

9. Facilities:

- a) Already available : Land and other infrastructure are available.
- b) Additional facilities required : Not needed.

10. Duration : Ten years.
11. Staff requirement : Will be done by the Staff of AICARP
12. Estimate of cost : 4000/- per year
13. Estimate of receipt : Rs.5000/- per year
14. Remarks : This is a compulsory and long term Experiment of the AICARP.

Certified that the work proposed is an AICARP Project approved in the annual workshop held at Poona during June 1977.

Name : V.RAMACHANDRAN NAIR.

Designation:- Associate Professor.

Signature

Sixth FRC. S.No.58.

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KERALA AGRICULTURAL UNIVERSITY

Faculty of Agriculture

Department of Agronomy

1. Name of Research Centre : College of Agriculture, Vellayani.
2. Project No. : Ag.1.18, Agron-27.
3. Title of project (This should indicate the nature of work) : "Influence of the seedling age on the growth and yield of Rice".
4. Names and designation of
 - a) Project Leader : M.Gopalakrishnan Nair
 - b) Associates : Dr.C.Sreedharan

5. Objective

To study the effect of seedling age in the growth and yield of rice as influenced by different spacing on varieties like Triveni, Bharathi and Mashoori.

6. Practical utility

The result will be of utility to the farmers when transplanting is delayed due to certain circumstances.

7. Short review of literature

Experiment conducted at CRRI, Cuttack on the above lines with different varieties showed that transplanting 60 days old seedlings did not show any field loss.

8. Technical programme

Separate experiments are to be laid out for the varieties viz., Triveni, Bharathi and Mashoori. The experiments are to be laid out in R.B.D.

I. Age of seedlings

- | | |
|------------------|------------------------|
| a) Transplanting | 3 weeks old seedlings. |
| b) -do- | 4 weeks old seedlings. |
| c) -do- | 5 weeks old seedlings. |
| d) -do- | 6 weeks old seedlings. |
| e) -do- | 7 weeks old seedlings. |

II. Spacing

1. 15 cm x 10 cm
2. 20 cm x 15 cm
3. 20 cm x 20 cm

Number of replications : 4
Plot size : 6 M x 6 M.

(Contd.)

9. Date of start : August, 1977
10. Likely date of completion : 1980
11. Additional facilities required: Nil
12. Approximate cost : Rs. 3000/=

13. Signature of

Sd/-
Project Leader

Sd/-
Head of Department

Sd/-
Director of Research.

Second FRC

S.No. 59

In letter attached to the master.

KERALA AGRICULTURAL UNIVERSITY

Model Agronomic Research Station, Karamana.

1. Title of the scheme : Studies on crop rotation with oil seeds, pulses and another cereal (Experiment No.1.a)
2. Project No. : AG.1.7 Agron.29 (vi)
3. Location : Model Agronomic Research Station, Karamana.
4. Principal Investigator : Project Co-ordinator, AICARP
5. Associates : Associate Professor, Model Agronomic Research Station, Karamana and the staff members.
6. Objective : To study the suitability of growing pulses and oil seed crops as a summer crop in a Rice - Rice rotation.
7. Practical utility : To find out the best crop that can filled in a rice-Rice rotation so asto obtain the maximum net profit.
8. Review Research : NIL
9. Technical programme

Design : Randomised block design
Replication: Four

Treatments

1. Rice (Jaya)	Rice (Jaya)	Gree manure
2. Rice (Jaya)	Rice (Jaya)	Green grain
3. Rice (Jaya)	Rice (Jaya)	Ground nut
4. Rice (Jaya)	Rice (Jaya)	Sesamum
5. Rice (Jaya)	Rice (Jaya)	Cow pea
6. Rice (Jaya)	Rice (Jaya)	Maize

Plot size .. 10 m x 5 m
Spacing .. 15 cm x 15 cm
G. nut .. 15 cm x 15 cm

Sesamum Broad casting @ 5 kg/ha
Green grain Broad casting or dibbling @ 20 kg/ha
Cowpea 15 cm x 15 cm
Maize 60 cm x 30 cm

Observations: Yield per plot plant height
No.of tillers both productive and non-productive
Dt.of 50% flowering.

(Contd..)

10. Facilities

a) Already available : Land and other infrastructure are available.

b) Additional facilities required : Not needed

11. Duration : Three years.

12. Staff requirement : Existing staff will manage the experiment.

13. Estimate of cost ; Rs.1500/= per year.

14. Estimate of receipt : Rs.2000/= per year.

15. Remarks

This is an AICARP Project.

Certified that the work is an AICARP Project.

Name : V.Ramachandran Nair

Designation: Associate Professor.

Signature.

Sixth FRC S.No.70

KERALA AGRICULTURAL UNIVERSITY

Rice Research Station, Moncompu

Faculty of Agriculture

Department of Agronomy

1. Name of Research Centre : Rice Research Station, Moncompu.
2. Project No. : AG.1.5 Agron.30 (ii)
3. Title of the project : Ccrop sequence studies for Kuttanad.
4. Name(s) and designation of
- a) Project Leader : P.J.Ittiyaverah, Asst.Professor (Agronomy)
- b) Associates : C.M.George, Junior Instructor.
5. Objective : This study aims at evolving a suitable multiple cropping pattern for Kuttanad paddy fields.
6. Practical utility : If an economic multiple cropping pattern could be arrived at, the farmers could be advised accordingly.
7. A short review of literature:
8. Technical programme : 8 x 3 R.B.D.
- Treatment : 1. Rice - Cowpea - Rice
2. Rice - Ragi - Rice
3. Rice - Soyabeen-Rice
4. Rice-Sunflower-Rice
5. Rice-Jute - Rice
6. Rice-Gingelly - Rice
7. Rice-Greengram - Rice
8. Rice-Fallow-Rice
- Plot size : 66 metres
- Rice variety : Triveni
- Observations : Rice 1) Vegetative tillers.
2) Productive tillers.
3) Yield of grain & straw.

Other crops : Economics of cultivation.

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KERALA AGRICULTURAL UNIVERSITY
RICE RESEARCH STATION, MONCOMBU

- Faculty of Agriculture : Department of Agronomy
1. Name of the Research Centre : Rice Research Station, Moncombu
 2. Project No. : Ag.1.5 Agron. 30 (iii)
 3. Title of the Project : Experiments of multiple cropping in Kuttanad.
 4. Name and designation of
a. Project leader : F.J. Ittyavirah, Asst. Professor (Agronomy)
b. Associates : K. Sivasankara Pillai, Associate Professor.
F.S. John, Jr. Instructor.

5. Objective:-

This experiment is proposed to find out a suitable cropping pattern for Kuttanad area under the changing conditions.

6. Practical utility:-

If an economic crop sequence pattern is arrived at the farmers could be advised accordingly.

7. A short review of literature:-

In a comparative study of different crop rotations in uplands the rotation Sesamum, Cowpea, Maize, Mustard gave best results. On medium lands the rotation Rice-Potato-Rice gave the best net return and water use efficiency. On sandy loam where different rotations were practised continuously to observe yields and efficiency on soil fertility, results showed best net returns from rice-potato-rice while there was a decline in the net returns obtained with hybrid maize-rice-rice and rice-rice rotation. Returns from Groundnut-Jute-rice and Jute-rice-rice rotations were stable. Studies on turnover of Nitrogen in different cropping patterns showed that Blackgram contributed 82 ppm mineralisable Nitrogen, while groundnut contributed 59 to 73 ppm (Annual report C.R.R.I., Cuttack 1973 p 100-101).

8. Technical programme : Design RBD
Replication 4
Treatments 8

contd.....

<u>Func ha</u> (October-January)	<u>Summer</u> (February-April)	<u>Additional crop</u> (April-September)
1. Rice	Fallow	Rice
2. Rice	Cowpea	Rice
3. Rice	Greengram	Rice
4. Rice	Blackgram	Rice
5. Rice	Seasamum	Rice
6. Rice	Sweet Potato	Rice
7. Rice	Ragi	Rice
8. Rice	Jute	Rice

Plot size : 6 x 6 metre.

Observations

a. Rice

1. Height of the Plant
2. Number of tillers and productive tillers
3. Days to flowering
4. Panicle length
5. Weight of the panicle
6. Grains per panicle
7. 1000 grain weight
8. Yield of grain
9. Yield of straw.

b. Cowpea, Greengram and Blackgram

1. Days to flowering
2. Number of nodes/plant
3. Number of seeds/nod
4. Length of nod
5. Number of nodule/plant
6. Yield of grains
7. Yield of haulms

c. Seasamum

1. Height of plant
2. Number of branches
3. Days to flowering
4. Number of nodes
5. Yield of grain
6. Yield of haulms

d. Sweet potato

1. Number of leaves/plant
2. Maximum length of vines
3. Yield of vines
4. Length of tuber
5. Girth of tuber
6. Yield of tuber/plant.

e. Ragi

1. Height of plant
2. Number of tillers and productive tillers
3. Days of flowering
4. Weight of earhead

f. Jute

1. Height of plant
2. Days of flowering
3. Number of branches/plant
4. Yield.

KERALA AGRICULTURAL UNIVERSITY

MODEL AGRONOMIC RESEARCH STATION, KARAMANA, TRIVANDRUM

1. Title of the Scheme : Studies on mixed cropping (Experiment No.1e.)
2. Project No. : Ag.No.1.7 Agron. 30 (iv)
3. Location : Model Agronomic Research Station, Karamana
4. Principal investigator. : Project Co-ordinator AICARP
5. Associate : Associate Professor, Model Agronomic Research Station, Karamana.
6. Objective : To study the overall production and economics of mixed cropping in rice
7. Practical/Scientific utility : To evaluate the Profit and loss and good and evil effects of the mixed sowing of waddy seeds of two different seasons, which is in practice in some localities over taking two different crops in two seasons.
8. Review of literature :
9. Technical programme :
Treatments :
 1. Medium duration high yielding varieties of waddy for both Kharif and Rabi seasons.
 2. Local varieties of waddy for both Kharif and Rabi seasons
 3. Medium duration High yielding variety in Kharif season and a local Photo sensitive variety in Rabi season.
 4. Local Photosensitive variety in Kharif season and a high yielding variety in rabi season.
 5. Mixed sowing of medium duration High yielding variety and a Photo sensitive local variety of Rabi season in the ratio of 2:1.
 6. Mixed sowing of medium duration High yielding variety and a Photo sensitive local variety of Rabi season in the ratio of 3 : 1.

contd....

7. Mixed sowing of Two Photo sensitive local variety of Kharif and Rabi seasons in the ratio of 2:1.
8. Mixed sowing of two photosensitive local varieties of Kharif and Rabi seasons in the ratio of 3 : 1.

- Manures : As per state recommendation.
- Design : Randomised Block design
- Replications : Four
- Plot size** : Gross - 6 M x 5 M
Net - 5,20 M x 4.60 M
- Spacing : 20 cm x 10 cm.
- Observation to be recorded : 1. Yield of grain and straw of both seasons.
2. Economics of Cultivation charges.
- b. Arrangements for analysing data : Statistical analysis will be done by the Director, Indian Agricultural Research Statistics, New Delhi.
9. Facilities:
- (a) Already available: Land and other infrastructure are available.
- b. Additional facilities required : Not needed
10. Duration : Three years from 1977-78
11. Staff requirement : Experiment will be conducted by the staff members provided for the AICARF Scheme.
12. Estimate of cost : Rs.1500/- per year
13. Estimate of receipt : Rs.2000/- per year
14. Remarks

Certified that the work proposed is one included in the All-India Co-ordinated Agronomic Research Project and prepared based on the discussions in the annual work show of the project held at Poona during June 1977.

Name : V. Ramachandran Nair
Designation : Associate Professor.

Signature

KERALA AGRICULTURAL UNIVERSITY

1. Institute Code No. : Ag.1.1 Agron. 32
2. ICAR Code No. :
3. Name and address of the Institute : Rice Research Station, Pattambi.
4. Title of the Project : Studies on increasing population density by paired row technique for increasing rice yield.
5. Name and designation of Principal Investigator : P.N. Fisharady, Associate Professor
6. Name and designation of the Associate : Sri. Madhusudan Nair, Junior Instructor.
Sri. Saifudeen, Jr. Instructor.
7. Location : Rice Research Station, Pattambi.
8. a. Objectives:

It has been found that in the case of medium duration high yielding varieties of rice, a spacing of 20 cm between lines and 10 cm in the line is the best spacing for transplanting with 2 to 3 seedlings per hill. It has also been found that for obtaining the maximum yield from a variety there should be 300 to 350 productive tiller per sq. meter. By planting giving a spacing of 20 cm x 10 cm, the desired number of productive tillers are not being obtained.

In the crops like Banana, the yield per unit area could be increased by planting 2 suckers in a pit. A modified technique on this line is proposed to be taken up in rice transplanting for increasing the population, thereby increasing the productive tillers/unit area without affecting the spacing much. In this a paired row technique is envisaged. Instead of one line, 2 lines with clear spacing between lines and the next paired row will be 20 cms apart.

b. Practical utility:-

For increasing the rice yield by slight modification in the method of planting.

9. Review of literature:-

It has been found that in the case of medium duration high yielding varieties of rice a spacing of 20 cm between lines and 10 cm between plants in the line is the best spacing for transplanting with 2-3 seedlings per hill (Annual report RRS, Pattambi). It has also been found that for

obtaining maximum yield from a variety there should be 300-400 productive tillers/sq.m. (IRR reports). By giving a spacing of 20 cm x 10 cm the desired number of productive tillers are not being obtained in the trials conducted at Pattambi. In the cross like Banana the yield/unit area could be increased by planting 2 suckers in a pit (TNAU, Reports). In rice a modified technique as in the finding of Banana is therefore proposed to be taken up in transplanting in rice paddies for increasing plant population, thereby increasing the productive tillers per unit area without affecting the spacing much. No work is seen conducted in this line. In this technique paired row planting is envisaged. Two lines of 10 cms apart are first planted giving a spacing of 10 cms. the next line is planted giving a spacing of 10 cm. Observations to be recorded:

1. Number of vegetative as well as productive tillers/unit area.
2. Yield of grains/ha.

Technical programme:
Field trial with following treatments.

5: types of spacing x 3 levels of fertilization.

Spacing:-

- | | |
|--------------------------------|-------------------------|
| 1. S ₁ | : 10 cm x 10 cm |
| 2. S ₂ | : 10 cm x 15 cm |
| 3. S ₃ | : 10 cm x 20 cm |
| 4. S ₃ ¹ | : 10 cm x (20 x 10 cm) |
| 5. S ₅ ⁴ | : 10 cm x (30 x 10 cm). |

3 levels of fertilization:

- | | |
|-------------------|-----------------------|
| 1. F ₁ | : 60:45:45 NPK kg/ha. |
| 2. F ₂ | : 90:45:45 -do- |
| 3. F ₃ | : 120:45:45 -do- |

Lay out: 15 x 3 R.B.D. Plot size : 20 sq. m.

10. Date of start : 1977-78 First Crop Season
11. Likely date of completion : 1978-79 Second crop
12. Estimated man months:24
13. Facilities required : All the available facilities in the station.
14. If financed by an organization other than the institute : No.
15. Approximate cost : Rs.500/- in each season.
16. Signature of

Sd/-
Principal Investigator.

KERALA AGRICULTURAL UNIVERSITY

1. Institute Code No. : New project
2. I.C.I.R. Code No. : Ag.1.3. Agron. 33 (ii)
3. Name and address of : Agronomic Research Station,
the Research Institute/ Chalakudy.
Centre
4. Title of the Project : Assessment of rainfall contribu-
tion towards the water require-
ment of rice
5. Name and designation : Dr. U.P. Bhaskaran, Associate
of the principal in- Professor (Agronomy), Agronomic
vestigator Research Station, Chalakudy.
6. Names & designation : 1. Sri.V.K. Sasidharan, Associate
of Associates Professor, Instructional Farm,
Mannuthy.
2. Junior Instructor, Mannuthy.
7. Location of the Rese-: Instructional Farm, Mannuthy
arch project (Rice Research Station)
8. a. Objectives : 1. To assess the total water re-
quirement of rice in laterite
loam soils of Peechi Irrigation
Project area.
2. To assess the rainfall contri-
bution towards the water require-
ment of Mundakan Rice in Peechi
Irrigation Project area.
b. Practical Utility : 1. The information will be useful
for better assessment of irri-
gation water to be delivered
from the reservoir.
2. Modification in planting pro-
gramme can be thought of, for
avaing better rainfall contri-
bution for Mundakan crop.
9. Technical programme : Water requirement will be assessed
by direct measurement of daily
loss of water under field sub-
sidence method. Micro plots of
4 m x 4 m will be laid out with
an inner net plot of 3 m x 3 m.
Rice crop will be raised in these
plots with the same variety in the
bulk crop in outskirts. Water
level in both the gross and net
plots will be daily recoured to
3 cm. maintaining a continuous
sub mergence of 2-3 cm.although
the crop growth. Field hook guage

will be installed to measure the daily loss or excess accumulation due to rains. Rainfall also will be recorded. Total water requirement rainfall contributions, net irrigation requirement and drainage requirements will be computed from the data collected. The experiment will be replicated 4 times in different plots in the farm.

10. Date of start : October, 1977
11. Likely date of completion : To be repeated for 5 consecutive years during Viruppu and Mundakan seasons.
12. Estimated man months:
13. Facilities required: The following field devices are required.
- 1. Field hookguage ... 4 Nos
 - 2. Rainguage ... 1 No.
- Other existing facilities in the Rice Research Station can be utilised.
14. If financed by an organisation other than the Institute : No.
15. Approximate cost : Cost of equipment - Rs.100/- (initial expenses!)
Operation cost - Rs.300/ Rs.(for each season!)
16. Remarks : Studies proposed as per suggestions made by Central Water Utilisation Team (vide File No.R1-46262/77 of the Director of Research.
17. Signature of

Sd/-
PROJECT LEADER

Sd/-
HEAD OF DEPARTMENT

Sd/-
DIRECTOR OF RESEARCH.

KERALA AGRICULTURAL UNIVERSITY

1. Institute Code No. : New project
2. I.C.A.R. Code No. : Nil
3. Project No. : Ag. 1.3 Agron. 33 (iii)
4. Name and address of the Research Institute/Centre : Agronomic Research Station, Chalakudy.
5. Title of the project : Assessment and component analysis of water requirement for rice in kole lands.
6. Name and designation of the principal Investigator : Sri. T.P. George, Associate Professor (Engineering) Agronomic Research Station, Chalakudy.
7. Name(s) & designation of Associates : Dr. U.P. Bhaskaran, Associate Professor (Agronomy) Agronomic Research Station, Chalakudy.
8. Location of the Research project : Cultivators field in Kole lands of Trichur
9. a. Objectives :
 1. To assess the water requirements of rice in Kole lands.
 2. To assess water losses in percolation, evaporation and transpiration.
- b. Practical utility : Correct assessment of water requirement will facilitate scientific scheduling of irrigation to rice in Kole lands. Identification of different forms of water losses will help to take suitable measures to reduce the losses and increase water use efficiency.

Review of literature:

Assessment and component analysis of water requirement for Rice in kole lands.

A similar experiment was conducted at Agronomic Research Station, Chalakudy and different components for water requirement were assessed. As the conditions in Kole land differ considerably especially in the case of water loss due to deep percolation, it was felt necessary to take up a project in Kole lands.

10. Technical programme :

Materials and methods:

Estimations are done on the principle of Drum culture technique using the following field equipments.

- i. Evaporimeter: - A rectangular G.I. Box of size 90 x 10 x 15 cm placed in between the seedling rows to assess the evaporation loss from standing crop of waddy field by refilling methods.
- ii. Evapotranspirometer: - A.G.I tank of the size 90 x 90 x 60 cm with bottom installed in the field and seedlings planted inside, continuous with the row in the field. The daily loss due to evapotranspiration is measured by refilling method.
- iii. Vertical percolation meter: - A.G.I Tank of the size 90 x 90 x 60 cm without bottom installed in the field and seedlings planted inside, continuous with the row in the fields. The daily loss due to percolation and evapotranspiration is measured by refilling method.
- iv. Rain gauge: Installed in between the seedling row in waddy field to assess the actual rain falling into the evaporimeter. This will be different from the actual rainfall record, because of the interception of falling rain by the foliage.
- v. Field plot: The size of field plots is 6 x 5 metre. Daily total water loss from the field plots is measured by hook gauge.

Replication: - 6

Seasons: Punja (Summer)

Observations:

- i. Soil physical characters such as bulk density, porosity, hydraulic conductivity, infiltration rate, permeability etc.
 - ii. Soil chemical analysis for major nutrients.
 - iii. Periodical measurement of growth characters like height, tiller counts.
 - iv. Panicle characters and grain weight
 - v. Yield of grain and straw
 - vi. Root penetration, root length and weight
 - vii. Dry matter production, transpiration ratio.
 - viii. Record of daily water loss through evaporation, transpiration and percolation.
 - ix. Record of ground water table.
11. Date of start : October 1977
12. Likely date of completion : February 1980 (to be repeated for three seasons)
13. Estimated man months:
14. Facilities required : a. Land - to experiment is to be located in farmer's holdings.

b. Equipment - The following field installations and devices are necessary.

Evaporimeter, Evapotranspirimeter, Rain gauge, Piezometer, Field hook-gauge, Measuring cans.

c. Staff: Agricultural Demonstrator (1st Grade 1.)

d. Transport facilities to experimental site.

15. If financed by an organisation other than the institute:

No

16. Approximate cost : Cost of equipment Rs.2,500/- (Non recurring)
Operation cost Rs.1,500/- each season.

17. Remarks

: Studies proposed as per suggestions made by Central Water utilisation Team (Vide File No.R1-46262/77.)

Action to be initiated to start the work in next season as per.

Fourth F.R.C.

KERALA AGRICULTURAL UNIVERSITY

1. Name of Research Centre: College of Horticulture, Vellanikkara.
2. Project No. : Ag.1.19 Agron.22 (iv)
3. Title of the project : Studies on the performance of a rice variety 'Aswathi' under direct seeding in relation to method of sowing and weed control.
4. Name and designation of
a. Project leader : Dr. P. Balakrishna Pillai, Associate Professor.
Kumari P. Sreedevi, M.Sc. (Ag) Student.
5. Objective : 1. To determine the relative efficiency of different methods of weed control in rice under semi dry conditions.
2. To fix the optimum spacing for the variety 'Aswathi' under direct seeding.
6. Practical utility : Heavy infestation of weeds is a serious problem confronting the rice growers during the first crop season. There is very little information regarding the use of various herbicides in controlling weeds under semi dry system of cultivation in Kerala. It has to be assured beyond doubt that herbicidal application does not harm the crop and effectively eliminate and destroy the weeds. Weed control is easy and thorough in line sown crop. Mechanical weeding is also possible when seeds are shown in wide spaced flow lines. So a suitable method of weed control in direct sown rice crop is to be found out to reduce weed infestation and to increase yield.
7. A short review of literature:
Stewart (1947), Grist (1953) Hynes (1955) Piaco (1955) and Vachani and Choudhari (1963) resorted that hand weeding was the best method of controlling weeds in rice. Nair et al (1964) observed that echinochloa crusgali (Kavade) a major weed found in rice fields of Kuttanad could be controlled with Stam F-34

contd....

KERALA AGRICULTURAL UNIVERSITY

1. Institute No. :
2. I.C.A.R. Code No. :
3. Project No. : Ag. 1.6 Agron. 24 (ii)
4. Name and address of the Research Institute/
Centre : Rice Research Station, Kayamkulam.
5. a. Title of the project: Scheme for the improvement of
existing cultivation practices of
rice in the sandy Koottumundakan
areas in Sherthalai region.
b. Title of the problem : Investigation for the improvement
of the existing agronomic practi-
ces in vogue in the sandy Koottu-
mundakan areas.
6. Name and designation
 - a. Principal Investigator : Sri. I. P. S. Nambiar, Assistant
Professor.
 - b. Associates and Estt. on which borne : Sri. A. E. S. Kurun, Associate
Professor.
7. Objective : To investigate better cultivation
practices so as to increase the
rice yield in sandy Koottumundakan
areas.
8. Location of the Research Project : Sherthalai Taluk, Alappuzha District.
9. Practical Utility : The sandy Koottumundakan areas in
Sherthalai Taluk are scattered
paddy fields lying in the interior
places of the region. Soil is
purely sandy which is very poor in
nutritional status and water hold-
ing capacity. Since these fields
are scattered with an area of 1-2
acre to 10-15 acres no proper dra-
nage facilities are available.
So during rainy season the fields
will be submerged. During summer
months, due to low water holding
capacity, drought is another pro-
blem faced by the cultivators. In
a few fields intrusion of salt
water is also a problem. Most of
these fields are artificially for-
med by excavating the sand to a
depth of 1 to 1.5 metre.

contd.....

Koottumundakan a traditional method of rice cultivation is generally followed in this area. The seeds of the 1st crop and 2nd crop are mixed together in a ratio of 1:2 to 3 and sown in the month of April. In a few places mounds are taken and seeds are dibbled in levelled fields. The seedlings on the mounds along with sand attached to the root portion will be spread over the fields in the month of June-July. The 1st crop will be harvested in September-October. Then the stubbles of the 1st crop will be removed and the 2nd crop will be allowed to grow. The harvest of the 2nd crop is done in the month of December-January. Soil is acidic in nature. Weed growth is very high. The cultivation is very expensive and the average yield for the 1st crop is 300 to 400 kg. per acre and that of the 2nd crop is 600 to 700 kg.

10. Technical programme:
1. Trials on the application of Kayal silt in sandy Koottumundakan fields.
 2. Trials on the mixing of 1st and 2nd crop seeds in different ratios for sowing.
 3. Trials on different cropping pattern by providing bunds and drainage channels around the fields.
 4. Manurial trials on different doses and kinds of organic and inorganic fertilizers.
 5. Different methods and time of application of organic and inorganic fertilizers.
 6. Application of Soil conditioners.
 7. Trials on the application of different weedicides.
 8. Trials on fish cum paddy culture.
11. Date of start : 1977-78 April-May
12. Likely date of completion : 1979-80
13. Estimated months : 36 man months
14. Facilities required : A Staff:- Services of an experienced Demonstrator and a Junior Instructor in Agronomy.

c ontd....

- B. Three hectares of typical sandy Kootumundakan land will be leased out at an annual rent of Rs.2,500/- hectare.
15. If financed by an organisation other than the Institute : No.
16. Name of financing organisation : Kerala Agricultural University (Rice Research Station, Kayamkulam)
17. Approximate cost : Rs.80,000 for three years.
18. Signature of :

Sd/-
PRINCIPAL INVESTI-
GATOR

Sd/-
Head of Division

Sd/-
Director of Research.

Fifth FRC.

*Project could not be approved.
Details of individual trial not given.
Follow up action not taken -
Not approved. FRC for follow up.*

RESEARCH PROPOSAL

Faculty of Agriculture

Department of Botany

- | | | |
|--|---|---|
| 1. Location
(Name of Research Centre) | } | Research Station and Instructional Farm, Mannuthy. |
| 2. Project No. | : | Ag.1. 2 Bot 3(i) |
| 3. Title of Project | { | Hybridization programme of Annapoorna and Sabhari with ARC 11775. |
| 4. Investigations | | |
| (a) Principal | : | Sri. K.M. George, Assoc. Professor. |
| (b) Associate | : | K. Pushkaran, Instructor. |
| 5. Objectives | : | To induce the desirable characters like plant height (to increase straw yield) drought resistance, better earhead characters etc. from ARC 11775 to Annapoorna and Sabhari |
| 6. Practical utility | : | Annapoorna is one of the popular HYV of short duration rice. The induction of more height, drought resistance, better earhead characters etc. from ARC 11775 will make Annapoorna all the more popular. It will also/Annapoorna /make more suited for modern cultivation on an extensive scale. Likewise, the incorporation of the desirable characters of ARC 11775 to Sabhari will t Sabhari a better variety for the dry sown 1st crop and even to modern cultivation. *make |
| 7. Review of Research | : | In paddy, floral biology genetic variability, correlation, mutation and hybridization studies were done in an extensive scale both in our country and abroad. |
| 8. Technical programme | : | ARC 11775 with Annapoorna and Sabhari will be crossed on either way, and in the segregating generation, selection will be effected for the desirable one (if found necessary back crossing will also be resorted to) |
| 9. Date of start | : | 1978-79 |
| 10. Date of completion | : | 1984-85 |

(contd..)

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: 2 :

11. Additional facilities required { Nil
12. Estimated cost : Rs.1500/- per year
13. Signature :

Sd/-
Principal investigator

Sd/-
Head of Department

Sd/-
Director of
Research.

S. No. 98

KERALA AGRICULTURAL UNIVERSITY

RICE RESEARCH STATION, MONCOMPU

....

Faculty of Agriculture Department of Botany

1. Name of Research Centre : Rice Research Station, Moncompu.
2. Project No : AG. 1.5 Bot 4 (v)
3. Title of project : Evolving a short duration Semi-tall variety of Rice.
4. Name(s) and designation of:-
 - (a) Project Leader : S. Sukumaran Nair, Asst. Professor.
 - (b) Associates :
 1. N. Rajappan Nair, Assoc. Professor.
 2. N. Remabai, Jr. Instructor.
5. Objective : To evolve a suitable short duration semitall variety resistant to pests and diseases.
6. Practical utility:-

The cultivators of the Upper Kuttanad and other eastern areas in Alleppey and Quilon Districts have expressed their desire for high yielding short duration semitall varieties which are non-lodging to replace the low-yielding local varieties like Munnayan, Vaikatharayan, Vellavithu etc. which yield only 10 to 12 folds. The local varieties are preferred because of their short duration nature and yield of straw. It is necessary that suitable varieties are evolved having high yield potential for grain and straw, short duration and resistant to pests and diseases to cater to the needs of the cultivators of the above region.

7. A short review of literature:-

A cross between Kochuvithu x IR-8 (Cul.14-2-3) evolved in this station was tested in the cultivators fields and also in the State Seed Farms during the Virippu crop season of 1977. Since the culture took 120 days to mature during this season this cannot be grouped under short duration varieties. But for the Funja crop season it has a duration of only 110 days. However considering its high resistance to BPH and other plant characters this culture can be utilised as a donor parent.

(contd....2)

8. Technical programme:-

It is proposed to undertake the following crosses:-

1. Cul. MI 4-2-3 x Cul 28
2. -do- x Triveni
3. -do- x Jyothi
4. Ptb 33 x Cul. 28
5. Kochuvithu x Cul. 28
6. -do- x Triveni
7. -do- x Jyothi
8. Navara x Jyothi
9. -do- x IR-8
10. -do- x Jaya

Selection procedures will be followed and the selected cultures will be tested under the various trials to study their performance.

9. Date of start : November, 1977
10. Likely date of completion : March, 1982
11. Additional facilities required)
12. Approximate cost : Rs.5,000/-
13. Signature of

Sd/- Sd/- Sd/-
Project Leader Head of Department Director of Research

KERALA AGRICULTURAL UNIVERSITY

RESEARCH PROJECT 1977-78

1. Institute Code No. : IG. 1.6. Bot-5 (Vi)
2. I.C.A.R. Code No. :
3. Name and address of the {
Research Institute/
Centre } Rice Research Station,
Kayamkulam.
4. a. Title of the Project: Scheme for the improvement of
rice varieties suited to the sandy
Koottumundakan areas in Shertalai
Taluk.
b. Title of the problem: Varietal improvement on rice suited
to Koottumundakan areas.
5. Name and designation of
a. The principal investigator: A.E.S. Kurup,
Associate Professor
b. Associate(s) and Estt. {
on which borne } S. Santha Kumari,
Assistant Professor(Botany)
6. Whole time or Part time: Part time
7. Location of the Research {
Project } Shertalai Taluk, Alleppey
District.
8. Objective : To evolve suitable high yielding
varieties tolerant to salinity
and drought conditions from the
indigenous varieties.
9. Practical utility : "Koottumundakan" is a type of
cultivation commonly followed in
the sandy Koottumundakan fields
which are lying scattered in the
interior places of the region.
The soil is purely sandy which is
very poor in nutritional status
and water holding capacity. During
rainy season the fields will be
submerged and during summer months
very severe drought is experienced.
In a few fields intrusion of salt
water is also a problem for profit-
able cultivation.

Under these conditions, as
a measure to reduce the cost of
cultivation the 1st and 2nd crop
varieties are mixed together in a
ratio of 10:2 to 3 and sown in the

(contd...2)

KERALA AGRICULTURAL UNIVERSITY

Faculty of Agriculture Department of Agricultural Botany.

1. Name and address of the Research Institute/Centre { College of Agriculture, Vellayani, Department of Agricultural Botany.

2. Project No. : AG. 1.18 Bot 6 (ii)

3. Title of the Project/ Problem { Selection of Rice Varieties Resistant to leaf Folder.

4. Name and designation of the

(a) Principal Investigator: K. Gopakumar, Assot. Professor in Botany

(b) Name(s) & designation of Associate(s) and establishment on which borne { 1. P.A. Rajan Asari, Asst. Professor in Entomology 2. M.P. Abdul Rasak, Instructor in Agricultural Statistics.

5. Objective : To evolve rice varieties resistant to leaf folder through selection.

6. Practical utility & : No rice variety resistant to leaf

7. Review of literature : folder has been identified till date. The pest has been reported to cause considerable damage. Therefore, if resistant varieties could be identified and isolated the damage caused by the insect could be controlled. Thus the work will be of value in increasing productivity in rice. A preliminary trial with 491 varieties was conducted at the Rice Research Station, Monkombu, and it was found that none of the varieties were resistant to the pest. However, ten varieties were identified to be relatively tolerant on the basis of damage index. The Research Council of the Kerala Agricultural University held on 21st and 22nd of April, 1977 directed that further testing of these 10 tolerant varieties be carried out at the College of Agriculture, Vellayani under the supervision of the Departments of Agricultural Botany and Agricultural Entomology.

8. Technical Programme : The 10 tolerant varieties will be tested against a control. Layout of the experiment - RBD with 3 replications. Field experiments are to be carried out during the first and third crop seasons of three consecutive years.

It is proposed to conduct the experiment under controlled conditions also. The extent of damage caused will be assessed on the basis of damage index.

9. Date of starting : 1--4--1978
10. Date of completion (anticipated) } 30--6--1981
11. Facilities required
- Land : 15 cents wet land
- Labour
- Equipment No additional equipment required. Facilities for conducting the trial under controlled conditions could be made available from the department of Agricultural Entomology.
12. Approximate cost : Rs.21,000/- (for the whole project)
13. Signature of:

Sd/-
Principal Investigator

Sd/-
Head of the Department.

Fourth FRC. S.No.114.

*Estimate is high.
Follow up action -
Breakup of exp.*

KERALA AGRICULTURAL UNIVERSITY

1. Institute Code No. : AG.1.1.Bot.13(ix)
2. ICAR Code No. :
3. Name of Research Station : Rice Research Station, Pattambi
4. Title of the project : UVT. III
Title of the problem : Uniform variety trial III
5. Name and designation of Principal Investigator) K.I. James, Associate Professor
6. Name and designation of Associate(s) (P.A. Varkey, Assistant Professor
7. Location of the Project : Rice Research Station, Pattambi
8. (a) Objective : To study comparative performance of early duration varieties.
(b) Practical utility : Helps to select high yielding entries suited to our conditions.
9. Technical programme : This is a trial proposed for both crop seasons under the AICRIP. For the 1st crop there are 20 entries and for II crop, 23 entries.
Layout : RBD with 3 replications.
10. Date of start : May 1977
11. Likely date of completion: March 1978
12. Facilities required : Only farm facilities required.
13. Financing organisation : ICAR
14. Approximate cost : Rs.1,200/-
15. Signature of:

Sd/-
Principal Investigator

Sd/-
Head of Division

Sd/-
DIRECTOR

KERALA AGRICULTURAL UNIVERSITY

1. Institute Code No. : AG. 1.1. Bot 13(xiv)
2. ICAR Code No. :
3. Name of Research Station : Rice Research Station, Pattambi
4. Title of the Project : PVT. III of AICRIP
Title of the problem : Preliminary variety Trial.III
5. Name and designation of Principal Investigator) K.I. James, Associate Professor
6. -do- of Associate(s) : P.A. Varkey, Assistant Professor
7. Location : Rice Research Station, Pattambi
8. a) Objective : To study comparative performance of promising mid duration selections.
b) Practical utility : Helps to select high yielding culture for further **trial** in UVT.
9. Technical programme : This is a trial under the AICRIP and is proposed for both crop seasons with 64 entries each.
Layout : RBD for 1st crop and Lattice for II crop.
10. Date of start : May, 1977
11. Likely date of completion: March 1978
12. Facilities required : Only farm facilities are required
13. Financing organisation : ICAR
14. Approximate cost : Rs.1,200/-
15. Signature of:

Sd/-
PRINCIPAL INVESTIGATOR

Sd/-
HEAD OF DIVISION

Sd/-
DIRECTOR

KERALA AGRICULTURAL UNIVERSITY

1. Name of Research Station : Rice Research Station, Pattambi
2. Institute Code No. : AG. 1.1. Bot.13(xvi)
3. ICAR Code No. :
4. Title of the Project : IRYN (L)
Title of the problem : International rice Yield Nursery(Late)
5. Name and designation of Financial Investigator { K.I. James, Associate Profesor.
6. Name and Designation of Associate { P.A. Varkey, Assistant Professor,
7. Location : Rice Research Station, Pattambi
8. a) Objective : To test promising materials of late duration from the International Rice Testing Programme.
b) Practical utility : Serves to Strengthen and complement rice improvement programmes.
9. Technical programmes : 28 cultures gathered from all parts of the world, by IRRI, will be tested in an RBD with 3 replication.
10. Date of start : September, 1977
11. Likely date of completion: March, 1978
12. Facilities required : Only farm facilities are required
13. Financing organisation : I.C.A.R.
14. Approximate cost : Rs.600/-
15. Signature of

Sd/-
Principal Investigator

Sd/-
Head of Division

Sd/-
DIRECTOR

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KERALA AGRICULTURAL UNIVERSITY

Rice Research Station - Moncompu

Faculty of Agriculture Department of Botany

1. Name of Research Centre : Rice Research Station, Moncompu
2. Project No. : AG. 1.5. Bot. 13 (xxv)
3. Title of the Project : Project for evaluating varieties and cultures supplied by cultivators.
4. Name and designation of:-
 - a) Project leader : N. Ramabai, Jr. Instructor.
 - b) Associates : S. Sukumaran Nair, Asst. Professor
5. Objective : To study the performance and suitability of the varieties and cultures supplied by cultivators.
6. Practical utility : The varieties and cultures if found suitable can be recommended for general cultivation in Kuttanad.
7. Review of literature :-

Four cultures viz. NP 73, NP 93, NP 3 and NP 10 were supplied by MR. N.J. Lukose, Nampiarampil, Kaloore P.O. He claims that the varieties are superior to many of the high yielding varieties. The culture NP 10 is a short duration variety derived from the cross Kallada arayan x TN 1, NP 73 and NP 3 are derivatives from IR-8 x Vellamunda and NP 93 a derivative from Ptb.16 x TN 1. This project has been proposed as per letter No.R1-59290/77 dt. L.Dis. of the Director of Research.

8. Technical programme:-

6 x 4 RBD field experiment

Plot size : 4.5 x 4.5 S.M.

Spacing : 15 x 15 cm doubles

Manuring : 90:45:45 kg NPK/ha.

Entries : 4 cultures + Standards

1. NP 3 2. NP 10 3. NP 73

4. NP 93 5. Jyothi 6. Cul. 57-5-1

9. Date of start : October, 1977
10. Likely date of completion: March, 1980
11. Addl. facilities required: Nil
12. Approximate cost : Rs.1,500/-
13. Signatures of :-

Sd/-
Project Leader

Sd/-
Head of Department

Sd/-
Director of Research

-49-
: 2 :

Entries : 5 cultures and 2 standards
1. M 8-88-2 5. M 13-116-1
2. M 15-36-2 6. Jyothi
3. M 15-26-1 7. Bharathy.
4. M 15-26-2

Designs : 7 x 4 RBD
Plot size 4.95 x 3.90 s.m.
Spacing 15 x 15 cm doubles
Manuring 90:45:45 kg. NPK/ha.

The selected cultures from the CYT will be studied for their yield potential and other characters in seed farms and cultivators fields during 1978-79.

9. Date of start : October, 1977
10. Likely date of completion: March, 1979
11. Additional facilities required { Facilities in seed farms and cultivators fields.
12. Approximate cost : Rs.1,500/-
13. Signature of :

Sd/-
Project Leader

Sd/-
Head of Department

Sd/-
Director of Research.

Sixth FRC. S.No.146.

KERALA AGRICULTURAL UNIVERSITY

Rice Research Station, Moncompu

Faculty of Agriculture

Department of Botany

1. Name of Research Centre : Rice Research Station, Moncompu.
2. Project No. : AG. 1.5.Bot.13(XXVI)
3. Title of the project : Evaluation of advanced cultures of different crosses.
4. Name(s) and designation of:-
 - a) Project leader : S. Sukumaran Nair, Asst. Professor.
 - b) Associate(s) : N. Remabai, Jr. Instructor.

5. Objectives:-

To assess the performance of the advanced cultures of the different crosses carried forward from the PYT by conducting experiments under CYT and Dist. trials in seed farms and cultivators fields.

6. Practical utility:-

The culture if found to perform well for yield, pests and disease resistance etc. can be recommended for general cultivation in Kuttanad.

7. Short review of literature:-

Selections made from the crosses IR-8 x MO3 (M8) IR 11-1-66 x Kochuvithu (M15) and IR-8-68 x Kochuvithu (M13) were tested in initial evaluation trials and preliminary yield trials and finally the following five cultures were found to be good with respect to yield, and pests and disease resistance.

1. M8-88-2
2. M 15-36-2
3. M 15-26-1
4. M 15-26-2
5. M 13-116-1

The project has been proposed with a view to finally evaluate the performance of these cultures under CYT and district trials.

8. Technical programme:-

The following cultures evaluated in the IET and preliminary yield trials for 3 reasons were found to perform well in yield and BPH resistance under field and laboratory conditions.

(contd...2)

9. Date of start : April, 1977
10. Likely date of completion } March, 1980
11. Additional facilities required { Facilities are required for conducting trials in cultivators fields and seed Farms during 1979-80.
12. Approximate cost : Rs.3,500/-
13. Signature of

Sd/-
Project Leader

Sd/-
Head of Department

Sd/-
Director of Research.

Sixth F R C S.No.147.

KERALA AGRICULTURAL UNIVERSITY

RICE RESEARCH STATION, MONCOMPU

Faculty of Agriculture Department of Botany

1. Name of Research Centre : Rice Research Station, Moncompu.
2. Project No. : Ag 1.5.Bot 13 (XXVII)
3. Title of the project : Evaluation of the selected cultures from the cross Jaya x MO I
4. Name(s) and designation of:-
 - a) Project leader : S. Sukumaran Nair, Asst. Professor.
 - b) Associates : N. Rema Bai, Jr. Instructor
5. Objective : To assess the yield potential of the advanced cultures selected from the cross Jaya x MO I.
6. Practical utility : Suitable cultures when identified will be supplied for general cultivation.
7. Short review of literature:-

MO I is a selection from the local variety Chettyvirippu. This variety grows well in ill drained conditions and possess good resistance to acidity and was very popular in Kuttanad before the introduction of high yielding varieties. Hybridization work was done to incorporate the above qualities of MO I and the high yielding nature of Jaya and to evolve a suitable variety for Kuttanad. During the year 1974-75, 395 cultures were studied from which 179 were selected and in the year 75-'76 44 numbers were studied in the F5 generation, out of which 41 numbers were selected in the F6 generation in 1976. 19 cultures were finally taken for study under initial evaluation trials. The project has been prepared to evaluate the performance of these cultures.

8. Technical programme :
 1. Evaluating 19 cultures of the cross Jaya x MO I under IET during 1977-78.
 2. Evaluating cultures selected from the previous IET under CYT.
 3. Conducting experiments under Dist. trials during 1979-80 in cultivators' fields and seed farms and Research Stations.

KERALA AGRICULTURAL UNIVERSITY

RICE RESEARCH STATION, MONCOMPU.

Faculty of Agriculture Department of Botany.

1. Name of Research Centre : Rice Research Station, Moncompu
2. Project No. and Title : AG. 1.5. Bot. 13(XXVIII)
3. Title of the project : Evaluation of the selected cultures from the cross IR-8 x Karivennel.
4. Name(s) and designation of:-
 - (a) Project leader : N. Ramabai, Jr. Instructor
 - (b) Associate(s) : S. Sukumaran Nair, Asst. Professor.
N. Rajappan Nair, Assoc. Professor.
5. Objective : To assess the yield potential of the advanced cultures selected from the cross IR-8 x Karivennel.
6. Practical utility : Suitable cultures when identified will be supplied for cultivation.
7. Short review of literature:-

Hybridization work was done in this station during the year 1972-73 to evolve suitable varieties of rice for Kuttanad using IR-8 and Karivennel as parents. The male parent Karivennel used is a variety of rice cultivated in Kuttanad from early times because of its high degree of resistance to acidity and pests especially BPH. The hybridization work was done to incorporate the high yielding nature of IR-8 and resistance nature of Karivennel to evolve a suitable variety of rice.
8. Technical programme:-
 1. Evaluating 18 advanced cultures of the cross IR-8 x Karivennel under PYT during 1977-78.
 2. Evaluating 12 cultures of the above cross selected under the project Ag.1-5-2-4 under IET during 1977-78.
 3. Conducting experiments under CYT and District trials during 1978-79 and 1979-80.
9. Date of start : April, 1977
10. Likely date of completion: March, 1980
11. Additional facilities required { Facilities are required for conducting trials in cultivator's fields and seed farms during 1979-80
12. Approximate cost : Rs.3,500/-
13. Signature of:-

Sd/-
Project Leader

Sd/-
Head of Department

Sd/-
Director of Research

Faculty of Agricultural Science - Department of Agrl.
Botany.

1. Name of the Research Centre: Rice Research Station,
Kayamkulam.
2. Project No. : AG 1.6.Bot 13 (XXX)
3. Title of project (This should indicate the nature of work) : **Screening** of rice varieties suited to different seasons in Onattukara from the existing high yielding varieties of paddy under the recommended package of practices.
4. Name(s) and designation of:-
 - (a) Project Leader : A.E. Sreedhara Kurup,
Assoc. Professor (Agrl.Bot.)
 - (b) Associate/s : S. Santhakumari, Instructor(Bot.)
5. Objective : To identify varieties best suited to different seasons in Onattukara by evaluating the performance of certain selected varieties from the existing high yielding varieties of paddy.
6. Practical utility:-

When compared to different tracts in Kerala, Onattukara region comprising an area of 27,000 hect. is lagging behind in the spread of high yielding varieties of paddy especially during the 2nd crop season. As it is purely a rainfed area cultivation in Virippu and Mundakan season is possible only depending upon the uniform spread of rains. The erratic rains and continuous drought during the early part of virippu season and the late part of Mundakan season often lead to crop failure. The source of water for irrigation during these periods is quite inadequate. This is because the quantity of water required for irrigation is very high due to poor water holding capacity of the soil. In the absence of a moderately congenial agroclimatic conditions farmers at this tract are rather constrained to cultivate the traditional varieties like P.T.B.23 for the Virippu Season and P.T.B.20 for the mundakan season at this tract. Hence it is a prime necessity to study the performance of certain selected high yielding varieties under the existing agroclimatic conditions for giving specific recommendation of varieties suited to virippu and Mundaken

season. With this the existing cropping pattern in Onattukara could be altered with availability of suitable high yielding short duration varieties. The information regarding the suitability of high yielding varieties of rice is quite inadequate which is one of the reasons for the poor coverage of the high yielding varieties of rice in the tract. Hence it is essential to identify varieties best suited to different seasons at this tract.

7. A short review of literature:

8. Technical programme:-

1. Collection of existing high yielding varieties from different stations.
2. Trial of these varieties in Virippu and Mundaken seasons and study the performance on the basis of Vigour, tillering, disease and pest reaction, Iron toxicity, yield etc. at least for three years.
3. Study the yield potentiality of the selected varieties in different seasons.

9. Date of start : From 2nd crop season 1976 (Aug.76)

10. Likely date of completion : December 1979

11. Additional facilities required { Facilities available at the Rice Research Station, Kayamkulam.

12. Approximate cost : Rs.2,000/-

13. Signature of:-

Sd/-	Sd/-	Sd/-
Project Leader	Head of Department	Director of Research

KERALA AGRICULTURAL UNIVERSITY

1. Institute Code No. : AG. 1.1. Bot. 13 (XXXII)
2. ICAR Code No. :
3. Name of Research Station : Rice Research Station, Pattambi.
4. Title of the Project : UVT 4 under AICRIP
Title of the problem : Uniform variety Trial - 4
5. Name and designation of Principal investigator { K.I. James, Associate Professor
6. -do- of Associate : P.A. Varkey, Assistant Professor
7. Location of the Project : Rice Research Station, Pattambi
8. a) Objective : To study comparative performance of late duration varieties
b) Practical utility : Helps to identify entries with high yield potential suited for the locality
9. Technical programme : This is a trial under AICRIP and is proposed for 1st crop 1977-78 only with 34 entries.
10. Date of start : May 1977
11. Likely date of completion : October, 1977
12. Facilities required : Only farm facilities are required
13. Financing organisation : I. C. A. R.
14. Approximate cost : Rs.600/-
15. Signatures of :-

Sd/-
Principal Investigator

Sd/-
Head of Division

Sd/-
Director.

Fourth F R C.

KERALA AGRICULTURAL UNIVERSITY

1. Name and address of the Research Centre { Rice Research Station, Pattambi.
2. Institute Code No. : AG.1.1.Bot.13(XXXIII)
3. Title of the Project : Research on Rice
Title of the Problem : Screening of varieties/cultivars for dry sown virippu crops.
- 4.a) Name and designation of: { Smt. R. Pushpakumari,
Principal Investigator { Junior Instructor.
- B) Names and designation of Associates { P.A. Varkey, Asst. Professor.
K.I. James, Assoc. Professor.
5. a) Objective : To breed varieties suited for dry sowing during the first crop season, with high yield potential and comparative tolerance to disease, pests and lodging.

6. Practical Utility:-

It is estimated that above 80% of the virippu rice crop is grown as dry sown on receipt of premonsoon showers in April-May. The major biophysical constraints of virippu rice are initial drought, weed growth and inundation during periods of heavy South-West monsoon- Although semi dwarf varieties are suited for dry sown virippu rice culture, their adaptability is not similar to that of the local tall varieties. The tall varieties have attractive agronomic traits suited for semi-arid rice culture, which many of the semi dwarf varieties do not possess. But lodging of the crop at various stages of growth considerably brings down the yield. Hence it is necessary to select high yielding varieties suitable for growing under dry broadcast conditions.

7. Review of literature :

8. Technical Programme:-

1. Intermediate height rice cultures evolved at the various Rice Research Stations all over India and abroad will be grown under dry broadcast conditions during virippu season at Pattambi and Rice Research Station, Kayamkulam where the practice of dry sowing is in vogue.

(contd...2)

2. Breeding for intermediate height varieties will be initiated at Rice Res. Station, Pattambi using ARC accessions and Indonesian lines.
3. Selection of cultures suited for dry sowing having the following traits will be done.
 - i) Medium duration.
 - ii) Early seedling vigour.
 - iii) tolerance to submergence in the initial stages of growth.
 - iv) long thin leaves producing thick canopy in the early stages.
 - v) Intermediate height (105-120 cm)
 - vi) Stiff straw and non-lodging till maturity.
 - vii) Tolerance to pests and diseases.
 - viii) Long bold grains with good milling and cooking qualities.

9. Date of start : First crop, 1977
10. Likely date of completion: Second crop, 1979
11. Facilities required : Facilities available in the Rice Res. Station will be utilised for the 1st instance. In the II phase trials will be laid out in cultivator's field.
12. Approximate cost : Rs.2,500/- per year.
13. Signature of principal Investigator) Sd/-

KERALA AGRICULTURAL UNIVERSITY

1. Institute Code No. : AG.1.1.Bot.15
2. ICAR Code No. : AICRIP Trial No.7 (Kharif, 1977)
3. Name of the Institute : Kerala Agricultural University,
Rice Research Station, Pattambi.
4. Title of the project : Studies on harvest of rice at its
physiological maturity stage.
5. Name of the principal investigator) P.F. Kuriakose, Associate
Professor (Agronomy)
6. Names of Associates : R.R. Nair, Assistant Professor
(Agronomy) N. Saifudeen, Junior
Instructor.
7. Location : Pattambi
8. Objective : To assess the physiological
maturity and correct time of
harvesting of long, mid and
short duration varieties under
different agroclimatic regions
and to evaluate milling recovery
of rice.

Practical utility : The optimum stage of harvesting
can be communicated to ryots.
9. Technical programme :
Layout : Split plot in RBD
Replications : 4
Treatments
Whole plot : 3 varieties (early, medium, long)
Early: Jyothi (110 days)
Mid : Jaya (125-130 days)
Late : IR 5 (135-145 days)

Sub sub-plot : 0,60,120 kg/ha.
time of harvesting (24, 28, 32, 36
and 40 days after 50% flowering)
- Data to be collected : 1. Grain yield.
2. Moisture % of grain at harvest.
3. Milling recovery.
10. Date of start : November, 1977
11. Date of completion : October, 1978
12. Finance : Financed by the ICAR
13. Approximate cost : Rs.2,000/-
14. Signature of

Sd/-
PRINCIPAL INVESTIGATOR

Sd/-
HEAD OF OFFICE.

KERALA AGRICULTURAL UNIVERSITY

Faculty of Agriculture

Department of Agricultural Botany, College of Agriculture, Vellayani.

PROGRAMME OF RESEARCH WORK FOR MASTER'S DEGREE
(For approval of the University)

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1. Name of the candidate : KISHORE KUMAR, K.
Project No. : AG.1.18 Bot.17
2. Date of Admission and Admission Number) 1. 12. 1976
(76-11-09
3. Name and Designation of the Chairman of the Advisory Committee { Dr.S.T. Mercy, Assistant Professor, Dept. of Agricultural Botany.
4. Topic of Research for Thesis { "Effect of herbicides on cell division, sterility and yield in rice".
5. Objective of Research for the thesis {

No work has so far been done to assess the effect of herbicides on cell division, sterility and yield in rice. The technology of herbicide usage is gaining great impetus in crop production due to factors like labour scarcity, excessive labour cost and other management aspects. The study will help in finding out any detrimental effects caused by the herbicides which may lead to sterility and subsequent reduction in yield. Hence the present study is undertaken.

6. Brief review of work done on the topic (Give reference to important publications/thesis).

No work has been done so far to find out the effects of herbicides on cytological aberrations, sterility and yield relating to rice. However literature is available on the cytogenetic effects of herbicides on plants like cotton, maize, oats, beans, carrots, onion, soyabean etc.

Hakeem and Shehab in 1973 have studied the cytological effects of herbicides Dalapon, paraquat and 2.4-D in beans. Sterrett and Fretz have observed in 1975 that mitotic irregularities are induced by the herbicide Asulum. Singh and Harvey (1975) have observed that different concentrations of 2, 4-D had varying degree of cytogenetic effects on plants cultured in vitro. Oku(1977) has reported the extent of chromosomal aberrations induced by Maleic hydrazide (herbicide) in root tips of onion.

7. Scientific and/or practical importance of the research.

A number of herbicides are in use for rice cultivation in Kerala. Hitherto no work has been done to study the effect of these

(contd...2)

herbicides on the sterility and subsequent reduction in yield effected by these herbicides on the crop. A detailed study of these adverse effects will help in assessing the depression in yield caused by the injudicious use of herbicides. Based on this study various herbicides can be screened for proper usage. A knowledge on the degree of the deleterious effects of herbicides can be used to put forward recommendations about their harmfulness and effective dosages which can be adopted by farmers during the coming season.

8. Technical programme:

Field experiments will be done during the coming season using plots of size 3 m x 3 m. Five selective herbicides treatments in addition to water spray treatment and control will be studied in four replications. The programme consists of:

- a. Raising nursery.
- b. Transplanting into plots in the field.
- c. Spraying of herbicides and water.

Observations will be taken on:

1. First day of tillering.
2. Total number of tillers
3. Number of effective tillers.
4. Height of the plant
5. Periodical survival counts.
6. P.M.C. studies for scoring chromosomal aberrations and other abnormalities.
7. Pollen sterility.
8. Periodical weed counts.
9. Grain yield per plot.
10. Grain and chaff ratio
11. 1000 grain weight.

9. Estimate of expenditure and receipts if any:	Fellowship	Rs.2,400/-
	Other expenses (approximate)	Rs.3,600/-
	Total	Rs.6,000/-
		=====

10. Location of Research if outside college campus. College of Agriculture, Vellayani.

Place : Vellayani
Date : 13. 6. 1978

Sd/-
SIGNATURE OF CANDIDATE

Sd/-
Signature of Chairman
Advisory Committee

Sd/-
Signature of Head
of Department

Sd/-
Signature of the
Dean.

KERALA AGRICULTURAL UNIVERSITY

Faculty of AGRICULTURE Department of BOTANY

1. Name of Research Centre : Rice Research Station, Moncompu.
2. { Project No. and title : AG.1.5.Bot.18(i)
3. { : Brown Plant Hopper resistant variety trial.
4. Objective : To evaluate comparative performance of Brown plant Hopper resistant varieties.
5. Name(s) of
 - a. Project Leader : S. Sukumaran Nair, Asst.Professor.
 - b. Associate(s) : K.P. Vasudevan Nair, Asst.Professor.
6. Practical utility : The test varieties supplied by AICRIP are reported to be resistant under lab-tests. If they prove their resistance under field condition at Moncompu their BPH resistance can be confirmed and suitable variety for the locality can be selected.
7. Review of literature : --
8. Technical programme :

Layout	R.B.D.
Replications	3
Test varieties	36
Check varieties	Jaya and I R 26
Plot size	6 M x 4 M strips
Spacing	15 cm x 15 cm
Plant Protection	Nil

Fertilizers

High level 100 kg N/ha, 50 kg as basal and 25 kg + 25 kg N at maximum tillering and PI stage. 50 kg. P_2O_5 + 25 Kg K_2O as basal dressing. Wherever necessary 25 kg Zn should be applied ad basal 24 hrs. after application of P_2O_5 .

Data to be collected

1. Grain yield (kg/plot)
2. Panicle per sq.m.(total)
3. Days to 50% flowering
4. Notes on pest, diseases and lodging. Extent of damage by Brown Plant Hopper in surrounding plots.

(contd..2)

9. Date of start : October, 1977
10. Likely date of completion: March 1978
11. Additional facilities required } Nil
12. Approximate cost : Rs.500/-
13. Signature of:

Sd/-
PROJECT LEADER

Sd/-
HEAD OF DEPARTMENT

Fourth F R C. S.No.159.

KERALA AGRICULTURAL UNIVERSITY

Rice Research Station, Moncompu.

Faculty of Agriculture Department of Agrl. Botany

- 1. Name of Research Centre : Rice Research Station, Moncompu
- 2. Project Number : AG.1.5. Bot 18(ii)
- 3. Title of the Project : Brown Plant hopper resistant variety trial.
- 4. Name(s) and designation of:-
 - a) Associate(s) : 1. N. Remabai, Jr. Instructor.
2. K. Balakrishna Pillai, Asst. Professor.
 - b) Project Leader : S. Sukumaran Nair, Asst. Professor.
- 5. Objective : To evaluate the comparative performance of the Brown Plant Hopper resistant cultures of rice.
- 6. Practical utility:-

The test varieties supplied by AICRIP are reported to be resistant under laboratory tests. If they prove their resistance under field conditions at Moncompu, their BPH resistance can be conformed and suitable variety for the locality can be selected.

7. Short review of literature:-

The AICRIP, Hyderabad has selected the station as one of the testing centres to evaluate the cultures developed by them against BPH as there is an area endemic to the pests. 49 varieties have been supplied by them for study and are to be tested during the Punja crop seasons of 1978-79. During the year 1977-78 also 36 varieties were studied and the data were supplied to the AICRIP.

8. Technical programme:-

- Lay out : 7 x 7 single lathice
- Replication : 2
- Test varieties : 49

(contd...2)

- 65 -
: 2 :

- Check varieties : Jaya and MR 1523
Level of fertilizer) 120:50:50 kg NPK/ha.
Plot size : 1.6 x 4.0 M.
Spacing : 15 x 15 cm.
9. Date of start : October 1978
10. Likely date of completion: March, 1979
11. Additional facilities required) Nil
12. Approximate cost : Rs.500/-
13. Signature of :-

FRC S.No.160.

KERALA AGRICULTURAL UNIVERSITY

Department of Agricultural Chemistry

1. Project No. :AG.1.18.Che.6(iii)
2. I.C.A.R. Code No. :
3. Name of the University : Kerala Agricultural University,
Mannuthy.
4. Title of the project : Study of the factors governing
the response of rice to phosphate
application in Kerala Soils.
5. Name and designation of the
Principal Investigator : M.M.Koshy,
Professor of Agrl. Chemistry.
6. Names and designation of
Associates. : 1. Abdul Hameed, Asst.Professor.
2. S.Kabeerathumma, Jr.Instructor.
7. Location of the Research
Project : College of Agriculture, Vellayani.
8. a) Objective : The response of rice to phosphatic
fertilizers is not consistent in
different parts of Kerala. There
are reports of response from some
areas, while no response is reported
from some other regions. One
reason for this is that phosphorus
is present in the form of Fe & Al
phosphates which becomes slowly
available to the crop. There is
a dynamic equilibrium between the
available and nonavailable forms of
P in the soil so that when the
available form of P gets depleted by
crop removal, a fresh quantity
passes on from the less available to
the more available form. The
object of the present project is to
investigate in greater detail the
availability of native and added
phosphates to the rice crop.
- b) Practical utility : A knowledge of the exact conditions
under which rice responds to P will
help us to make more specific
recommendations regarding the
application of phosphatic fertilizers.

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9. Technical programme : 1. Review of the experiments on phosphate application and identification of areas having response, as well as no response to phosphorus.
2. Collection of soil samples from the above representative areas and fractionation of P into available, Fe & Al phosphates etc.
3. Correlation of Fe & Al phosphate in soils and uptake P by rice in pot culture experiments.
4. Depletion of available P in soils by successive extractions and studying the release pattern.
10. Date of start : 1978
11. Likely date of completion : 1980
12. Additional facilities required : Nil
13. Approximate cost : Rs.1,000/=
14. Signature :

Sd/-
Project Leader

Sd/-
Head of Department

Sd/-
Director of Research.

Fifth FRC

S.No.175

KERALA AGRICULTURAL UNIVERSITY
(Main Campus - Vellanikkara)

Faculty of Agriculture

Department of Chemistry

1. Name of the Research centre: Agricultural College, Vellayani.

2. Project No. : AG.18 Che.11(VI)

3. Title of Project(This should indicate the nature of work) : A comparative study of different methods of applications of zinc on yield and nutrition of paddy.

4. Name(s) and designation of:

(a) Project leader : S.Kabeerathumma, Junior Instructor.

(b) Associate/s : Dr.M.M.Koshy

5. Objectives

6. Practical utility

: In a field experiment at Vellayani it was found that application of 10 Kg Zn $So_4 \cdot 7H_2O$ along with 55 kg of N to rice variety was equal to or rather better than applying 70 kg N per hectare for the same variety. And in another experiment at Agronomic Research Station, Chalakudy it has been reported that presoaking seeds of rice variety Triveni for eight hours in a 2% solution of zinc sulphate recorded an increase grain yield. There are also varying reports regarding foliar application of zinc as well seedling dip in zinc sulphate solution. Hence an experiment is planned to compare all these four methods of application of zinc to rice variety Triveni first in a pot culture trial followed by a field experiment.

7. A short review of literature

: Though the rate, time and method of Zn application vary according to variety, soil and local environment the two most common methods of Zn application are treatment of transplant seedling and soil treatment (Mikkelson and Shion Kuo, 1976) suspension of ZnO in the range of 2 to 4% are suggested by IRRI(1970) depending upon severity of Zn deficiency and varietal requirements.

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8. Technical programme (in brief):

I. A pot culture experiment is planned in Kayal soil of Vellayani with the following treatments.

- Levels of N - 55 kg/ha and 70 kg/ha
- Mode of application of zinc
- 1. Presoaking of seeds in 2% solution for 8 hours.
 2. Dipping seedling for 8 hours in 2% zinc sulphate solution before planting.
 3. Soil application zinc sulphate at 10 kg/ha.
 4. Soil application of zinc sulphate at 20 kg/ha.
 5. Foliar application of zinc at 5 kg/ha.
 6. Foliar application at 10 kg/ha.

Replications 4

Total pots 48

II. After completion of pot culture experiment a field trial will be conducted with the best treatments obtained from the pot culture experiment.

9. Likely date of start : March 1977

10. Likely date completion : March 1978

11. Additional facilities required :

12. Approximate cost : Rs. 3,300/=

13. Signature of :

Sd/-
Project Leader

Sd/-
Head of Department

Sd/-
Director of Research

KERALA AGRICULTURAL UNIVERSITY

1. Project No. : AG.1.18.Che.13(ii)
2. ICAR Code No. :
3. Name of the University : Kerala Agrl. University, Mannuthy.
4. Title of the Project : Study of the factors governing the response of rice to liming in Kerala.
5. Name & Designation of the Principal Investigator : P.A.Korah, Asst. Professor of Agrl. Chemistry.
6. Name & Designation of the Associates : 1. Alice Abraham Asst. Professor.
2. M.M.Koshy, Professor of Agrl. Chemistry.
7. Review of literature : The results of experiments conducted to different parts of Kerala have not always been consistent.

Dr. Gopalakrishnan (1973) has reported that application of lime at 500 kg/ha gave an increased yield of 20 - 30% in rice. During 1961-66 the Department of Agrl. Chemistry, College of Agriculture, Vellayani conducted a series of liming experiments in Kuttanad and found that ~~liming results and found~~ that liming resulted in increased rice yields. Kabeerathumma (1969) has reported that the optimum dose of lime for maximum efficiency is half the lime requirement for Karapadam soils and full lime requirement for Kari soils of Purakad and Ambalapuzha.

However the trial conducted at Model Agronomic Research Centre, Karamana failed to record any significant effect for liming on rice yield. Similarly trials conducted in cultivators fields in Trivandrum, Quilon, Trichur and Malappuram districts also did not give any response to applied lime. From the Rice Research Station, Moncompu also it is reported that rice does not show any response to lime application. Kabeerathumma (1975) reported significant decrease in yield due to increased rates of lime application in soils of Pattambi.

8. Location of the Research Project : College of Agriculture, Vellayani.
9. a) Objective : Nearly 90% of the soils in Kerala are acidic in reaction. Liming at the rate of 600 kg/ha has been recommended as a management practice on the basis of some experiments conducted in the Kari lands and some other areas of the Kuttanad region. But of late, there are reports of no response to liming from the research station Moncompu and the Agronomic Research Station, Karamana. Therefore, it is necessary to investigate in detail the conditions under which the rice will respond to lime. Hence, the present project.
- b) Practical utility : If the exact conditions under which rice responds to liming are known, it would be possible to make liming recommendations more location specific.
10. Technical programme : 1. Review of the liming experiments conducted in Kerala and Identification of areas having response as well as no response to liming.
2. Collection of soil samples from the above representative areas and study of their characteristics such as pH of dry and wet samples, CEC extractable Al, Ca, Mg lime requirement etc.
3. Correlation of the above characteristics with response of rice to lime.
11. Date of start : 1978
12. Likely date of completion : 1980
13. Additional facilities required : Nil
14. Approximate cost : Rs.1,000/=
15. Signature of:

Sd/-
Project Leader

Sd/-
Head of Department

Sd/-
Director of Research.

KERALA AGRICULTURAL UNIVERSITY

1. Institute code No. : AG.1.1.Che.14(i)
2. ICAR code No. :
3. Name of Institute : Kerala Agricultural University,
Rice Research Station, Pattambi.
4. Title of the Project : Effect of Azotobacter inoculation
of rice.
5. Principal Investigator : T.F.Kuriakose, Associate Professor
(Agronomy)
6. Associates : R.R.Nair, Assistant Professor(Agro.)
N.Saifuddeen, Jr.Instructor, Pattambi
7. Location : Pattambi
8. a) Objective : Azotobacter is a source of natural N
enrichment in soils. It improves
nitrogen nutrition of plants resulting
in better growth. It is also associated
with the synthesis of complex biolo-
gically active compounds which stimulate
the growth of plants. The beneficial
effects of Azotobacter increase when
it actively multiplies in the rhizosphere
of living plants. The present study is,
therefore, taken up to find out the
effect of Azotobacter inoculants on plant
parameters and yield characteristics of
rice.
- b) Practical Utility : If found effective, considerable savings
can be effected on the cost of manuring.
9. Technical programme :
Design : RBD : Replication:3
Treatments
 1. Azotobacter culture I + Fertilizer N at 100%
 2. Azotobacter culture II + Fertilizer N at 100%
 3. No azotobacter + Fertilizer N at 100%
 4. Azotobacter culture I + Fertilizer N at 75%
 5. Azotobacter + Fertilizer N at 75%
 6. No.Azotobacter + Fertilizer N at 75%
 7. Azotobacter culture I + Fertilizer N at 62.5 %
 8. Azotobacter culture II + Fertilizer N at 62.5%
 9. No azotobacter + Fertilizer N at 62.5%

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-73-

N dose : 90 kg/ha
Variety : Jaya
1. Panicles/m
2. Panicle weight
3. Grain yield.
4. Soil and plant analysis.

10. Date of start : November, 1977
11. Date of completion : October, 1979
12. Finance : ICAR
13. Approximate cost : 4000/=

14. Signature of :

Sd/-
Principal Investigator

Sd/-
Head of office

- 75 -
Minor treatment

- 1) Spraying trace elements (combination of Zn, Mn, Cu, B)
- 2) Spraying benlate 0.1%
- 3) Spraying agromycino 500 ppm.

9. Date of start : 1-9-1977
10. Likely date of completion : 31-8-1979
11. Additional facilities required : Nil
12. Approximate cost : Rs.2,000/=
13. Signature of :

Sd/-
Project Leader

Sd/-
Head of Department

Sd/-
Director of Research

Third FRC.

KERALA AGRICULTURAL UNIVERSITY

Faculty of Agriculture : Department of Entomology

1. Name of the research centre: Rice Research Station,
Muncompu
2. Project No Ag.15 Ent 2 (ii)
3. Title of project : Methods of soil application
of carbofuran against paddy
pests.
4. Names and designation of :
 - a. Project leader : K. Balakrishna Pillai, Asst.
Professor (Ent.)
 - b. Associates : Dr. K.V. Mammen, Associate
Professor (Ent.)
5. Objective : Carbofuran is widely used for
control of rice pests. This
is usually applied to soil
(broadcast) in the form of
granules. A broadcast appli-
cation may entail loss of in-
secticides as the whole of
the doze applied does not
reach the root zone. The pre-
sent proposal is hence needed
to workout the methods of
placement of insecticides in
soil to ensure maximum absorp-
tion by the roots and to pre-
vent a loss of the toxicant.
6. Practical utility : The results obtained will help
in evolving suitable methods
for placement of carbofuran
which apart from giving effe-
ctive control will also help
in reducing quantity of pesti-
cide needed.
7. A short review of litera- : Placement of insecticides
ture near the root zone soon after
planting had given satisfact-
ory control of the pest for
a period of 100 days at IRRI
Philippines. Insecticides
were applied to the root zone
using paper capsules and gela-
tin capsules and also in the
form of tablets or granules.
The feasibility of applying
fertilizer and insecticides
together using the mud ball
technique provided insect
control, similar to that when

they were placed in the root zone. There was no antagonistic or synergic effect.

8. Technical Programme : Replicated field experiments in RBD will be laid out with the following treatments.

Treatments:

1. Mudball application
 2. Cowdung ball
 3. Oilcake bolls
 4. Paper bolls
 5. Broadcast application (Control)
- Plot size. 30 sqm. Rep. 4
Test variety. Jaya

Observation on population counts and the extent of damage of different pests will be taken at fortnightly intervals. Yield data will also be recorded.

9. Date of start : December 1977
10. Likely date of completion : March 1980
11. Additional facilities required : Nil
12. Approximate cost : Rs. 3500/- for 3 seasons.
13. Signature of

Sd/-
Project leader

Third FRC

Sd/-
Head of Department

S No. 212

Director of
Research.

KERALA AGRICULTURAL UNIVERSITY

Faculty of Agriculture : Department of Entomology

1. Name of Research Centre : Rice Research Station, Moncompu
2. Project No. : Ag.1.5 Ent.3 (i)
3. Title of Project : Studies on the disease causing organisms of insect pests of paddy.
4. Objective : Microbial pathogens like fungi, bacteria and viruses are associated with insects causing diseases among them. Some of these control agents can be utilised for applied microbial control of pests especially in pest management programmes. No information is available on the disease of rice pests in the Kuttanad and the pathogens causing them. The present project is hence proposed to identify the different diseases of the important paddy pests and the pathogens causing them.
5. Name and designation of
 - a. Project Leader : K.P. Vasudevan Nair, Asst. Professor
 - b. Associate : Dr. K.V. Mammen, Associate Professor
 - Dt. K.M. Rajan "
6. Practical Utility : Information gathered under this project will help in understanding the disease complexes of rice pests based on which further work on utilisation of virulent pathogens if, any can be formulated.
7. A short review of literature : Not much work has been done on the use of pathogens for the control of insect pests in our country, especially in the case of rice pests. A few cases of virus infections in rice pests have been reported. These include the occurrence of nuclear polyhedrosis in rice swarming caterpillar and granuloses in rice leaf roller and rice swarming caterpillar. But no detail studies have been conducted on the field use of these virus pathogens. Examples where biological control

agents are shown to be of potential use in rice pest control include Bacillus thuringiensis against rice leaf roller and Cephalosporium lecani against BFH

8. Technical programme : Specimens of the infested stages of the pests will be collected from farmers fields periodically and examined for the disease infection. The nature of the pathogens involved will be ascertained by appropriate pathological methods.
9. Date of start : December, 1977
10. Likely date of completion : March 1980
11. Additional facilities required : Ultra centrifuge has to be purchased
12. Approximate cost : Rs.2500/-
13. Signature of

Sd/-
Project Leader

Sd/-
Head of Department

Director of
Research.

Third FRC. S No. 215.

PROFORMA FOR RESEARCH PROJECT PROPOSAL

Faculty of Agriculture: Department of Entomology

1. Name of the Research Institute/Centre : Rice Research Station, Kayamkulam
2. Project No. : Ag. 1.6 Ent. 6
3. Title of the Project : Studies on the biology, binomics & Control of Rice mealy bug Ripersia oryzae
4. Name and designation of the
 - a. Project leader : T. Nallakumari, J. Sankar
 - b. Associate : Sri. A. E. S. Kurup, Associate Professor.
5. Objectives : The rice mealy bug R. oryzae is a dry season pest of paddy. The attack causes reduced growth & yellowing of the crop. No information is available on biology & Binomics of this pest in Kerala. Suitable control measures also have not been worked out so far. The present project is hence proposed to undertake the studies on these aspects.
6. Practical Utility : The results obtained will help in keeping the pest under control by appropriate management practices.
7. A brief review of literature : The rice mealy bug occurs as a serious pest in Tamil Nadu and as a minor pest in Andhra Pradesh, Mysore, Orissa, Madhya Pradesh, West Bengal. Biology of the pest has been worked out in brief 5 weeks. Insecticides like parathion & diazinon have been reported to control the pest. Cherman et. al 1937 Nair 1975.
8. Technical programme :
 1. Life cycle of the pest will be studied on potted plants
 2. Seasonal occurrence of the pest in the field will be recorded
 3. Parasites & Predators associated with the pest in field will be studied.

4. Relative susceptibility of the common cultivated varieties of Rice, to infestation by the mealy bug will be assessed by pot culture studies.
5. Efficacy of different insecticides in controlling the pest will be assessed.

9. Date of commencement : April '77
10. Likely date of completion : March '79
11. Facilities required .
12. Approximate cost : Rs.1000/-
13. Signature of

Sd/-
Project leader

Sd/-
For Head of
Department

Director of
Research.

Third FRC. S. No.219.

KERALA AGRICULTURAL UNIVERSITY

RICE RESEARCH STATION--MANGALAM

Faculty of Agriculture : Department of Entomology

1. Name of Research Centre : Rice Research Station, Mangalam
2. Project No. : Ag. 1.5 Ent. (10) (ii)
3. Title of the project : Storage pests of paddy and their control, in Kuttanad.
4. Name of project leader: Dr. K.V. Mammen, Assoc. Professor and Associate : K. Balakrishna Pillai, Asst. Professor
5. Objective :

In the Kuttanad which is one of the major rice producing tracts of the state, it becomes necessary to store paddy for periods varying from 6 to 8 months both for seed purposes and for consumption. Reports were being received from the farmers about the deterioration of paddy under storage. On a preliminary study it has been observed that the stored paddy is very often attacked by various storage pests such as the grain moth, Rhizopertha beetles and the rice weevil. There is no precise information about the infestation pattern of the different pests, their relative importance as pests, the source of their infestation and on the methods of control. The present project is hence proposed to undertake objective studies on these different aspects of the problem.

6. Practical Utility:-

These studies will help in evolving suitable prophylactic and curative measures for the effective protection of stored paddy insect from infestation and damage.

7. Review of literature:-

No efforts have been made in the past to study the storage pest problems of Kuttanad. Since Kuttanad belongs to unique agroclimatic zone, different from the rest of the state, it is necessary to undertake studies in these lines.

8. Technical programme:-

1. Studies on pest infestation and estimation of damage caused by them.

Representative samples of stored paddy will be collected from the farmers granaries from different locations in Kuttanad, at monthly intervals commencing from the time of storage for 6 months and counts of insects and damaged grains will be taken. Moisture content of the grains will be determined at each occasion.

Other details such as variety of rice, chaff contents other extraneous matters etc. also will be recorded.

2. Control of storage pests of maddy using different insecticides.

An experiment with the following treatments will be conducted on rice stored in wooden cubicles.

Lay out

RLD with 4 replications.

Treatments:

1. Malathion 0.1% spray covering the entire internal surface of the cubicle before storage.
2. Malathion 0.1% spray inside the cubicle before storage and on the surface of gunny bags used for covering the grains after storage.
3. Lindane 0.05% spray covering the entire internal surface of the cubicles before storage.
4. Lindane 0.05% spray inside the cubicle before storage and on the surface of the gunny bags used for covering the grains after storage.
5. DDVP 0.1% spray covering the entire internal surface of the cubicle before storage.
6. DDVP 0.1% spray inside before storage and on the surface of gunny bags used for covering grains after storage.
7. Endosulfan 0.1% spray covering the entire internal surface of the cubicle before storage.
8. Endosulfan 0.1% spray inside before storage and on the surface of gunny bags used for covering grains after storage.
9. Date of start : May, 1977
10. Likely date of completion : March, 1979
11. Additional facilities required : Wooden cubicles have to be purchased.
12. Approximate cost : Rs.500/-
13. Signature of the project Leader : Signature of the Head of the Department.

Third FRC S.No.231.

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KERALA AGRICULTURAL UNIVERSITY

Faculty of Agriculture : Department of Entomology

1. Name of Research Centre : RICE RESEARCH STATION, MONCOMPU
2. Project No. : AG.1.5 Ent. 1o (iii)
3. Title of Project : Susceptibility of different varieties of paddy to infestation by storage pests.
4. Name and designation of
a. Project Leader : K. Balakrishna Pillai, Asst. Professor (Ent)
Dr. K.V. Mammen, Assoc. Professor (Ent.)
S. Sukumaran Nair, Asst. Professor (Bot.)
5. Objective : Studies undertaken in previous years in this state (Agriculture College, Vellayani) have shown that different varieties of paddy show different degrees of susceptibility to insect pests. Farmers of Kuttanad also have reported that while some of the new varieties get spoiled under storage rapidly while others do not. Since information on the relative susceptibility of the different newer paddy strains to insect infestation is lacking the present project is proposed.
6. Practical utility : Information on the susceptibility of different paddy varieties cultivated in Kuttanad will help in selecting suitable varieties for cultivation and in taking precautionary steps to protect the grain under storage. Further the resistant/tolerant varieties can be used as breeding material for evolving newer strains with this attribute also.
7. A short review of literature : Abraham & Nair (1966 and 1968) have done some work on susceptibility of different Pattambi varieties to infestation by grain moth. Since then no information on the varietal susceptibility of different paddy strains available in Kerala to infestation

by storage pests has been gathered. The experiment will be laid out in storage conditions.

Design RLD with 3 rep,
varieties: 25

500 gms of each test variety will be dried uniformly and kept in separate containers in the store and subjected to infestation by storage pests. Sample from each test variety will be drawn from the store upto six month. Observation on count of insects, percentage of grain infested, difference in grain weight, and the moisture percentage will be recorded.

- 9. Date of start : August 1977
- 10. Likely date of completion : March 1979
- 1. Additional facilities required : Nil
- 12. Approximate cost : Rs.500/-
- 13. Signature of

Sd/-

PROJECT LEADER

Sd/-

HEAD OF DEPARTMENT

DIRECTOR OF
RESEARCH.

Third FRC.

KERALA AGRICULTURAL UNIVERSITY

Faculty of Agriculture: Department of Entomology

1. Name of the Research Centre : Rice Research Station, Moncombu
2. Project No. : Ag. 1.5 Ent. 11 (iv)
3. Title of Project : Collection and identification of waddy nests and their natural enemies in Kuttanad.
4. Name(s) and designation of
a. Project Leader : Radhakrishnan, Jr. Instructor
Dr. K.V. Mammen, Assoc. Professor
K. Balakrishna Pillai, Assistant Professor.
5. Objective : Our knowledge on the nests of waddy in the Kuttanad is based on studies under taken more than 22 years ago in a research station at Pallom. Due to changes in the pattern of cultivation insect infestation observed also has changed a great deal. For example in the past the only nest of major importance was the rice swarming caterpillar. At present major nests of this region consist of a number of species including the new comers like the whorl maggot and brown plant hopper. Rice gall fly which was not recorded in Kuttanad as a pest in the past has also made its appearance. It is necessary to understand fully the nature of the nest complex in its entirety, so that adequate criteria for the nest management can be worked out. This project is hence proposed to undertake studies on the nest complex associated with waddy in Kuttanad.
6. Practical Utility : The informations gathered on nests associated with rice with reference to their identities, relative importance, seasonal occurrence and natural enemies will help in evolving appropriate nest management systems for Kuttanad.

7. A short review of literature : Studies on the biology and control of rice swarming caterpillar were made at Moncombu and at Pallom in Kuttanad from 1945 to 1954 under a scheme implemented by the University of Travancore. No studies were made on any other nest as they were then not important.
8. Technical Programme : Paddy crop will be frequently examined for insects associated with it. They will be collected and reared in the laboratory. The identity of the already known species will be checked and of new species ascertained by referring to Zoological Survey of India or to other experts in systematics. Biology of these species of which no information is available will be worked out. The parasites and predators associated with different nests will also be collected and identified. Observation on the seasonal occurrence of the different nests and their natural enemies will also be recorded.
9. Date of start : June 1977
10. Likely date of completion : March 1980
11. Additional facilities required :- Laboratory rearing jars have to be purchased at a cost of Rs.500/-
12. Approximate cost : Rs.1500/-
13. Signature of

Sd/-

Project leader

Sd/-

Head of Department

Director of
Research

KERALA AGRICULTURAL UNIVERSITY

Faculty of Agriculture : Department of Entomology

1. Name of Research Centre : Rice Research Station, Moncompu
2. Project No. : Ag. 1.5 11 (vii)
3. Title of the Project : Performance of pre-release cultures M 11-57-5-1 and M4-26-4-2 under protected and unprotected conditions.
4. Names(s) and Designation of
 - a. Project Leader : K.P. Vasudevan Nair
 - b. Associate(s) : Radhakrishnan, K.P.

5. Objectives:-

To study the magnitude of yield loss due to major pests and the reaction of these cultures to major insect pests in comparison with other popular high yielding varieties Jyothi and Jaya.

6. Practical Utility:-

A knowledge on the reaction of these pre-release cultures to major insect pests and an assessment of the production potential of these cultures under protected and unprotected condition in comparison with the popular high yielding varieties Jyothi and Jaya is essential for recommending these cultures in Kuttanad.

7. A short review of literature:-

Nil

8. Technical Programme:-

Design - Split plot Rep.4.

Plot size - Sub plot 5 x 4 M spacing 20 x 15 cm.

Treatments:-

- a. Major
 1. Protected
 2. Unprotected
- b. Minor 4 varieties (2 pre-release cultures two popular high yielding Jyothi and Jaya).

Plant Protection in protected field:-

1. Nursery application of phosphamidon 0.25 Kg ai/ha on the 12th day.
2. Seedling root dip in 0.02% Dursban
3. Application of Furadan 0.5 kg ai/ha at 20, 40, 60 DAT.

4. Quinalphos with 0.25 Kg ai/ha against leaf feeders if there is attack.
5. Protection against rice bugs with methyl parathion 0.25 kg ai/ha if necessary.

All treatments will get a uniform dose of 90:45:45 Kg NPK/ha.

9. Date of start : September, 1977
10. Likely date of completion : September, 1980
11. Additional facilities required : Nil
12. Approximate cost : Rs.1,000/-
13. Signature of

Sd/-
Project Leader

Sd/-
Head of Department

Director of
Research.

Third F R C.

KERALA AGRICULTURAL UNIVERSITY

Faculty of Agriculture : Department of Entomology

1. Name of Research Centre : College of Agriculture, Vellayani
2. Project No. : Ag. 1.18 Ent. 13-
3. Title of the Project : Studies on the uptake of systemic insecticide (phorate) by paddy under different levels of irrigation.
4. Name & Designation of
 - a. Project Leader : Dr. N. Mohandas, Associate Professor.
 - b. Associates : 1. Smt. A. Visalakshy, Assistant Professor
2. Smt. T. Nalina Kumari, Junior Instructor.

5. Objectives:

Phorate is one of the systemic insecticides recommended for the control of paddy pests. The effect of different levels of irrigation on the absorption and translocation of this insecticides has not been studied so far. The present project is proposed for undertaking studies on these aspects.

6. Practical Utility:

Information gathered from these studies will help in reducing the wastage of the costly insecticides if any in relation to irrigation methods.

7. A short review of literature:

The persistence and degradation of a systemic insecticide in soil depend to a great extent on the field moisture condition. Harris (1964) and Harris and Maurek (1967) have shown that organo phosphorous compounds are strongly insectivated in dry soils. Influence of soil moisture on desiccation of phorate in soil and mustard crop is studied by Agnihothi et al (1975). But no studies have been conducted under Kerala conditions.

8. Technical programme:

The insecticides will be applied 3 weeks after transplanting and at the boot leaf stage at the rate of 12.5 kg./ha. The application will be done (1) at field capacity, 2. at 3" water and 3. after application water will be let in and kept at 3" level. Plant samples will be

collected 1 day 3 days and 5 days after application and subsequently at 5 days intervals and translocated insecticides will be assessed by chemical and bioassay methods. Plant sampling will be continued till no residue is detected in the plants.

9. Date of start : July - August, 1977
10. Likely date of completion : August, 1978
11. Approximate cost : Rs. 1500/-
12. Additional facilities: Nil
13. Signature of

Sd/-

Sd/-

PROJECT LEADER

HEAD OF DEPARTMENT

DIRECTOR OF
RESEARCH.

Third F R C S No. 24o.

KERALA AGRICULTURAL UNIVERSITY

- Faculty of Agriculture: Department of Entomology
1. Name of the Research Institute : Rice Research Station, Kayamkulam.
 2. Project number : Ag. 1.6 Ent. 13
 3. Title of the project : Insect infestation pattern on Rice crop in the Onattukara area with special reference to Rice stem borer.
 4. Name and designation of the
 - a. Project leader : T. Nalinakumari
Junior Instructor.
 - b. Associate : Sri. A. E. Kurun, Associate Professor
 5. Objectives : The Onattukara rice tract (sandy rice tract) as an agro eco system is different from other rice tracts of Kerala. As such the pest problem of the area also are different from other tracts. But a precise picture of the different insect, involved and their seasonal occurrence is not available. Rice stem borer is a regular major pest of the area. But the factors governing the population fluctuation of this pest is not known. The present project is hence proposed.
 6. Practical Utility : The results obtained from these studies will help in understanding the nature of the pest problems of rice and to undertake timely control operation.
 7. A brief of review of literature : No work in this aspect relating to the Onattukara tract has been done before.
 8. Technical Programme :
 1. Light trap will be set up near the paddy fields and the pests collected, (the stem borer, gall flies etc) will be recorded daily.
 2. The incidence of leaf roller caterpillars, dead heart, white earhead rice case work, Hisma, mealy bug etc. in plots selected as per statistical norms will be recorded at

regular intervals plots during
the different seasons.

9. Date of commencement : April 1977
10. Likely date of completion : March 1979
11. Facilities required :
12. Approximate cost : Rs. 500/-

Sd/-
Project leader

Sd/-
For Head of Department

Director of
Research.

Third F R C.

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KERALA AGRICULTURAL UNIVERSITY

1. Institute code No : AG.1.1 Path 1 (i)
2. ICAR code No : , 2
3. Name and address of the Res.
Institute /Centre: : Rice Research Station, Pattambi.
4. Title of the Project : All India Coordinated Rice Improvement Project.
Title of the Problem : Elite variety trial.
5. Name & designation of principal investigator : N.Gopalan, Associate Professor of Plant Pathology.
6. Name (s) and designation of associate (s) and establishments on which borne: : S.N.Shanmughom. Assistant Professor.
a) Whole time b) Part time.
7. Location of the Research project : Rice Research Station, Pattambi.
8. a) Objectives: : To study the comparative performance of multiple resistant breeding lines.
b) Practical utility : Evolving high yielding varieties with multiple resistance.
9. Technical programme : Twenty multiple resistant rice varieties received from AICRIP, Hyderabad will be tested in this station for their resistance towards various stresses. Yield potential will be estimated to select high yielding.
Lay out: 20 x 3 RBD
Plot size: 12 sq.m.
Treatments: 20 IEF cultures with multiple resistance.
10. Date of start : October, 1977.
11. Likely date of completion : March, 1978.
12. Estimated man months : 2
13. Facilities required : Nil
14. If financed by an organization other than the institute
a) Name of the financing organization : ICAR
b) Title of the project (if the project forms a part of a longer project) : AICRIP
15. Approximate cost : Rs. 1,000/-
16. Signature:
Principal Investigator Head of Division Director of Research
Fifth FRC : SNo.242.

KERALA AGRICULTURAL UNIVERSITY

1. Institute code No: - AG. 1.1. Path 1 (ii)
- 2 ICAR code No: - 000
3. Name and address of the Research Institute/Centre - Rice Research Station, Pattambi.
4. Title of the Project : - All India Coordinated Rice Improvement Project.
Title of the problem - Screening for disease resistance.
5. Name and designation of principal investigator: - N.Gopalan, Associate Professor of Plant Pathology.
6. Name (s) and designation of Associate (s) and Establishments on which borne: - S.N.Shanmughom, Assistant Professor
 - a) Whole time
 - b) Part time.
7. Location of the Research Project : Rice Research Station, Pattambi.
8. a) Objectives: - To screen varieties, cultures and breeding materials for diseases resistance, especially blasts, sheath blight and brown spot.
b) Practical utility: A permanent solution for disease problem.
9. Technical programme:
Varieties: Cultures and breeding materials received from the AICRIP and IRRI will be tested here for their resistance. Major diseases like blast, sheath blight brownspot and BLB. Blast resistance will be tested in uniform blast Nursery and other diseases in the main field, planting the materials in single rows alternate with susceptible varieties. The disease will be induced by giving congenial environmental conditions for disease development and by providing high inoculum potential. The resistance will be evaluated by using standard evaluation system for rice. During this mundakam season the following number of entries will be tested.
Screening for blast: 476 entries.
Screening for sheath blight : 154 entries.
10. Date of start : February 1978
11. Likely date of completion : Five
12. Estimated man months ; Nil

13. Facilities required:

14. If financed by an organization

other than the institute:

a) Name of the financing

organization - ICAR

b) Name of the financing

Title of the project

(if the project forms a

part of a longer project) - AICRIP

15. Approximate cost:

- Rs.2,000/-Institute's Project.

16. Signature of:

Principal Investigator

Head of Department

Director of Research.

Fifth FRC.

- SNo. 243 .

KERALA AGRICULTURAL UNIVERSITY

1. Institute Code No :- AG.1.1.Path .2 (ii)
2. ICAR Code No :- 119
3. Name and address of the Research Institute/Centre :- Rice Research Station, Pattambi.
4. Title of the Project :- Screening for disease resistance.
5. Name and designation of principal investigator :- S.N.Shanmughan, Assistant Professor of Plant Pathology.
6. Name (s) and designation of Associate (s) and Establishments on which borne :- N.Gopalan, Associate Professor (Plant Pathology)
 - a) Whole time
 - B) Part time.
7. Location of the Research Project :- Rice Research Station, Pattambi.
8. a) Objectives :- To locate disease resistance in rice varieties of National and International breeding materials and varieties.
 - b) Practical utility :- Control of diseases.
9. Technical Programme.
 - Varieties :- Fifty numbers of Blast resistant selection from International Blast nursery and 83 numbers from National screening Nursery.
 - Lay out : 5 rows of each variety (2m long) alternated with susceptible check variety.
 - Fertilizer :- 150 M (3 split doses) 50 P and 50 K.
 - Inoculations: :- Culturing the sheath blight organism on rice stem pieces and placing them amidst the tillers at active tillering stage.
 - Observations :- Disease status will be evaluated using International evaluation system (Score 0-9)
10. Date of start :- July 1978
11. Likely date of completion :- November, 1978.
12. Estimate man months :- 3
13. Facilities required :-
14. If financed by the organization other than the Institute:-
 - a) Name of the financing organization : AICRIP
 - b) Title of the Project (If the project) :
15. Approximate cost :- Rs.600/- Institute's Project.
16. Signature of Principal Investigator. Head of Division. Director of Research.
SNo :- 249.

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KERALA AGRICULTURAL UNIVERSITY

1. Institute Code No :- AG.1.1 Path.2.(iv)
2. ICAR Code No :-
3. Name and address of the Research Institute/Centre :- Rice Research Station, Pattambi.
4. Title of the project :- Chemical control of Rice Disease.
Title of the problem :- Chemical control of sheath blight disease of rice.
5. Name and designation of principal Investigator N.Gopalan, Associate Professor of Plant Pathology.
:-
6. Name (s) and designation of Associate (s) and Establishment on which borne S.N.Shanmughom, Assistant Professor of Plant Pathology.
:-
a) Whole time b) Part time.
7. Location of the Research Project :- Rice Research Station, Pattambi.
8. Objective : To evaluate few promising fungicides in controlling sheath blight disease.
b) Practical utility :- Control of sheath blight disease.
9. Technical programme.
Variety :- IET 4141; susceptible to sheath blight.
Fungicides: T1 Bavistin - 1 g/l (0.05% a.i)
T2 MBC - " (, ,)
T3 Derosal - 0.9/l (, ,)
T4 Disease check - no spraying + Inoculation
T5 Healthy check - no inoculation.
Layout: :- RBD - Replications : 4
Plot size :- 5 x 3 m.
Fertilizer :- H.150, P.75, K.50
Method of inoculation :- Culturing the organism on rice stem pieces and placing them in the centre of the hill at panicle initiation.
10. Date of start :- July, 1978.
11. Likely date of completion :- October, 1978.
12. Estimated man months :- 1.5
13. Facilities required :-
14. If financed by an organisation other than the Institute:-
a) Name of the financial organization :- AICRIP
b) Title of the Project (if the project forms a part of a longer project) :-.....
15. Approximate cost :- Rs. 500/- Institute's Project.
16. Signature of

Sd/ Principal Investigator
Sd/ Head of Division

Sd/
Director of Research.

KERALA AGRICULTURAL UNIVERSITY

1. Faculty of Agriculture : Department of Plant Pathology.
Name of Research Centre : Rice Research Station, Moncompu.
2. Project No : AG 1.5 Path.2 (vii)
3. Title of the project : Studies on the sheath blight disease of rice.
4. Name (s) and designation:-
 - a) Project Leader : P.Varadarajan Nair, Asst.Professor.
 - b) Associate (s) : Dr.K.M.Rajan, Associate Professor.
5. Objective :
 - 1.To evaluate the efficiency of soil fungicides in controlling sheath blight disease.
 2. To assess the intensity of sheath blight at varying levels of NP and K.
 3. To estimate the loss in yield due to the disease.
 4. To estimate the disease intensity at various levels of PH,moist ure stress and depth of inoculation in soil.
6. Practical utility : To recommend economic control measures of sheath blight disease, which is a serious menace in the locality.
7. Short review of literature : Sheath blight disease of rice caused by Corticium sasakri is quite ~~nerve~~^{severe} in all the rice growing countries. As none of the high yielding varieties show a moderate degree of resistance, many workers have estimated disease intensity in varying fertilizer levels (Luo et al 1963, Inove and Uchino, 1963). Reduction in grain yield to the level of 25% (Hari, 1965) and 27% (Mathai, 1975) have been reported. The casual fungus is predominant in soil. There are reports that soil fungicides are effective against the fungus. The chemical and physical soil changes may also influence the growth and survival of the pathogen .
8. Technical programme in brief:- Field experiment.

Design	: R.B.D
Variety	: Jyothi
Treatment	: 9
Replication	: 3

1. Soil application of fungicides Viz; Thiride, Benlate, Vitavax, Bavistin, PCNB, Captan, Difolatan and Kitozin granules with an untreated control will be done at late tillering stage of the crop. Observations on disease intensity and yield will be recorded.

2. Combinations of NP and K will be tried as per the following rates.

N 1 45 Kgs/ha P1 30 kgs/ ha

N 2 67.5 Kgs/ha P2 45 Kgs/ha

N3 90 Kgs/ha P3 60 Kgs/ha

K1 30 Kgs/ha Design ; R.B.D

K2 45 Kgs/ha Variety ; Jyothi.

K3 60 Kgs/ha Treatment: 27

Combination :

Replication : 3

Observations on disease incidence and yield will be recorded.

Inoculation of crop in varying stages with a viable culture and to observe disease intensity and yield.

Pot Experiment:

1. Assessment of loss in yield due to sheath blight (This part is in progress)
2. To estimate disease intensity PH, moisture and depth of inoculation will be adjusted as follows.

	<u>PH</u>	<u>Moisture</u>	<u>Depths of inoculation</u>
fungus will be placed in petridishes of varying soil conditions and their viability will be tested.	5.0	Field capacity	0cm
	6.0	Saturation paste	10cm.
	7.0	Sub merged	20cm

9. Date of start : 1-9-1977
10. Likely date of completion : 31-3-1980
11. Additional facilities required:
12. Approximate cost : Rs. 5000/-
13. Signature of

SD/	SD/	SD/
Project Leader	Head of Department	Director of Research.
Thir d FRC		
	: 254.	

KERALA AGRICULTURAL UNIVERSITY: MANNUTHY

Programme of Research for Master's Degree.



- Project No : AG.1.1.8.Path .2.(xii)
- Faculty of Agriculture : Department of Plant Pathology.
1. Name of candidate : BABU GEORGE.
 2. Date of Admission and Admission Number : 10-10-1977
: 77-11-28
 3. Name and designation of Chairman, Advisory Committee : Dr.M.Ramanathan Menon, Professor of plant Pathology.
 4. Topic of Research for thesis : The role of Organic amendments on the control of Sheath Blight of Rice.
 5. Objectives : To find out the suitability of using Organic amendments, especially the non-edible oil cakes and industrial waste products like saw dust, Coconut pith etc. for controlling Sheath Blight of Paddy.
 6. Brief review of previous work done on the topic : The role of organic soil amendments in the suppression of soil borne plant pathogens has been emphasised by several workers (Stover, 1962); Huber and Watson 1970; Linderman'70) Successful control of black scurf of potato caused by Rhizoctonia Solani by Pythium aphanidermatum. (Rajan and Singh, 1972) by amending the soil with oil cakes and saw dust has been reported. The effect of different oil cakes and of some agricultural and industrial waste products as soil amendments on infection of rice by (Corticium sasakil were compared). (Rajan and Menon, 1975) some of the products may prove useful in controlling soil borne diseases.
- (Singh, 1968) and soft root of ginger caused

7. Scientific and Practical importance of the Research : The organic amendments have been proved to be useful for controlling many soil borne diseases of crop plants. The plant pathogenic micro-organisms are suppressed by the profuse growth of other saprophytic/ organisms consequent to the addition of amendments and thus helps in checking the diseases. If the soil borne diseases can be checked by this method the use of organic amendments will be more safe and less costly when compared to the use of fungicides.
8. Technical programme :
1. Field experiment: A field experiment will be conducted with the organic amendments, using Jyothi, a susceptible variety of Rice.
 2. Design of the experiment in R.B.D with 3 replications.
 3. The organic amendments are to be added 10-15 days to the soil before planting.
 4. The microbial population in the soil samples will be estimated at five periods.
 - a. before the addition of amendments .
 - b. before planting.
 - c. at the time of tillering .
 - d. at the time of ear head emergence.
 - e. before harvest.
 5. Recording the intensity of infection
 - a. percentage tiller infection.
 - b. Intensity of infection.
 6. Yield of grain and straw will be recorded.
 7. Survival of Pathogen in the amended soil (pot experiment)
 - a. Survival of the pathogen will be determined at different intervals.
 - b. Estimation of microbial population at different intervals.

9. Expenditure and receipts
if any

Cultivation Expresses : Rs. 1,500/-

Fellowship for the student
at the rate of Rs.400/-
per trimester.

: Rs.2,400/-

Total expenditure : Rs.3,900/-

Receipts anticipated Rs. 750/-

10. Location of Research if
outside College Campus

: -----

Sd/

Signature of Candidate.

Sd/

Signature of Chairman.
Advisory committee.

Sd/

Signature of Head of Department.

Signature of Dean.

KERALA AGRICULTURAL UNIVERSITY

1. Institute code No : AG.1.1.Path.3 (i)
2. ICAR Code No : 102
3. Name and address of the
Research Institute/ Centre : Rice Research Station, Pattambi.
4. Title of the Project : Chemical control of rice diseases.
Title of the problem : Chemical control of blast disease
of rice.
5. Name and designation of
principal investigator : N.Gopalan, Associate Professor of
Plant Pathology.
6. Name (s) and designation of
Associate (s) and Establish- : S.N.Shanmughom, Assistant Professor
ments on which borne of Plant Pathology.
a) Whole time (b) Part time.
7. Location of the Research
Project. : Rice Research Station, Patta mbi.
a) Objectives : To evaluate promising systemic fungicide
in controlling blast disease of rice in
endemic areas.
b) Practical utility : Control of blast disease .
8. Technical Programme.
Variety : Blast susceptible variety pusa 2-21-

<u>Fungicides and dosage.</u>	<u>K.T</u>	<u>A.I</u>
T1 Bavistin	0.25 kg/ha	0.5 g/1
T2 Bavistin	0.50 ,,	1.0 ,,
T3 MBC	0.25 ,,	0.5,,
T4 MBC	0.50 ,,	1.0 ,,
T5 Derosal	0.45 ,,	0.4 ,,
T6 Derosal	0.90 ,,	0.8 ,,
T7 Hinosan		0.5 ml/1
78 Hinosan		1.0 ,,
79 Control		

Lay out RBD Replications : 4

Plot size : 5 x 3 m : Spacing: 15 x 15 cm

Fertilizer: 100-120 N

Spray Schedule : sprays at tillering and rapid tillering.

10. Date of start : July 1978
11. Likely date of completion : October 1978
12. Estimated man months : 1.5
13. Facilities required : --
14. If financed by an organisation other than the Institute :
 - a) Name of the financing organization : AICRIP
 - b) Title of the Project (if the project forms a part of a larger project) :
15. Approximate cost : Rs.60/4
Institute's Project.
16. Signature of:

SD/	SD/	SD/
Principal Investigator	Head of Division	Director of Research.

SNo. ; 262.

KERALA AGRICULTURAL UNIVERSITY

- 1. Institute code No : AG.1.1.Path.3 (v)
- 2. ICAR Code No : 055
- 3. Name and address of the Rice Research Station, Pattambi.
Research Institute/ Centre :
- 4. Title of the Project : Rice Blast control by integrated use
of systemic and non systemic fungicides at foliar and earhead stages.
- 5. Name and designation of : V.P.Sukumaradev, Assistant
Principal Investigator : Professor.
- 6. Name (s) and designation of Associate (s) and Establish-
ments on which borne :
a) Whole time (b) Part time
- 7. Location of the Research Project : Rice Research Station, Pattambi.
- 8. a) Objectives : To find out the best treatment
combination of systemic and non-systemic fungicides in controlling rice blast effectively and economically.
b) Practical utility : To evolve a most practical and economic spray shedule for blast control.

9. Technical Programme

From earlier fungicidal trial against rice blast it was observed that Hinosan, Kitazin and Dithane -Z-78 has better effect in controlling leaf blast, whereas, Bavistin has proved to be better in feducing neck blast incidence. Hence it is proposed to layout a trial with these four chemicals, spraying at two stages. (2 foliar + 1 earhead)

Lay Our: 17 x 2 RBD

Variety: Pusa 2-21

Plot size: 5.10 x 2.85M Spacing: 15 x 15 cm

No of plants per plot : 34 x 19 - 646

Basal : 50 N 50 P 50 K

Top dress 25 0 0

25 0 0

Treatments:

- | | | | |
|-------------------------|--------------|------------------------|------|
| 1. Hinosal Foliar spray | | Hinosan Earhead spray. | |
| 2. | -do- | Bavistin | -do- |
| 3. | -do- | Kitazin | -do- |
| 4. | -do- | Dithane Z-78 | -do- |
| 5. | Bavistin | Bavistin | -do- |
| 6. | -do- | Hinosan | -do- |
| 7. | -do- | Kitazin | -do- |
| 8. | -do- | Dithane | -do- |
| 9. | Kitazin | Kitazin | -do- |
| 10. | -do- | Hinosan | -do- |
| 11. | -do- | Bavistin | -do- |
| 12. | do- | Dithane | -do- |
| 13. | Dithane Z-78 | Dithane Z-78 | -do- |
| 14. | -do- | Hinosan | -do- |
| 15. | -do- | Bavistin | -do- |
| 16- | -do- | Kitazin | -do- |
| 17. | Control. | | |

Schedule of spraying:

A total of 3 spraying (2foliar and one earhead will be given. The first spraying will be given, soon after symptom expression.

Observation:

1. Leaf as well as neck blast scores will be recorded before and after each spray.
2. Weight of grains of individuals treatments.
3. The percentage of neck blast on main earhead and tillers till be recorded separately.

10. Date of start : June 1977
11. Likely date of completion : October 1978.
12. Estimated man months : 24 months (4 seasons)
13. Facilities required : Field facilities at Pattambi.
14. If financed by an organization and other than the Institute: Kerala Agricultural University.
 - a) Name of the financing organization:
 - b) Title of the Project (if the project forms a part of longer project) :
15. Approximate cost: : Institute's Project. Rs.1,000/-year.

16. Signature of:

Sd/	Sd/	Sd/
Principal Investigator.	Head Division.	Director of Research.
Second FRC , SNo.266		

KERALA AGRICULTURAL UNIVERSITY

Faculty of Agriculture : Department of Plant Pathology.

1. Name of Research Centre : Rice Research Station,
Moncompu.

2. Project No : AG.1.15 Path:4 (iii)

3. Title of the Project : Screening Varieties and
cultures against Bacterial
Leaf Blight of rice in green
house.

4. Name (s) and designation
of :

a) Project Leader : P. Varadarajan Nair, Assistant
Professor, Plant Pathology.

b) Associate : S. Sukumaran Nair, Assistant,
Professor (B)

5. Objective: To identify varieties and cultures resistant
to Bacterial leaf blight which could be
utilized as donor parents for breeding
programmes.

6. Practical Utility:

In Kuttanad the most popular variety is
jyothy. This has been found to be highly susceptible
for Bacterial Leaf Blight. During the additional crop
season of 1976 symptoms of this disease were noticed in
many parts, but it did not take a serious toll. During
the additional crop season of 1977, the disease has
taken a serious toll and more than 50% of the area
has been seriously affected. It is inevitable that we
have to find out suitable remedial measures for this
malady. Since chemical control measures have not proved
to be complete success, evolving varieties with
resistant genes would be the only solution to tackle
the problem.

7. Short review of literature:

Lot of work has been done at IRRI, AICRIP,
Hyderabad, CRRI, Cuttak, etc. At IRRI they were able
to identify varieties and cultures like OV 85 and ARC 6076.
At AICRIP cultures ICT-4140, IET 3262 and LET 4141 were
identified. At AICRIP they have developed an improved
technique for evaluating resistance of rice varieties
to Xanthomonas oryzae by leaf clip technique which
facilitates rapid screening against the disease.

8. Technical Programme:

The available varieties and cultures of this station
under different breeding programmes will be raised in posts.
Variety jyothy and TN 1 will be used as susceptible checks.
IR 20 and TKM 6 will be included as resistant checks.

Five plants will be raised under each variety/culture in pots. The Plants will be inoculated by the leaf clip technique at the maximum tillering stage (40-60 OAS). Screening will be done based on the standard Evaluation system.

9. Date of Start : 1977 October.
10. Likely date of completion: 1980 October.
11. Additional facilities required : 750 mud pots will have to be purchased.
12. Approximate cost : Rs. 2,000/-
13. Signature of:

Sd/ Project Leader.	Sd/ Head of Department.	Sd/ Director of Research.
Third FRC.		: SNo.274.

KERALA AGRICULTURAL UNIVERSITY

- Faculty of Agriculture : Department of Plant Pathology.
1. Name and Research Centre : Rice Research Station,
Moncompu.
 2. Project No : AG 1.5.Path 4 (iv)
 3. Title of the Project : Control of Bacterial Leaf
Blight of paddy.
 4. Name (s) and designation
of:-
 - a) Project Leader : Dr.K.M.Rajan, Associate
Professor.
 - b) Associates : 1.P.Varadarajan, Nair, Assistant
Professor.
2.S, Sukumaran Nair, Assistant
Professor.
 5. Objective :
 1. To findout an effective control measure against the disease.
 2. To evolve a variety resistant/ tolerant to the disease.
 3. To formulate suitable agronomical practices to check the development of the disease.
 6. Practical utility : Bacterial leaf blight is assuming severity in the locality: Studies on the various aspects will be useful.
 7. Short review of literature: Bacterial leaf blight of rice caused by Lnthamenas oryzae is widespread in all the rice growing countries including India. This was first reported from India by Srinivasan et al (1959). In the Kuttonad tract of Kerala , during the additional crop season of 1977 and Punja season of 1977-78. This disease appeared in a severe form. Srivastava et al (1966) have reported than the losses in grain yield may vary from 6 to 60% depending upon the severity of the disease and the stage at which infection occurs.
 8. Technical programme in brief:
 1. Chemical control:(Field experiment)

Layout : Randomised block designs with seven treatments (spray of batoricides) and 3 replications.
Variety:Jyothi.

Treatments

1. Agricycine 500 g in 300 lit water using high volume sprayer.
2. Agrimycine 250 g in 300 lit water and volume sprayed.
3. Agrimycine 500 g in 300 lit water on the low volume sprayer.
4. Streptocyclene 500 g in 300 lit water using high volume sprayer.
5. Streptocyclene 250 g in 300 lit water using low volume sprayer.
6. Streptocyclene 500 g in 300 lit water using low volume sprayer.
7. Untreated control.

2. Breeding resistant / plant variety

(screen house studies)

All the available cultures in Rice Research Station, Moncompu will be screened.

3. Cultural control (Field experiment)

Lay out: Randomised block design.

Variety: Jyothi.

Treatments: Five ^{levels} of spacing and 3 ^{levels} of nitrogen.

Spacing: 15 x 10, 15 x 15, 20 x 10, 30 x 10, 30 x 15 cm.

Nitrogen: N.60, 70, and 80 Kg/ha

9. Date of start : 1-9-1977

10-Likely date of completion : 31-3-1980

11. Additional facilities required : Nil

12. Approximate cost : Rs.5000/-

13. Signature of:

Sd/

Sd/

Sd/

Project Leader. Head of Department. Director of Research.

Sixth FRC. SNo.275.

KERALA AGRICULTURAL UNIVERSITY

1. Institute code No : AG.1.1 Path Vth (i)
2. ICAR code No :
3. Name and address of the Research Institute/
Centre : Rice Research Station, Pattambi.
4. Title of the project : All India-Co-ordinated Rice Improvement Project.
5. Title of the problem : Effect of manganese on brown spot disease of rice.
5. Name and designation of Principal Investigator : N.Gopalan, Associate Professor of Plant Pathology.
6. Name (s) and designation of associate (s) and establishments on which borne : S.N.Shanmughom, Assistant Professor.
- a) Whole time b) Part time.
7. Location of the Research Project : Rice Research Station, Pattambi.
8. a) Objectives : To find out whether manganese has any effect in controlling the brown spot disease of rice.
- b) Practical utility : To evolve a cheap method for the control of brown spot disease.
9. Technical programme: : Effect of manganese will be tested by applying Mn SO₄. H₂O to the soil.
Lay out : 3 x 8 RBD
Plot size : 24 sq.m
Variety : Benibhog.
Treatments: 1) Control-OMn
2) 5 ppm Mn
3) 10 ppm Mn
10. Date of start : November, 1977
11. Likely date of completion: : March 1978

KERALA AGRICULTURAL UNIVERSITY

1. Institute Code No : AG.1.1 Path Vth (ii)
2. ICAR Code No :
3. Name and address of the Research Institute/
Centre : Rice Research Station,
Pattambi.
4. Title of the Project : Effect of micronutrients on
the incidence of Helminthosporiose of rice.
5. Name and designation of principal investigator : V.P.Sukumara Dev, Assist
Professor.
6. Name (s) and designation of Associate (s) and establishments on which borne. : T.N.Vilasini.
Junior Instructor.
- a) whole time (b) Part time.
7. Location of the Research Project : Rice Research Station, Pattambi.

8. a) Objectives:-

Helminthosporiose of rice (Brown spot disease) is now known to be associated with unbalanced & poor soil conditions especially when silica, potash manganese or magnesium is deficient. In order to study the effect of these elements on the incidence of helminthosporium blight (brown spot) the trial is proposed.

b) Practical Utility:-

To evolve a suitable control measure against the brown spot disease by maintaining the nutrient balance of the soil itself.

9. Technical Programme:

The trial will be laid out as a field experiment and pot culture, simultaneously. The treatments include both soil application and foliar spray.

Layout	= 8 x 4 RBD.
Variety	= IR -5
Plot size	= 5.10 x 3.0M ²
Spacing	= 13 x 20 CM
No of plants(per plot)	= 34 x 15 = 510.
NPK basal	= 50 : 50 : 50
Top	= 25 - -

KERALA AGRICULTURAL UNIVERSITY

RICE RESEARCH STATION, MONCOMPU

Faculty of Agriculture: Department of Plant Pathology

1. Name of Research Centre: Rice Research Station, Moncompu
2. Project No, : AG.1.5 Path 12 (i)
3. Title of the Project : Epidemiological studies on important rice disease in Kuttanad.
4. Name(s and designation of
 - a. Project leader : Dr. K.M. Rajan, Assoc. Professor (Plant Pathology)
 - b. Associate : F. Varadarajan Nair, Asst. Professor (PP)
5. Objective : To study the influence of weather factors on the incidence and severity of different rice diseases.
6. Practical Utility : A knowledge of the above will help in adjusting the planting time and other operations so as to lead to disease escape.
7. Short review of literature : It is widely known that occurrence and severity of any plant disease will be governed to a great extent by the various weather elements existing in a particular locality.
8. Technical Programme : Fort-nightly planting of TN₁ which is highly susceptible to rice disease in the locality will be done continuously. Scoring of the various diseases will be done at fort-nightly intervals based on the standard evaluation system. The weather data will be correlated with the disease score.
9. Date of start : 1976 September
10. Additional facilities required : Nil
11. Approximate cost : Rs.2,500/-
12. Signature of :



Sd/-

Project Leader

Sd/-

Head of Department

Sd/-

Director of Research