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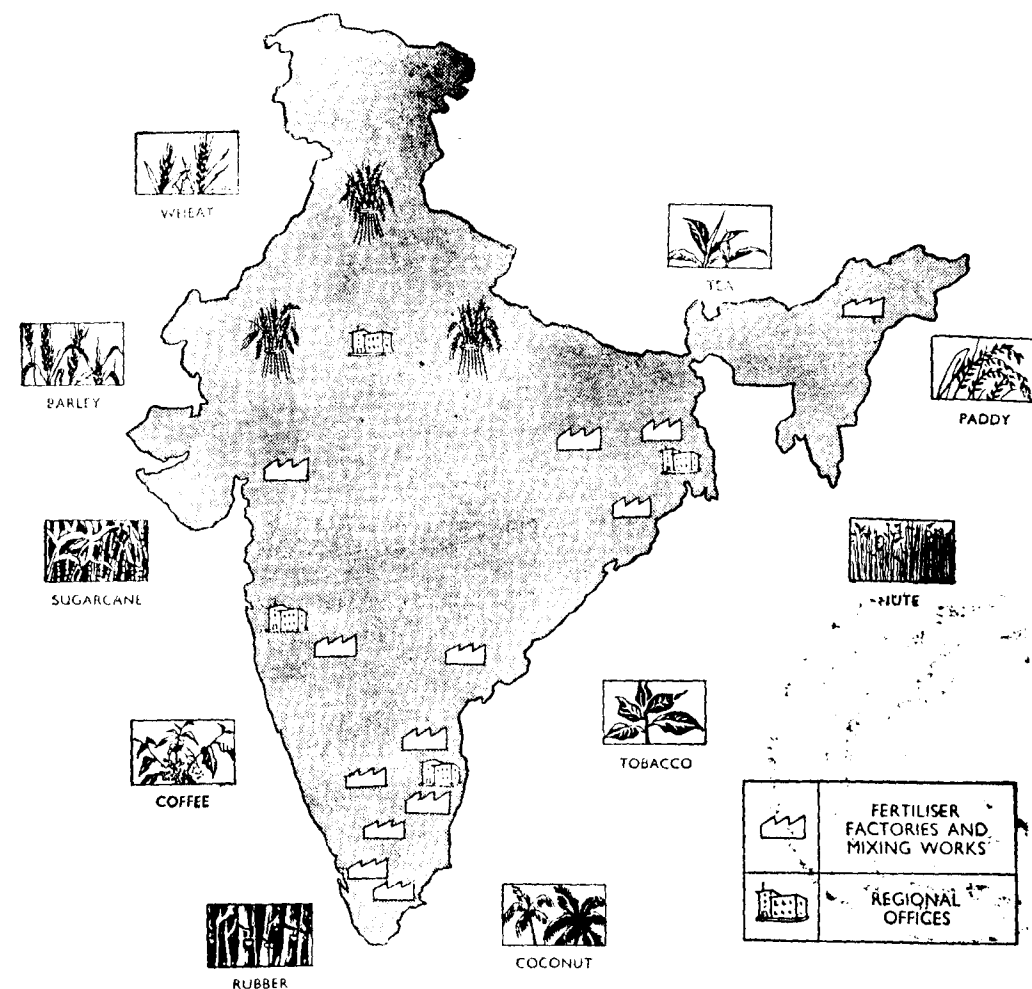
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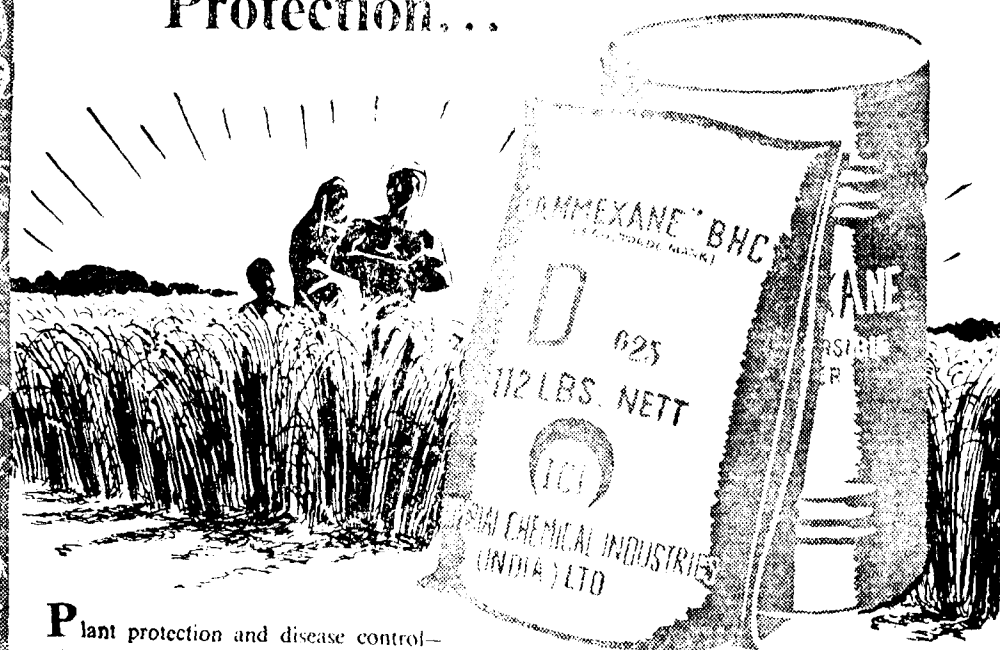
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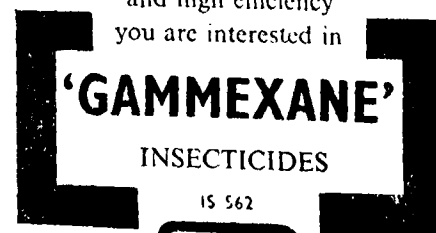
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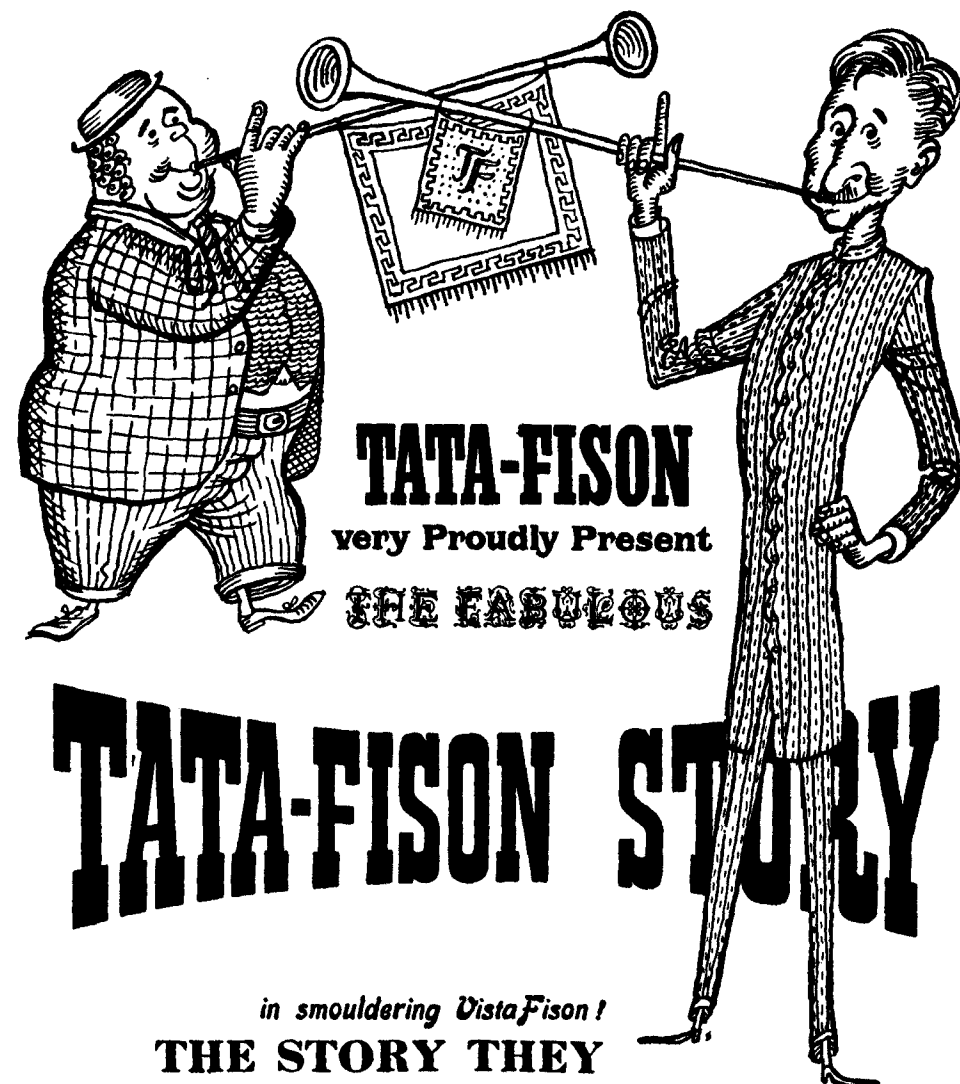
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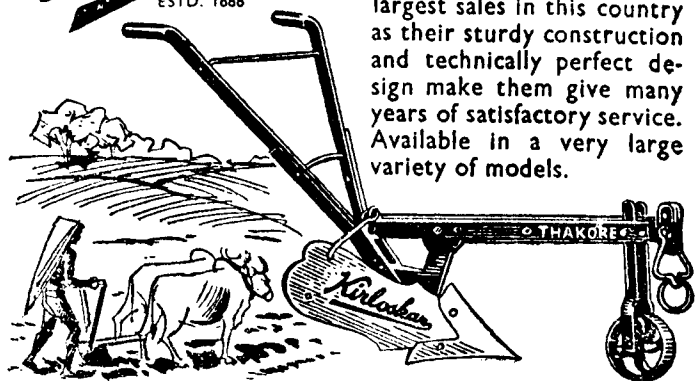
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The Madras Agricultural Journal

Vol. XLVI

January 1959

No. 1

Editorial

The New Year: We wish all our members, contributors, subscribers and advertisers a happy and prosperous New Year. We also desire to thank them and all others, who had helped us in several ways to run the journal successfully during the past year and hope to continue to enjoy their support in an increasing measure this year also.

With 1959, the Madras Agricultural Journal has entered in its forty eighth year of publication — a long period to be really proud of. It has usefully served the cause of Scientific Agriculture in this State in no small measure. However its continuance and improvement depends upon the continuance and sustained support and patronage of persons interested in Agriculture both from within and outside the State. Improvement is possible by receipt of a large number of suitable contributions for publication and by increase in membership of the Madras Agricultural Students' Union and the number of subscribers. We would therefore appeal to all the members of the Agricultural Department who are not members and also those in the extension and crop protection wings to enrol as many patrons and subscribers as possible to enable us to run the Journal more efficiently without feeling the pinch for finance. Our Journal is in need of good improvement, for which at present finance is a great bottleneck.

Past and Future: The past year has not been without significance to agriculture and the Agricultural department. Food production has been particularly good in spite of the vagaries of the Moonsoons and would soon make the State self sufficient if not surplus. The Department's efforts have considerably helped the crop production programmes of the State. Liberal Central grants have augmented the departmental activities under the Second Five Year Plan. Several State Seed Farms and new Research and Extension projects

have been put into force. Post Graduate courses leading to M. Sc., by study have been established in the subjects of Soil Science, Plant Breeding and Genetics, Horticulture and Plant Pathology and will be extended during the year to Agronomy, Agricultural Economics and Entomology. These would supply the much needed trained technical personnel for Agricultural Research under the National Plan. The pay scales of the Upper Subordinates of the Departments have been revised upwards after long agitation in the press and on the platform. The Nalagar Committee has submitted its report. How far, the recommendations will be implemented by Governments is yet to be known and we hope the members of the Agricultural Department will have a better deal in future.

Prices of most of the Agricultural Commodities have spiralled and Governments—Central and State—are contemplating to check the present trend of increase in prices. We hope, in this effort, the interest of the Agriculturist—the dumb tiller of the soil—will not be allowed to suffer. He should be paid parity prices with consumer goods he requires lest he loses and production falls. The talk of land reforms is already having a damping effect on the enthusiasm for increased production. We hope land reforms,—Co-operative Farming, fixation of ceilings and vesting surplus lands in Panchayats to be managed through Co-operatives—will be ushered in with the largest measure of agreement and co-operation of all land-owners, particularly, those with large holdings, so as not to cause deterioration in crop production, which is the primary problem of the State, faced with a growing population.

Whether land reforms are brought in one form or other, prices stabilised or not, the role of the Agricultural Department is definite. Its goal is increased production, of food and non-food crops. We hope all the members of the Department—research and extension—rank and file—will work in devotion to duty and spare no pains to achieve the targets set up in the National Plans for the year 1959. We would assure, that the Madras Agricultural Journal, would play its humble but worthy role in this effort, by ensuring informative, regular, and timely publication.

Progress of Plant Protection in Madras State

by

K. R. NAGARAJAN, B. Sc., (Ag.),
Crop & Plant Protection Officer (Entomology)
Coimbatore.

Introduction : The heavy toll levied by insect pests on cultivated crops has been an annual feature, ever since man took to Agriculture. The situation, of late has taken a turn for the worse due to the changing conditions. The drive to increase agricultural production and the ready response of the cultivators have lead to some unforeseen repercussions by way of creating new problems in insect control. The intensive cultivation coupled with the rapid expansion of the area under the plough has resulted in the various crops being grown throughout the year and this has provided a favourable atmosphere for the breeding and perpetuation of the numerous insect hordes. As a result, pests which were already reckoned as serious have increased in their virulence while some species which were considered only of minor importance, have now, assumed quite serious proportions - viz. the rice jassid (*Nephotettix bipunctatus*) flared up into prominence by 1948 and has now come to stay as a very serious pest of paddy. Added to this the white jassid (*Tettigoniella spectra*), the fulgorid (*Nysia atravenosa* and *Nilaparvata lugens*) along with the black Pentatomid (*Scotinophora lurida*) etc., claim very serious attention in certain localities. The steady and alarming increase in the depredations by the field rat (*Bandicota bengalensis*) would only render the picture more lurid.

Another instance would be that of the insect enemies of the long staple variety of cotton. The damage by the green jassid (*Empoasca devastans*), the aphid (*Aphis gossypii*) and the spotted bollworm (*Earias sp*) has reached such terrific levels that insecticidal treatments have practically fitted themselves into the regular agricultural practices of certain tracts. In the case of sugarcane, it is subject to a very serious pest—the early shoot borer (*Chilo traea infuscatella*). Similar examples can be quoted in large numbers. In short, the situation is getting more and more critical and any definite measure envisaging the reduction of the loss would go a long way to render the country self supporting, not only in its food requirements but also in the supply of raw materials which are so vital to feed the numerous industrial enterprises.

The Madras Agricultural Department has, from its very inception, been endeavouring to afford the necessary degree of relief to the ryots and the following is a resume of its activities and the results obtained thereof.

Previous work: The entomology section was first organised at Coimbatore during 1912 for investigating the insect problems of the Madras State and evolving suitable measures of control. Attention had, necessarily, to be concentrated in the earlier days towards the study of the fundamental aspects, like the life history and habits, nature and extent of damage, distribution, host plants etc. The subject itself being still in its infancy and the efficacy of the then available insecticides limited, the control measures suggested had to be more of a mechanical or cultural nature based on the habits of the insect, with an occasional use of the chemicals then in vogue. These were at best more palliative inciting little or no enthusiasm from the ryot. A fund of information has, however, accumulated as a result of the pioneer work which has served as a strong foundation for further work on the economic side.

Present work in Plant Protection: One of the outstanding discoveries of the second world war period was about the potentialities of the chlorinated hydrocarbons, DDT and BHC, as effective killers of disease carriers like mosquitoes, flies, lice etc. The findings were first kept as top secrets and used to protect the fighting forces. With the termination of the war, attempts were made to adapt these chemicals for the control of crop-pests as well. With the rapid inflow of further experience and knowledge, safer formulations were evolved and some of them were found to confer a remarkable degree of relief. The advent of these wonder chemicals happily synchronised with the formation of a separate Plant Protection Section by 1949. Two Officers, one for the control of insect pests and the other for fungus diseases were appointed - one set for the Andhra and the other for the residuary State. They were provided with a compliment of two assistants (one for Entomology and one for Mycology) for each district to popularise the approved remedial measures. The field being practically virgin, astounding developments were possible within a very short time. The old methods were summarily discarded and the entire aspect of Plant Protection was revolutionised, by switching on to the newer synthetic insecticides. The response of the cultivators has been something magnificent, as evidenced by the enormous quantities of chemicals purchased and consumed by them.

The first field scale use of these chemicals, taken up by the Government Entomologist Coimbatore, was that of BHC 5% against the rice grasshopper (*Hieroglyphus banian*) in the Andhra during September 1948 and that of DDT 5% and 50% WP against the rice jassid (*Nephotettix bipunctatus*) extensively in the Tamil districts by November of the same year. Encouraged by the convincing results obtained against these two major pests, the chemicals were rapidly tested against numerous other insect pests as and when opportunities occurred. The results being uniformly successful, the subsequent popularity of the insecticides was only a matter of course. Statement I furnishes the data regarding the draw of the chemicals with the progressive increase from year to year.

With the extensive use of the chemicals and passing off of the first wave of enthusiasm, some of the serious draw-backs like phytotoxicity, absorption and retention, tainting, selective action, secondary infestation by other pests etc., which are inherent with most of the chlorinated hydrocarbons, came to light as a result of the experiments conducted by the Government Entomologist, Coimbatore, and by others elsewhere. Greater care had, therefore, to be exercised in advocating a judicious application of the formulations.

The next advancement in the synthesis of these modern insecticides was the production of organo-phosphorous compounds like, HETP, TEPP, Parathion, Malathion, Diazinon etc. These chemicals are strong poisons and are therefore more potent - the special features being that their application is not fraught with the adverse effects as are common with some of the hydrocarbons. The results of the trials carried out by the Government Entomologist, Coimbatore, were transmitted to the public with no loss of time.

A more recent development is the synthesis of the systemic insecticides. When sprayed on the plants or applied to the soil, they are absorbed and retained by the plant, rendering themselves proof against infestation by mites, aphids, coccids etc. Though their range of action is, at present, limited to a few categories of pests, the discovery has served as an incentive for further research and the results, if successful, would take us much nearer the solution of certain pest problems which have so far baffled human ingenuity. All the products that are now being freely used in the treatment of extensive areas of food, vegetable, fruit and commercial crops have been detailed in Statement I. The area of the crops treated with the above chemicals is given in Statement II.

Statement III furnishes the particulars of the acreage protected against serious pests of rice like the stem borer, jassids and rats and the quantity of food grains saved. Statement IV shows the areas under important commercial crops as well as the number of fruit and coconut trees effectively treated.

A perusal of the data furnished in these statements would clearly indicate the progress and appreciable increase in the areas tackled and the quantities of the insecticides consumed, the sum total of which would naturally go to improve the country's resources and enrich the cultivator.

Conclusion: Insect pests of cultivated crops have come to stay and the havoc caused by them is increasing to almost ruinous levels year by year. Unless requisite protective measures are taken, Agriculture, which constitutes the very back-bone of the country would ere long cease to be a profitable proposition. The Plant Protection Organisation of the Madras Agricultural Department has clearly indicated the possibilities of harnessing the latest discoveries in science to the benefit of the cultivator and, considering the larger interests of the country's welfare, the results amply show that steps taken towards the expansion of this organisation would be well worth the trouble and expense.

STATEMENT I.

Quantities of Insecticides purchased and distributed by the Department
(in Tons)

	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58
BHC 5%	107½	31½	15½	30	7½	..	..
BHC 10%	130	310	768	583	900	718	752
BHC 50% (WP)	46½	42½	71	96½	89½	115½	106
DDT 5%	49½	20	95	47½	70	91	105½
DDT 10%	110	..	1	..	1	½	..
DDT 50% (WP)	90	7	13	11	9	7	45½
Toxaphene 10%	4	16	22	..	5	..	..
Cotton dust	51	..	..	..	..	..	..
Calcium arsenate	3½	1/3	3	3	7	3	5
Zinc phosphide	2	3-1/3	2	12½	..	2½	2
H. E. T. P.	½	2/3	1/3	1½	1	1/3	1½
Parathion (Folidol tubes of 100 cc.)	..	..	..	1750	17,418	43,400	39,975
Endrin (Gallons)	..	..	..	..	202	..	500

STATEMENT II.

Area of crops treated by the Plant Protection Organisation.

Year	Food crops in acres	Vegetables in acres	Other crops in acres	Total in acres	Total No. of fruit trees & other trees
1949-50	12,110	2,562	2,986	17,658	25,160
1950-51	37,288	5,209	15,033	58,130	43,650
1951-52	1,05,352	6,491	22,604	1,34,447	23,815
1952-53	1,83,135	9,280	34,000	2,26,415	38,024
1953-54	1,68,300	9,730	27,300	2,05,330	37,200
1954-55	1,38,820	6,270	32,090	1,77,780	83,440
1955-56	1,88,680	9,040	50,130	2,47,850	1,30,470
1956-57	1,72,660	11,250	75,225	2,59,135	1,16,160
1957-58	2,22,530	18,720	1,06,860	3,48,110	1,12,900

STATEMENT III.

Area under paddy affected by the Stem borer, Jassids, Rats and other pests
(in Acres)

Year	Stem borer		Jassids		Rats		Other pests		Total area (Cols 2+4+6+8)	Appraised Quantity of food grains saved in tons
	Area treated	As % to the total area treated	Area treated	As % to the total area treated	Area treated	As % to the total area treated	Area treated	As % to the total area treated		
1	2	3	4	5	6	7	8	9	10	11
1949-50	522	4.70	1,768	15.80	3,372	30.20	5,506	49.30	11,168	1,042
1950-51	1,165	3.82	5,371	17.71	10,693	35.26	13,111	43.23	30,340	2,758
1951-52	2,845	2.84	10,396	10.40	69,443	69.13	17,338	17.33	1,00,022	9,093
1952-53	7,987	4.91	13,039	8.06	1,18,892	73.10	21,689	13.43	1,61,607	14,700
1953-54	18,832	12.10	60,237	38.90	33,750	21.80	42,201	27.20	1,55,020	14,092
1954-55	20,678	16.70	17,138	13.90	62,988	51.20	22,468	18.20	1,23,272	11,206
1955-56	29,090	16.22	28,405	15.85	96,845	53.91	25,141	14.02	1,79,481	16,316
1956-57	47,030	29.70	35,031	22.10	40,307	25.45	36,012	22.75	1,58,380	14,400
1957-58	55,300	27.70	48,650	24.32	50,660	25.33	45,290	22.65	1,99,900	18,100

STATEMENT IV.

Area under Commercial crops and the number of fruit trees and other trees treated.

Year	Commercial Crops				Total	Fruit Trees & other Trees (in No.)				Total
	Chilli	Cotton	Ground nut	Other crops		Coco-nut	Man-goes	Citrus	Other fruit trees	
1	2	3	4	5	6	7	8	9	10	11
1949-50	2,126	182	200	478	2,986	9,830	7,835	6,767	728	25,160
1950-51	12,220	601	1,228	1,584	15,633	17,001	11,932	9,727	4,990	43,650
1951-52	18,403	2,350	1,181	670	22,604	2,002	9,504	12,309	..	23,815
1952-53	23,236	2,036	1,087	7,641	34,000	9,480	16,278	11,834	432	38,024
1953-54	17,509	1,651	1,419	6,721	27,300	12,460	8,884	15,000	858	37,200
1954-55	18,215	3,548	1,614	9,313	32,690	58,636	5,974	6,787	12,043	83,440
1955-56	20,091	13,121	1,803	9,115	50,130	8,914	26,348	12,759	10,419	1,30,470
1956-57	39,956	13,176	11,424	10,669	75,225	65,334	24,497	19,314	7,015	1,16,160
1957-58	48,050	24,830	18,400	15,580	1,06,860	33,290	54,690	14,940	9,980	1,12,900

Statement III furnishes the particulars of the acreage protected against serious pests of rice like the stem borer, jassids and rats and the quantity of food grains saved. Statement IV shows the areas under important commercial crops as well as the number of fruit and coconut trees effectively treated.

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BHC 50% (WP)	46½	42½	71	96½	89½	115½	106
DDT 5%	49½	20	95	47½	70	91	105½
DDT 10%	110	..	1	..	1	½	..
DDT 50% (WP)	90	7	13	11	9	7	45½
Toxaphene 10%	4	16	22	..	5	..	..
Cotton dust	51	..	..	..	..	..	..
Calcium arsenate	3½	1/3	3	3	7	3	5
Zinc phosphide	2	3-1/3	2	12½	..	2½	2
H. E. T. P.	½	2/3	1,3	1½	1	1/3	1½
Parathion (Folidol tubes of 100 cc.)	..	..	..	1750	17,418	43,400	39,975
Endrin (Gallons)	..	..	..	..	202	..	590

STATEMENT II.

Area of crops treated by the Plant Protection Organisation.

Year	Food crops in acres	Vegetables in acres	Other crops in acres	Total in acres	Total No. of fruit trees & other trees
1949-50	12,110	2,562	2,986	17,658	25,160
1950-51	37,288	5,209	15,633	58,130	43,650
1951-52	1,05,352	6,491	22,604	1,34,447	23,815
1952-53	1,83,135	9,280	34,000	2,26,415	38,024
1953-54	1,68,300	9,730	27,300	2,05,330	37,200
1954-55	1,38,820	6,270	32,690	1,77,780	83,440
1955-56	1,88,680	9,040	50,130	2,47,850	1,30,470
1956-57	1,72,660	11,250	75,225	2,59,135	1,16,160
1957-58	2,22,530	18,720	1,06,860	3,48,110	1,12,900

STATEMENT III.

Area under paddy affected by the Stem borer, Jassids, Rats and other pests
(in Acres)

Year	Stem borer		Jassids		Rats		Other pests		Total area (Cols 2+4+6 +8)	Appraised Quantity of food grains saved in tons
	Area treated	As % to the total area treated	Area treated	As % to the total area treated	Area treated	As % to the total area treated	Area treated	As % to the total area treated		
1	2	3	4	5	6	7	8	9	10	11
1949-50	522	4.70	1,768	15.80	3,372	30.20	5,506	49.30	11,168	1,042
1950-51	1,165	3.82	5,371	17.71	10,693	35.26	13,111	43.23	30,340	2,758
1951-52	2,845	2.84	10,396	10.40	69,443	69.13	17,338	17.33	1,00,022	9,093
1952-53	7,987	4.91	13,039	8.06	1,18,892	73.10	21,689	13.43	1,61,607	14,700
1953-54	18,832	12.10	60,237	38.90	33,750	21.80	42,201	27.20	1,65,020	14,092
1954-55	20,678	16.70	17,138	13.90	62,988	51.20	22,468	18.20	1,23,272	11,206
1955-56	29,090	16.22	28,405	15.85	96,845	53.91	25,141	14.02	1,79,481	16,316
1956-57	47,030	29.70	35,031	22.10	40,307	25.45	36,012	22.75	1,58,380	14,400
1957-58	55,300	27.70	48,650	24.32	50,660	25.33	45,290	22.65	1,99,900	18,100

STATEMENT IV.

Area under Commercial crops and the number of fruit trees and other trees treated.

Year	Commercial Crops				Total	Fruit Trees & other Trees (in No.)					Total
	Chilli	Cotton	Ground nut	Other crops		Coco-nut	Man-goes	Citrus	Other fruit trees		
1	2	3	4	5	6	7	8	9	10	11	
1949-50	2,126	182	200	478	2,986	9,830	7,835	6,767	728	25,160	
1950-51	12,220	601	1,228	1,584	15,633	17,001	11,932	9,727	4,990	43,650	
1951-52	18,403	2,350	1,181	670	22,604	2,002	9,504	12,309	..	23,815	
1952-53	23,236	2,036	1,087	7,641	34,000	9,480	16,278	11,834	432	38,024	
1953-54	17,509	1,651	1,419	6,721	27,300	12,460	8,884	15,000	856	37,200	
1954-55	18,215	3,548	1,614	9,313	32,690	58,636	5,974	6,787	12,043	83,440	
1955-56	20,091	13,121	1,803	9,115	50,130	8,914	26,348	12,759	10,419	1,30,470	
1956-57	39,956	13,176	11,424	10,669	75,225	65,334	24,497	19,314	7,016	1,16,160	
1957-58	48,050	24,830	18,400	15,580	1,06,860	33,290	54,690	14,940	9,980	1,12,900	

Cultivation of Cambodia Cotton in Avanashi Taluk

by

N. THULASI RAO,

(Cotton Assistant, Avanashi, Madras).

Introduction : Irrigated Winter Cambodia cotton is cultivated in Madras State over an area of 3.5 lakh acres. The area is mostly confined to the districts of Coimbatore, Tiruchi and Salem. Yet, different systems of cultivation are in vogue. Avanashi, a taluk of Coimbatore district forms a distinct subzone of the Irrigated Cambodia tract where cotton is planted late in October after the harvest of Ragi. The seedcotton from Avanashi area is much sought after in trade and goes by the special name as "Avanashi Cambodia" and is valued higher.

Soils and climate : In Avanashi tract, cotton is raised in garden lands. The soil is mostly blackloam with a few patches of red loam. The water table is low, being 25 to 30 feet and in summer it may go down to 40 feet even. A total rainfall of 28" is received annually.

Cotton cultivation : (a) *Preparatory cultivation :* American cotton is raised after the harvest of ragi in the garden lands under irrigation from wells.

The preparation of land for sowing Cambodia cotton depends upon the receipt of rain. Usually it commences from the first week of October and prolongs till the end of the month depending upon the rainfall. Immediately after the receipt of rain, the field is ploughed twice. If the monsoon or the harvest of the previous ragi crop is delayed, cotton seeds are dibbled in ragi stubbles. In either case, there is no preparatory cultivation.

(b) *Manuring :* The cotton crop is not usually manured. Only the previous crop of ragi is manured. Farm yard manure, compost and tank silt are the manures applied. The manuring is done heavily. Normally, 75 cartloads are applied per acre. It is not uncommon to apply even 125 cart loads per acre. Sheep penning is also practised rarely. Of late, some of the enterprising ryots are applying Ammonium Sulphate as a top dressing at the rate of 20 lb. Nitrogen per acre. Some ryots apply 2 to 3 bags of groundnut cake as a basal dressing, in addition.

(c) *Seeds and sowing :* MCU. 1 is the common variety grown in this tract. Occasionally, Cambodia 2 is met with. A heavy seed rate of 20 to 25 lbs. is used per acre. The seeds are sown mostly broadcast and covered. Dibbling is also practised. After sowing, beds are formed with channels for irrigation. Forming ridges and furrows and dibbling seeds on the sides of the ridges are uncommon.

(d) *Intercultivation :* Hand weeding is not usually done to the cotton crop unless the field becomes weedy. Two mammatty hoeings are given, the first, after one month and the second two months after sowings.

The cotton grower of this area is interested in the proprietary compounds of insecticides, now available in the market and uses them freely in protecting his crop. "Endrin" and "Folidol" are freely used. Jassids, aphids and boll-worms are the common pests affecting the cambodia cotton in this tract. Two sprayings are usually given and three sprayings at times depending upon the prevalence of pests.

The black arm disease is rare in this area.

(e) *Irrigation :* The irrigation is from wells. Cheap electricity is available even in remote villages. Usually each well is fitted with electric motor and pumpset. Still, mhots are functioning side by side. The mhots are used to supplement the irrigation by the electric motors and pumpset. The mhots are put to the maximum use in summer months when it has become common to impose restrictions on the consumption of electricity and hence mhots have become indispensable.

Normally, the cotton crop is irrigated 10 to 15 times depending upon the rainfall received during the crop growth. The usual interval between 2 irrigations is about 16 days and at the time of flowering and during the period of drought, the crop will be irrigated at an interval of 10 days.

(f) *Harvest :* The Cambodia cotton crop raised in the month of October starts flowering in December, January and is ready for harvest by March. The harvest is done by hired labourers who attend to their work from 8-00 A. M. to 6-00 P. M. with an interval of an hour. The burst boll is snapped by hand, the *kapas* is collected in the folds of their lap. After a sizable quantity

is obtained, they are put in a basket and carried to the house of the cultivator where the harvested produce is heaped in a corner of his house. The picking is done as and when required usually at an interval of 3 to 4 days. The *kapas* is not left to remain on the plant unnecessarily due to the menace of field rats. It is the usual practice to harvest the good and stained *kapas* separately. If the sowing of cotton is delayed and the season for planting of Ragi in July is nearing, all the green bolls left over on the cotton crop are harvested, dried in the sun, beaten with a stick, *kapas* collected and mixed with the produce or sold separately.

Four pothies (of 280 lbs.) of *kapas* is obtained, on an average per acre. The *kapas* is sold away to the merchants from Tiruppur and locally to the ginning factories. The small land holders and peasant proprietors sell away their *kapas* as and when they are harvested to clear off the debts incurred for cultivation expenses and to eke out their livelihood. The medium and big land-lords wait till the entire harvest is over and sell away their produce when the market is favourable.

(g) *Cost of cultivation*: The cost of cultivation of an acre of irrigated cambodia cotton in the Avanashi Tract amounts, on an average, to Rs. 228 and the net profit obtained therefrom is Rs. 308 as shown below:—

Expenditure.		Rs. nP.	
1. Preparatory cultivation (2 ploughings) ...	...	32	50
2. Cost of 20 lbs, of seed and sowing ...	...	3	50
3. After cultivation (one hand hoeing) ...	...	15	50
4. do. (two mammatty hoeings) ...	...	30	00
5. Cost of Endrin or Folidol and spraying twice ...	...	30	50
6. Irrigation (12 at Rs. 5/- per irrigation) ...	...	60	00
7. Harvest ...	...	45	75
8. Pulling out stalks ...	...	12	35
Total ...		228	25

Receipts.			
Cost of 4 pothies of <i>kapas</i> per acre at Rs. 130/- per pothy	...	520	00
Cost of 4 cart loads of stalks at Rs. 4/- per cart load ...	...	16	00
Total ...		536	00
Total expenditure Rs.	...	...	...
Profit ...	...	228	25
		307	75

Suggestions and Recommendations.

1. Some of ryots are still in the habit of raising Cambodia 2. The advantages of growing MCU. 1 in the place of Cambodia 2 should be brought home to these ryots.

2. Many of the ryots still depend upon bazaar seeds. Sustained propaganda is necessary for the use of improved seeds supplied by the Agricultural Department.

3. The advantages of line sowing should be demonstrated to the cultivators.

4. Installation of electric motors in wells will reduce the cost of irrigation.

5. Shortage of bulky organic manure is keenly felt. It is, therefore, suggested that green manure crop be grown and incorporated in the fields.

6. The application of 200 lbs. of Ammonium Sulphate per acre in two split doses may be advocated.

7. All the growers of MCU. 1 cotton may be advised to register their crop and sell away the produce after the entire harvest is over.

8. To infuse the bargaining power among the ryots and to enable them to wait till the entire harvest is over, arrangements should be made to give them interest free loans.

9. Measures should be taken to control the menace of field rats.

10. Picking *kapas* in the cool hours of the morning, drying it in the sun before storage and storing the produce in rat-proof godowns should be advocated.

Tenuous Plants in *Sorghum Roxburghii*

by
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Introduction: The occurrence of thin, wiry plants is one of the many seedling abnormalities in *Sorghum*. Sieglinger (1929) found such plants in a single head-row population of F₅ generation from a cross between two varieties of Kafir. He termed these plants as 'tenuous' and described them as slender grass-like plants which produced practically no secondary or coronal roots and made all their development from single seminal roots. He also considered that a single factor explanation seemed 'plausible' to account for their occurrence and that in the recessive condition the factor prevents the development of the coronal roots and the thickening of the stems to such an extent that the plants do not fruit. This is the only previous record of tenuous plants in cereals, as far as the author is aware.

An experience similar to that of Sieglinger's (loc. cit.) was obtained at the Millet Breeding Station, Coimbatore, in the monsoon crop-season of 1953, with a variety of *Sorghum* locally known as *Thalaivirichan cholam* and taxonomically described by Snowden (1936) as *Sorghum Roxburghii* var. *hians*, Stapf. The present study was undertaken to gather more details and confirmatory data on the occurrence and behaviour of such tenuous plants in *Sorghum*.

Materials and Methods: A single head-row population among several of selfed seed of strain Co. 19, which threw up conspicuously frail and lanky seedlings along with the normal ones, contributed the material for this study. The seedlings were noted when the crop was about four weeks old and had been thinned and hoed once. Though this had disturbed the proportion in which the segregating types originally occurred in the line, counts were taken in the existing population which indicated 376 normal seedlings as against 77 of the tenuous. The abnormal seedlings had their internodes thin and drawn-out, in sharp contrast to the normals in which the stem was thicker, much compressed and totally ensheathed at that age. Most of the tenuous plants were withering out fast and the few available healthy ones were carefully transferred to pots and nursed with a standard nutrient solution (Knop's). Only one from a dozen such plants established well and survived for about eleven weeks.

The normal phenotypes in the particular head-row plots were selfed at flowering time and finally 26 earheads were available from that stock for further study. Among the lot, 16 heads exhibited heterozygosity for seedling character in preliminary tests, and subsequently 500 seeds from each of these heads were sown in small plots to determine the segregation by actual counts.

Experimental Data: The counts obtained are:

Total number of heterozygous heads tested.	Total number of normal seedlings.	Total number of tenuous seedlings.	Total.
16 Observed	5,755	1,821	7,576
Expected (3:1)	5,682	1,894	7,576
$X^2 = 3.752$		$P > 0.05$	

The data furnished above would sustain the assumption that the segregation is a simple monogenic one. Plate 1 shows, comparatively, the growth of both normal and tenuous seedlings about four weeks old. At that age, no coronal roots have appeared in the tenuous seedlings and their leaves are also longer and narrower than those of the normal seedlings. The measurements of two representative seedlings, both normal and tenuous, at the age of four weeks are furnished in the following table.

Particulars	Normal	seedlings	Tenuous	seedlings
	1	2	1	2
Length of seminal root	5.4 cm.	3.7 cm.	7.4 cm.	5.2 cm.
Length of coleoptile	2.4 "	1.0 "	3.2 "	3.6 "
Height of plant (from the lowest node to the tip of longest leaf)	22.1 "	23.1 "	34.0 "	39.4 "
Length of first internode	Much compressed and ensheathed.		5.6 "	4.5 "
Length of second internode	do.		5.0 "	3.9 "
Number of visible leaves	7	7	6	6
Dimensions of third leaf (L/B)	13.1 cm. 5.0 mm.	19.5 cm. 8.0 mm.	23.3 cm. 2.5 mm.	28.5 cm. 2.5 mm.
Dimensions of fourth leaf (L/B)	22.1 cm. 2.0 cm.	23.0 cm. 1.5 cm.	24.0 cm. 3.0 mm.	30.3 cm. 3.0 mm.

Plate 3 shows a well grown tenuous seedling at the age of 11 weeks and plate 2 shows a normal plant of comparable age from the same parent stock, in marked contrast with regard to relative growth under identical conditions. The heights of the normal and tenuous plants at this age were almost the same (about 150 cm. measured from the lowest node to the tip of longest leaf) but the length of the stem was nearly double in the case of the tenuous plant (110 cm.) against that of the normal plant (61 cm. measured from the lowest node to the apical meristem in the desheathed stem).

The tenuous seedlings are easily spotted right from germination. They appear to grow faster than the normal seedlings in the initial stages due to rapid elongation of the internodes, which are wiry and well exposed from the leaf sheath. The depth of green in the leaves is also lighter. Under favourable field conditions the tenuous seedlings tenaciously survive even up to 11 weeks and under pot conditions, for, about three weeks more, after which they gradually dry cut. In most of the plants the growing tip dries up after the fifth or the sixth node and axillary buds are activated. Indeterminate growths of adventitious roots are also noticeable even up to the sixth node. The duration of the normal plant in this particular variety of Sorghum is about 140 days and flowering commences about 40 days earlier to seed maturity. In the case of the tenuous type, no plant could be made to live long enough to come to flowering age even with all possible care. Examination of the shoot terminals at the maximum growth of the tenuous plants failed to reveal any floral primordia, as against their clear presence in the normal plants of the same age. While in a great majority of the tenuous plants there was only the seminal root, an additional, though very short, coronal root was also discovered in a few older plants. Under pot conditions, the maximum penetration of the meagrely branched and the only main root of the tenuous plant is about five inches. The normal plant under similar conditions produces a fan of well branched and ramified coronal roots from the basal nodes. On account of the weakness of the root system and the thinness of the stem, the tenuous plants do not stand erect unless propped, after three weeks of age.

Discussion: The present record runs more or less parallel to that made by Sieglinger (loc. cit) in the same genus, Sorghum. But while this record relates to *Sorghum Roxburghii* var. *hians* Stapf, Sieglinger's relates to Kafirs which belong to a different species, *Sorghum caffrorum*. And also, Sieglinger's experience of the tenuous plants was obtained in a crossed progeny while in the present instance

such plants were obtained by spontaneous mutation in a selfed population. Sieglinger also observed that the tenuous plants do not produce earheads but at best show only rudimentary glumes and ovaries and no anthers or stigmas at all. In the present case of record the tenuous plants, even at their maximum growth, showed no clear evidence of any floral parts, either rudimentary or normal, in the apical meristem. The tenuous plants mentioned by Sieglinger appears to have had the same period of growth as that of the normal from the same parent stock. A different experience was obtained here, with the tenuous plants not living beyond 11 weeks while the normal plants of the same descent had a growth duration of 20 weeks. The difference may have been due to the variety or seasonal factors or both. Sieglinger has not mentioned about the rapid elongation of the internodes and leaves in the seedling stage of the tenuous plants, which mark them out very conspicuously from other normal seedlings. Working on the balance of the original crossed seed which threw out the tenuous plants, Sieglinger obtained segregation counts of normal and tenuous seedlings, and considered that a single factor explanation was plausible, to account for the inheritance of this abnormality, even though the number of normal plants was over-proportionate. In the present case a clear monohybrid segregation was obtained between normal and tenuous seedlings, through selfed seed of heterozygous plants that occurred in a mutant selfed progeny.

The gene responsible for the occurrence of tenuous plants in Sorghum is designated *tn* and it gives rise to thin, attenuated and grossly under-developed plants with poor survival value.

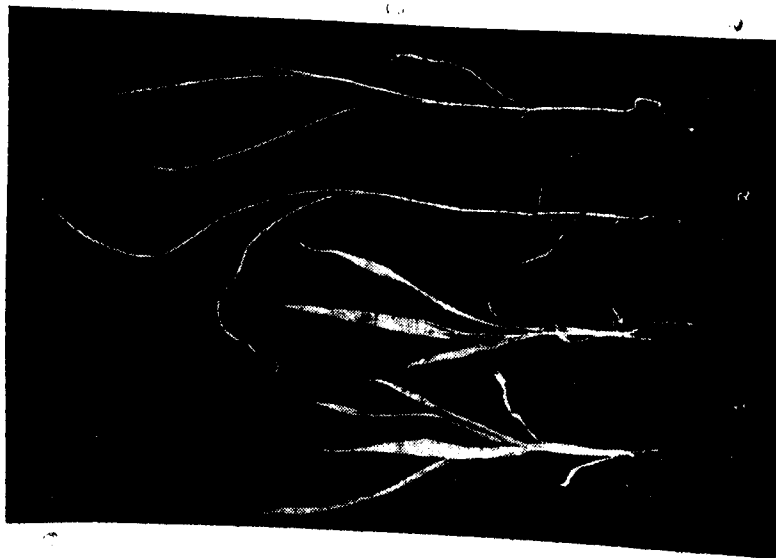
Summary and Conclusions: Observations following a mutational occurrence of tenuous plants in a selfed population of *Sorghum Roxburghii* var. *hians* Stapf., (an indigenous variety locally known as *Thalaiviricham cholam*) made it possible to indicate that a single gene in its recessive condition, produced this abnormality, which is also lethal in ultimate effect.

Acknowledgment: The guidance given Sri M. A. Sankara Ayyar, formerly Cotton Extension Officer and by Sri B. W. X. Ponnaiya, Millet Specialist, in the matters of progress of this work and preparation of this paper respectively, is gratefully acknowledged.

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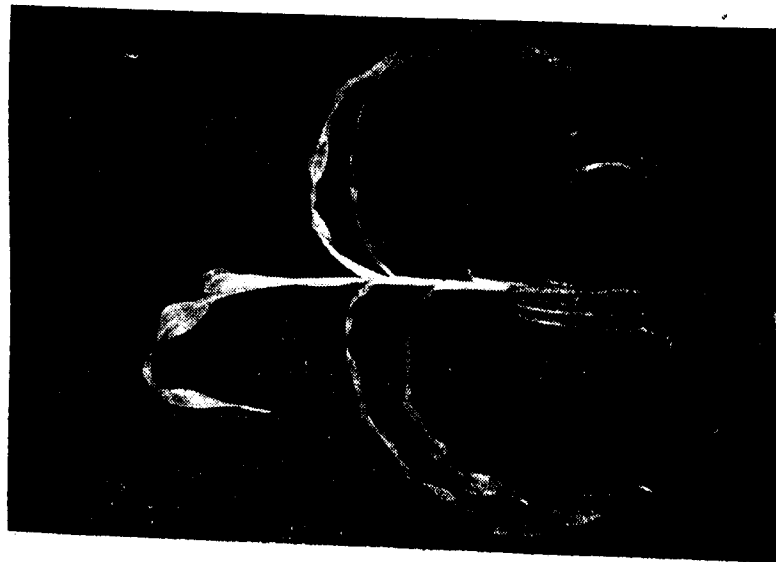
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PLATE 1



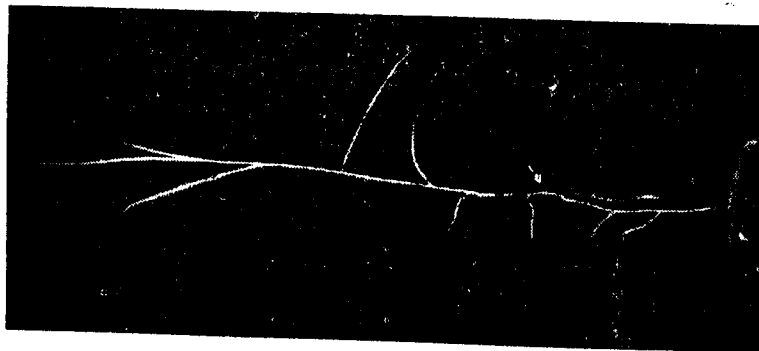
FOUR WEEK OLD SEEDLINGS
1. Normal 2. Tenuous
[Note Coronal roots, indicated by arrow, in the normal seedlings and their absence in the tenuous seedlings.]

PLATE 2



NORMAL SORGHUM PLANT—II WEEKS

PLATE 3



TENUOUS SORGHUM
PLANT—II WEEKS
[Note tiny adventitious root, indicated by arrow, from the fifth node.]

Research Note

Effect of Manuring on the Composition of Paddy Grain.

Increased food production to cope with the increased population is the cry of the country. Better seeds and intense manuring have been exploited to a great extent to increase crop production. Since improvement in quality of seed is as important as the yield of grains, samples were drawn to study quality of grains from the experiments laid out during 1957—'58 by the Agronomist and Professor of Agronomy, Coimbatore. He had done the experiments to study the effect of tillage and manuring on the yield of grain. He had the following treatments:

(a) Manurial:—

1. No manure
2. 30 lb. N+30 lb. P_2O_5
3. 60 lb. N+60 lb. P_2O_5 +60 lb. K_2O
4. 60 lb. N + 120 lb. P_2O_5 + 120 lb. K_2O
5. 90 lb. N + 120 lb. P_2O_5 + 120 lb. K_2O

(b) Tillage:—

1. First ploughing with Iron plough + 4 ploughings with country plough.
2. First ploughing with Iron plough + 8 ploughings with country plough.

The results of analysis of the paddy grain samples (strain Co 25) drawn from the above treatments are presented below in Table I.

TABLE I.
Composition of Paddy Grains.

Tillage Treatments	Manurial Treatments	Moisture %	Nitrogen %	Total Phosphorus (P_2O_5) %	Phytin Phosphorus %	Potash (K_2O) %	Lime (CaO) %	Yield per acre lb.
First ploughing with Iron plough + 4 ploughings with country plough.	Control	7.65	1.16	0.23	0.18	0.47	0.14	2760
	30 lb N + 30 lb P_2O_5	7.75	1.02	0.26	0.20	0.61	0.08	2900
	60 lb N + 60 lb P_2O_5 + 60 lb K_2O	6.99	1.06	0.28	0.19	0.55	0.10	3400
	60 lb N + 120 lb P_2O_5 + 120 lb K_2O	8.42	1.09	0.31	0.27	0.73	0.11	3150
	90 lb N + 120 lb P_2O_5 + 120 lb K_2O	9.41	1.10	0.52	0.49	0.65	0.10	3170

TABLE I (Contd.)

Tillage Treatments	Manurial Treatments	% Moisture	% Nitrogen	Total Phosphorus (P ₂ O ₅) %	Phytin Phosphorus %	Potash (K ₂ O) %	Lime (CaO) %	Yield per acre lb.
First ploughing with Iron plough + 8 ploughings with country plough.	Control	6.89	1.01	0.57	0.50	0.84	0.10	2740
	30 lb N + 30 lb P ₂ O ₅	8.88	1.06	0.52	0.41	0.51	0.10	3170
	60 lb N + 60 lb P ₂ O ₅ + 60 lb K ₂ O	6.17	1.09	0.77	0.56	1.10	0.12	3320
	60 lb N + 120 lb P ₂ O ₅ + 120 lb K ₂ O	7.24	1.08	0.64	0.39	1.20	0.10	3340
	90 lb N + 120 lb P ₂ O ₅ + 120 lb K ₂ O	8.55	1.18	0.62	0.49	1.27	0.10	3200

From the data presented above in the table it is clear that (1) the increased application of Super phosphate to the soil increases the total phosphorus content of the Grain.

(2) Increasing the potash dosage also results in the increased Potash content of the grain.

(3) However increasing the amounts of Nitrogen, Phosphorus or Potash has not got any significant effect on the Nitrogen or lime content of grain.

(4) In the case of tillage treatments more number of ploughings increases the uptake of Phosphorus and Potash by the plant and also increases the Phosphorus and Potash content of the grain.

(5) As should be expected increased application of Nitrogen, Phosphorus and Potash increased the crop yield and

(6) Phytin Phosphorus which is nutritionally unimportant is increased by increasing nitrogen at higher levels of phosphorus and with increased tillage.

Sanyasi Raju *et al* (1954) have observed that increased application of Phosphorus to soil increased the Phosphorus content of Paddy grain in the laterite soils of Pattambi. Coulton and Lockard (1955) noticed that with increased Phosphorus dressings there was a great uptake of Phosphorus by Paddy crop. Krantzsa and Chandler (1951) observed that potash uptake was increased with increased potash application to soil.

The results obtained here also go to confirm the findings of the above in addition to providing some information about the effect of tillage in the uptake of nutrients.

Phytin Phosphorus (A. Mariakulandai & R. Soundararajan 1957) was found to increase with increased levels of Phosphorus in the grain obtained in long term experiments. There seem to be an indication here that nitrogen levels and tillage are also involved in the Phytin Phosphorus content of grain.

Our thanks are due to the Agronomist and Professor of Agronomy for kindly supplying the samples for analysis.

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A. MARIAKULANDAI.

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Preliminary experiments on the control of the cotton stem weevil, *Pempherulus affinis* Faust, with insecticides

Introduction: *Pempherulus affinis*, Faust, commonly known as the cotton stem weevil is one of the major pests of cotton in South India. The damage caused to the crop by this pest is often very serious. It is a tiny dark brown weevil one eighth inch in length, the grubs of which bore into the stem and cause prominent swellings generally at the lower portions of the plants. Young seedlings invariably succumb to the attack while the grown up plants, survive but lose their vigour and often lodge snapping at the swollen portions. Almost all the varieties of cotton are attacked by this weevil in this region and the variety Madras Uganda seems to be highly susceptible, in which case even the grown up plants are killed outright. Considerable work has been done on the biology and natural enemies of this pest in South India. But as regard the control measures, the previous workers have recommended only the removal of the affected plants, which though useful to a certain extent is not found to completely check the pest. Liberation of natural enemies also has not given tangible results. Since these control measures have not given satisfactory results, it was programmed to conduct experimen-

to find out the effect of application of insecticides on the standing crop at regular intervals commencing at the early stage of the crop, on the incidence of the weevil as done in the case of other cotton pests like bollworm, boll weevil etc. in India and elsewhere. Based on this programme preliminary trials were conducted at Coimbatore during the years 1955 to 1957 with new pesticides and the results of such trials are presented in this paper.

Experiments and Results: Experiments were conducted at the Central Farm attached to the Agricultural College and Research Institute, Coimbatore, in the main season crop raised from September to March for three years from 1955 to 1957. In the first two years the trials were conducted in non-replicated, observational plots of 2½ cents each and in the third year, under replication taking one cent area for each treatment. A number of insecticides viz. Aldrin, Dieldrin, Endrin, Toxaphene, Chlordane, Folidol, Gusathion, BHC, Agroicide cotton dust (a mixture of BHC 10%, DDT 5% and Sulphur 50% dust), and Basudin emulsion were tested either as dust or spray in these trials. The chemicals were applied at triweekly intervals commencing from the fourth week of sowing when the weevils appeared for egg laying, and four such applications were made. The results were assessed by recording the number of weevil-infested as well as the total number of plants in each treatment and working out the percentage of infestation. In all these trials the variety taken was Madras Uganda 1. The details of the insecticides tested in each year, the dosage used and the results obtained are given in the Tables I to III.

Among the various pesticides tested in these preliminary trials Agroicide cotton dust, Endrin sprar, and Dieldrin spray were found to be effective in warding off this weevil as the plots treated with these showed low incidence of the pest.

TABLE I		Variety MCU I	
Year 1955			
Treatments	Total number of plants in each treatment	No. of weevil infested plants in each treatment	% of weevil infestation
Agroicide cotton dust	1095	71	6.5
B. H. C. dust 10%	990	170	17.2
Toxaphene dust 10%	828	217	24.6
Endrin dust 1%	956	81	8.5
Endrin spray (1 oz. in 6½ glls.)	1217	53	4.4
Folidol spray (1 oz. in 12½ glls.)	918	227	24.7
No treatment	1041	440	42.3

TABLE II		Variety MCU I	
Year 1956			
Treatments	Total number of plants in each treatment	No. of weevil infested plants in each treatment	% of weevil infestation
Agroicide cotton dust	836	1	0.1
Endrin dust 1%	935	10	1.1%
Chlordane dust 5%	979	21	2.1
Aldrin 2% dust	978	12	1.2
Dieldrin dust 1.5%	842	20	2.3
Aldrin spray (1 oz. in 3 glls.)	836	20	2.3
Dieldrin spray 1 oz. in 3 glls.)	861	1	0.1
Gusathion spray (1 oz. in 3 glls.)	916	13	1.4
Folidol spray (1 oz. in 12½ glls.)	944	6	0.6%
Endrin spray (1 oz. in 6½ glls.)	848	5	0.6
No treatment	914	23	2.4

TABLE III		Variety MCU I	
Year 1957			
Treatments	Total number of plants in each treatment	No. of weevil infested plants in each treatment	% of weevil infestation
Agroicide cotton dust	1541	33	2.1
Chlordane dust 5%	1532	70	4.6
Folidol spray (1 oz. in 12½ glls.)	1012	71	6.8
Endrin spray (1 oz. in 6½ glls.)	1697	61	3.6
Gusathion spray (1 oz. in 3 glls.)	1457	59	4.1
Basudin emulsion spray (1 oz. in 6½ glls.)	1520	91	5.9
Aldrin spray (1 oz. in 3 glls.)	1475	53	3.6
Dieldrin spray (1 oz. in 3 glls.)	1677	54	3.2
No treatment	1291	129	9.9

Entomology Section, Agrl. College and
Research Institute, Coimbatore.

T. R. SUBRAMANIAN,
A. LEELA DAVID.

Effect of foliar application of urea on rice

That the grain yield of cereal crops like barley and wheat can be considerably increased by the application of urea in the form of foliar spray has been shown by Anna et al (1955).

A similar observation trial to find out the effect of foliar application of urea (containing 45.7% N) on the growth and yield of paddy was conducted at the Paddy Breeding Station, Coimbatore, during the main season of 1956-57 using the variety Co. 25. The different treatments given are shown in Table Table I.

TABLE I

Treat- ment	Basal Dressing (lb. per acre)			Top Dressing (lb. per acre)	Foliar Spray (lb. per acre)
	Green manure	P ₂ O ₅ (Super phosphate)	N (Amonium sulphate)	N (Amonium sulphate)	N (Urea)
1	5000	30	30	30	..
2	5000	30	30	..	30 sprayed once.
3	5000	30	30	..	30 sprayed twice (15 each time).
4	5000	30	30	..	30 sprayed thrice (10 each time).
5	5000	30	..	..	30 sprayed once.
6	5000	30	..	..	30 sprayed twice (15 each time).
7	5000	30	..	..	30 sprayed thrice (10 each time).
Control	5000	30	..	30	..

Urea was sprayed at the rate of 100 gallons per acre. The first spraying was done when the crop was in the boot-leaf stage and subsequent sprayings at five days' interval and the whole spraying process was completed before the end of flowering.

Twenty five plants were taken at random in each treatment for counts of productive tillers and measurement of height, length of panicle and proportion of grain and chaff. From the data collected in this connection it is inferred that application of 30 lbs., N per acre sprayed twice, 15 lbs., N each time, has given the maximum yield of 5514 lbs. per acre, the percentage of increase over the control being 9.4. On the basis of the current market price, the value of the additional produce of grain obtained by the foliar application of urea over the control works out to Rs. 89/- as against Rs. 23/- of the cost of urea per acre. The yield of straw also has been considerably increased by the application of urea in the form of spray viz., 700 lbs. per acre over the control.

From the results obtained it appears that (1) 30 lb. N per acre is the optimum dose for paddy crop and (2) paddy plants respond well when the nitrogenous fertilizer viz., urea is applied in the form of foliar spray as indicated by the grain and straw yields,

It can be concluded that the application of urea as foliar spray for paddy crop is likely to give promising results but needs further trial for confirmation of the results obtained so far.

Agricultural College and
Research Institute,
Coimbatore.

S. SUBRAMANIAN,
(Formerly Assistant in Paddy Section).

Preliminary studies on the increase in Cotton Yield
due to honey bee Pollination.

Introduction: The utility of beekeeping as a Cottage industry has been fully realised and our State has now about 40,000 bee colonies working in good condition. Bees collect a large quantity of nectar from flowers of Citrus, banana, coconut, cotton, etc., in the plains. The fruit trees on the hills also provide a considerable quantity of pollen and nectar and bees abound and thrive well on higher altitudes. In certain more favourable localities in Tanjore, Srivilliputhur and Rajapalayam areas of Ramanathapuram district and in Kodaikanal and Coonoor, beekeeping is practised on a commercial scale by extracting and selling large quantities of honey.

But honey bees are also known to play an important role in the production of several crops by pollinating the flowers and thus ensuring better setting and development of fruits and seeds, better yields, prevention of flower shedding, etc. This feature has been artificially exploited for increasing crop yields in many countries with particular reference to deciduous fruit trees like apples, cherries, plums and pear, several legumes, different varieties of clover, etc. It is a common practice in such countries for Orchardists and Cultivators to procure bee colonies on hire at the time of flowering and keep them in or near the fields. In recent years some workers have tried to explore the feasibility of using honey bees for cotton pollination and assess whether any beneficial effect (of pollination) would result from bee activity in Cotton yields.

Experiments of a preliminary nature were conducted at the Agricultural College and Research Institute, Coimbatore during 1955-56 and 1957-58 to find out whether and to what extent honey bees are

capable of increasing the yield of cotton under local conditions. The following paragraphs give the details of the investigations made on that aspect and the results obtained.

Review of literature: Grout, (1955) has pointed out the need for the use of honey bee pollination in the production of better fruit, fibre and seed crops. The same author has discussed in detail how honey bees make hybrid cotton possible. McGregor (1955) has revealed that cotton in cages exposed to honey bee pollination yielded 24.5% more seed cotton than that in cages excluding pollinating insects. This significant increase was noted to have been caused by corresponding increase in weight of bolls, seeds per boll and by less shedding of fruit. Weight of lint per individual seed was not affected by bee activity.

Material and method: The experiments were conducted in the Central Farm fields situated near the college Apiary during the flowering season of Cotton from December 1955 to May 1956 and from December 1957 to March 1958. A plot of size 22' x 17' containing about 350 plants were selected in the middle of the field for the above trial. It was covered on all sides including the top with a wire-gauze cage (22' x 17' x 6') and 8 meshes to an inch just before the commencement of flowering. The idea was to exclude completely this caged plot from the visits of bees and other pollinating insects. A second plot was left uncovered so as to allow free visits of bees and thus expose it for pollination. In the second season's trial, observations were made in eight such plots closely surrounding the central caged one. The entire area was within the flight range of bees belonging to the college apiary. The variety of cotton sown was M. U. 1. in the first case and M. C. U. 1. in the second season's trial. The *Kapas* obtained both from the caged as well as open plots were compared for their weight, quality of fibre, etc. for assessing the results.

Results: The following yield data for the season 1955-'56 were gathered from the experimental plots.

STATEMENT I.

Date of picking.	Plot covered with cage (wt. in grams.)	Plot exposed to bees. (wt. in grams.)
14-3-56	32.4	97.8
21-3-56	71.5	362.5
27-3-56	298.0	1281.0
4-4-56	809.0	1265.0
11-4-56	1071.0	736.0
18-4-56	257.0	220.0
25-4-56	76.0	46.5
3-5-56	11.4	19.7
Total for each plot.	2626.3	4028.5

74765

The yield data presented above show an increase of 53.4% of *Kapas* in the case of the plot left open for the visits of bees and other pollinators. As regards the quality of lint, samples of *kapas* collected separately at each picking were sent to the Cotton Specialist and the findings are (1) the length of the samples from the caged area is better than the samples from the open control plot in all the pickings while the fibre weight, maturity and strength is practically the same in both the samples and (2) the ginning percent of the open control and caged samples are 34.7 and 35.3 respectively which are practically the same.

The yield data obtained in connection with the experiment conducted during 1957-58 are presented below:

STATEMENT II.

Date of picking.	Plot covered with cage	Plot exposed to bees.							
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Ounces.	Oz.	Oz.	Oz.	Oz.	Oz.	Oz.	Oz.	Oz.
16-1-58	4.75	16.25	12.75	16.25	6.50	19.75	10.75	14.75	4.50
24-1-58	16.00	47.00	39.00	39.00	30.00	31.00	37.00	31.00	20.00
3-2-58	31.00	28.75	28.00	31.75	28.50	22.00	31.75	21.00	25.25
19-2-58	15.25	8.75	7.25	12.25	12.50	7.00	7.25	7.25	13.00
10-3-58	3.00	2.00	1.00	2.00	2.05	3.00	4.00	3.00	3.00
	70.00	102.75	88.25	101.75	81.50	82.75	91.75	77.00	65.76

Average of 8 plots — 86.44 oz.

An examination of the figures show that there is an increase of 23.34% in the yield of *Kapas* in the case of plots left open for the visits of bees and other pollinators. Regarding the quality of fibre, the caged plot has given a mean fibre length of one inch by Balls' Sorter which is the same as the other eight samples taken from open plots. The ginning percent of the open control and the caged samples are 35.1% and 35.0% respectively which are practically the same.

Discussion: Cotton flowers constitute one of the major sources of nectar for the honey bees from the month of December till May and bees visit the flowers in large numbers to collect enormous loads of nectar. In the early stages when the crop is young, bees collect nectar from the extrafloral nectaries situated on the bracts and on the calyx cups (outside) of the flowers. However, in the growing crop, they collect nectar from inside the flowers and in this act get a deposit of pollen dust on the thorax as can be seen from the pale yellow colouring on the thorax of a bee soon after visit to an open flower. Pollen grains of cotton are big-sized and thickly dotted with a sticky fluid which makes it adhere fast to the body hairs of the bees. Subsequent visits to other cotton flowers naturally results in pollination of these flowers concerned. In plots exposed to

bees, other insects like bumble bees, wasps, *Apis florea*, *Myllocerus* sp., *Danaus chrysippus*, *Dolicoris indicus*, *Cyrtacanthacris ranacea*, etc. were also noted, but their part in pollinating the cotton flowers was not separately assessed as they were very few in numbers when compared to the honey bee. It has to be stated in conclusion that the present findings are purely indicative based only on preliminary trials and have to be confirmed by more detailed replicated experiments. It has also to be admitted that the depression in yield in the case of the caged plot may be not only due to want of pollination by bees and other pollinators but also due to less of subshine and other variations in the micro-climatic conditions prevalent as a result of caging.

Summary and conclusion: Experiments conducted at the Central Farm area, Coimbatore for assessing the increased yield in Cotton due to visits of honey bees revealed an increased production of 23.34% to 53.40% over the yield obtained from plots covered with wire-gauze cages for preventing entry of bees and other pollinators. There was no difference in the quality, length and ginning percentage of fibre in the case of samples taken from both open and caged plots.

Acknowledgment: Our thanks are due to the Government Entomologist for the guidance and facilities given for carrying out the work. Thanks are also due to the Cotton Specialist for undertaking the tests of *Kapas*. To the Assistant Agricultural Engineer (Civil) we owe our thanks for erecting the experimental cages in the Central Farm fields.

Agricultural College and
Research Institute,
Coimbatore.

V. MAHADEVAN,
K. C. CHANDY.

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Review

Lal Behari Day's "Kanchanpur Revisted" by Tara Krishna Basu, Orient Longman Private Ltd., Madras-2. Re. 1/-.

The title of the book would lead one to expect comparative facts and figures about Kanchanpur before and after the visit of the author. However statistics have been avoided and the author has brought out vividly the present decadent state of the village. This is true with most of the villages in India-dissolution of joint families, village schism due to caste system, decay of community betterment System as *Barwar*, *Panchaynts* or Unions etc.). The cause for decadence is traced to Western influence—the educated leaving the villages to cities, change in social mind, caste becoming the instrument of party conflicts and community organisation and non-functioning bodies. So discord reigns supreme. The author's plea is that rural reconstruction in such villages is not to be imposed from outside. It is to be striven for and attained by the villagers' own efforts. At best, outsiders can stand by the villagers and help them in their struggle to secure economic educational opportunities:— A revolutionary task indeed.

The book is well written in simple and easy style and will greatly help the students of social service, co-operation and Agriculture and all those who have to deal with villages and villagers. The students will certainly learn how to approach villagers and villages in respect of their problems. To the Politicians and Administrators, such books will be helpful for laying out and carrying out policies in rural reconstruction.

The book would have been more interesting with a few photographs. We hope the author would revisit the village and bring out another book with conditions after a generation.
[Editor, Madras Agri. Journal]

Gleanings

Per Capita Figures for total Protein, Animal Protein and Fat Intakes.

	Population in 1955 (millions)	Per capita in-take during 1955-'56			
		Calories per day	Total protein g/day	Animal protein g/day	Fats and oils (Fat content) kg/year
@ Australia	9.3	3,190	88	56	17
Canada	15.6	3,190	89	61	20
Denmark	4.4	3,310	89	50	24
U. S. A.	164.3	3,100	93	64	20
U. K.	51.2	3,210	83	48	22
West Germany	50.0	2,970	78	42	22
Switzerland	5.0	3,090	92	51	17
Norway	3.4	3,160	89	50	27
New Zealand	2.1	3,430	104	72	19
China (Mainland)	582.6	..	..	..	..
France	43.3	2,830	101	51	12
Ceylon	8.6	..	..	..	..
Austria	7.0	2,910	84	40	18
Belgium & Luxemburg	9.2	2,990	89	44	22
@ India	382.00	1,850	50	8	4

@ Figures available only for 1954-'55.

Extracted from page 334 of Food Science Vol. 7, No. 11 of November 1958
Bulletin of the Central Food Technological Research Institute, Mysore.

Weather Review — for December, 1958.

RAINFALL DATA (IN INCHES)

Division	Station	Total rainfall for the month	Departure from normal	Total since 1st January 1958
North	Madras (Moonambakkam)	2.5	— 3.0	51.7
	Tirurkuppam*	2.7	— 2.0	46.3
	Vellore	1.5	— 1.1	42.5
	Gudiyatham*	1.8	— 1.8	36.4
East Coast	Palur*	1.9	— 3.6	31.5
	Tindivanam*	1.3	— 1.4	36.7
	Cuddalore	1.9	— 5.6	40.0
	Nagapattinam	2.8	— 8.2	33.9
	Aduthurai*	1.3	— 4.0	29.4
	Pattukkottai*	0.7	— 5.3	31.9
Central	Salem	0.5	— 0.5	34.3
	Coimbatore (A. M. O.)*	0.3	— 0.6	22.4
	Coimbatore	0.3	— 0.7	22.4
	Tiruchirapalli	1.8	— 0.8	25.2
South	Mathurai	0.6	— 1.4	22.2
	Pamban	2.1	— 5.5	24.0
	Koilpatti*	1.1	— 0.7	24.9
	Palayamcottai	0.8	— 3.4	21.3
	Ambasamudram*	1.8	— 3.1	34.5
	Nagercoil*	0.3	— 1.6	42.3
Hills	Kodaikanal	1.9	— 3.3	52.5
	Coonoor*	2.3	— 3.6	55.6
	Ootacamund*	0.3	— 1.8	49.8
	Nanjanad*	0.4	— 0.9	59.9

* Meteorological Stations of the Madras Agricultural Department.

The month began with dry weather over the Madras State. A series of easterly waves passed one after another over the extreme south of the peninsula during the month, causing slight fluctuations in rainfall in the different localities. Due to the incursion of the moist air over the Peninsula on the 4th and 5th December, '58, rain or thundershowers occurred locally in Madras State on 4-12-58, followed by widespread rain on 5-12-58. Rainfall was scattered on 6-12-58, and dry weather prevailed on the next day. Rainfall was fairly widespread in coastal Madras State on 8-12-58, and occurred locally for five days more. Ponneri in Chingleput district recorded an isolated heavy rainfall of 5.12" on 11-12-58. Thereafter mainly dry weather prevailed in Madras State, except for scattered light showers, especially in the southern districts. During the last 10 days of the month the weather was mainly dry throughout the State.

Night temperatures were generally above normal, except in Ootacamund, where it was generally below normal.

Rainfall: The noteworthy rainfalls and the zonal rainfalls for December 1958 are furnished hereunder:

Noteworthy rainfalls

No.	Date	Name of place	Rainfall in inches
1.	4-12-1958	Vellore	1.14
2.	5-12-1958	Coonoor	1.20
3.	5-12-1958	Koilpatti	1.11
4.	5-12-1958	Tiruchirapalli	1.26
5.	11-12-1958	Ponneri	5.12

Zonal rainfall (in inches)

Name of Zone	Rainfall for December, 1958	Departure from normal	Remarks.
North	2.0"	— 2.0"	Far below normal
East Coast	1.7"	— 4.7"	"
Central	0.7"	— 0.7"	"
South	1.1"	— 2.6"	"
Hills	1.2"	— 2.4"	"

Agricultural Meteorology Section,
Lawley Road Post, Coimbatore-3.
20th December, 1958.

C. B. M., M. V. J. & A. K. V.

College and Estate News.

Seminar on University Education: The Staff of our college participated in the Seminar on University Education conducted by the P. S. G. College of Technology.

Tours: Thirty two students accompanied by three members of the teaching staff were on an all India tour. They visited Bombay, Agra, Kanpur, Lucknow, Delhi, Benares, Allahabad and Calcutta. They had the unique privilege of having an interview with the President of India.

The M. Sc. (Ag.) Students of the Horticulture Faculty were on an educational tour to Coonoor, Kallar and Burliar. The Second year students are on their educational tour to the neighbouring states of Andhra and Mysore from 16-1-1959 to 2-2-1959.

Games: Sri. Chacko Eapon and K. C. Medappa have been selected to represent the University of Madras in Hockey.

Athletics: Sri. Joe Mathias was selected for training in Shot Put conducted by the Madras University. He represented the University in the Inter University Sports Meet and was ranked fourth in Shot Put.

Pongal Celebrations: The members of the Agricultural College Hostels Celebrated the "Harvest Festival" in a grand manner. They themselves prepared "Pongal". Later there was a meeting which was addressed by Sri. Maharaja B. Sc., B. L., Additional District Judge and Sri. Ramaswamy of the Tamil College Perur. In the evening there was a dance performance.

Departmental Notifications

Gazetted Officers—Madras Agricultural Department.

Postings and Transfers during the month of January 1959.

Name and Designation	Posted or Transferred to
Sri C. R. Subramaniam, Additional Assistant Agricultural Engineer, Head quarters, Office of the Director of Agriculture, Madras	Earned leave for 30 days from 2—1—1959.
„ K. Kuppmuthu, Addl. Lecturer in Agronomy	District Agricultural Officer, North Trichy, Vice Sri V. Nataraja Ayyar.
„ V. Nataraja Ayer, D. A. O., Trichy North	Assistant Marketing Officer, Cuddalore
„ K. Kannian, Asst. Cotton Specialist, Srivilliputhur	Special Asst. Cotton Specialist, (Khadi Scheme) Tirupur.
„ C. S. Krishnan, Special Asst. Cotton Specialist, (Khadi Scheme) Tirupur	Assistant Cotton Specialist, Srivilliputhur.
„ S. Ramaswami, Cane Development Officer, Madras	L. A. P. for 12 days from 27—1—1959 to 7—2—1959.
„ C. Ekambaram, Gazetted Assistant, office of the Director of Agriculture, Madras	To be in Addl. Charge of the post of Cane Dev. Officer, Madras.
„ V. K. Appaji, Sugarcane Specialist, Cuddalore	Extension of leave on average pay for 2 months from 27—12—1958.
„ K. Saptharishi, Superintendent, Agrl. Research Station, Bhavanisagar	Earned leave for 33 days from 19—1—1959 to 20—2—1959 after-noon.
„ B. S. Kuppuswamy Assistant Horticulturist on foreign service, on reversion	Cashew Dev. Officer, Tanjore.
„ K. R. Nagaraja Rao, Asst. Entomologist, (Toxicology) Coimbatore	Posted as Addl. Lecturer in Entomology, Coimbatore, Vice Sri A. R. Seshadri on deputation to U. S. A.
„ Sri K. P. Kuppuswami, Asst. Sim's Park, Coonoor	Reappointed temporarily as Asst. Hort., Coonoor, Vice Sri K. R. Raman.
„ K. R. Raman, Asst. Horticulturist, Coonoor	Transferred as Assistant Horticulturist, Vegetable scheme, Coimbatore Vice Sri S. Muthuswami posted as Lecturer in Horticulture, Coimbatore.
„ C. R. Seshadri, Joint Director of Agriculture (Planning and Development)	L. A. P. for 27 days from 2—2—1959 to 28—2—1959.
„ T. S. Francis, Joint Director of Agriculture (Extension)	To be in Addl. charge of the post of Joint Director of Agri., (Planning and Development), during the absence of Sri Seshadri on Leave.
„ J. Sakharama Rao, Addl. Lecturer in Botany, Coimbatore	Earned leave for 30 days from date of relief.
„ S. Madhava Rao, Asst. in Botany, Coimbatore	To be in Addl. charge during the absence of Sri Sakharama Rao.
„ C. D. Sivasankaran, Asst. Agrl. Engineer, (Inspection) Trichy	Earned leave for 15 days from 8—1—1959.
„ A. Ekambaram, Senior Agrl. Engineering Supervisor	In current Addl. charge during the absence of Sri C. D. Sivasankaran.
„ M. Ramachandran, Upper Subordinate and approved probationer	Appointed temporarily as Lecturer in Economics, Agrl. College, Coimbatore.

Name and Designation	Posted or Transferred to
Sri S. Muthuswami Iyer, D. A. O., Polur	Posted as Chief Inspector of Fertilizers, Office of the Director of Agri., Madras.
„ K. Santhanam, Chief Inspector of Fertilizers, Office of the Director of Agriculture, Madras	Promoted temporarily as Deputy Director of Agriculture.
„ D. Shanmugasundaram, Deputy Director of Agriculture, Madras	Posted as State Marketing Officer, Madras.
„ B. Santhanakrishna Naidu, State Marketing Officer, Madras	Posted as Deputy Director of Agriculture, Tanjore.
„ C. A. Parangusadass, Asst. Director of Industries and commerce, allotted to the Agricultural Department	Asst. Agricultural Engineer, Saidapet.
„ K. Thandayutham, Asst. Agrl. Engineer, Saidapet	Assistant Agricultural Engineer, (Soil conservation Scheme) Athur, Madurai District.

Upper Subordinates—Agricultural Department

Postings and Transfers during the month of January 1959.

Name and designation	Posted or Transferred to
Sri G. Narayanan, Compost Inspector, Gingee	Coconut Nursery Assistant, Tindivanam
„ V. Sundararaj Rao, Compost Inspector, S. V. Nagaram	Special A. D., Sugarcane, Gudiyatham.
„ S. Venkataraman, Compost Inspector, Panruti	Agricultural Demonstrator, Tirukoilur.
„ P. Guruswamy, Compost Inspector, Thottiam	Horticultural Dev. Assistant, Trichy.
„ Venkatanarayanan, Compost Inspector, Kaveripatnam	Agricultural Demonstrator, Denkanikota.
„ N. Krishnaswamy, Compost Inspector, Tirukalikundram	Extension Officer, for Agri. Kancheepuram.
„ L. L. Narasimhan, Compost Inspector, Athoor, Madurai Dt.	A. D., Uthamapalayam.
„ V. Navaratnam, Compost Inspector, Krishnagiri	Extension Asst. Fruit Farm, Periyakulam
„ V. Tharagabrahmam, Compost Inspector, Chinna Salem	Horticultural Dev. Assistant, Madurai.
„ P. D. Moorthy, Compost Inspector, Polur	Farm Manager, Alamathi.
„ S. Mangappan, Compost Inspector, Chetpet	Farm Manager, L. R. S., Hosur.
„ G. Ranganathan, Compost Inspector, Poonamallee	Agricultural Demonstrator, Villivakam.
„ K. V. G. Subramaniam, Compost Inspector, Karur	Special A. D., Sugarcane, Karur.
„ K. Soundararajan, Compost Inspector, Singampuneri, Ramnad District.	Horticultural Dev. Assistant, Sattur.
„ L. Aryana Gounder, Compost Inspector, Cheranmadevi	Extension Officer, for Agri., Shencotta.

Name and Designation	Posted or Transferred to
Sri L. R. Vaidyanathan, Compost Inspector, Attur, Salem District	Fruit Assistant, Thimmapuram.
" M. Ranganathan, Compost Inspector, Perianaickenpalayam	Plant Protection Assistant, Mayuram.
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" N. Venkatesan, Compost Inspector, Papanasam	Farm Manager, State Seed Farm, Kodavakam.
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" C. S. Subramaniam, Fieldman Millet Section, Palladam	A. D., Udumalpet.
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" N. Rangaswamy, Fieldman, Millet Section, Kodumudi	Extension Officer, Poddanaickenpalayam.
" S. Vadivelu, Fieldman, Millet Section, Devakotai	Agricultural Demonstrator, Tirupullani.
" K. Ranganathan, Fieldman, Millet Section, Tirumangalam	Plant Protection Assistant, Sattur.
" N. Shanmugam, Suchindram, Kanyakumari Dt.	A. D., Ponnamaravathi, Trichy Dt.
" C. S. Jayagopal, Suchindram, Bargur, Salem Dt.	Plant Protection Asst., Salem.
" V. Balasubramaniam, Suchindram, Alangudi, Trichy Dt.	Spl. A. D., Sugarcane, Kulithalai.
" S. Subramaniam, Suchindram, Pattukottai	A. D., Arantangi.
" P. A. Ratnam, Suchindram, Perambalur	Plant Protection Asst., Trichy.
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" C. N. Venkataraman, Asst. to the Prof. of Soil Science, Coimbatore	Asst. in Chemistry, Coimbatore.
" O. R. Muthukrishnan, Asst. Lecturer in Hort., Coimbatore	Asst. to the Professor of Horticulture (Post-Graduate Course), Coimbatore.
" Md. Abdul Khadir, Asst. to the Professor of Hort., Coimbatore	Asst. Lecturer in Hort., Coimbatore.
" S. Iyemperumal, Cotton Certification Inspector, Srivilliputhur	Asst. in Cotton, A. R. S., Palur.
" H. Syed Javad Hussain, Asst. in Cotton, A. R. S., Palur	Asst. in Cotton, A.C. & R.I., Coimbatore.
" B. Nanjan, Fieldman, A. R. S., Nanjanad	Potato Asst., Nanjanad.
" T. N. Ramakrishnan, Fieldman, A. C. & R. I., Coimbatore	Spl. A. D., Sugarane, Udumalpet.
" R. Venkataraman, Fieldman, A. C. & R. I., Coimbatore	Additional Dairy Manager, A. C. & R. I., Coimbatore.
Kumari R. Mary Clara, Asst. in Cotton, A. C. & R. I., Coimbatore	Resignation accepted from 27—12—1958 A. N.
Sri A. K. Kadirvelu, A. D., Ponnamaravathy	Sugarcane Asst., Laxmangudi.
" Solomon Durairajan, Sugarcane Asst., Laxmangudi	Sugarcane Asst., Cuddalore.
" A. Thyagarajan, Extension Officer for Agriculture, Tittagudi	Extension Officer for Agriculture, Melur.
" S. N. Veeraraghavan, Extension Officer for Agriculture, Melur	Extension Officer for Agri., Tittagudi.
" S. Krishnan, Extension Officer for Agriculture, Vasudevanallur	Extension Officer for Agri., Chetpet.
" P. Muthumani, Extension Officer for Agriculture, Chetpet	Ex. Officer for Agri., Vasudevanallur.
" M. A. Balasubramaniam, Research Assistant, Kallar and Burliar fruit, Station, Mettupalayam	Resignation accepted from date of relief.
" J. Ebeneser, Instructor in Agri., Pattukottai	Extension Officer for Agri., Vedaranyam.



Review of market conditions of commercial crops in the notified areas for the month of December, 1958.

Cotton: In this section, lint: Candy of 784 lbs.
Kapas: Pothi of 280 lbs.

Tirupur: Coimbatore District: Season: The rainfall received during the month was below normal and the conditions of the standing crops were reported to be satisfactory. The harvest of new crop of cotton has commenced in parts of Coimbatore and Pollachi areas.

Arrivals and transactions: Lint: During the month the lint market started with an opening balance of 4737 candies of Cambodia and 1041 candies of Karunganni lint. The total arrivals into Tirupur during this month were 3190 candies of Cambodia and 757 candies of Karunganni lint which included 823 candies of Cambodia lint locally ginned. Despatches from Tirupur accounted for 2516 candies of Cambodia and 481 candies of Karunganni lint which included 213 candies of lint sent to South Arcot, Madurai, Salem, and Tanjore in Madras State and Mysore, Andhra States and Ahmedabad in Bombay State. At the end of the month there was a closing stock of 5411 candies of Cambodia and 1317 candies of Karunganni lint.

Kapas: The kapas market started with an opening balance of 8432 pothis of Cambodia and 195 pothis of Karunganni kapas. The total arrivals into the Tirupur during the month were 9300 pothis of Cambodia and 138 pothis of Karunganni kapas. The disposals during the period were 11865 pothis of Cambodia and 303 pothis of Karunganni kapas in the Tirupur market area. At the end of the month the market closed with a balance of 5867 pothis of Cambodia and 30 pothis of Karunganni kapas.

Prices: There was a fairly good demand for all types of kapas during the month and the price showed a slight increase.

The following were the prices of both lint and kapas during the month as compared to that of previous month:

Prices in Rs. Lint in candy of 784 lbs.

	Lint:	
	Dec., '58.	Nov., '58.
Cambodia superior quality	Rs. 900—982	Rs. 900—981
" average "	Rs. 820—885	Rs. 815—875
Karunganni superior "	Rs. 872.00	Rs. 870.00

Kapas per pothi of 284 lbs.

	Kapas:	
	Dec., '58.	Nov., '58.
Cambodia superior quality	Rs. 130—145	Rs. 127—140
" average "	Rs. 115—125	Rs. 115—125
Karunganni superior "	Rs. 127.00	Rs. 115.00

Ramanathapuram district: Season: The rainfall received during the month was reported to be below normal. The standing crops of Karunganni which are at flowering stage are reported to be satisfactory.

Arrivals and transactions: The following were opening stocks, arrivals, disposals and closing stocks of kapas and lint in the important markets of the district during the month.

Kapas in pothis of 280 lbs:

Name of Market	Opening stock	Arrivals	Disposals	Closing balance
Virudhunagar		800	800	Nil.
Sattur		...	...	...
Rajapalayam		...	...	...
Total for the District	...	800	800	Nil.

Lint in candies of 784 lbs:

Virudhunagar	... 200	80	160	120
Sattur		...	...	...
Rajapalayam	... 430	...	300	130
Total for the District	... 630	80	460	250

Prices: The following were the prices of cotton kapas, lint and seeds in the district during the month as compared to that of previous month.

Kapas in pothi of 280 lbs.

	December '58.	November '58.
Karunganni	... Rs. 89—96	Rs. 93—98
Karunganni second crop	... Rs. 80—88	Rs. 75—81
Tinny	... Rs. N. A.	Rs. 60—100
Uganda	... Rs. N. T.	...

Lint in candy of 784 lbs.

Karunganni	... Rs. 676—751	Rs. 706—790
Tinny Karunganni	... Rs. ...	Rs. 658—701
Tinny	... Rs. 647—670	Rs. 570—650
Certified Uganda	... Rs. 1476—1636	...
Uncertified Uganda	... Rs. 1086—1136	...

Seeds in Maund of 82 2/7 lb :

Karunganni	... Rs. 12.40—13.06	Rs. 10.33—12.00
Tinny	... Rs. 12.66—13.66	Rs. 12.33—12.75
Uganda	... Rs. 11.00—11.33	...

N. B:— N. A = Not Available.

N. T = No Transaction.

Groundnut: (In this section kernels are in candy of 531 lbs and pods in tons).

South Arcot District: Groundnut kernels: The groundnut market started with an opening balance of 1993 tons and arrivals of winter groundnut were in full swing and amounted to 12,737 tons. Receipts from other districts like North Arcot, Chingleput and Tiruchi came to 2426 tons. Despatches to other districts like Tanjore, Madras, Chingleput, Trichy, Salem and Coimbatore totalled 6960 tons and export to Pondichery State came to 28 tons. Consumption by mills and *chekkus* was 5960 tons and 364 tons respectively wastages were calculated at 717 tons. The stock with the trade at the end of the month stood at 3532 tons.

Prices declined due to greater arrivals and the average in the several markets varied from Rs. 133.25—148.48 per candy of 531 lbs. according to quality.

North Arcot District: Season: During the month under report some occasional showers were received in the district. Groundnut harvest were reported to be completed in all the places of the district except a little extent in certain parts like Chetpet, Wandiwash etc.

Arrivals and transactions: The arrivals, disposals and stocks of groundnut in the various markets of the district were as below:

Quantity in Tons:

Groundnut Pods:	Opening stock	Receipts	Disposals	Closing stock
Name of market				
T. V. Malai	...	80	80	...
Arni	334	2200	1800	734
Polur	100	300	300	100
Cheyvar	290	800	800	290
Chetpet	27	300	227	100
Total	751	3680	3207	1224

Groundnut Kernels:

Vellore	...	3	365	360	8
T. V. Malai	...	55	1500	1566	...
Tirupathur	...	718	827	900	645
Arni	...	...	1100	1100	...
Arcot	...	50	250	200	100
Total	...	826	4042	4126	753

Prices: The prices of groundnut and its products during the month when compared to previous month were as follows:

	December, 1958.	November, 1958.
Groundnut kernels (Cdy. of 531 lb.)	Rs. 136—155	Rs. 140—167
Groundnut pods (Bag. of 80 lb.)	Rs. 10—12	Rs. 9—18.50
Groundnut oil (Cdy. of 500 lbs.)	Rs. 285—315	Rs. 317—345
Groundnut cake (Md. of 82 2/7 lb.)	Rs. ...	Rs. 9—20

Gingelly: (In this section bag is 168 lbs).

Arrivals of gingelly amounted to 912 bags comprising 704 bags from district produce and 208 bags from Tiruchi district. Despatches to Tiruchi, Salem and Coimbatore districts came to 258 bags and consumption by *chekkus* to 677 bags. The stock with the trade at the end of the month stood at 1441 bags.

The average price per bag of 168 lbs. worked out to Rs. 61.21.

Tobacco: (In this section tobacco is in candies of 500 lbs).

Coimbatore District: Arrivals and transactions: At the end of the month under report there was a stock of 12,210 candies of chewing and 300 candies of cheroot tobacco. About 2470 candies of chewing and 225 candies of cheroot tobacco were exported to South Arcot, North Arcot, Madurai, Salem, Trichy, Ramanad and Tanjore districts of Madras State and to places in Mysore, Bombay, Kerala and Andhra States.

The prices of Tobacco eased slightly during the month. The price ranges were as follows:

Variety	Prices in Rs. per candy of 500 lbs.		
	I Grade	II Grade	III Grade
1. Chewing tobacco (Sun-cured):			
(a) Meenampalayam	400—485	200—330	120—185
(b) Other varieties	275—375	200—280	100—175
2. Cheroot varieties:			
Sun-cured grown in Erode and Bhavani taluks	260—440	210—250	120—200
3. Chewing tobacco:			
Pit-cured grown in Palladam and Suler areas.	250—325	160—200	90—130

Cardamom: Madurai District: There was a meagre rainfall in the Cardamom plantation areas of Madurai district during the month under report. The standing crops were reported to be good.

The Arrivals of Cardamom in all the important assembling markets in Madurai district were reported to be good during the month. Despatches from Bodinaickanoor, were to Bombay, Delhi, Calcutta, Kanpur and Amirtasar.

The estimated arrivals and stock positions of Cardamom during the month were as hereunder:

Name of Market.	Quantity in lb.		
	Estimated Arrivals.	Estimated Despatches.	Estimated closing stock.
1. Bodinaickanur	... 3,21,000	2,88,000	60,000
2. Thevaram	... 41,000	28,000	35,000
3. Pannaipuram	... 30,000	30,000	15,000
4. Kombai	... 20,000	19,000	26,000
5. Uthamapalayam	... 12,000	10,000	10,000
6. Cumbum	... 40,000	40,000	1,00,000
7. Gudaloor	... 15,000	10,000	25,000
8. Pattiveeranpatti	... 48,000	55,000	8,000
9. Virudhunagar	... 72,000	68,000	18,000
Total	... 5,99,000	5,48,000	2,97,000

Prices: The prices of all varieties were reported to be steady in all the markets of the district except the inferior varieties which showed a slight decline.

The minimum and maximum prices of Cardamom that prevailed in some of the important markets during the month for different qualities were as detailed below:

Name of Market	Trade Variety	Prices per lb.	
(a) Bodinaickanoor:	(1) Green Bulk.		
	Superior	Rs.	9.22 to 9.25
	Medium	"	8.00 to 8.52
	Small Inferior	"	7.16 to 7.79
	(2) Seeds	"	11.50 to 11.75
	(3) General (Green bulk, Splits, Lights and seeds)	"	...
(b) Pattiveeranpatti:	(1) Sun dried:		
	Superior and Bold	Rs.	9.00 to 9.46
	Medium and bulk	"	8.60 to 8.85
	Inferior	"	8.30 to 8.52
	(2) Green store:		
	Superior and bold	"	9.16 to 9.62
	Medium and bulk	"	8.54 to 8.96
	Inferior and small	"	8.33 to 8.52
	(3) Seeds	"	11.34 ...
(c) Virudhunagar:	(1) Green bulk:		
	(2) Bold qualities	"	9.50 to 9.75
	(3) Superior	"	9.00 to 9.25
	(4) Medium	"	8.25 to 8.50
	(5) Inferior	"	7.35 to 7.50
	(6) Seeds	"	11.75 to 11.75

Review of administrative activities of market committees during December, 1958.

General: The Market Committees of South Arcot, North Arcot, Coimbatore and Tiruchy continued to function during the month. Efforts are being made to function the Market Committees of Ramanathapuram and Tirunelveli due to the disposals of the appeal in the Supreme Court.

Enforcement: The progress of licensing by the Market Committees during the month were as follows:

Name of the Market Committees	Section 5 (1)		Section 5 (3)		Weighmen	
	A	B	A	B	A	B
South Arcot Market Committee	587	3062	520	2337	480	2159
North Arcot Market Committee	885	3236	861	2952	129	1019
Coimbatore Market Committee	165	1652	121	1274	10	615
Tiruchy Market Committee	168	452	128	347	98	286

A = Licences issued during the month.

B = Licences issued up to the end of the month.

Meetings: A meeting of the South Arcot Market Committee was held on 30-12-1958. Nine members attended it, 32 subjects were disposed of and nine subjects were deferred. A meeting of Tiruchy Market Committee was held on 29-12-1958 and thirteen subjects were discussed. There were no meetings held in other Market Committees during the month under report.

Quality Analysis: Nil.

Quality Competition: Nil.

Crop and Trade Reports

Cotton First Forecast report 1958-'59: The area sown with cotton in the Madras State upto 25th July, 1958 is estimated at 78,000 acres. Compared with the area of 77,400 acres estimated for the corresponding period of the previous year and an average area of 72,000 acres calculated for the five years ending 1957-1958 this is an increase of 0.8 per cent and 8.3 per cent respectively. The area estimated is the same as that for the previous year in Chingleput and Tanjore districts. A decrease in area is estimated in Madurai and Tirunelveli districts and an increase in the other districts of the State except the Nilgiris and Kanyakumari, where the area under the crop is little or negligible.

The wholesale price of cotton lint per standard maund of 82.2/7 lb. or 3,200 tolas was Rs. 99.35 for Cambodia, Rs. 86.86 for Karunganni at Tiruppur and Rs. 102.97 for Cambodia and 91.42 for Karunganni at Coimbatore. Compared with the prices which prevailed during the corresponding period of the previous year, these prices reveal an increase of 2.2 per cent in the case of Cambodia and 2.5 per cent in the case of Karunganni at Coimbatore and a decrease of 3.4 per cent in the case of Cambodia and 4.9 per cent in the case of Karunganni at Tiruppur. Figures of area under cotton by varieties are shown in the statement appended.

The Madras Agricultural Students' Union.

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Announcement.

The following prizes and awards are given by the M. A. S. U. every year during the College Day and Conference.

1. Ramasastrulu Munagala Prize.
2. V. C. Vellingiri Gold Medal for the best research work of the department.
3. Golden Jubilee rolling shields.
 - (a) N. Veeraraghavalu Naidu shield for Agricultural botany.
 - (b) T. Konda Reddy shield for Agronomy.
 - (c) O. M. Lakshminarayana Reddy shield for horticulture.
4. Hon'ble M. Bhaktavatsalam medal for the best outgoing student in horticulture.
5. Hon'ble C. Subramaniam medal for the best outgoing Student in Plant Pathology.
6. G. Rangaswamy Naidu prize for the best research worker in Sugarcane.
7. Ramakrishna medal for the best research worker in Cotton.
8. Krishnaswami Naidu prize for the best student in Agricultural practical and *viva voce*.
9. S. Sambamurthy medal for the best outgoing student in Agricultural economics (To be instituted in the coming year).

Note: For items 1 to 5 refer, M. A. S. U. issues April, June, July 1958 for rules for the award.
Items 6, 8, the rules for the award are yet to be prepared.

V. Subbiah,
Secretary.

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