The Madras Agricultural Journal

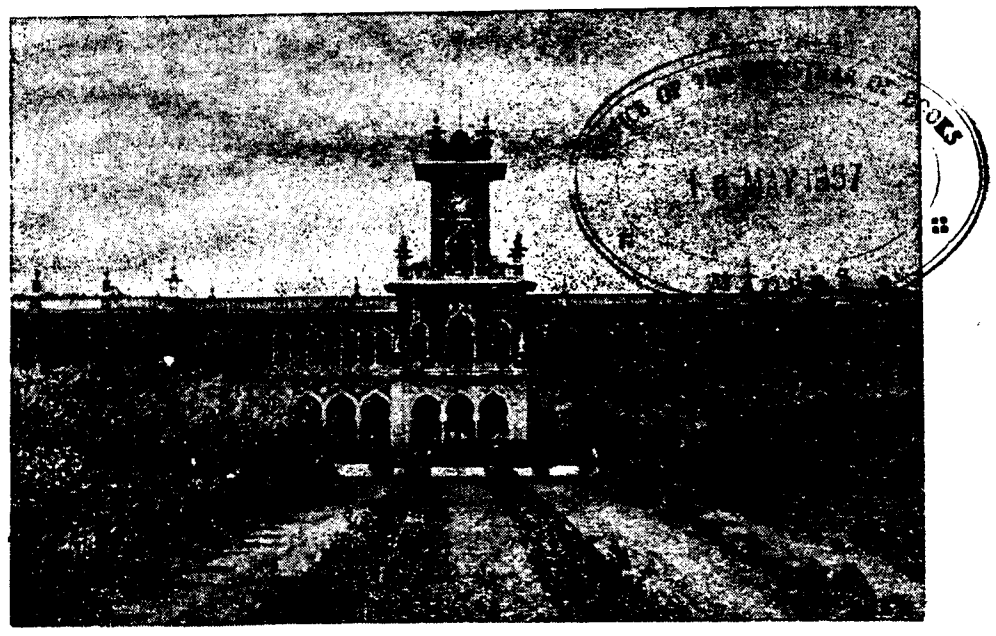
1957 - Feburary

VOL. 44. NO. 2.

Regd. No. M. 5155

Madras Agricultural Journal

Vol. XLIV February 1957 No. 2



AGRICULTURAL COLLEGE AND RESEARCH INSTITUTE, COIMBATORE

Published by

THE MADRAS AGRICULTURAL STUDENTS' UNION,

AGRICULTURAL COLLEGE AND RESEARCH INSTITUTE,

COIMBATORE, S. INDIA.

Annual Subscription.

Inland Rs. 6—0—0

Foreign Rs. 7—0—0

Single Copy

As. 8

THE MADRAS AGRICULTURAL STUDENTS' UNION.

This is an association of the students, past and present, of the Madras Agricultural College, and of the officers of the Madras Agricultural Department, the Principal of the Agricultural College being the President, ex-officio. The Union conducts this Journal and celebrates annually the College Day, on which occasion it convenes an Agricultural Conference. The Association has Members, Associates, Honorary Members and Patrons. For detailed particulars apply to the Secretary.

THE MADRAS AGRICULTURAL JOURNAL

A Premier Agricultural Monthly in India

A monthly journal in English devoted to the study and development of Agricultural Science; contains articles of scientific as well as of general interest written in popular language. Reviews of agricultural publications and extracts from various Journals — both Indian and foreign form a special feature. Commands a wide circulation and is therefore an excellent medium for advertisements.

Rates of Subscription

Journal supplied *free* to Members, Associates and Patrons of the Union.

Annual subscription rates for others:

India and Ceylon Rs. 6—0—0, Foreign Rs. 7—0—0, Single number Re. 0—8—0.

Rates of Advertisement:

For single insertion:

	Rs.	A.	P.
For full page	20	0	0
For half page	10	0	0
For quarter page ..	5	0	0

Inside cover pages 25 percent extra.

Outside cover pages 50 percent extra.

Preparation of blocks unless supplied by advertisers, charged extra.

N. B:— All advertisements are subject to the approval of the M. A. S. U. Managing Committee before insertion. The charges are payable strictly in advance.

Contributions to the Journal:

Contributions on Agricultural Science, subjects of agricultural interest or pertaining to rural economics and co-operation will be accepted for publication, subject to approval by the Editorial Board. Correspondence and queries on agricultural and allied subjects are invited. Manuscripts should be sent clearly typed on *one side of the paper* only. The manuscripts should not ordinarily exceed 8 printed pages, including tables and figures.

Twenty-five copies of reprints of contributions will be presented to authors. *Extra copies and printed covers for reprints*, if required, can be supplied at actual cost if intimation is given when the manuscript is presented. Contributors will be charged half the actual cost of block-making.

N. B:— The Editorial Board does not hold itself responsible for the opinions expressed by the contributors.

All communications should be addressed to:

The Secretary, M. A. S. Union,
Agricultural College, Lawley Road P. O., Coimbatore.

THE ASSOCIATION OF THE UPPER SUBORDINATE OFFICERS

OF THE

MADRAS AGRICULTURAL DEPARTMENT

LAWLEY ROAD P. O., COIMBATORE

CIRCULAR

Government Memorandum No. 82164 BI/56 - 2 dated 29—1—1957 which has been received by this Association is reproduced below for the information of the members

" ..... The Association of the Upper Subordinate Officers of the Madras Agricultural Department has requested that special preference may be shown to the Agricultural Officers while making appointments to higher posts in the Community Projects and National Extension Service Schemes. The Director of Agriculture has recommended the proposal. The Government have examined the proposal and consider that it is not possible to fix any percentage for filling up the vacancies of Block Development Officers in the Community and National Extension Service Schemes from among Officers of the Agricultural Department.

A proposal to prescribe a test for all those who aspire for the posts of Block Development Officers is under the consideration of the Government. The Officers of the Agricultural Department may appear for this test and acquire eligibility for appointment as Block Development Officers by passing it in due course ".

This Association is the only forum through which the Upper Subordinates can collectively make representations to the authorities on matters concerning our welfare. Still several Upper Subordinates have not yet joined the Association as members.

Subscription for Life Membership is only Rs. 5—0—0.

Entrance Fee Re. 0—8—0.

This amount can be paid preferably in one lump sum or in instalments of first not less than Rs. 1—8—0 and the balance at not less than Re. 1—0—0 each.

All Upper Subordinates are cordially requested to join and strengthen the Association. Members who have to pay arrears of subscription are requested to remit the same.

S. Muthuswami,
Secretary.

The Madras Agricultural Journal

Vol. XLIV FEBUARY 1957 No. 2

CONTENTS

The Madras Agricultural Journal

Vol. XLIV February 1957 No. 2

Editorial

The Minister for Agriculture, Sri. M. Bhakthavathsalam inaugurated at Nagapattinam on the 23rd of this month, the Soil Testing Service for the farmers of the Madras State. This is part of an All-India scheme wherein 24 laboratories, strategically situated will operate in a number of States. In the south, these laboratories are located at Madras, Kerala, Coorg, Mysore and Andhra. Soil samples from the farmer's fields will be tested free of charge in these laboratories which are equipped under the Indo-American Technical Co-operation Mission.

Chemical analysis of soils has been utilised for determining the fertiliser needs of various soils from the time of Liebig, as early as 1840. Since then, many advances have been made in developing chemical techniques for assessing the fertility status of soils in respect of different plant nutrient elements. During the early period, it was thought that an analysis of the soil solution would give the needed information. It was soon realised however, that the extracted soil solution does not reflect accurately the ionic environment of the plant roots because of the dynamic nature of the soil solution. Agricultural chemists from all over the world have evolved a variety of empirical methods during the last several decades to assess soil fertility.

In recent times they have brought forward rapid methods, not only for estimating available plant nutrients in the soil but also to characterise the environment in relation to the crop. Soil Testing Laboratories adopting these modern techniques can help the farmer to know more about the nutritional status of his soil and its behaviour in crop production. It would give a picture of the deficiencies in the soil and indicate what have to be added to increase yields.

The most important point in soil testing is to collect a composite soil sample, representative of a given field. Elsewhere in this issue are given details for collecting soil samples as outlined by Mr. Robert Engle of the American Technical Co-operation Mission which would interest our readers. As observed by our Director of Agriculture Sri. E. U. Damodaran, at the function, the Soil Testing Service should prove a boon to the farmers of our State and we hope that they will fully utilise the service and build up prosperity to themselves and the nation.

Economic Spacing for Irrigated Bunch Groundnut

by

M. BHAVANISHANKER RAO, B. sc. (Ag.) & N. SRINIVASALU, B. sc. (Hons.)
Oilseeds Section, Department of Agriculture, Madras

Introduction: Cultivation of groundnut during the summer season as an irrigated crop is becoming increasingly popular in the Madras State. While the scope for such increase is rather limited in garden lands, extension of cultivation in rice fallows offers vast possibilities. This new development deserves all round encouragement because (a) the increase in the production of oilseeds, which is in short supply now, is achieved without encroaching on the area sown to food crops; (b) the cultivator is financially benefited by this money crop; and (c) the leguminous crop not only improves soil fertility but also gives adequate green manure for the following rice crop.

The short duration ($3\frac{1}{2}$ months) bunch variety is preferred for the reason that it fits in well in the normal cropping programme and further, requires 2 or 3 irrigations less than the spreading variety. Definite information on the seed rate and spacing to be adopted for raising bunch groundnuts under irrigation is not available. An experiment was therefore laid out at the Agricultural Research Station, Tindivanam to elucidate this problem.

2. **Review of Literature**: Though experiments have been carried out in different tracts in and outside Indian Union on rainfed groundnut, no trials appear to have been conducted for determining the economic spacing to be adopted for the bunch groundnut under irrigation.

3. **Materials and Methods**: The experiment was carried out at the Agricultural Research Station, Tindivanam, during 1953, 1954 and 1955 summer seasons. The following five treatments were adopted.

1. 6″ x 6″
2. 9″ x 6″
3. 9″ x 9″
4. 12″ x 9″
5. 12″ x 12″

The randomised block method of lay out with six replications was adopted. The gross plot sizes were different for the different treatments but the net size was the same, 24′ x 6′.

TABLE I

Groundnut Spacing Trials - yield Data

Spacings	1953 Acre yield in lb.	1953 Percentage on control	1954 Acre yield in lb.	1954 Percentage on control	1955 Acre yield in lb.	1955 Percentage on control	Average of 3 years Acre yield in lb.	Average of 3 years Percentage on control
A. 6″ x 6″	639	100·0	1474	100·0	572	100·0	895	100·0
B. 9″ x 6″	745	116·6	1172	79·5	562	98·4	826	91·2
C. 9″ x 9″	674	105·4	1159	78·6	399	69·9	744	83·1
D. 12″ x 9″	515	80·6	1046	70·9	408	71·5	656	73·3
E. 12″ x 12″	602	94·2	958	65·0	314	55·0	625	70 0
Standard error	35·3	5·2	62·9	4·3	31·2	5·5	..	..
Whether significant or not.			YES					
(P = 0·05)			YES					
Critical difference	102·5	15·7	185·7	12·6	92·3	16·2	..	..

1953

A	B	C	D	E

1954

A	B	C	D	E

1955

A	B	C	D	E

Conclusion :

Spacing	Gross plot size	Net size
6″ x 6″	30′ x 8′	
9″ x 6″	30′ x 9′	
9″ x 9″	30′ x 9′	24′ x 6′
12″ x 9″	30′ x 10′	or 1/302·5 acre.
12″ x 12″	30′ x 10′	

A one foot wide bund separated each plot. Sowings were done in the proper season with graduated rods to the correct spacings. Germination was good in all the seasons and a few gaps were promptly filled up. Irrigations were given at regular intervals. Inter-cultivation, harvest, etc., were attended to as usual.

4. **Results**: The yield data obtained in all the three years were statistically analysed and the economics of adopting the different spacings were also worked out. The results are presented in the following tables.

5. **Discussion:** In all the three years, the differences in yield between the different spacings were statistically significant. The yields were low in the first and third years and fair in the second year. The highest yield was obtained in the treatment 6″ x 6″ in two out of the three years of trials. In the first year, the treatment 9″ x 6″ recorded significantly higher yields than the treatment 6″ x 6″ and in the third year, was on par with it. In the second year, the treatment 6″ x 6″ significantly out-yielded all the others. From the average figures for the three years, it is seen that the yield differences decrease progressively as the spacings increase.

When the economics were worked out, it was seen that the maximum net profit was obtained in the 9″ x 6″ spacings in two out of three years. Only the second year when the treatment 6″ x 6″ resulted in very high yields, maximum profit was obtained by adopting a spacing of 6″ x 6″. The average for three years shows that the highest profit is obtained in the case of the treatment with 6″ x 9″ spacings.

Adoption of the different spacings require adoption of different seed rates. The spacing 9″ x 6″ has given the highest average profit and to obtain this spacing a seed rate of 90 lbs. of picked kernels will have to be used.

TABLE II

Economics of the Different Treatments

Treatments	Seed rate in lb.	Cost of cultivation Rs.	Acre yield of pods in lb.	Gross receipts Rs.	Profit or loss Rs.
		1953 - Summer			
A. 6" x 6"	134	217	639	223	6
B. 9" x 6"	90	195	745	256	61
C. 9" x 9"	67	181	674	232	51
D. 12" x 9"	45	169	515	177	8
E. 12" x 12"	33	162	602	206	44
		1954 - Summer			
A. 6" x 6"	134	203	1474	305	102
B. 9" x 6"	90	187	1172	242	55
C. 9" x 9"	67	178	1159	238	60
D. 12" x 9"	45	164	1046	214	50
E. 12" x 12"	33	162	958	197	35
		1955 - Summer			
A. 6" x 6"	134	119	572	118	— 1
B. 9" x 6"	90	108	562	116	8
C. 9" x 9"	67	100	399	83	—17
D. 12" x 9"	45	95	408	85	—10
E. 12" x 12"	33	92	314	66	—26
		Average for 3 years			
A. 6" x 6"	134	180	895	215	35
B. 9" x 6"	90	163	826	205	42
C. 9" x 9"	67	153	744	184	31
D. 12" x 9"	45	143	656	159	16
E. 12" x 12"	33	139	625	157	18

6. **Summary**: In an experiment conducted to find out the economic spacing for bunch groundnut grown under irrigation, it was found that the spacing 9" x 6" gave higher returns than other spacings tried. A seed rate of 90 lbs. of picked kernels will have to be used for this spacing.

7. **Acknowledgements:** Our thanks are due to Sri P. Krishna swamy, B. sc. (AG.), Superintendent, Agricultural Research Station, Tindivanam for help in preparing this article.

The Control of the Rice Mealy Bug — Ripersia Oryzae Gr — in the Tanjore Delta of the Madras State

by

K. P. ANANTANARAYANAN* & E. V. ABRAHAM
Entomology Section, Agricultural College, Coimbatore

Introduction: Mealy bugs and scales are serious pets on cultivated crops — The mealy bug — *Ripersia Oryzae Gr* — is responsible for the malady popularly known as "soorai" on paddy in the Madras State. It is widely distributed in the Madras State and has been noted in Tanjore, South Arcot, Tiruchirappalli, Coimbatore, and Malabar districts. It occurs in a fairly severe form more often in the Tanjore delta than in other tracts.

The presence of the pest in the field is easily noticed by the characteristic round or oval sunken patches in the midst of a normal crop. The plants in the affected patches die in course of time and those that survive, seldom put forth normal earheads. The few earheads that may emerge are distorted and chaffy.

The control of the pest has been a difficult problem due to the concealed existence of the bugs inside the leaf sheaths. The results of recent investigations conducted for three seasons at the Agricultural Research Station, Aduthurai on the control of this pest are furnished in this paper.

* Government Entomologist. Since retired from service.

Review of previous work: Newstead (1917) makes mention of pest as having been noted in South India. Green (1931) gives the correct identity of the pest. Ramakrishna Ayyar, the eminent South Indian Entomologist, has made mention of the pest in a number of his publications from 1917 to 1933. The same author gives a detailed account of the pest and its occurrence in South India in his publications in 1938. It was first noted in Coimbatore district in 1907 and collected from Tanjore in 1940. A good deal of information on the life history and habits, nature of damage, etc. is available. The bug breeds on a variety of grasses. Destruction of all grasses in which the insect breeds, elimination of infested seedlings before transplanting and helping vigorous growth by proper manuring have been recommended for its control (Ramakrishna Ayyar — loc. cit.) Intensive investigations on the control of the pests were in progress from 1950 onwards Santhanaraman (1952) explored the possibilities of controlling the pest by mechanical and insecticidal methods. The mechanical method adopted was to burn the grasses on field bunds before the sowing of paddy with a view to exterminate the mealy bugs living on them. The method however did not give encouraging results. Preliminary insecticidal trials indicated encouraging results with high concentrations of Parathion, Schradan and BHC when applied to infested patches at the early stage of appearance of the pest.

Materials and Methods: Investigations were pursued for three seasons, viz, 1953—54, '54—55 and '55—'56 with a view to evolve the most effective and economic method of control of the pest. Two separate methods of trials with insecticides were explored. A number of insecticides like BHC, Endrin, Folidol (Parathion) BF. P. O. and Systox were tried.

In one set, the seedlings were treated about a week prior to transplanting in order to eliminate the pest at the early stage and the effect of treatment in reducing the incidence of the pest on the transplanted crop was studied.

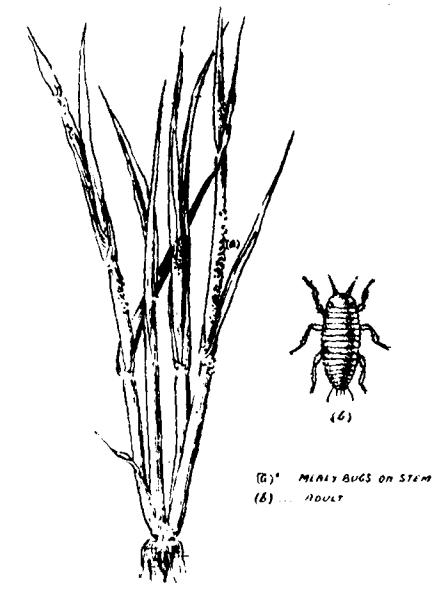
The other method was to treat the 'soorai' patches at the initial stage of appearance in the planted fields and watch for further expansion in size.

The variety of paddy chosen for the nursery trial was Co. 25 for all the three seasons while the treatment of patches was tried on other varieties also, as opportunities arose. The nursery trials were confined to the Thaladi crop while treatment of patches was tried on Samba also.

Assessment of Results: The effect of the nursery treatment was gauged by measuring the acre of 'soorai' patches formed in the different plots at the time of harvest. The yield under the different treatments was also recorded.

With regards to the treatment of 'soorai' patches, the results were assessed by noting the relative expansion in size of the patches after treatment as compared to the area affected at the time of treatment.

Results: *Nursery Trial: 1953 — '54.* BHC 0·1% spray, BHC 10% dust and Folidol 0·025% spray were applied in the nursery. 10 cent plots under each treatment was planted with the crop. The data gathered are furnished in Statement I. 'Soorai' incidence was least under Folidol. The yield was also high in the plot treated with this chemical. The treatment however did not eliminate the pest.



THE RICE MEALY BUG

CONTROL : FOLIDOL 0·05 % OR
SYSTOX 0·15 %

1954 — '55. Folidol 0·025%, Endrin 0·04% and Systox 0·15% sprays were tried. BHC was eliminated as results in the previous season were not encouraging with reference to this chemical. The treated seedlings were planted in larger plots of 20 cents under each treatment. The data gathered are furnished in Statement II. The incidence of the pest was too low during the season to arrive at any conclusion.

1955 — 56. Folidol 0·05% and 0·025%, Endrin 0·04% and Systox 0·15% were tried as in previous seasons. The treated seedlings were planted in large fields of 45 cents for each treatment. The results showed the least incidence of the pest and a maximum yield in the plot treated with Folidol 0·05%. (Vide statement III) — The observations confirmed the first year's findings.

Treatment of infested patches to prevent further spread: 1953 — '54. BHC 0·2% spray, Hexidole 950 RR (BHC with special

Trials by treatment of 'soorai' patches - Percentage of expansion in size to the original

1953 — '54 *Statement IV* Variety Co. 25 (Thaladi) Treatments: 6; No. of patches treated with each chemical: 4; Treated on 28-1-'54		1954 — '55 *Statement V* Variety Co. 25 (Thaladi) Treatments: 6; No. of patches per treatment: 4; Treated on 30-12-54		1954 — '55 *Statement VI* Variety ADT 25 (Thaladi) Treatments: 6; No. of patches per treatment: 4; Treated on 22-12-'54	1955 — '56 *Statement VII* Variety Co. 25 (Samba) Treatments: 5; No. of patches per treatment: 5; Treated on 23-10-'55		1955 — '56 *Statement VIII* Variety Co. 25 (Thaladi) Treatments: 5; No. of patches per treatment: 5; Treated on 29-11-55	1955 — '56 *Statement IX* Thovai Samba (Thaladi) Treatments: 4; No. of patches per treatment: 5; Treated on 14-12-55	1955 — '56 *Statement X* Nellore Samba (ADT. 11 Thaladi) Treatments: 5; No. of patches per treatment: 4; Treated on 21-12-'55	1955 — '56 *Statement XI* * ADT. 25 (Thaladi) Treatments: 5; No. of 'soorai' patches per treatment 10; Treated on 29-12-'55 and 11-1.'56
Treatments	percentage of expansion at harvest	Treatments	percentage of expansion	percentage of expansion	Treatments	percentage of expansion	percentage of expansion	percentage of expansion	percentage of expansion	percentage of expansion
1. Folidol 0·025 %	9·0	Folidol 0·025%	8·6	Nil	Folidol 0·05%	1·4	Nil	Some plant srevived in these treatments	Nil	15·0	Nil
2. BF. PO 0·5%	9·3	Endrin 0·04%	7·0	3·1	Folidol 0 025%	12·0	Nil		Nil	not included	5·6
3. BHC 0·2%	18·4	Isodrin 0·05%	55·9	12·8	Systox 0·15%	Nil	Nil		Nil	8·0	Nil; some plants revived
4. Hexidol RR 950 (BHC with special adhesive) 0·1%	25·0	Hexidol 950 RR; 0·2%	27·9	23·1	Endrin 0·94%	16·1	3·8		13·5	26·2	14·5
5. Systox 0·5%	7·2	Systox 0·15%	Nil	2·1	Control	76·5	40·8		83·8	55·5	82·2
6. Control	40·0	Control	75·1	37·8							

Folidol 0·05% (oz. in 6¼ gallons of water) and Systox 0·15% (1 oz. in 4 gallons) gave consistently encouraging results

* Two rounds of treatments at a fortnight's interval as the incidence was of a severe nature.

adhesive) 0·1%, BFPO 0·5% and Systox 0·5% were tried. The expansion in size was least under Folixol and Systox — Vide Statement IV.

1954 — '55. Hexidol 950 RR 0·2%, Isodrin 0·1% and Endrin 0·04% were tried in addition to Folidol and Systox during the season. Folidol and Systox confirmed their superior efficiency in arresting the spread of the pest. Endrin also gave some promising indications. Trials were conducted on varieties Co. 25 and ADT. 25. The data gathered are tabulated in Statements V and VI.

1955 — '56. Five sets of trials under Samba and Thaladi under different varieties in the farm and ryots' field were conducted, the variants consisting of Folidol, Systox and Endrin. Folidol and Systox gave the best results in controlling the spread of the pest. Some of the plants revived in the patches treated with these chemicals. Endrin did not yield consistently good results. (Vide Statement VII to XI.)

In one trial (Statement XI), two rounds of treatment at a fortnight's interval were required as the incidence of the pest was heavy.

In all these trials, the insecticidal application was given 5 to 6 weeks after planting when the initial infestation could be detected.

Mortality Observations: The mortality of the insects caused by Folidol, Systox and Endrin was observed one week after treatment was provided for examining the mortality of the bugs with a view to allow the full play of the systemic properties of Systox and Folidol on the insect. Dead and living bugs on 5 infested tillers in each treatment were counted. The data are furnished in Statement XII. Systox 0·15% and Folidol 0·05% caused the highest mortality of bugs.

Summary and Conclusions: A number of synthetic chemicals was tried against the rice mealy bug for three reasons. Folidol 0·05% and Systox 0·15% and Systox 0·15% proved to be the most effective treatments both in minimising the damage and increasing the yield.

The treatment of the crop at the nursery stage will Folidol 0·05% or Systox 0·15% gives much relief with reference to the incidence of the pest on the transplanted crop. The insect may appear to some extent in the transplanted fields even after nursery treatment. The initial appearance of 'soorai' patches in the planted fields can be detected in about 5 to 6 weeks after planting. Timely application of Folidol or Systox will arrest the further spread of the

pest. In cases of serious infestation, two rounds of treatments will be required for controlling the pest in the affected patches.

Mortality observations showed that Folidol and Systox were the most effective of the different insecticides tried.

The cost of the chemical for treating the nursery required for planting one acre works out approximately to Rs. 2—8—0 in the case of Folidol 0·05% (1 oz. in 6¼ gall) and Rs. 8—0—0 in the case of Systox 0·15% (1 oz. in 4 gallons of water). For treatment of patches, the cost varies with the size of each patch and severity of occurrence of the pest.

For all practical purposes, a careful watch over the planted crop at critical periods to detect the first signs of infestation and prompt application of one of the above pesticides will quite suffice to minimise or eliminate loss arising from this pest. Folidol is a known remedy to control a number of other pests also occurring on paddy and at the same time cheaper than Systox.

As these chemicals are highly poisonous and easily get absorbed into the body tissues, they should be used with care and under expert guidance.

Acknowledgement: The authors are thankful to the Superintendent, Agricultural Research Station, Aduthurai for the facilities afforded for conducting the investigations.

BIBLIOGRAPHY

1. Green, E. E., 1931. Two New Mealy Bugs from India. Ann. Mag. N. H. VII (10), P. 557.
2. Newstead, R., 1917. Observations on Scale Insects. Bull. ent. Res., London, VIII, P. 178.
3. Ramakrishna Ayyar, T. V., 1917. Report IInd Ent. Meet. Pusa. P. 178.
4. .. 1919. A Contribution to Our Knowledge of South Indian Coccidae. Pusa Bull. No. 87, P. 178.
5. .. 1923. List of Important Crop Pests of South India. Bull. 86, Dep. Agric. Madras. P. 3.
6. .. 1930. A Contribution to Our Knowledge of South Indian Coccidae. Pusa Bull. No. 137, P. 59.
7. .. 1933. Important Insect Problems regarding Cultivation of Rice in South India. Agric. Live. Stk. India, III (4), P. 349.
8. .. 1938. The Rice Mealy Bug in South India. J. Mysore Agric. Exp. Un., XVII, pp. 179 – 188.
9. Santhanaraman, T., 1952. Some Experiments on the Control of the Rice Stemborer (Schoenobius incertellus Walker) and the Rice Mealy Bug (Ripersia Oryzae Green). Plant Protec. Bull. IV (4), pp. 93 – 100.

APPENDIX

Nursery Treatment Trial

Statement I:

1953–'54 Variety Co. 25. Treatments: 4
Area planted under each treatment: 10 cents; Treated on 5–10–1953;
Extent of 'soorai' damage and acre yield

Treatment	Area of affected patches	Yield per acre in lb.
1. Folidol 0·05% Spray	48 sq. ft	3,643
2. BHC 10% dust	114 ,,	3,457
3. BHC 0·1% spray	180 ,,	3,374
4. Control	83 ,,	3,312

Statement II:

1954–'55 Variety Co. 25. Treatments: 4
Area planted under each treatment: 20 cents; Treated on 28–9–1954;
Extent of damage and yield

Treatment	Area of affected patches	Yield per acre in lb.
1. Endrin 0·04% spray	39·3 sq. ft.	3,411
2. Folidol 0·025%	38·1 ,,	3,528
3. Systox 0·15%	27·3 ,,	3,033
4. Control	48·0 ,,	3,294

The incidence was too low to arrive at any conclusion.

Statement III:

1955–'56 Variety Co. 25. Treatments: 5
Area of transplanted crop under each treatment 45 cents;
Treated on 7–10–1955

Treatment	Area of affected patches	Acre yield in lb.
1. Folidol 0·05% spray	95·75 sq. ft.	4,216
2. Folidol 0·025% spray	151·5 ,,	3,931
3. Systox 0·15% ,,	113·0 ,,	3,707
4. Endrin 0·04% ,,	200·5 ,,	3,528
5. Control	243·0 ,,	3,049

The incidence of the insect is least and yields highest under Folidol and Systox.

Statement XII :

Mortality Studies 1955 – '56.

Treated on 29–12–1956. Mortality after one week of treatment. i. e., on 5–1–1956.

	Treatment	No. of dead mealy bugs.	Number alive	Total	Percentage of mortality
1.	Folidol 0·05%	104	41	145	71·7
2.	Folidol 0·025%	76	49	125	60·8
3.	Systox 0·15%	109	28	137	79·6
4.	Endrin 0·04%	55	135	190	29·0
5.	Control	6	162	168	3·6

Mortality was highest under Systox 0·15% (1 oz. in 4 galls) and Folidol 0·05% (1 oz. in 6¼ galls).

Note on the Liberation of Hydrogen Sulphide in Submerged Paddy Soils

by

C. P. NATARAJAN, T. SESHAGIRI RAO & DR. A. MARIAKULANDAI
Chemistry Section, Agricultural Research Institute, Coimbatore

Introduction : Hydrogen sulphide is toxic to plants even in small puantities. It causes injury to the root cells and inhibits respiration. The toxicity is a function of the concentration and time of contact of H_2S with the plant. The injury increases with time of exposure of the plant to the gas even in minute quantities (1. 2). The uptake of nutrients is vitally affected and Baba *et al*, (3) from their studies on the nutrition of rice showed that the absorption of some nutrients particularly potassium and silica and of water was decreased by the addition of H_2S. As a result of similar studies, Mitsui *et al*, (4, 5) showed that passing H_2S through the culture solution at the rate of two bubbles a second for 30 minutes caused a market reduction in ion accumulation, water absorption and protein synthesis during the subsequent 23 hours. Ion uptake was reduced in the following order :— $P_2O_5 > K_2O > Sio_2 > NH_4 > MnO > H_2O >$ Mgo > CaO. They concluded that the severe Helminthsporium root rot noticed in certain soils was a result of H_2S injury. The toxicity

due to H_2S is believed to be the cause of the disease known locally in Japan as 'AKIOCHI' or autumn disease which is prevalent in old sandy degraded soils (6). The subject has rightly received more than passing interest in Japan and detailed studies have been made there with reference to the conditions favouring H_2S toxicity and ameliorative mehods to be adopted to prevent the disease.

The sulphides are the reduction products of sulphates brought about by a small group of anaerobic bacteria at high pH (7). The fertilizers ammonium sulphate, super and potassium sulphate are the chief sources of sulphate. Besides, the animo acids, cystine and methionine also yield on anaerobic decomposition H_2S and mercaptans. The conditions obtaining in a submerged paddy soil with considerable amounts of easily decomposable organic matter are ideal for anaerobic decomposition and the reduction products like Fe^{++}, Mn^{++}, NH_3, CH_4 and H_2S are present in varying amounts depending on factors such as period of submergence, drainage, amount of organic matter, fertilizers added and nature of soil. This paper gives an account of the preliminary studies conducted with particular reference to the liberation of H_2S in paddy soils receiving different manurial and cultural treatments.

Materials and Methods : The formation of H_2S is one of the aspects under study in the experiment that is being conducted in the Paddy Breeding Station, Coimbatore, to assess the benefits of intercultivation under the Japanese and Madras methods of Paddy cultivation. Based on these two manurial treatments, 5 different methods of interculture were under study, thus making a total of 10 treatments. Samples of the swampy soils were drawn at intervals of every fortnight, both before and after intercultivation, and tested for H_2S and and soil reaction (pH).

Hydrogen sulphide was estimated by removing the gas from the pasty roil by suction after mixing with sufficient water to allow a current of H_2S free air to pass through it and absorbing the gas in a 5% solution of potassium antimony tartrate. The soil suspension was also boiled for 10 minutes to remove all the H_2S dissolved in the soil-water. The formation of a yellow colour indicated the presence of H_2S and by comparing the intensity of the colour with those of known standards the quantity of H_2S present in the swampy soil was estimated. Measurement of the pH of the samples was also carried out.

Results: It may be seen from the table that under 'Japanese manuring' (Treatments 1 to 5) no H_2S was detected in the soil in the first two rounds but traces in the third round. Later on H_2S was completely absent.

In the 'Local manuring' (Treatments 6 to 10) H_2S in traces was noted earlier but as the crop growth advanced it was completely absent.

The pH of the soils is on the alkline side which is as expected under anaerobic decomposition of organic matter in paddy soils.

Discussion: The necessity for moderate drainage in paddy soils needs no emphasis, for, the excess of reduction products formed must be removed from the root zone be it either Fe††, M††n or H_2S (8). Under conditions obtaining in normal paddy soils the concentration of H_2S is not generally alowed to reach toxic level, for, any H_2S formed is almost completely removed from solution as the sparingly soluble ferrous sulphide. As long as the soil is saturated with calcium or iron the toxicity is not serious. Only when iron is deficient, H_2S or methyl sulphide will appear (9). This defensive mechanism is absent in the case of old sandy paddy soils in Japan – called degraded soils – for they are highly leached soils and the soil constituents Si, Mn, Fe, Mg, Ca and K have disappeared from the top soil (10, 11). It is in these soils that AKIOCHI or autumn disease is prevalent and one of the remedial measures adopted to prevent the disease is to apply red upland soil, containing iron. The deficiency of iron in the 'degraded soils' mainly causes H_2S to accumulate to toxic limits (12).

There is a unique mechanism in paddy which keep reduced substances at safe distance from causing injury to the plant. The roots of paddy plants are believed to diffuse oxygen, younger roots diffusing more oxygen than older roots, and keep an oxidising environment in the immediate vicinity of the roots, which acts as a defensive wall against possible incursion of excessive and harmful reduced products (13).

All sulphates increase the risk of harmful H_2S accumulation due to reduction and it is for this reason ammonium chloride and potassium chloride are found more suitable for paddy growing in degraded soils, low in manganese and iron, in Japan (11, 14).

The liberation of H_2S under the soil and climatic conditions and manuring in Madras State is not likely to depress the yield of paddy. The soils in Madras State including the highly leached laterite soils, contain adequate reserves of iron which has a protective action in removing H_2S from solution. The provision of moderate drainage ensures the quick removal of the reduced products.

Summary and Conclusion: The formation of hydrogen sulphide in paddy soils and the conditions leading to its toxicity on crop growth have been discussed. It has been shown that only in soils highly deficient in iron as in the case of certain soils of Japan that the harmful effects of this product will be felt. Results of some preliminary studies on the formation of this toxic gas in the paddy soils at Coimbatore have been furnished. It can safely be concluded that the liberation of Hydrogen sulphide, under the soil conditions cultural and manurial practices obtaining in Madras State is not likely to present a serious problem.

REFERENCES:

1. Doi, Y. 1950. Protoplasmic streaming in root hairs of crop plants. Proc. crop Sci. Soc. Japan 19: 19: 193.
2. Yamamoto, K. and Mori, T. 1956: The abnormal growth of lateral roots in rice plants. Soils and Ferti. XIX. 1. 496.
3. Baba, I. Et. Al. 1952. Studies on the nutrition of rice with reference to Helminthsporium disease. The nutrient absorption of rice as affected by the H_2S added to culture solution. Proc. Crop Sci. Soc. Japan 21: 98 - 99.
4. Mitsui, S. Et. Al. 1951: Dynamic studies on the nutrient uptake by crop plants. 1. Nutrient uptake of rice root as influenced by H2S. J. Sci. Soil Tokyo 22: 46 - 52.
5. Mitsui, S. Et. Al. 1953: Dynamic studies on the nutrient uptake by crop plants. 1. Effect of butyric acid and respiration inhibitors such as H_2S, NaC N and Na N_3 on the nutrient uptake by rice plant. J. Sci. Soil and Man. 24: 45 - 50.
6. Dion, H. G. 1953: FAO development paper No. 39.
7. Starkey, R. S. and Wight, K. M. Anaerobic corrosion of iron in soil. Published by the American Gas Association, New York, 1945.
8. Baba, Et. Al. 1956: Studies on the nutrition of the rice plant - 2. Influence of the supply of organic acid and H2S to the soil upon the occurrence of the disease. Soils and Ferti. XIX 1. 500.
9. Pearsall, W. H. 1950. The investigation of wet soils and its agricultural implications. Empire J. Expt. Agric. 18: 289 - 298.
10. Shioiri, M. and Yoshida, M. 1951: Manganese in paddy soil. J. Sci. Soil Tokyo, 22: 53 - 56
11. De Gens, J. G. Means of increasing rice production. Centre D'etude De L'azote Geneva.
12. Shioiri, M. and Tamada, T. 1952: The chemistry of paddy soils in Japan. FAO Int. Rice Comm. Work. Paper 43.
13. Mitsui, S. 1954: Inorganic nutrition, fertilization and soil amelioration for lowland rice. Yokendo Ltd., Tokyo.
14. Kawaguti, K. and Osugi, S. 1938. The reduction of sulphates in paddy field soil. J. Sci. Soil Tokyo, 12: 453 - 462.

Results of estimation of Hydrogen Sulphide (H2 S) and pH in the Paddy Soils under Intercultivation Experiments in the Paddy Breeding Station, Coimbatore.

No. of treatment	Particulars	1st round				2nd round				3rd round				4th round				5th round			
		Preinter-cultivation		Post intercultivation																	
		A		B		A		B		A		B		A		B		A		B	
		30—11—55		2—12—55		13—12—55		17—12—55		31—12—55		3—1—56		17—1—56		20—1—56		31—1—56		2—2—56	
		H2S	pH	H2S	pH	H2S	pH	H2S	pH	H2S	pH	H2S	pH	H2S	pH	H2S	pH	H2S	pH	H2S	pH
1.	Japanese Manuring+Intercultivation by Japanese Rotary intercultivator once in 15, 30 & 45 days after planting.	Nil	7·90	nil	7·80	nil	7·35	nil	7·4	Trace	7·20	Trace	7·06	nil	7·10	nil	7·40	nil	7·40	nil	7·38
2.	Jap. manuring+working hand rake once in 15, 30, 45 days.	,,	7 60	,,	7·70	,,	7·20	,,	7·40	,,	7·14	,,	7·08	,,	7·00	,,	7·02	Trace	7·42	Trace	7·50
3.	Jap. manuring+weeding twice and working Jap. rotary intercultivator, 15, 30 days after each weeding.	,,	7·60	:,	7·60	,,	7·20	,,	7·60	,,	7·42	,,	7 06	,,	7 00	,,	7·00	nil	7·40	nil	7·40
4.	Jap. manuring and weeding twice.	,,	7·60	,,	7·40	,,	7·20	,,	7·52	,,	7·20	,,	7·12	,,	7·20	,,	7·1	Trace	7·50	,,	7·40
5.	— do — + No weeding and no trampling.	,,	7·45	,,	7·30	,,	7·35	,,	7·46	,,	7·22	,,	7·10	,,	7·24	,,	7·1	nil	7·40	,,	7·58
6.	Local manuring + as in 1	,,	7·60	,,	7·35	Trace	7·10	Trace	7·58	,,	6·96	,,	7·14	,,	7·06	,,	7·06	Trace	7·44	Trace	7·42
7.	— do — + as in 2	,,	7·60	,,	7·30	,,	7·20	,,	7·58	,,	6·92	,,	7·10	,,	7·16	,,	6·9	,,	7·62	nil	7 50
8.	— do — + as in 3	,,	7·60	,,	7·35	,,	7·45	,,	7·60	,,	7·00	,,	7·26	,,	7·06	,,	6·9	,,	7·36	Trace	7·30
9.	— do — + as in 4	,,	7·70	,,	7·30	,,	7·40	,,	7·50	,,	7·00	,,	7·15	,,	7·00	,,	7·2	,,	7·46	,,	7·38
10.	Local Manuring + as in 5	,,	7·70	Sample not received		,,	7·40	,,	7·46	,,	6·94	Sample not received		,,	7·08	,,	7·14	,,	7·40	nil	7·40

Evolution of a Short Duration Strain in Tenai or Italian Millet (*Setaria Italica* Beauv.) by Hybridisation

by

M. CHARLES RATNASWAMI & LEELA DHANARAJ

Assistants in Millets

Agricultural College and Research Institute, Coimbatore

Introduction : The Evolution of a short duration crop is of special interest in view of its great importance in the efficient use of land in the rotation of crops. Tenai is one of the principal millets maturing in 100 to 110 days and gives as much yield of grain as the grain crops of the same duration. It can be grown throughout the year as it is not a season bound crop and in almost all types of soils. Early maturing crops will be most desirable for the gardenlands of Coimbatore, Salem and Madurai and for the dry tracts of south and North Arcot, Ramanathapuram and Chingleput districts. To meet such a requirement, the work on the evolution of short duration strain in Tenai was commenced at the Millet Breeding Station, Coimbatore.

Materials and methods : Out of an extensive collection of the representative varieties studied, selections with desirable economical characters from suitable varieties were isolated and crossed with the standard high yielding strain Co. 1 as an initial step in the breeding programme. The strain Co. 1, Mosu Tenai of Coimbatore is non-pigmented and takes 100 to 110 days to mature. It was used as the female parent against short duration pigmented selections as male parents. The purple pigmentation in Tenai is determined by a dominant factor (1). As such, two purple pigmented economic selections, S. I. 3497 isolated from the local variety of Salem, "Muri" or "Mappillai" Tenai, which comes to maturity in 70 to 75 days and another selection S. I. 3560, "Bochu" Korra of Cuddapah district with similar desirable characters were used as male parents. The F 1 s were spotted out by the manifestation of the purple pigmentation in the plants, out of a large number of progenies of the crosses, 10 promising selections with duration ranging from 80 to 85 days were advanced for yield tests in the preliminary yield trial in 1949 main season. The performance of the different selections in the trials is given in Table 1. Out of these five selections gave increased yields over the general mean, with duration ranging from 80 to 85 days and selection S. I. 4894 gave the highest yield. These five selections

were advanced to comparative yield trials in 1950, 1951 and 1952 monsoon seasons with S. I. 3497, the short duration selection as the standard. The summary of yield trials are furnished in Table 2.

Discussion and conclusion : In 1950 main season, three of the five selections have given increased yields, the increases ranging from 4 to 84% with S. I. 4894 recording 25% increase. In 1951 out of the five selections compared, S. I. 4894 has given the highest grain yield of 17% over the standard. In 1952, S. I. 4894 has recorded an increased yield of 39% over the standard. Though the yield differences between the variants were not significant. From a perusal of the above data, it could be seen that the promising selection, S. I. 4894, has consistently given increased yields in all the three seasons of yield trials with durations ranging from 80 to 85 days. On an average it has given 27% increased yield over the standard.

TABLE 1.

Performance of Selections of Short Duration in the Preliminary Yield Trial of 1942 Main Season.

Selections	Grain yield expressed as a percentage of the general mean
General Mean	100·0
S. I. 4894	111·2
S. I. 4805	110·7
S. I. 4906	110·4
S. I. 4919	108·7
S. I. 4909	102·0
S. I. 4799	97·6
S. I. 4907	96·6
S. I. 4926	89·5
S. I. 4925	87·6
S. I. 4908	85·7
Standard Error	6·95
Whether differences significant or not p 0·05 ..	Yes
Critical difference	19·2

Conclusion :—

Grain Yield : S. I. 4894, S. I. 4805, S. I. 4906, S. I. 4919, S. I. 4909, S. I. 4799, S. I. 4907, S. I. 4926, S. I. 4925, S. I. 4908

TABLE 2.

Performance of Selections of Short Duration Tenai Crop in the Comparative Yield Trials.

Particulars	Year	Selections S. I. 3497	S. I. 4805	S. I. 4894	S. I. 4906	S. I. 4909	S. I. 4919	Standard Error	Whether differences significant or not. P = 0·05.	Critical difference
Yield per acre in lb.	1950	288	491	358	480	298	529	37·8	Yes	110·4
Grain yield expressed as a % of standard	,,	100 0	170·8	124·6	167·0	103·5	184·1	13·2	Yes	38·4
Yield per acre in lb.	1951	616	548	722	675	614	525	34·3	Yes	101·6
Grain yield expressed as a % of standard	,,	100·0	89·9	117·3	109 6	99·7	85·3	5·57	Yes	16·5
Yield per acre in lb.	1952	338	375	469	313	325	323	43.0	No	..
Grain yield expressed as a % of standard	,,	100·0	111·1	138·9	92·6	96·3	95·8	11·12	No	..

Conclusions :— Grain Yield :

1950 : S. I. 4919, S. I. 4835, S. I. 4906, S. I. 4894, S. I. 4909, S. I. 3497

1951 : S. I. 4894, S. I. 4906, S. I. 3497, S. I. 4909, S. I. 4805, S. I. 4919

1952 : Yield differences not significant.

To determine the suitability of S. I. 4894 in the Tenai tracts, it was supplied for trials in the districts and the results obtained show marked success. A total of nine centres in Coimbatore district, nine in Salem district, one in Madurai district, one in Ramanathapuram district and one in Chingleput district have recorded increased yields of on an average of 21, 23, 15, 13 and 20% over the local varieties respectively.

Such a superior performance distributed over a large area confirms it as a successful strain to replace all the short duration varieties grown in the different districts. Work on the adaptabilty of this crop to different types of soils has indicated its inherent ability to adapt itself to the various soil conditions for a successful growth (2).

Summary: Tenai is one of the important food rain crop and is suited to tracts of low or moderate rainfall. As a mixed crop, it is largely grown with Cotton and groundnut. Crop breeding in this millet to meet the requirements of the cultivators, has been in progress at the station for a long time. Duration is an important agronomic character for tracts of low rainfall. A high yielding short duration selection has been S. I. 4894. has been isolated from the progeny of a cross between Co. 1, the standard strain that has spread in Tenai tracts of the Madras State and S. I. 3497, a selection from the local short duration variety of Salem. It comes to maturity in 80 to 85 days and under rainfed conditions gives an average acre yield of 500 lb. Trials in the districts have recorded marked performance of 19% increased yield over the respective local varieties.

Acknowledgement: The help and guidance given by Shri. B. W. X. Ponniah Millets and Pulses Specialist, Coimbatore, in the preparation of this paper are gratefully acknowledged.

REFERENCE CITED

1. Ayyangar, G. N. R. *et al* 1935. Inheritance of characters in *Setaria italica* (Beauv.), The Italian Millet, Part VII. Plant purple pigmentation. Ind J. Agric. Sci. 5; 176-154.

2. Charles Ratnaswami, M. 1956. Rood anatomy in Tenai (*Setaria italica* Beauv.) with special reference to soil variation-A preliminary study. Read at the VI Scientific Workers, Conference 1956.

Research Note:

Seed Treatment and Seedling Vigour

Seed-borne diseases are responsible for serious losses in almost every crop grown from seed. The losses can be completely prevented or minimised to a great extent by suitable seed treatment with fungicides. Increased emergence and better stands have been reported for a variety of crops like rice, sorghum, barley, oats, corn, cotton, etc. (Leukel, 1948). Tullis (1940) has reported that New Improved Ceresan is effective against *Helminthosporium oryzae* Breda de Haan and also combats injury due to several other fungi that may cause poor stand. Cralley (1947) conducted rice seed treatment experiments with Arasan, Phygon, New Improved Ceresan, Spergon, and Cuprocide and concluded that there were substantial improvements both in stand and yield. In a previous communication the author (Govindaswamy 1955) observed that seeds collected from different rice growing tracts of the Madras State were found to be infected by eight different genera of fungi. With a view to determine the relative efficacy of various seed dressing fungicides in eliminating the fungi and also to note their effect on the germination of the seed and stand of the seedlings pot culture studies were made at the Agricultural College, Bapatla (Andhra State) during 1952-53.

A popular medium duration paddy variety, viz., MTU: 3 was chosen for the experiment. The seed was treated with different fungicides at the rate of one gram per pound of seed. The fungicidal treatment was done by vigorously shaking the seed with calculated quantities of the fungicide in an Erlenmeyer flask for 15 minutes. The seed was subsequently sown in pots containing finely pulverised and sieved clayey soil collected from paddy field. The sowing was done at the rate of 25 seeds per pot replicated four times.

The percentage germination in each pot was recorded. Visual observations on the seedlings have shown that plants in most of the treated pots were robust and exhibited vigorous growth. The seedlings were lifted from the pots with roots intact on the 15th day from sowing. The height of each seedling from the point of its emergence from the seed to the tip of the central leaf was measured. The data were statistically analysed and the results are set forth in the following table.

TABLE

Effect of different fungicides on the germination of paddy seed and vigour of the seedling

S. No.	Fungicide	% germination	% vigour over control
1.	Agrosan GN (Organo-mercurial fungicide)	93	108·2
2.	Atiran	,,	88	111·4
3.	Ceresan	,,	92	104·3

TABLE (Contd.)

S. No.	Fungicide	% germination	% vigour over control
4.	Certosan ,,	95	107.8
5.	Leytosan ,,	95	102·7
6.	Tillex ,,	81	80·0
7.	Fernasan (Non-mercurial organic fungicide)	86	100·3
8.	Phygon (Quinone group)	88	97·6
9.	Spergon ,,	90	87·8
10.	Tritisan (Fungicide with benzene as base)	87	91·4
11.	Y. F. 2776 (Currous oxide)	85	92·6
12.	B. S. Fungicide (Composition not known)	94	106·7
13.	Control (Untreated)	81	100·0
	Standard Error ...		3·25 %
	Critical Difference		9·28 %

It is observed that in general the germination percentage in most of the treated cases was better than the control although the results were not statistically significant. However, the results in respect of the stand and vigour of the seedlings, as evidenced by the height measurements, were found to be satistically significant. This indicated that the fungicides have a stimulatory effect on the growth of the seedlings. Among the various groups of fungicides tested the superiority of the organo mercurials over others was markedly noticed. It appears, therefore, that the fungicides not only improve germination but also contribute to the vigour of the seedlings.

Mycology Section, Agricultural Research Institute, Coimbatore.

C. V. GOVINDASWAMY

REFERENCES

1. Cralley, E. M. (1947) Rice seed treatment, *Arkansas Agri. Exp. Sta. Series 5.*
2. Govindaswamy, C. V. (1955) Studies on seed-borne fungi of rice. *Madras Agri. J. 42 :* 56—65.
3. Leukel, R. W. (1948) Recent developments in seed treatment. *Bot. Rev. 14 :* 235—269.
4. * Tullis, E. C. (1940) Diseases of rice. *U. S. Dept. Agri. Yar. Bull. 1854.*

* Original not seen.

Sprout Inhibiting Hormone : Its Influence on Storage and Yield of Potatoes

The successful use of 'Barsprout', a product containing *Mena* as its active ingredient, in controlling storage losses of table potatoes had been previously reported upon by Saptharishi and Azariah (4). The studies were also extended to seed potato tubers, to examine the effects of the chemical, both on the seeds under storage and on the yields returned by such treated seed tubers. The results are presented in this note.

The studies were carried in two sets, viz., I, with freshly-lifted dormant tubers and II, on just sprouted tubers stored for a period of two months after lifting. There were five treatments for each of the two sets, replicated four times. A total of 100 tubers, weighing 12·5 lb. was studied per treatment per each replication. Barsprout was evenly spread over the tubers before being stored in wooden racks. The potato variety used was Great Scot.

The stored tubers of the different treatments were periodically observed to evaluate the percentages of sprouted tubers to total. The results are summarised as follows :

SET I	SET II
Started on 30—8—1949 with freshly-lifted dormant tubers	Started on 29—10—1949 on just-sprouted tubers, stored for two months after lifting
Treatments	*Treatments*
A. Untreated (Control)	A. Untreated (Control)
B. Treated with 2·0 gram of Barsprout.	B. Treated with 7·0 gram of Barsprout.
C. Treated with 3·5 gram of Barsprout.	C. Treated with 14·0 gram of Barsprout.
D. Treated with 7·0 gram of Barsprout.	D. Treated with 21·0 gram of Barsprout.
E. Treated with 14·0 gram of Barsprout.	E. Treated with 28·0 gram of Barsprout.
per 12·5 lb. of tubers.	per 12·5 lb. of tubers.

Result of Sprouting : *Set I :* An examination of the tubers from the different treatments, after a storage period of seven weeks, revealed that while the percentage of sprouted tubers to total was as high as 94 in the untreated control (A), the percentage were 81, 72, 59 and 26 respectively for the treatments B, C, D, and E. Upto six weeks from the start, sprouting was not evident in the above four treatments. There was a clear, progressive decrease in the percentages of sprouting with increased doses of Barsprout. But, within a week after the sixth week of

trial, the sprouting percentage in all the five treatments levelled up at cent per cent proving, that the effect of Barsprout had lasted only up to six weeks from the start.

Set II : As already stated, tubers which had just broken their eyes to form incipient sprouts were used for this set. Up to a period of about seven weeks from the start the four treatments receiving Barsprout (B to E) revealed no further development of the sprouts. But, a week later, the arrested sprouts began to develop, the rate of development decreasing with the higher concentration levels of the chemical, as found in Set I.

To find out the effect of Barsprout-treated tubers on yield, the tubers from both the sets were kept on in storage for planting in the main crop season of the next year, i. e., for a period of about eight months after lifting. The calculated acre yields recorded were as follows :

Storage treatment	Acre yield in lb.	
	Set I	Set II
A	3,600	2,050
B	3,300	3,150
C	3,100	2,700
D	3,200	3,300
E	3,550	2,300
F	8,400	10,300

Note: **Treatment F represents the crop raised from naturally-sprouted seeds kept stored for about three months after lifting, which is the normal procedure.**

It was clear from the above yield values that seed tubers preserved with Barsprout and stored for long periods cannot be used for planting without serious fall in yields.

The use of hormones or chemicals for sprout inhibition in potatoes is of recent origin. Luckwill (3) of the long Ashton Research Station has reported on the arrest in sprouting of stored potatoes in boxes or sacks or in field camps by methyl-ester of alpha-naphthalenacetic acid, the rate being 0·5 to 3·0 oz. of the chemical in a suitable carrier per ton of tubers, depending on the season of treatment and the length of storage period. Glasslick (2), on the other hand, found that complete control of sprouting was difficult by large-scale trials at Kent, using methyl-ester and methyl alpha napthyl-methyl ester. Bradley and Dean of America (1) found that it was possible to inhibit sprouting of Chippewa potato tubers which had already broken dormancy, by the use of napthalene acetic acid and its sodium salt, applied at 8 grams per bushel, when the treated tubers were stored for 40 days at an average temperature of 58°F

The results of the studies reported lead to the following conclusions :

(1) The effective life of Barsprout, for controlling sprouting in dormant tubers, lasts for a period of about six weeks following treatment. Further development of sprouts in tubers that have just begun sprouting in storage can be retarded up to a period of about seven weeks following treatment. The effect of the chemical wears off after the above critical time limits.

(2) The product, while useful for preservation of table potatoes, cannot be recommended for treatment of tubers intended for seed, since the yields resulting from them are very poor.

Agrl. Research Station,
Nanjanad.

M. D. AZARIAH.

BIBLIOGRAPHY

1. Bradley R. H., and Dean L. C. Sprouting inhibition of non-dormant Chippewa potatoes. *Amer. potato Jour. 1949;* 26 : 279—286.

2. Glasslick, H. H. Prevention of sprouting in potato clamps. *Gdner's Chron; 1946;* 825, 54—55.

3. Luckwill, L. C. The use of growth substances to inhibit the sprouting of potatoes in storage., *A. R. Long. Aston. Res. Station, 1946—47.*, 79—84.

4. Saptharishi, K., and Azariah, M. D. Control of sprouting and loss of weight in table potatoes during storage. *Madras Agricultural. Journal* Vol. XXXIX, May 1952.

AWARD OF MASTER OF SCIENCE DEGREE

Sri. B. Viswanath Shetty, B. sc., has been declared qualified for the M. sc., degree by the University of Madras, the subject of his Thesis being "*Cyto-Genetical Studies in the cultivated Grapes* (Vitis viriefera L) *of South India, and the related wild species.*"

Gleanings

Balanced Plant Nutrition: Plants need food in sufficient quantities. The important plant food elements required by crops are nitrogen, phosphorus and potassium. Nitrogen produces rapid growth and increases yield of leaf, fruit or seed. Phosphorus stimulates early root formation and growth and hastens maturity and seed formation. Potassium imparts vigour and disease resistance to the plants, reduces lodging and strengthens stalks and stems. A good crop is one which has all these qualities and these can be achieved only through supply of N, P_2O_5, and K_2O in the right proportions. From the point of view of yields over a long period of time along with a good quality of the crop can be sufficient. But a good yield over a long period of time along with a good quality of the crop can be ensured only through supply of balanced plant nutrients.

This fact has been amply recognised in many foreign countries where farmers use plant nutrients in the required proportions as revealed in the ratio of fertiliser consumption, to get bumper harvests.

The ratio of N, P_2O_5, K_2O consumption in different countries.

	N.	P_2O_5	K_2O
Austria	1	1.5	1.6
Belgium	1	0.9	1.5
Canada	1	2 3	1.7
Denmark	1	1.1	1.9
France	1	1.9	1.5
Finland	1	2.1	1.6
Germany (west)	1	1.0	1.9
Japan	1	0.5	0.7
Italy	1	1.7	0.2
Netherlands	1	0.6	0.8
Norway	1	1.0	1.4
Sweden	1	1.4	1.0
U. S. A.	1	1.2	0.9
UnitedKingdom	1	1.4	1.0
World	1	1.2	0.9
India	1	0.1	0.09

Thus we are lagging behind even the world average, leave alone some of the other countries. The farmers in other countries generally make good the loss of plant food elements by using balanced fertilisers in liberal quantities whereas the farmer in India uses small quantities of fertilisers and that too unbalanced. Till recently the opinion was prevalent that Indian soils had enough of phosphate and potash, and what was required was only nitrogen for increasing crop yields. As a result of this the Indian farmer never thought of using any other fertility of using only nitrogen and not other plant nutrients.

Is it a fact that our yields are low because we use of little of fertilisers and that too unbalanced? Does it not appear that there is a good correlation between high yields and balanced fertiliser consumption? If Indian agriculture is to improve we have to find suitable answers to these questions.

(FERT. REV. JAN. 57)

Chemical Soil Tests to help plant growth: India has developed a chemical soil test adapted to Indian soils and 24 laboratories, strategically situated, will soon be in operation in the States of Bihar, Tripura, Kerala, Pepsu, Madhya Bharat, Madhya Pradesh, Coorg, Madras, Hyderabad, Bhopal, Rajasthan, Andhra, Punjab, Bombay, West Bengal, Mysore, Orissa, Ajmer, Sourashtra, Assam, Vindhya Pradesh, Himachal Pradesh, Uttar Pradesh and Delhi. Soil samples here will be tested free of charge. Equipment for the laboratories is now arriving and is being sent to the 24 locations. One of the most important issues in soil testing is to obtain a composite soil sample which represents a given area, for a soil test can be no better than the sample upon which analytical work is done. This type of sampling is used almost universally in the drawing samples for tests.

Soil Samples: Cultivators interested in getting the soil of thier plot of land tested might contact the gram sevaks, obtain instruction from and learn how to take a soil sample. The following considerations should also be kept in view. 1. Ordinarily each field should be treated as a sampling unit. However, two or more small fields, which are adjacent and uniform in appearance, production and past treatment, may be grouped together into a single sampling unit. But if areas within a field are different in appearance, slope, drainage, soil colour or past treatment, eaeh one should be sampled searately. Fields in India are usually small, but fields larger than 10 acres should be divided so that one sample represents no more than 10 acres. 2. Take a separate composite sample for each soil area or field. In taking soil samples a soil auger or a narrow-bladed khurpi are satisfactory tools. In very friable soils, a large stiff-handled spoon may sometimes be used. 3. Take a uniform core (or thin slice.) of soil from the surface from 10-20 spots over the field. Collect all the cores or slices in a clean container, mix well in the container or on a clean cloth, and reduce the sample to about $\frac{1}{2}$ pint in size. Draw as nearly as possible the same size of slice from each spot, and keep the slices small. If the slices or coves are small enough that no quartering is necessary, as such the better, since it is difficult to mix damp soil. 4. Avoid drawing cores or slices from spots which appear to be unrepresentative. Examples of unrepresentative areas are old bunds, marshy spots, within 50 feet of roads, near trees or hedges, compost heaps, buildings, etc. 5. The soil is easiest to sample when its moisture content is such as to make it suitable for ploughing. The best time to sample is often after ploughing. 6. Do not sample within 3 months after an application or fertilizer containing phosphate or potash. 7. Any clods or lumps should be broken up before they dry out. Fairly wet samples, should be spread out in the shade and dried without artificial heat before being packaged. 8. Place sample of desired size in clean cloth bag or cardboard carton for transmission to the soil testing laboratory. 9. Label each sample with a number and the cultivator's name. Be sure to make a record of the ares which the sample represents in such a manner that it is clearly identifiable. 10. Fill out the information sheet to be sent with the sample, as fully as possible, since this will greatly help the soil scientist in making his recommendations.

In addition, the cultivator must give a history of the field, of which he sends a sample, in the prescribed record sheet. Information about location, depth of sampling, moisture condition at the time of obtaining the sample-for instance, whether it was dry, moist or wet- and soil type are to be given in this "sheet." Moreover, drainage conditions-good, fair or water-logged-and erosion-slight, severe or nil- are also to be mentioned. Special soil conditions, such as impermeable sub-soil, Kankar layer, salt incrustation, etc., and slopiness of land, if any, are also to be commented upon. The "record sheat," contains questions relating to the crops grown previously or to be grown in future and the uniformity of plant growth over the entire area. The information furnished in reply to the question in "record sheet" forms part of important data for the soil scientist, giving him, along with the results of the chemical soil test, all the facts to enable him to tell the cultivator how he can grow bigger crops from his plot of land.

(R. ENGLE)

The Amino Acid and Nitrogen Content of Cane Juice: Though the amount of nitrogenous material in cane juice is small it is capable of exerting a profound influence not only on clarification but even on the recovery of sucrose from molasses. The limitations of crystalling sugar from molasses is based on the concept that when an organic solute other than sugar reaches saturation in concentrated molasses, the crystallisation of sucrose ceases. Hence, amino acids due to

their low solubilities exercise a controlling influence on sucrose crystallisation. Different cane varieties studied did not show any characteristic variation in their major amino acid content, which varied from 0·05 to 19·2 millions per litre. The nitrogen content was found to vary between 0·011 to 0·065 per cent. As the plant changes from the vegetative to the reprodustive phase, there is an increase in carbohydrate material and consequently a fall in nitrogen content. Nitrogen fertilisation has been found to affect plant composition in two ways- i. increase in nitrogen content and consequent fall in soluble carbohydrates and ii increase in water content of plant, thus depressing actual level of all constituents. Nitrogen intake also causes a rise in pH of the cell sap and permits greater swelling of the protoplasmic colloids. Increasing doses of nitrogen fertisation have increased the nitrogen as well as aminoacid content of the juice.

(FARMER)

Weather Review — For January, 1957

RAINFALL DATA (IN INCHES)

Division	Station	Total rainfall for the month	Departure from normal	Total since 1st January 1956
North	Madras (Meenambakkam)	0·0	— 1·4	0·0
	Tirurkuppam*	0·0	— 1·6	0·0
	Vellore	0·0	— 1·5	0·0
	Gudiyatham*	0·0	— 1·2	0·0
East Coast	Palur*	0·0	— 1·6	0·0
	Tindivanam*	0·0	— 0·1	0·0
	Cuddalore	0·0	— 2·4	0·0
	Nagapattinam	0·0	— 2·7	0·0
	Aduthurai*	0·2	— 1·7	0·2
	Pattukottai*	0·0	— 2·4	0·0
Central	Salem	0·0	— 0·3	0·0
	Coimbatore (A. M. O.)* ..	0·0	— 0·5	0·0
	Coimbatore	0·0	— 0·6	0·0
	Tiruchirapalli	0·0	— 0·8	0·0
South	Madurai	0·0	— 0·8	0·0
	Pamban	0·5	— 2·1	0·5
	Koilpatti*	£	— 1·2	£
	Palayamcottai ..	Tr	— 1·7	Tr
	Ambasamudram* ..	0·0	— 3·8	0·0
	Nagarcoil	0·3	— 0·5	0·3
Hills	Kodaikanal	Tr	— 3·2	Tr
	Coonoor*	0·0	— 4·2	0·0
	Ootacamund*	0.0	— 0·8	0·0
	Nanjanad*	0·0	— 0·5	0·0
West Coast	Pattambi*	0·0	— 0·1	0·0

Note:— 1. *Meteorological Stations of the Madras Agric. Dept.

2. Tr. Trace (0·01″ to 0·04″)

3. £ = Actual Rainfall was 0·04″

The weather in Madras State was mainly dry in the first eighteen days of the month. During this period there were mild fluctuation in the night temperatures. On 19—1—57 a few stations in Madras State had light localised showers. From 20—1—57 to 30—1—57 the weather was dry in Madras State. On 30—1—57 rainfall occured at a few places in south Madras.

The rainfall figures given in the above statement will indicate that droughty weather prevailed practically throughout the State. The rains at Aduthurai, Pamban and Nagarcoil were sub-normal. There was no noteworthy rainfall in any place in Madras State. Just before the onset of Summer this sort of dry weather will make the water position very acute. The rainfed cotton crop will have a very bad set back. On the whole the season in January 1957 was highly unfavourable to the agriculturists.

The zonal rainfall in inches are furnished below:

Zonal Rainfall

Name of Zone	Rainfall for the month	Depature from Normal	Remarks
North	Nil	— 1·4	Far below normal
East Coast	£	— 1·8	do
Central	Nil	— 0·6	do
South	0·1	— 1·7	do
Hills	Nil	— 2·2	do

£ = Actual rainfall is 0·03″

Agricultural Meteorology Section,
Lawley Road P. O.,
Coimbatore, 11—2—1957

C. B. M. & M. V. J.

OBITUARY

SRI ULLAL VITTAL RAO

It is with deep regret that we record the death of Sri U. Vittal Rao, retired Marketing Officer. The late Mr. Vittal Rao was an old student of the Agricultural College, Coimbatore. He was a keen sportsman and during his student days, Mr. Vittal Rao was the mainstay of the College teams for hockey and cricket. He entered service as a Botanical Assistant in the Sugarcane Section in 1915 and contributed much to the knowledge of sugarcane. He was Lecturer in the Agricultural College in Agronomy and subsequently worked in the districts as a District Agricultural Officer and later in the Marketing Section in the development of agricultural marketing, from where he retired.

Mr. Rao was closely associated with the Madras Agricultural Students' Union, and our Journal. He was Manager, Secretary and a member of the Editorial Board for quite a number of years. His enthusiasm for organising sports and entertainments for the annual functions of the Union is remembered by his friends even today.

A gentleman of upright character, sincere and unostentatious, extremely courteous in his behaviour towards one and all, the late Mr. Rao was highly respected by every one and his death will be mourned by a wide circle of his friends. The Madras Agricultural Union offer its heartfelt sympathies to his bereaved family.

Departmental Notifications

Gazetted Officers — Postings and Transfers

Name and present post	Posted as
Azimuddin, A., F. M., State Seed Farm, Senkulam,	D. A. O., Pattukottai.
Dorai Raj, K., Asst. in Paddy, Pattukottai,	S. D. O., Vellore.
Ekambaram, C., D. A. O., Cuddalore,	Asst. Agronomist, A. R. S, Nollikuppam.
Krishnan, R. H., S. D. O., Vellore,	Supdt., A. R. S., Bhavanisagar.
Thirumalacharya, N. C., Spl. D. A. O., Vellore,	D. A. O., Kanyakumari.
Venkateswara Iyer, P. A., Vice-Principal, Agri. College, Coimbatore,	Headquarters Deputy Director of Agriculture, (Inspection), Madras.

Upper Subordinate Officers

Dwarakanath, K., Agrl. Eng. Supervisor, Trainee at Bellary,	Agrl. Eng. Supervisor, Soil Conservation, Kodaikanal.
Duraiswamy, G., Agrl. Eng. Supervisor, Trainee at Bellary,	Agrl. Eng. Supervisor, Soil Conservation, Coimbatore.
Kannan, E. B., Agrl. Eng. Supervisor, Trainee at Ooty,	Agrl. Eng. Supervisor, Soil Conservation, Gudalur.
Nageswaran, R., Agrl. Eng. Supervisor, Trainee at Bellary,	Agrl. Eng. Supervisor, Soil Conservation, Coimbatore.
Pandya Perumal, S., Agrl. Eng. Supervisor, Trainee at Ooty,	Soil Conservation Asst., Vellore.
Ramarathnam, M. V., Agrl. Eng. Supervisor, Trainee at Ooty,	Agrl. Eng. Supervisor, Soil Conservation, Coonoor.
Ranganathan, R., Upper Subordinate, Trainee at Bellary,	Soil Conservation Asst., Coimbatore.
Sundarapandyan, J., Agrl. Eng. Supervisor, Trainee at Ooty,	Agrl. Eng. Supervisor, Soil Conservation, Vellore, Kadambuliyur.
Venkataraman, B., Upper Subordinate, Trainee at Ooty,	Soil Conservation Asst., Vellore, Kadambuliyur.

Review of Market Conditions of Commercial Crops in the Areas of Market Committees for the Month of December, 1956.

Cotton : (Cdy = 784 lbs. Pothi = 280 lbs.)

Tirupur : The Cotton market at Tirupur revealed a dull tone this month. The market started with an opening balance of 6782 cdys of lint at the commencement of the month with which was added 1269 cdys of lint by way of receipts. The receipts included 254 cdys of cambodia and 12 cdys of Karunganni lint locally ginned. Total despatches from Tirupur market amounted to 2914 cdys leaving a closing stock of 5128 cdys of lint at the close of the month. The Kapas market had an opening balance of 5852 pothis at the begining of the month. Receipts totalled 3396 pothis. Disposals during the month were 5141 pothis, leaving a closing stock of 4107 pothis at the end of the period under review.

The prices of lint were quoted at Rs. 875/- to 975/- per cdy for Cambodia variety and Rs. 781/- per cdy for Karunganni variety, while that of Kapas were at Rs. 110/- to 115/- per pothi for Cambodia and Rs. 105/- per pothi for Karunganni variety.

Ramanathapuram District : The timely rains during the year have been more beneficial to the Karunganni cotton in this district giving good scope in the current year's production. The existing level in the cotton market is however reported to be dull and weak throughout the month with practically no arrivals of kapas. The small arrivals are from the old stocks in the market. At Rajapalayam demand for Uganda lint from upcountry markets continued to be moderate. The three markets of Rajapalayam, Virudhunagar and Sattur put together opened with a stock of 2380 pothis of Kapas and 3265 cdys of lint at the beginning of the month. Receipts and disposals amounted to 2000 pothis of Kapas and

1400 cdys of lint and 2830 pothis of Kapas and 1680 cdys of lint respectively. There was a closing stock of 1550 pothis of Kapas and 2985 cdys of lint at the end of the month.

The prices of different varieties of lint and Kapas in these markets were :

	Opening Rate	*Closing* Rate
Karunganni Kapas per pothi ...	106/8-109	105-108
Tinny Karunganni Kapas per pothi ...	...	96-102
Tinny per pothi	66/8-75	52-92
Uganda Kapas per pothi :		
I Sort	116/8-120/12	116/-120
II Sort	100-112/8	...
III Sort	58-92	50-84
Karunganni lint per cdy. ...	826-866	801-805
Tinny Karunganni lint per cdy. ...	800-825	...
Tinny lint per cdy.	746-810	750-761
Uganda per cdy :		
M. U. 2 Certified.	...	1012
Uncertified	970	970
Cotton Seeds per Md. of 82 2/7 lb. :		
Karunganni Seeds.	10/5-11/5	8/10-10
Cambodia Seeds.	6/-	4/5-5/5
Uganda Seeds.	7/8-	6/12

South Arcot District : Trading in cotton in this district was dull and prices had a declining trend during the month. This dull tone in the market is the result of accumulated stocks left at Tirupur market. The market had a stock of 243 pothis of Kapas at the beginning of the month. About 1097 pothis were received at Villupuram market and 195 pothis at Panruti Market. Total despatches to Tirupur in Coimbatore district amounted to 1385 pothis. There was a closing stock of 150 pothis at the end of the month with the trade.

The ruling price of cotton kapas in this district was quoted at Rs. 42/8 per pothi at Panruti and Rs. 50/8 per pothi at Villupuram.

Groundnut : (In this section : Cdy = 531 lbs. of kernels
Bag = 80 lbs. of pods)

South Arcot District : The month opened with 2732 tons of kernels with the trade in all the markets of the district. As the harvest of winter crop was proceeding briskly arrivals in markets improved appreciably and totalled 9602 tons. Receipts from other districts and states amounted to 2205 tons and 478 tons respectively. Disposals by way of crushing in mills and country cheekkus etc. have come to 7165 tons and 200 tons respectively. Total purchases in the district by the firms at other places have improved and stood at 2771 tons in the month. Exports to Pondicherry State amounted 152 tons, there was a closing stock of 4119 tons of kernels at the end of the month with the trade.

Prices of kernels in the district declined in the first week of the month due to increased arrivals but in the 2nd and 3rd weeks they improved with rumours that export quotas for oil would be announced. This however did not materialise and prices declined at the end of the month as the quality of the kernels marketed was wet due to rains. The average prices ranged from Rs. 144-8-0 to 154-6-0 per cdy according to quality.

North Arcot District : The market for Groundnut in this district depicted a deserted picture as there were no large scale buyers. Consequent on the announcement that there would be no export quota unless the prices came down to a reasonable level, buyers withdrew from the market. Sellers were also reluctant to part with their produce, for any lower rates. In expectation of a big spurt in the prices ryots and merchants have elected to stock their produce and hence arrivals were poor in all the markets of the district. In the beginning of December 1956 the stock with the merchants were 1752 tons of pods and 862 tons of kernels. During the course of December 1237 tons of pods and 2312 tons of kernels were received. Sales came to 1156 tons of pods and 1092 tons of kernels. Thus during the close of the last month the merchants had a stock of 943 tons of pods and 2966 tons of kernels. Since the trade circles were unnerved, the demand for oil was completely nil and the Calcutta and Bombay interests have withdrawn from buying. This has resulted in piling of stocks with the merchants.

The prices of kernels in this district were quoted around Rs. 150/- to Rs. 160/- and oil around Rs. 305-320 per cdy. Pods were sold at Rs. 14-17 per bag of 80 lb. while oil cake was quoted at Rs. 8-8/8 per Indian standard maund.

Ramanathapuram District : The harvests of groundnuts in the district were at its speak and it is reported that the bulk of harvests have already been realised. As a result of good yield, the arrivals of groundnut

at Virudhunagar market were very heavy during the month. It is even reported that the arrivals in this season are double that of last year's quantity. Consequent to the local arrivals improving in abundant measure, receipts from other places have declined. The Virudhunagar market started with an opening balance of 20 tons of pods alone at the commencement of the month. Arrivals during the month amounted to 1750 tons of pods and 900 cdys of kernels while disposals were of the order of 1690 tons of pods and 900 cdys of kernels leaving closing stock of 80 tons of pods alone at the end of the period.

The prices of Groundnut pods and kernels ruled out in this market during the month are extracted below :

	Prices	
	Opening rate.	Closing rate.
Groundnut Kernels : (per cdy.)		
I.	160 0-0 — 167-0 0	150 0-0 — 163 0 0
II.	150-0-0 — 155-0-0	140 0-0 — 146 0 0
Groundnut Pods : (per bag.)		
I.	14 0 0 — 16 0 0	16-0 0 — 16-8-0
II.	... ... —	14-0 0 — 15-0-0
Groundnut Oil : (per 35 lb.)		
	22-0 0 — 22 4 0	21-4 0 — 21-8-0
Groundnut Cake : (per Std. Md.)		
	9 5-0 — 10-0-0	7-12-0 — 8-2-0

Gingelly : (In this section Bag = 168 lb.)

South Arcot District : Viruddachalam is the only centre in this district having significant transactions of gingelly. This market received 378 bags while the other markets Tindivanam and Panruti, together received 43 bags. The trade had an opening balance of 350 bags. Receipts from other places amounted to 113 bags at Viruddachalam and 35 bags at Tindivanam markets. Rotaries and country cheekkus consumed 33 bags and 406 bags respectively for conversion to oil. Despatches to other districts amounted to 218 bags. The month closed with a balance of stock of 262 bags.

Since the arrivals were meagre, prices improved. The average price per bag of 168 lb. varied from Rs. 65-9-0 to Rs. 73-0-0 per bag according to quality.

Tobacco : (In this section cdy. = 500 lbs.)

Tirupur : The tobacco market at Tirupur disposed of 1235 cdys. of chowing and 250 cdys of cheroot tobacco during the month. Despatches were made to Ramanad, Kanyakumari, North Arcot, South Arcot, Tiruchirapalli, Tirunelveli, Salem and the Nilagiris districts of Madras State and Andhra, Mysore and Kerala States. The tobacco Market was generally dull.

The prices ranged during the month as follows :

(Prices per candy)

Variety	*I Grade* Rs.	*II Grade* Rs.	*III Grade* Rs.
1. *Chewing — Sun cured :*			
(a) Meenampalayam.	300—325	220—275	150—175
(b) Other varieties	225—270	130—175	75—120
2. *Cheroot varieties :*			
Sun cured (grown in Erode and Bhavani Taluks)	260—340	200—255	120—160
3. *Chewing varieties :*			
Pit cured (grown in Palladam and Sulur areas)	200—300	125—175	75—125

Review of Administrative Activities of Market Committees for December, 1956.

General : Except Coimbatore Market Committee and South Arcot Market Committee, other Market Committees continued to function under 6A of the Madras Commercial Crops Markets Act under their revenue heads. The election in the North Arcot Market Committee in the case of one grower's constituency which has been contested took place during the month and the result stands yet to be released. The other two Market Committees are continuing under legal restraints.

The following are the progress of licencing by the Market Committees during the month.

	Section 5 (1)		Section 5 (3)		Weighmen	
	A	B	A	B	A	B
North Arcot Market Committee	659	3194	386	1493	141	826
South Arcot Market Committee	505	3233	466	2848	459	2690
Coimbatore Market Committee	677	1064	166	1120	43	683
Tirunelveli Market Committee	—	13	—	16	—	17
Ramanathapuram Market Committee	—	29	—	28	—	5

A — During the month.

B — Upto the end of the month from January 1956.

Meetings: Two meetings of Coimbatore Market Committee took place on the 7th and 22nd of the month. Twenty seven subjects were discussed and disposed of. A meeting of the newly constituted Committee of the South Arcot Market Committee was held on 6—12—1956. Out of 23 subjects in the Agenda, 18 subjects were disposed of and the rest were not taken up for want of time.

Quality appraisal: The South Arcot Market Committee during the month analysed 97 samples drawn from 7613 bags of arrivals comprised in 3547 lots. The crop marketed at Cuddalore and Panruti contained large percentage of moisture, than at Ulundurpet and Vridhachalam.

Quality competition: Forty one entries were secured for the quality competition for winter groundnuts during the month as against nil entries in the previous month in which the competition commenced. More entries could not be secured due to the poorer quality of kernels marketed.

The Madras Agricultural Students' Union.

PATRONS.

1. Dewan Bahadur C. Arunachala Mudaliar, Zamindar of Chunampet
2. Raja Sri Krishnachandra Gajapathi Narayana Dev, Maharaja of Parlakimidi
3. Sri V. C. Palaniswami Gounder, M. L. A., Vellaikinar, Coimbatore
4. Sri C. P. Ramaswami Ayyar, Ootacamund
5. Sri R. Jeevandass, Varnasi, Parlakimidi
6. G. R. Hilson Esq., Norwich, England
7. Sri Ramachandra Ananga Bhima Dev, Kesari Gajapathi, Raja Saheb of Budokhemidi, Berhampore, Ganjam
8. Rao Bahadur K. T. Alwa, Mangalore
9. Sri Gurdial Singh Sidhur, C/o Sri S. Sant Singh Sidhu, Algom Khurd, Lahore
10. Sri R. K. Kandaswamy, "Brindavan", Tiruchi Road, Coimbatore
11. ,, G. D. Naidu, "Gopal Bagh", Avanashi Road, Coimbatore
12. ,, K. Thiruvenkata Mudaliar, Munniyur, Andankarai P. O., (Via) Alattambadi, S. R.
13. ,, S. Ramamurthy Iyer of Kunnam, Land-Holder and Secretary, South Rajan Mirasdars' Association, "Vibrajee", Alangad
14. ,, P. G. Karuthiruman, M. L. A., Nanjai Puliampatti, Thukkanaickanpalayam, (Via) Anthiyur
15. ,, K. Venkataswami Naidu, B. A., B. L., Gopalapuram, Coimbatore
16. ,, C. V. Bashyam, "Dharma Vilas", College Road, Coimbatore
17. ,, V. C. Subbaiya Gounder, Gnanambika Mills P. O., Coimbatore
18. ,, M. S. Palaniappa Mudaliar, 125, Rajah Street, Coimbatore
19. ,, A. K. D. Balaramaraju, Land-Lord, Rajapalayam
20. ,, N. S. Vydianatha Iyer, Sengalipuram, (Via) Kodavasal, Tanjore
21. ,, K. P. Amrithanatha Iyer, President, Co-operative Union Ltd., Ambalapuzha Taluk, Monkompu P. O., T. C. State
22. ,, M. Subba Reddy B. sc., (Ag.) Mango Range, P. O. Nilgiris
23. ,, M. R. Balakrishnan, F. A. O., Irrigation Agronomist, Thailand
24. ,, S. Raja Iyengar, Landlord and Agriculturist, Madurai
25. ,, K. Rangachari, Landlord, 16, Old Munsiff's Court Street, Saidapet, Vellore
26. ,, R. Ramakrishna Naidu, Palamalai Ranganathar Mills, Perianaickanpalayam
27. ,, C. M. John, Agricultural & Technical Advisor, The Potash Scheme, India, 7, Lavelle Road, Banglore-1
28. ,, S. N. Venkataraman, 33, Third Main Road, Gandhinagar, Madras - 20
29. ,, Dr. T. S. Sadasivan, Director, Botany Laboratory, Madras University, Triplicane, Madras
30. ,, W. P. A. Soundira Pandian, Pattiveeranpatti, Batlagundu P. O., (Via) Kodai Road.
31. ,, M. A. Ayee Gounder, Kasipalayam, (Via) Gobichettipalayam.

OFFICE-BEARERS FOR 1956—'57.

Dr. K. C. Naik, President (ex-officio)
T. R. Narayanan, Resident Vice-President
A. H. S. Sarma, Editor
D. John Durairaj, Secretary

Council (16 Members)

President
Resident Vice-President
Editor
Secretary

Mofussil Vice-Presidents

C. S. Seshadri
Muhamad Ali
L. T. S. Francis

Mofussil Members

K. Meenakshisundaram
M. J. David
K. Saptharishi
T. Srinivasan
P. Krishnaswami

Resident Members

K. Varadachari
S. Ramaswami
G. Ramanathan (Student)
D. Paulas, Club Secretary

Managing Committee (10 Members)

Resident Vice-President
Editor
Secretary
D. Meenakshi Sundaram (Manager)
Kumari, M. V. Sukanya Bai (Treasurer)
J. Sakharam Rao
K. Rajagopal
K. S. Shetty
Kalil Ahmad (Student)
Rajaguru, (Student)

Editorial Board (8 Members)

Editor
Secretary
Manager
S. Varadarajan
C. Balasubramania Mudaliar
J. Sakharam Rao
G. Ramanathan (Editor, Tatler)
D. Paulas, Club Secretary (ex-officio)

Edited and published by T. R. Narayanan, B. Sc. (Ag.), M. A. (Cantab.), for the Madras Agricultural Students' Union and printed by A. Subramaniam, at The Coimbatore Co-operative Printing Works, Ltd., Coimbatore.

(1)	(2)	(1)	(2)