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The Madras Agricultural Journal

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Editorial

Youth and Agriculture: The youth of to-day is the nation of to-morrow. The future of the country lies in their hands. If we want to see our motherland in peace and prosperity, the youth has to be given a new scale of values, new ideals and new attitudes to build up sense of responsibility, self confidence, self-reliance, ambition for service, devotion to duty and other qualities of leadership. At the same time they should be able to understand and assimilate technical and scientific knowledge, to develop a scientific attitude towards life and the problems of the farm, the house and community and to be practically skilful.

India is a predominantly agricultural country. What an economist said about China is equally true about India: "Our politics is agriculture, our life is agriculture, our success depends upon agriculture". Prime Minister, Pandit Nehru, has rightly remarked that any national plan which ignores the stepping up of agricultural production in India is a plan unsuited to India's efforts at national reconstruction. In this direction the youth of the farming community has a potential contribution to make. In other countries, the 4-H Clubs and Future Farmers of America (F. F. A.) in United States of America, Young Farmers' Clubs of England and Folk Schools of Denmark have helped to a significant extent the progress of scientific agriculture. With the main objective of building up the attitudes of rural youth by bringing them nearer to science and technology and thus utilizing their forces for the increase in production and raising the level of living in rural India, the Young Farmers' Association, (Y. F. A.) India, was formed in the year 1955. It was on the initiative and foresight of Dr. Panjabrao S. Deshmukh, Union Minister of Agriculture, this national organisation of young farmers came into existence.

The Young Farmers' Association is particularly interested in diffusing practical information about the improved methods of farming among the young agriculturists. It stands for stimulating



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and maintaining the interest of the young farmers in the all-round development of village life. This central organisation with (Y. F. A.) State branches has spheres of activity in district and village levels. There is need for many of the youth with agricultural back-ground to be brought into this vital movement which in the words of our Prime Minister Nehru: "inspires me and encourages me, because this is the kind of thing we want to have all over India".

Third Five Year Plan: In April, as you receive the journal, we begin the Third Five Year Plan. A decade of planning has resulted in increasing production all round, especially in the agricultural sector, thereby proving that the plan is not just a blue print but a pulsating movement reflecting the aspirations of the people for better and better living standards. There still continues a rising demand for food and raw materials for industry. Over the whole country, food production has to be stepped up from the present 75 million tons to 105 million tons and in Madras State the production is programmed to be stepped up from 54 lakh tons to 70 lakh tons.

It is a responsible undertaking and all aspects of agricultural technology will have to be applied to meet this increased production. Farmers and workers on the field have to be alert to the technological possibilities and be guided in their full adoption. The monthly "agricultural jottings" from the Extension Specialist of the Madras Agricultural Department included as a new feature in the Journal is to serve this purpose and we hope these will be fully used to increase production.

A note on the evolution of the long linted Cottons for the Rice Fallows in the Madras State.

by
N. VENKATARAMAN.

Introduction: The cultivation of cotton as a remunerative cash crop in between two crops of paddy in the rice growing regions of Madras has been made possible by the successful introduction of the short duration variety of cotton P 216 F from the Punjab in the year 1950. This variety which has a duration of about five months is capable of yielding normally 250-300 pounds of lint per acre in addition to possessing a staple of 15/16", a ginning outturn of 32% and spinning performance of 30's (counts). A scheme financed by the Indian Central Cotton Committee has been functioning in Madras State since April 1954 for the spread of this strain both in the deltaic and the non-deltaic regions of this state.

With the emphasis in cotton breeding having been shifted to the evolution of long and extra long staple cottons in this country to save the much needed foreign exchange, the objective of the scheme in its extended period from 1956 has been redefined as evolution of a long-linted short duration variety of cotton possessing a mean fibre length of over one inch, a ginning percent of 35 and above and a spinning capacity of 45's H. S. C.

Possibilities of fitting in varieties with short duration and long staple were discussed by Kalyanaraman and Rangaswami (1957). The results of agronomic experiments conducted in the Rice Fallows were also reported by them.

Materials and Methods: Laying stress on a substantial increase in length, ginning and spinning and at the same time retaining the earliness of P 216 F, attempts were made to evolve a suitable strain by selection from among the *hirsutum* material on hand and also by resorting to hybridisation with choice parents. Out of a number of cultures obtained, the all round improvements effected in a set of three cultures viz. 1072-1, a reselection from L. L. 40/51, a long linted strain from the Punjab, 1019-1, a reselection from Coker (U. S. A.) and 1001, a selection from A. C. 75 from the Punjab, from 1955 to 1958 seasons have been critically studied at the Agricultural Research Station, Aduthurai. On the basis of visual scoring, it was observed that they were on a par with the control P 216 F in respect of earliness. Therefore, no further screening for earliness will be possible in these cultures; but they possess better fibre properties than the control and this quality can be utilised with advantage in isolating types with longer lint, at the same time possessing equal earliness. The data gathered from the materials utilised for the study are presented in Table I to III.

Results :

TABLE I.

Yield of *Kapas* in pounds per acre.

S. No.	Season	Culture 1072-1	P 216 F (control)	% on control	Culture 1019-1	P 216 F (control)	% on control	Culture 1001	P 216 F (control)	% on control	P 216 F (Control) Mean Yield
1.	1955-56 ...	838	797	105	960	667	144	824	667	124	710
2.	1956-57 ...	1143	1021	112	817	735	111	653	640	102	799
3.	1957-58 ...	1307	708	185	1519	987	154	1462	989	148	985
	Mean ...	1096	842	130	1099	796	138	980	765	128	801

TABLE II.

Mean fibre length and Mean fibre weight.

Season	Culture 1072-1		Culture 1019-1		Culture 1001		P 216 F (Control)	
	MFL	MFV	MFL	MFV	MFL	MFV	MFL	MFV
1. 1955-56 ...	0.99	0.131	0.96	0.167	0.96	0.149	0.91	0.152
2. 1956-57 ...	0.97	0.144	1.02	0.154	0.91	0.130	0.94	0.153
3. 1957-58 ...	1.04	0.128	1.09	0.127	1.04	0.121	0.95	0.164
Mean ...	1.00	0.134	1.02	0.149	0.98	0.133	0.93	0.156

TABLE III.

Fibre maturity percent.

Season	Culture 1072-1		Culture 1019-1		Culture 1001		P 216 F (control)	
	M.	H. M.	M.	H. M.	M.	H. M.	M.	H. M.
1. 1955-56 ...	72	15	77	13	70	14	62	20
2. 1956-57 ...					— Not tested —			
3. 1957-58 ...	72	20	65	18	64	24	69	16
Mean ...	72	18	71	16	67	19	71	14

Note:— M: Mature H M: Half mature MFL: Mean Fibre Length (inch).
MFV: Mean Fibre Weight (millionth of an ounce per inch).

It would be seen from the Tables I to III that all the three cultures had given increased yields of *kapas* over P216F for all the three years. The increase in yield of *kapas* was in the range of 48% to 85% in the 1957-'58 season. It may further be stated that this has been achieved without any

sacrifice in the quality of the cultures which, on the other hand, have shown marked improvements in respect of length and fineness. The cultures 1072-1 and 1001 are under purity test awaiting further trials for confirmation on their superiority over P216 F.

In addition, a set of nine more cultures in advanced generations which show great promise in respect of yield, length and fineness is under test (Table IV appended).

It would be seen from the Table IV that all the cultures have given significantly higher yields than P216F, the increase being in the order of 52 to 111%. One culture D. P. L. 15-4-1 has been observed to be pure for all the economic characters and it is under test in the Main Strain Trials for confirmatory evidence on yield.

It is further seen that seven cultures have exceeded one inch in length of which four combine fineness as well. As they combine good maturity and fibre strength, these cultures offer scope for isolating types of economic importance. The all round improvements exhibited by those cultures at Aduthurai during the summer seasons where high temperature facilitating elongation of fibres prevails, clearly indicate that there is ample scope for isolating a long linted type and that the achievement of the objective of the scheme viz., evolution of an early long linted cotton variety to replace P216F, has been more than assured.

Summary: The performance of three promising cultures viz., 1072-1, 1019-1 and 1001 tested in the Rice Fallows Scheme at the Agricultural Research Station, Aduthurai for years 1955-58 has been presented. Besides, out of nine cultures in the advanced stages of breeding, four from the cross (Coker X. A. C. 107) i. e. 1115-1-1-D, 1115-1-3-D, 1115-1-2-B and 1116-3-3-E were noteworthy for their length and fineness, possessing good ginning percent and maturity as well. One selection D. P. L. 15-4-1-A which was pure for all the economic characters (yield, length and ginning) recording high yield as well was advanced to the Main Strain Trial (Yield Trial). It may thus be seen from the performance of the cultures under test in the Rice Fallows Scheme, there is great scope for isolating long-linted types of economic importance.

Acknowledgment: The author expresses his thanks to the Indian Central Cotton Committee under whose finance the scheme is functioning. The author is indebted to the Cotton Specialist for his valuable suggestions and advice and also to Sri S. K. Iyer, the Technological Assistant for estimating the fibre properties of lint samples.

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TABLE IV.
Summary of performance of promising cultures in the Rice Fallows Scheme Aduthurai during 1957 and 1958 seasons.

Sl. No.	Culture No.	Parentage	Yield of kapas lb. per acre		Ginning Percent	Mean fibre length (inch)	Mean fibre weight (X10 ⁻⁶ oz. inch)	Pressley strength index lb./mgm.	Maturity percent		Significance for sib-analysis (57-58)
			Cult-ure	P216F (con-trol)					M	IM	
1.	476-2-3	P216F	1682	987	170	35.8	0.98	7.66	60	24	N
2.	D. P. L. 15-4-1	D. P. L. 15 (U. S. A.)	1593	803	198	37.9	1.01	6.86	68	16	N
3.	1115-1-1-D	Coker x A.C. 107	1511	803	188	34.8	1.06	7.10	73	16	—
4.	1116-3-2	do.	1500	987	152	31.0	1.02	7.44	78	13	N
5.	362-1-8 F	P216F	1497	708	211	30.8	0.99	7.65	63	24	—
6.	1116-3-3 E	Coker x A.C. 107	1470	871	169	35.0	1.07	7.14	63	18	—
7.	1115-1-2 B	do.	1375	803	171	34.3	1.08	7.53	68	20	—
8.	1115-1-3 D	do.	1361	803	169	34.8	1.05	7.70	71	14	—
9.	1072-1-1 C	L. L. 40/51	1307	708	185	33.1	1.04	7.94	72	20	S
	P216F (Control)		—	—	—	30.5	0.95	7.60	69	16	N

Note:— S: Significant N: Not Significant (pure) M: Full Mature HM: Half Mature IM: Immature.
1, 2, 4 and 9: From Compact Family Block Trials. 3, 5, 6, 7 and 8: From Progeny Row Trials.

Lepidopterous Larvae Injurious to Sorghum Earheads

by

B. VASANTHARAJ DAVID and S. KANAKARAJ DAVID.

Introduction: *Sorghum vulgare* is one of the major millet crops of the Madras State grown for grain and for fodder. In Coimbatore where irrigation facilities are available it is grown as a summer crop under irrigation and as a rainfed crop in the N. E. monsoon season. The summer crop is subject to the attack of the earhead bug *Calocoris angustatus* D. which sucks up the sap from the newly formed grain and makes it chaffy. It has now become a regular practice to apply B. H. C. 10% dust once a week at the time the earheads are exerted so as to control the bugs. However, other insects which had so far been occupying a subsidiary status, are becoming important now. Many species of Lepidopterous larvae have been found in the internal portions of the compact earheads feeding on the grains in the security of the spikelets which surround them. Attention has been drawn to some of these insects by former workers (Fletcher, 1921 & Ramakrishna Ayyar, 1940) but the exact nature of attack has not been clearly indicated. An account of the insects noted and their characteristic features are given here.

Previous Records: Fletcher (1921) listed seven caterpillar pests which attacked cholam earheads. These were *Stenachroia elongella* Hmps. (Pyralidae) in Coimbatore and Pusa; *Eublemma silicula* Swinh. in Coimbatore and Nagpur; *Porthesia xanthorrhoea* Koll. (Lymantriidae) in Pusa; *Dichocrocis punctiferalis* Guen. in Nagpur and Pusa; *Anatrachyntis simplex* Wlsm. in Pusa, Hagari and Coimbatore (Fletcher, 1920); *Stathmopoda theoris* Meyr. (Heliodinidae) in Coimbatore and *Sitotroga cerealella* Oliv. also. Ramakrishna Ayyar (1940) observed the first two and *Celama internella* Wlk. (Arctiidae) as the common ones in Coimbatore. In Mysore, the occurrence of *D. punctiferalis* Guen. in the earheads of cholam stored after harvest (Puttarudraiah & Channabasavanna, 1951) and *S. cerealella* Oliv. feeding on the ripening grains of cholam in the field (Puttarudraiah & Raju, 1953) were reported. Thirumal Rao (1956) reported for the first time outbreaks of *Heliothis armigera* Hb. causing severe damage to cholam earheads in 1952 in Coimbatore District and in 1953 in Guntur District. Again a serious incidence of the insect on cholam earheads in Madras State was reported (Nagaraja Rao & Abraham, 1956). A fairly large scale incidence of *S. cerealella* in the earheads of a standing cholam crop was reported in Coimbatore recently (Subramaniam *et al.*, 1959).

The Earhead Caterpillars and the nature of Injury Caused:

The study of the caterpillar pests of cholam earheads was made in the fields of the Agricultural College & Research Institute, Coimbatore. The following were the insects noted during the study.

1. *Cryptoblabes* sp. (Pyraustinae): A narrow light brown caterpillar with a dark head and dark lateral lines on the body occur commonly in the cholam earheads in any season. It attains a length of about $1\frac{1}{2}$ cm. and has very short hairs sparsely distributed on the sides. The caterpillar is usually found near the rachis, webbing together adjacent grains in a thin silken web and feeding from inside on the grains. The debris and faecal matter get attached to the webs. The caterpillar wriggles in short jerks when disturbed and falls to the ground. It pupates in light cocoons attached to the rachis or other branches in the earhead. The moth is about 1.5 cm. across the wings and has brown forewings and light brown hind wings.

This insect is being noted here for the first time on cholam.

It occurs during summer and October to December and is seen in the earheads all through the earhead stage of the cholam crop.

2. *Eublemma silicula* Swinh. (Noctuidae): This is a pale yellowish caterpillar noted webbing the grains in the branches of the earheads. The caterpillar is cylindrical, measures about $1\frac{1}{2}$ cm. when full grown and has a dark V shaped marking on either side of the median line on the prothoracic shield. The apex of the marking points away from the head and the inner line is thicker than the outer. Small black spots are present on the sides of all the thoracic segments. Wavy greenish brown lines are seen on the body and thin long hairs in four rows. The thoracic legs are black and the prolegs in the fifth, sixth and anal segments are yellowish. There is a median dark marking on the dorsum near the anal end.

The caterpillar lives in light silk webs constructed on the grains or by combining a few grains together. It pupates in the silken tunnels itself in a brown pupa. The adult moth has a wing expanse of about 1.9 cm. and has reddish buff coloured wings with wavy lines. The wings are spread out flat while resting.

This insect has been noted by former workers but not much importance has been attached to it. It is seen in the summer and monsoon seasons and is capable of destroying a good number of grains.

3. *Heliothis armigera* Hb. (Noctuidae): The gram caterpillar has been noted as a polyphagous insect on a number of plants in India. It is met with invariably with the other two. It remains concealed in the earhead in the inner branches and feeds on the grains. The affected earheads could be easily made out in the fields by the chalky appearance of the earheads due to the presence of partially eaten grains. It has, however, to leave the earhead for pupation in the soil. This insect also occurs all through the year in cholam earheads.

4. *Anatrachyntis simplex* Wlsm. (Cosmopterygidae): This is a small red caterpillar with a yellowish brown head and prothorax measuring about 7 cm. in length. It binds grains in a thin silken web and feeds on the inner portions of the grains. It pupates in the web and emerges as a small brown moth of about 1.1 cm. in width with fringed hind wings.

This insect is found in fairly large numbers all through the year along with the other insects mentioned above. Fletcher (1920) concluded that it should feed on debris of the grains and may not injure whole grains. Wilcocks (Fletcher, 1920) had also noted the insect feeding only on injured cotton seeds or on the fibre in the cotton bolls. However in the present instance when fresh spikelets were given as feed the caterpillars were found to bore through the grains and feed on the contents. This insect can cause appreciable damage since its small size is made up by its numbers.

5. *Dichocrocis punctiferalis* Guen. (Pyralidae): The castor capsule borer has been known to attack several plants like turmeric, ginger, cardamom and guava commonly in the field. Except for its record on cholam earheads in Nagpur, Pusa and Mysore (*loc. cit.*) there is no further record of the insect as occurring on cholam. The insect collections of the Institute includes specimens taken on cholam earheads (Coll: Y. R. Rao, July, 1916). In the present instance it has been noted to occur on cholam from April to June in small numbers along with the other earhead caterpillars. This insect is common in Coimbatore and has therefore to be regarded as a regular pest of the crop in summer.

6. *Plodia interpunctella* Hubn. (Pyralidae): The meal moth is a pest of stored grains attacking mainly wheat (Pruthi & Mohansingh, 1950) in India. It does not occur to any large extent in South India. However, the caterpillars were found to feed on cholam grains in a standing crop during June. This appears to be the first record of the insect attacking cholam earheads in the field. Although it may be a small infestation, it can also contribute to reducing the yield of grain from the crop.

7. *Sitotroga cerealella* Oliv. (Gelechiidae): The grain moth is also a pest of stored grains attacking commonly unhusked paddy. But it has been reported as attacking cholam earheads (*loc. cit.*) and occasionally becoming severe. In the present case a few caterpillars were found attacking cholam earheads along with the others reviewed above. This also has to be considered as a pest of cholam earheads of the summer crop.

Other Insects: Though *Stenachroia elongella* Hmps., *Porthesia xanthorrhoea* Koll. and *Celama internella* Wlk. have also been reported as infesting cholam earheads, these were not obtained during the present study. Evidently these occur on the plant sporadically.

Comparative Populations of the Insects : With a view to arrive at the severity of injury caused by the several insects noted above, counts of the caterpillars in each species per earhead were made. The following range of infestation was noted in the summer crop of cholam.

Insect.		Number of caterpillars per earhead.	Occurrence.
1. <i>Anatrachyntis simplex</i> Wlsm.	...	5-37	common.
2. <i>Eublemma silicula</i> Swinh.	...	2-6	"
3. <i>Cryptoblabes</i> sp.	...	2-4	"
4. <i>Heliothis armigera</i> Hb.	...	1-2	"
5. <i>Dichocrocis punctiferalis</i> Guen.	...	1-2	occasional.
6. <i>Sitotroga cerealella</i> Oliv.	...	2	"
7. <i>Plodia interpunctella</i> Hubn.	...	2	"

The first four insects mentioned above occur in almost all earheads and hence have to be regarded as severe pests. The others occur only occasionally in small numbers but can cause appreciable damage.

Summary : Lepidopterous insects affecting cholam earheads and the nature of damage caused by them are given in this paper. Out of the seven insects noted, three are recorded here for the first time in this State. The range of infestation noted in the summer crop of cholam is also indicated.

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Scope of Mixed-farming on the Nilgiris

by

Y. B. MORACHAN.

Introduction : Mixed farming as a means of providing social and economic security to small farmers is now well realised. By adopting a diversified system of farming, the farmer can increase his income, provide work for all the members of the household all through the year and utilise the farm by-products profitably.

Mixed or diversified farming is the inclusion of several kinds of livestock, bee-keeping and poultry farming on the one hand and the cultivation of several kinds of crops on the other in the farming practice. In regard to the latter, it would be good for the farmer to plant both permanent and annual crops. Permanent crops should include fruit trees as well as economic trees providing saleable products such as fodder, firewood, fencing material, etc.

Mixed farming in Nilgiris : The Nilgiris district with its temperate and equitable climate offers great possibilities for diversified farming. The mixed farming is being widely practised in Yedapalli Village at Coonoor Taluk. The above village with the lands situated at altitudes between 3,000 to 6,000 ft. receives an average annual rainfall of 60" distributed in about 90 days in a year. Unlike Ootacamund, the rainfall is more from the North East monsoon and the temperature in winter

season is comparatively high. The average holding of a farm comes to 4.16 acres. But the above holding is scattered in about six places around the village. There are many farms having an average holding of ten acres and the mixed farming practised in one such farm is given below :—

1. *Potato*: (1 acre) If favourable rainfall is received an average gross income of Rs. 1,500/- is obtained, out of which the cost of cultivation comes to about Rs. 1,000/- per acre thus giving a net income of Rs. 500/-. But if the rains fail the yield is reduced giving a low income and sometimes loss also results. An average income of Rs. 400/- can be expected per acre per year by improved cultivation practices.

2. *Cereals*: (1.00 acre) The usual crops rotated with potato are ragi, samai, wheat and barley. These crops are not manured and only the residual effects of manure applied to potato is utilised. One of the causes for growing potato is for raising a subsequent cereal crop on rotation. These cereals form the staple food for the majority of farmers who supplement it with rice. With an average yield of ragi at 1200 lb. samai, wheat and barley at 800 lb. per acre an income of Rs. 200/- is expected. Among the cereals, wheat is more paying.

3. *Tea*: (4.00 acres) This is the main commercial crop of the tract. In a well maintained farm the average income per acre comes to about Rs. 500/-. The initial investment comes to about Rs. 2000/- per acre and the amount so spent will be recovered after about ten years. Plucking of tea leaves can be started from the fifth year onwards. The yield of Tea leaves is not adversely affected to any great extent by the vagaries of monsoon.

4. *Coffee*: (0.50 acre): The income from coffee cultivation is comparatively low and many small coffee estates are being converted into tea gardens. Further, growing of coffee requires more attention than tea and the seasonal conditions also affect the yield very much. Most of the ryots in the tract cultivate it for their house-hold consumption and the excess is sold to the Coffee-Board. An average net income of Rs. 200/- can be expected per acre.

5. *Wattle* (*Acacia sp.*): (1.00 acre): At present, the farmer is concentrating more on the cultivation of wattle rather than blue-gum (*Eucalyptus globulus*) on the steep slopes on account of the larger income and quick return. The cost of raising one acre of wattle comes to about Rs. 100/-. An out-turn of 5 tons of bark valued at average price of Rs. 300/- per ton (price ranges up to Rs. 550/- per ton) and 25 tons of fire-wood valued at Rs. 20/- per ton can be obtained easily from an acre for a rotation of 8 years. Hence the average income per acre per year comes to Rs. 250/-. Here, the only difficulty is that the farmer has to wait for a period of about 8 years to get the income.

6. *Blue-gum* (*Eucalyptus globulus*): (0.50 acre): This is grown not only for timber and fuel, but also for the Eucalyptus oil which has made Nilgiris famous. The average cost of raising the trees comes to about Rs. 100/- per acre. An acre of blue-gum shola yields about 50 lots (120 Cft.) of fire-wood and at the present rate of about Rs. 30/- per lot, it fetches about Rs. 1,500/- per acre and leaves about Rs. 500/- per acre (1 lot of firewood weighs about 1 ton). But the rotation followed is about 10 years and as such the average income per acre per year comes to about Rs. 200/-. Generally the ryot will not wait for such a long period and lopping and cutting of leaves will be done earlier.

7. *Orchard*: (1.00 acre): Though the tract is ideally suited for a variety of fruits such as peach, plum, apple, pears, etc, plum alone has caught the attention of the farmer. The variety *Hale* due to its profuse bearing and ready market is the largest single type grown. At a spacing of about 30 ft. about 50 plants can be planted in an acre. In between the trees and even under shade, vegetables like beans, lettuce etc. and tea-seedlings can be raised. Each tree will fetch an income of Rs. 10/- after about 5 years and an income of Rs. 500/- can be obtained per acre per year. In the above farm, country peach seedlings are used as root stock for budding plums.

8. *Vegetables*: (0.50 acre): Though this tract is suited for a variety of English vegetables like cabbage, cauliflower, beet-root, knolkhol, carrots, turnips, etc., cabbage forms the main cultivated vegetable. In one acre about 10,000 seedlings can be planted and an average income of Rs. 600/- per acre can be obtained. But irrigation, manuring and plant protection have to be attended to carefully.

9. *Bee-keeping*: This forms one of the easiest sources of income to the farmer. About 20 bee-colonies can be easily kept in the above farm and this will give an annual income of Rs. 40/- per hive per year. Bee hives are being maintained in the farm for the past 15 years.

10. *Fodder grasses and Dairy animals*: (0.50 acre) Besides raising fodder grasses (mostly Guinea grass) on the terrace faces, about 0.50 acres of swampy area is exclusively planted with Napier and Guinea Grass. The fodder obtained from this area is sufficient for the farmer. Besides supplying farm yard manure for vegetables and potato crops, the cattle supply the entire quantity of milk consumed by the farmer and his family throughout the year. Though milk is not being sold, the money value of milk and manure can easily come to about Rs. 200/- after deducting the maintenance charges for the cattle.

11. *Poultry-Keeping*: The farmer maintains 12 birds of White Leghorn and Black-minorca varieties and the income obtained from this comes to about Rs. 100/- per year.

The net income derived from the above different sources are tabulated below :—

Sources of Income and crops raised	Type of crop	Area	Income per acre	Total income
			Rs.	Rs.
1. Potato ...	Annual	1 acre	400	400.00
2. Cereals (Rotated with Potato) ...	Annual	1 acre	200	200.00
3. Tea ...	Perennial Plantation crops	4 acres	500	2,000.00
4. Coffee ...	"	0.50 "	200	100.00
5. Wattle ...	"	1.00 "	250	250.00
6. Bluegum ...	"	0.50 "	200	100.00
7. Orchard ...	Perennial fruit crop	1.00 "	300	300.00
8. Vegetable garden ...	Annual	0.50 "	600	300.00
9. Bee-keeping ...		20 hives	40 per hive	800.00
10. Fodder grasses and dairy animals ...	Perennial	0.50 acre	400	200.00
11. Poultry keeping ...				100.00
12. Income from Marginal planting of wattle; shade trees in plantation, orange trees in coffee Garden; Scented Geranium on batter of bench terracing, etc. ...	Perennial			250.00
Total net income				5,000.00

From the above table, it is seen, a sum of Rs. 5,000/- can be obtained out of a 10 acre farm of dry lands in the hills. The farmers house and cattle sheds etc. are situated in the village and not inside the farm.

Modifications suggested to suit other conditions: All the farms may not have the same topography, climatic and soil conditions. The size of holdings may also vary from tract to tract and even within the same village. For the above variations the following suggestions are made.

(1) For holdings, situated in higher altitudes such as Ootacamund more area may be allotted for potato and vegetables rather than tea, coffee and fruit trees.

(2) For holdings situated in lower altitudes of 3000 ft. plantation crops like tea, coffee and wattle will be more paying than potato and cereals.

(3) If sufficient water facilities are available, more area can be brought under vegetables.

(4) Orchards should be established on the lee-ward side to avoid damage from winds.

(5) The bee-hives also should be kept on the lee-ward side and should have direct sun-light in the mornings.

(6) The steep and eroded areas may be planted with wattle and blue-gum.

Scope of further improvements:

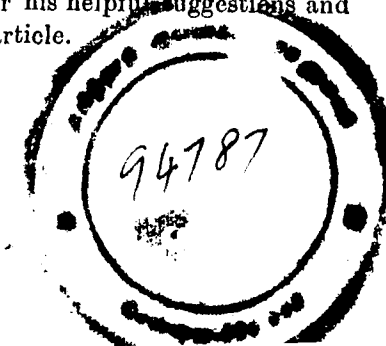
(1) Sheep rearing as practised by the ryots around Ootacamund adds another source of income. The Animal Husbandry Department is supplying pedigree rams for the increased production of wool from its Research Station at Ootacamund. By maintaining sheep, additional income can be derived from wool, mutton and manure.

(2) The Department of Industries and Commerce advocates the planting of mulberry cuttings for silk-worm rearing and loans are being given to the ryots of the tract for the same. Any bit of area available can be utilised for the above cultivation to augment income.

(3) Instead of maintaining country cows, pedigree breeds like Ayrshire and Jersey which thrive well in the tract can be maintained and excess milk sold to augment income.

Conclusion: The Coonoor taluk of Nilgiris offers the greatest scope for the practice of mixed farming to augment the meagre income of ryots. By mixed farming, the difficulties encountered on the failure of monsoon rains and market fluctuations for farm produce can be overcome and the farmer is assured of a steady income out of his dry lands. Mixed-farming can be modified to suit the different climatic and soil conditions of a tract and this offers the greatest possibility of providing economic security to the farmer.

Acknowledgment: I am much grateful to Sri T. Nataraj, Agronomist and Associate Professor of Agronomy for his helpful suggestions and valuable guidance in the preparation of this article.



Research Notes

Inheritance of the Purple Pigmentation on the Spines of the Capsules of *Ricinus communis* Linn.

The inheritance of the purple pigmentation on the spines of green capsules independent of capsule colouration was studied in castor at the Agricultural Research Station, Tindivanam and the results are presented in this note.

Number of crosses were effected between strains TMV. 1 and TMV. 2 with green capsules manifesting distinct purple pigmentation on the spines and an ornamental type R. C. 1073 with sulphur white capsules exhibiting no pigmentation on the spines. The hybrids expressed the purple pigmentation on the spines. Of the five families studied, the F₂ population consisted of 344 plants showing purple pigmentation on the spines and 110 without it, thus indicating that this character is controlled by a pair of genes. It is also clear that the purple pigmentation on the spines is a monogenic dominance to its absence. The results are presented in Table below :—

Cross No.	Female Parent	Male Parent	F 1	F 2	
				No. of plants	
				With purple pigmentation on spines	Without purple pigmentation on spines
X 219-3	TMV. 2 (R. C. 59-2-1-1)	R. C. 1073	Purple pigmentation present on spines	63	15
X 219-6	TMV. 2 (R. C. 59-2-1-1)	R. C. 1073	"	46	18
X 219-12	"	"	"	64	20
X 221-1	TMV. 1 (R. C. 59-2-1)	"	"	73	24
X 221-3	"	"	"	98	33
Total observed				344	110
Expected on 3:1				340.5	111

$$X^2 = 0.042$$

$$P = \text{between } 0.90 \text{ and } 0.95.$$

It was also observed that wherever the purple pigmentation on the spines of sulphur white capsules appeared it was visible even from a distance and this imparted a light purple colour of the capsules. The

expression of the purple pigmentation on the spines was also associated with the red pigmentation on the stem. The inheritance of the pigmentation on the stem has also been reported to be governed by a single factor difference.

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Response of rainfed cotton (Karunganni cotton) to application of Boron

The role of trace elements in enhancing crop production is gaining importance. Trace elements like boron, copper, magnesium, zinc and manganese have been found to improve the growth and yield in various crops. Beneficial effects of boron have been recorded on tobacco, citrus, cereals, legumes, groundnut and a few cruciferous plants. Early in 1952 Schmid reported that the application of boron in the form of borax in small quantities gave higher yield of tobacco in addition to improving the quality of the tobacco leaf. Wilson, (1952) established that the application of boron to citrus trees increased the yield of fruits and at the same time arrested fruit drop. Extensive experiments have been conducted in the case of alfalfa (Lucerne) and cotton in foreign countries and valuable results have been reported. Eaton, (1932) reported that deficiency of boron is said to cause boll and flower shedding in cotton, 20 lb. rate being reported to reduce wilt and to increase the yield of seed, boll size and number of bolls. The application of boron is claimed to increase the dry matter and yield of crops. The studies in groundnut physiology scheme at Tindivanam and Coimbatore have revealed that borax applied as boric acid at 10 lb. per acre increased the yield of groundnut upto 40 per cent in pot culture and 3 to 4 per cent under field conditions.

To study the actual response of rainfed cotton to the application of boron in black soils under Kovilpatti conditions, an experiment was laid out in 1948-'49 and continued upto 1951-'52. Four different dosages namely 10 lb., 20 lb., 30 lb., and 40 lb. per acre, were adopted with 'no boron' as control. The element was applied to the crop in the form of boric acid, applied at the time of preparatory cultivation without adding any other manure. The experiment was laid out in replicated randomized blocks (four replications). The gross area under each variant in a replication is 1.65 cents, of which the produce from a nett area of 0.75 cents only was taken into consideration for calculating the acre yield.

Results and Discussion: The results for the four years' trials are as follows:—

S. No.	Treatments.	1948-'49		1949-'50		1950-'51		1951-'52	
		Calculated acre yield of kapas in lb.	% on control	Calculated acre yield of kapas in lb.	% on control	Calculated acre yield of kapas in lb.	% on control	Calculated acre yield of kapas in lb.	% on control
1.	No boric acid (control)	364	100	463	100	failure due		233	100
2.	10 lb. boric acid per acre.	420	115	524	113	to unfavour-		268	115
3.	20 lb. boric acid per acre.	405	111	537	116	able season		251	108
4.	30 lb. boric acid per acre.	368	101	540	117			310	133
5.	40 lb. boric acid per acre.	360	99	580	125			236	102
	Whether significant by 'Z' test or not.	Not		Not		Not		Not	
	Remarks:—	Season normal.		Season normal.		Season normal.		Season normal.	

The yield differences between the various treatments did not reach the level of significance though increases in yield of kapas ranging from 1 to 33% were recorded. However, there are clear indications to show that the application of boron even at a high dosage of 40 lb. per acre has not induced any toxicity. On the other hand the results seem to show a trend towards higher yields. More precise experiments have to be laid out for confirming the trends which have been indicated in the above trials.

Acknowledgment: My grateful thanks are due to Sri S. G. Aiyadurai, Millets and Pulses Specialist, and Sri S. Gopalakrishnan, Groundnut Physiologist, for their valuable suggestions in the preparation of this paper.

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Etiella zinckenella Treit. as a pest of *Tephrosia noctiflora* Boj. in Coimbatore.

Etiella zinckenella Treit. (Lepidoptera: Pyralidae), commonly known as the pulse pod borer, is a major pest of pulse crops in India. Recently, the authors noticed the caterpillars of the insect feeding inside the pods of the plant *Tephrosia noctiflora* Boj. This is the first record of the insect on this plant and the observations made are given here.

The damage is caused by the greenish caterpillars which are pod borers. Inside a pod only one caterpillar is found. The caterpillar feeds on the developing seed and as it grows it moves freely inside the pod and damages almost all the seeds. The damage was severe in this case and about 30-35% of the pods in the plants were affected. The caterpillar changes to pink colour just before pupation and pupates outside the pod. It never pupates inside the pod and in the laboratory it was observed to pupate in a silken cocoon on the sides of jars. Further in the field also no cocoon was observed either on the pods or on the branches of plants. Possibly the caterpillars fall to the ground and pupate in the soil as reported by Abul-Nasr and Awadalla (1959).

T. noctiflora is a shrub introduced here in 1954 from Guatemala (Central America) and appears to be a promising green manure plant. Since the seed production is considerably reduced by the attack of the insect its occurrence must be taken note of.

The authors wish to express their deep sense of gratitude to Dr. S. Kanakaraj David, Reader in Entomology, for his valuable suggestions in the preparation of this note.

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Time of sowing experiments with short duration Redgram (*Cajanus cajan*) No. 1141

Redgram is one of the important pulse crops and is grown in about one and half lakhs of acres in Madras State with an annual production of 20,000 tons of pulse. In the cropping pattern of South India, Redgram is sown in drylands in the months of June/July, either as a pure crop or as a mixed crop with millets, cotton or oilseeds. The varieties grown have a duration of six to seven months and are suited only for the rainfed season. They are also season-bound in nature. In some parts of the state the crop is raised under irrigation in a small area and the variety grown is of short duration, maturing in about 140 days. From a survey and study of the collections made at the Millet Breeding Station with the early maturing varieties, one selection 1141, collected from Tiruchirapalli was found to be of promise. With a view to study its performance under irrigation and to fix the optimum date of sowing under Coimbatore conditions, an observation trial was laid out at the Millet Breeding Station, Coimbatore during 1959 summer season. The sowing was done on 16th of every month from January to May with a normal spacing of two links between rows and one link between plants. Irrigation was given soon after sowing, and later whenever necessary. The crop received two hoeings and weedings. Growth measurements at the time of flowering and notes on the incidence of pest every fortnight, were recorded. Before harvest, random samples in each plot were taken for estimating the number of pods attacked by pod borer fly (*Agromyza obtusa* Mall) and to estimate the number of infested seeds in each pod. Picking of pods were done twice and the produce obtained on different dates were threshed separately. The data collected are presented below.

Data on yield, duration and pod infestation in short duration
Redgram No. 1141.

Month of sowing	Height of plants in cms.	Flowering duration	Duration seed to seed	Yield of dry pods per acre in lb.	Yield of seeds per acre in lb.	% age increase of seeds over general mean.	Threshing % age of pods to seeds	Percentage of infestation in	
								Pod	seeds
January	118	90	140	881	362	76.5	41.1	44.5	24.4
February	141	95	145	970	513	108.5	52.9	34.0	42.1
March	146	90	145	1354	743	157.1	54.9	50.0	39.1
April	166	90	145	846	491	103.8	58.0	57.7	48.7
May	136	95	140	486	255	53.9	52.4	45.8	31.8
General mean (average)	141.4	92	143	907.4	473	100.0	52.1	46.4	36.2

From the data presented it may be seen that March sown crop has given the maximum yield of grain per acre. The crop in all the five different months did not show any appreciable difference in its duration. Observation on incidence of pest revealed that the attack of pod flies (*Agromyza obtusa* Hall) was heavy in all the months. The higher yield of seeds for March planting should, therefore, be attributed to more number of pods obtained per acre.

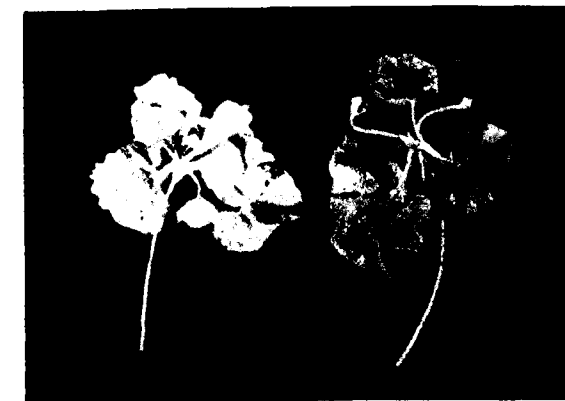
Acknowledgment: The authors wish to record their sincere thanks to Sri S. G. Aiyadurai, Millets and Pulses Specialist for his help and guidance in the preparation of this note.

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Floral Abnormalities Showing Phyllody in *Trichosanthes anguina* Linn.

Phyllody consists in the transformation of all the floral parts into foliaceous structures. Worsdell (1916) has recorded phyllody in *Saxifraga cotyledon* Linn., *Primula vulgaris* Huds., and many other species. Rao (1942) came across a peculiar flower of *Cassia occidentalis* Linn., in which a number of abnormalities such as petaloidy, suppression, phyllody of carpels, proliferation etc., were present. In *Grangea madaraspatis* Poir., Gopalakrishnan (1943) found that the floral parts became foliaceous and in place of the ray and disc florets, small leaves were observed. In the place of the monocarpellary pistil a short stalk ending in two open leaflike structures were noted in *Cassia siamea* by Rao and Sirdeshmukh (1953).



Two abnormal flowers exhibiting phyllody. The position of the tendril-bearing branches are clearly seen.

In *Trichosanthes anguina* Linn., the author observed a few of the branches bearing abnormal staminate flowers in which all the floral parts were modified into green leaflike structures, whereas other branches possessed normal flowers. The stamens were either transformed into minute leaflike organs or remained as staminodes. In two such flowers, two slender branches each bearing a few still unfurled leaves and tendrils arose from the centre (Plate). These specimens with the phyllody and the position of tendril-bearing branches from the middle of the flower throw light on the carpellary theory of the floral parts.

The author wishes to thank Sri M. Mohanasundaram, Post-graduate Trainee, who drew his pointed attention to the abnormal specimens.

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AGRICULTURAL JOTTINGS FOR APRIL, 1961.

April like March is also a hot summer month. The scorching sun burns throughout the day. Even so, the welcome interludes of the summer showers help on in pushing forward agricultural operations. Farmers should be on the alert to take advantage of these showers to obtain a good tilth in places where south west monsoon crops are raised.

Use Improved Seeds :

The Department of Agriculture has evolved several improved strains of crops. Improved seeds are those in which some improved qualities have been introduced by research workers so that when you grow them you get higher yields than the local. For instance, varieties selected for high yields give 20 or 30 per cent more yields than the local. The breeder has introduced several desirable features, like disease resistance, drought resistance, non-lodging properties etc. which result in high yields. Check with your Extension Officer about the improved seeds he stocks for the crops you grow and you are sure to benefit.

Groundnut Varieties :

Groundnuts are sown in April in some parts of the State. The strain TMV. 2 is a bunch, short duration type. TMV. 3 is a spreading type. Both are good yielders. The seeds are available from your nearest Agricultural Extension Officer and he will give you more particulars.

Prepare your field well and bring it to a condition of good tilth. Deep cultivation is avoided as deep cultivation encourages pod formation in deeper layers of the soil, thus rendering harvest comparatively more difficult. The seed rate decides the population and ultimate yield. Sow 100 to 120 lb. of seeds if it is bunch type and 80 to 90 lb. in spreading type per acre. Researches have indicated that a higher seed rate as above gives higher yields.

Have a Cropping Scheme :

When you think of cropping for your farm in the modern way try to prepare a cropping scheme. A cropping scheme is a programme of the crops you propose to raise in your farm during the year or season, when the manuring programme, the seed requirements etc. are all worked out. A further step would probably be to take an assessment of the probable income from the farm. Indeed the cropping scheme to a farmer is something very important like a blue print is to an Engineer who wants to build a building or a bridge. A cropping scheme will help to critically examine the farm business and make improvements. You can make a beginning by jotting down and drawing up a programme for the year and note therein the agricultural improvements you are going to make in your farm. You will find it very entertaining and interesting. You

will find that there are a good number of methods by which you can increase the productivity and profits in your farm. Just jot down in a small note book a few details of what you do every day and the costs therefor and review it month by month. You will surely find it worthwhile in the end.

Think of an Orchard in your Farm Allotment :

While on the subject of cropping scheme, it would be a useful thing to earmark a small area in your farm to the growing of fruits and vegetables. By doing so, you enjoy a richer food every day. We want also to build up the health of the people for which a balanced diet is essential. This is possible by eating plenty of fruits and vegetables. How to grow fruits and vegetables will be given in subsequent news letters.

Ragi Nurseries start in April :

Usually the irrigated ragi crop is transplanted in May for which nurseries are started in April. It is time to think of ragi nurseries if ragi has been included in the cropping scheme.

There are some excellent strains suited to your conditions evolved at the Agricultural Research Institute, Coimbatore and they give 20 to 30% more yield than the locals which you are accustomed to grow. Co. 5 is a very good strain suited to a variety of conditions. Co. 7 is another new strain just released and is performing very well. More details of these strains and the seeds can be obtained from your nearest Agricultural Extension Officer.

A successful ragi crop requires good seedlings. After the strain has been chosen, the next step is to prepare a good nursery. First plough the nursery, manure with 10 cart loads cattle manure per acre, and bring the soil to a good condition of tilth. Ragi is a fine seed and a good tilth is very important. Form beds, preferably 6 ft. x 6 ft., sieve a few baskets of wood ash and spread it over the beds.

Carefully sow the seed at the rate of $\frac{3}{4}$ to 1 lb of seed per cent, cover carefully with the hand and then irrigate slowly to prevent washing away of the seeds. About three cents of nursery would be enough to plant an acre. A low seed rate assures a thin stand and the seedlings are healthy and stout and they establish well in the main field.

Modern method of Storing Jaggery :

The storing of jaggery over the monsoon months is always a problem facing farmers in the jaggery producing areas. Farmers who have not sold their jaggery probably may be looking forward to store it without much deterioration. There are some of the age old methods and the most common method is to pack them in gunnies with a mat lining. The woven mat preserves the jaggery in a better condition.

Researches made into the improved methods of jaggery storage have shown that polythene bags are quite satisfactory for the purpose. A polythene bag is inserted into another gunny bag and thus the polythene bags act as a lining for the gunny. Such polythene bags are now readily available in the market and they are also very cheap. They keep the jaggery, moisture proof and thus there is no running of the jaggery even if the quality of the jaggery is poor. The jaggery can thus be kept over up to six months. No farmer will think of storing jaggery for more than this long.

Control the Groundnut Red Hairy Caterpillar :

With the summer showers emerge the moths of the red hairy caterpillar. The caterpillars that were infesting the groundnut crops all over the State last year have gone into pupation under the soil. It is a good method of control to collect the pupae and destroy them whenever they come across while ploughing the field or carrying on other preparatory cultivation operations. The moths on emergence mate and the female moths start laying eggs on all kinds of places, on field bunds, weeds, hedges etc. Millions of eggs are thus laid and the moths die afterwards.

Egg masses can be found everywhere after the rain. These may be collected and destroyed but they are difficult to locate. Even so, some attempt could be made to clean the field bunds, and hedges and collect all trash and set fire to them. This is a second step to control the caterpillar menace which does immense havoc to crops.

The tiny caterpillars start to emerge within about three or four days and they can be seen starting to move. They look very small and tiny and this is the time when an all out attack will be successful to destroy them. Dusting with BHC 10% in fields, bunds, crops, weeds etc. would help to kill them completely. You need only 30 lb per acre for this operation.

A second dusting after a fortnight will kill the second emergence completely and then you are free of the pests. Request your neighbours also to do the same. That is very important.

If the tiny caterpillars are allowed to grow, they become uncontrollable, killing is difficult as the thick hair that has grown on them prevent the chemicals from coming in contact. Then one is compelled to use deadly and costly sprays like parathion for killing them. Time is the essence of success in controlling this menace. Save your crops by timely action.

Manure Schedule for Sugarcane :

The sugarcane crop planted in March would need to be given the top dressing of fertilisers. Top dressing of fertilisers is done in two split doses, one in the third month after planting and the other about a month

or two later. Possibly a time schedule of 75 to 80 days for the first application and 125 to 140 days for the second would be a convenient arrangement.

Experiments on the response of sugarcane to manuring has shown that the sugarcane crop responds well to nitrogen fertilisation. But it is not a good thing to apply nitrogen only. When Nitrogen is taken up by a crop and that crop grows well, larger and larger quantities of phosphorus and potassium, the other two major nutrients are also taken up with the result that unless phosphorus and potassium are supplied with the Nitrogen, the crop yields are likely to go down in subsequent years owing to shortage of these plant foods.

The following quantities of fertilisers are generally recommended for the sugarcane crop.

N	200 to 250 lb.
P ₂ O ₅	60 lb.
K ₂ O	80 lb.

About 50 lb. Nitrogen, the whole of the phosphorus and potassium are applied at the time of planting the cane crop.

It is found better to supply the Nitrogen both in the organic and inorganic form mixed together wherever possible. For this purpose oil-seed cakes which are rich in Nitrogen are mixed with fertilisers before application, one third of the nitrogen may come from organic source and the other two thirds from fertilisers.

The manure schedule for sugarcane will therefore be as follows:

Groundnut Cake	500 lb.	} First application.
Ammonium Sulphate	325 lb.	
Groundnut	500 lb.	} Second application.
Ammonium Sulphate	325 lb.	

(From the Extension Specialist, Agricultural College and Research Institute, Coimbatore-3).

Weather Review — for February, 1961.

RAINFALL DATA (IN INCHES)

Region	Station	Total rainfall for the month	Departure from normal	Total since 1st January
North	Madras (Meenambakkam) ...	1.0	+ 0.6	2.2
	Tirurkuppam* ...	0.3	+ 0.2	1.6
	Vellore ...	0.2	— 0.1	0.3
	Gudiyatham* ...	0.1	— 1.1	0.5
East Coast	Palur* ...	0.6	+ 6.4	8.1
	Tindivanam* ...	1.4	+ 0.8	5.3
	Cuddalore ...	0.9	—	9.5
	Nagapattinam ...	£	— 0.8	9.1
	Aduthurai* ...	0.4	— 0.4	7.8
	Pattukkottai* ...	0.1	— 0.9	6.5
Central	Salem ...	0.7	+ 0.4	2.4
	Coimbatore (A. M. O.)* ...	0.5	+ 0.2	1.8
	Coimbatore ...	0.4	— £ ₂	2.5
	Tiruchirapalli ...	—	— 0.3	2.2
South	Madurai ...	1.0	+ 0.5	1.2
	Pamban ...	Trace	— 0.9	6.3
	Koilkatti* ...	—	— 0.7	8.7
	Palayamcottai ...	0.2	— 0.9	6.5
	Ambasamudram* ...	1.5	+ 0.4	10.7
	Nagercoil* ...	1.4	+ 0.6	3.8
Hills	Capcomorin* ...	1.4	+ 1.3	5.3
	Kodaikanal ...	0.3	— 1.3	6.0
	Coonoor* ...	3.1	+ 0.7	10.0
	Ootacamund* ...	0.5	+ 0.1	2.6
	Naujanad* ...	0.5	+ £ ₃	2.2

1. * Meteorological Stations of the Madras Agricultural Department.

2. £ = Actual value = 0.04" 3. £₂ = Actual value = -0.01"

4. £₃ = „ = +0.03"

The dry weather, that commenced on 19-1-'61 practically persisted upto and inclusive of 9-2-'61. On 10-2-'61 and 11-2-'61 scattered showers or thunder-showers were received throughout the State. For four days from 14-2-'61 either scattered or localised showers were received. On 18-2-'61 a depression was noticed in the south-west Bay, being centred about 370 miles east-south-east of Colombo. It remained practically stationary on 19-2-'61 and developed into a cyclonic storm of small extent on 20-2-'61 and continued to be so on 21-2-'61 and became weak on the next day. But inspite of these developments there was no large change in weather, which remained practically dry from 18-2-'61 to the end of the month.

Regarding the fluctuations of day temperatures there were no large changes. In fact, they were practically normal throughout the State. For the first nine days of the month the night temperatures were above normal. On 18-2-'61 the night temperatures were below normal.

The zonal rainfall for the month of February, 1961 is furnished hereunder.

Name of the Zone	Rainfall for February 1961 (inches)	Departure from normal	Remarks
North	0.4"	— 0.1	Far below normal
East Coast	0.6"	— 0.1	"
Central	0.4"	— 0.1	"
South	0.9"	£	"
Hills	1.1"	— 0.1	"

From the Agricultural Meteorologist, A. C. & R. I. Coimbatore.

College and Estate News

Students' Club Day: The annual Club Day of the students' club was celebrated on 4th March 1961. Sri M. Bhakthavatsalam, Minister for Home and Agriculture, presided.

Inauguration of the grape society: On the 4th March, the Minister for Home and Agriculture Sri M. Bhakthavatsalam inaugurated the grape society.

Hostel Day: The annual Hostel Day was celebrated on 6th March 1961 under the presidentship of Sri V. Karthikeyan, I. A. S., Director of Agriculture, Madras.

N. C. C. Day: The annual Day of the N. C. C. and N. C. C. (Rifles) was celebrated on 17th March. A ceremonial parade was held and Sri T. Sankaranarayana Menon, District and Sessions Judge, Coimbatore took the salute and presided over the function.

Foundation Lectures: Foundation lectures were delivered to the post-graduate students by the following:—

Sri V. T. Subbiah Mudaliar, Retired Prof. of Agronomy, Ambalamudram. Dr. Maheswari, Prof. of Botany, Delhi University, Delhi. Dr. M. S. Swaminathan, cytogeneticist, I. A. R. I. Delhi.

The Maharajah of Travancore Curzon Lectures: Dr. Bertie De'Souza, Principal, Madras Veterinary College delivered two lectures on "Improvement of animal production".

Seminar on Tutorial system: The Minister for Finance and Education Sri C. Subramaniam inaugurated a seminar on Tutorial system in colleges on 20th March. Twelve colleges of the Coimbatore District participated in the seminar.

Departmental Notifications

Gazetted Officers — Madras Agricultural Department Postings and Transfers during the month of March 1961.

Name and Designation	Posted or Transferred to
Sri R. Somalingam, Agricultural Engineering Supervisor	Assistant Agricultural Engineer (Inspection), Madurai.
„ P. A. Murthy, Asst. Agricultural Engineer, Madurai.	Assistant Agricultural Engineer, Ramanathapuram.
„ C. Raman Moosad, Deputy Director of Agriculture, Madurai.	Retired from service on 16-3-1961.
„ K. Santhanam, D.D.A., Thanjavoor	Additional charge of the post of D. D. A., Madurai.
„ G. Venkataramana, A. C. & R. I. Coimbatore.	District Investigating Officer (New Post).
„ K. K. Ananthanarayanan, Asst. in Horticulture, Ootacamund.	Superintendent, A. R. S., Nanjanad.
„ N. V. Raman, Horticulture Asst. Coimbatore.	Assistant Horticulturist, Kodaikanal (for improvement of Apples).
„ S. S. Nagarajan, Plant Physiology Assistant, Coimbatore.	Plant Physiologist (Micro nutrient studies on crop plants) New post.

Upper Subordinates — Agricultural Department Postings and Transfers during the month of March 1961

Name and Designation	Transfer and Postings
Sri S. V. Subramaniam, Agricultural Demonstrator, (Nursery), Vellore.	Special A. D. (Sugarcane), Cuddalore.
„ E. E. Sadanandan Nambiar, Entomology Assistant	Entomology Assistant, Cuddalore.
„ P. Pazhaniappillai, Nagercoil	Allotted to Coimbatore Region.
„ Vijayakumara Pillai, Chara	A. E. O., Kodavasal.
„ A. N. Sasisekharan, Nedungadu	A. E. O., Muthupet.
„ F. B. Chellappa, Madurai	A. E. O., Koradacheri.
„ E. Ramachandra Pillai	A. E. O., Koradacheri.
„ R. Krishnan Nair, Kulasekharam	A. E. O., Acharapalkam.
„ G. Sreedharan Pillai	Assistant in Oil Seeds, Salem.
„ M. Sathyanathan	Assistant in Botanic Gardens, Ooty.
„ K. S. Sridar Sahib, Kerala State	Allotted to D. A. O., Pattukottai.
„ V. T. Sathyapal Ponnaiya, Coimbatore.	Allotted to A. C. & R. I. Coimbatore.
„ S. Ramachandran Nair, Chenkal P. O.	Allotted to Thanjavoor District.



Review of Market conditions of Commercial Crops in the notified areas in the Madras State for the month of February, 1961.

Cotton :

COIMBATORE DISTRICT : *Season :* The weather was hot and dry during the month. Tiruppur received a rainfall of 49 millimetres during the month. The rainfall was helpful to a certain extent to the growth of the dry crop cotton. Some more rains are needed for the crop. It is reported that normal yield is expected in Coimbatore taluk and that the yield will be below normal in Palladam and Avanashi taluks.

Arrivals and Transactions : **Kapas :** On 28-1-1961 there was a stock of 5445 quintals of Cambodia and 14 quintals of Karunganni kapas in Tiruppur market area. The total arrivals into Tiruppur during the month of February, 1961 (upto 25-2-1961) were 29159 quintals of Cambodia and 78 quintals of Karunganni kapas. The despatches during the month were 28667 quintals of Cambodia and 88 quintals of Karunganni kapas. On 25-2-1961 there was a stock of 5937 quintals of Cambodia and 4 quintals of Karunganni kapas.

Lint : The lint market started with an opening balance of 23418 quintals of Cambodia in Tiruppur market. The total arrivals into Tiruppur during the month were 14679 quintals of Cambodia lint which included 6091 quintals of Cambodia lint locally ginned. Despatches from Tiruppur were 24296 quintals of Cambodia lint. At the end of the month the market was left with a balance of 13801 quintals of Cambodia lint.

Prices : The prices of kapas and lint that prevailed during the month were as follows :

Centre	Rs./nP. per quintal			
	Cambodia Kapas	Lint	Karunganni Kapas	Lint
Pollachi	125.11	370.92	...	...
Tiruppur	139.37	344.47	96.85	...
Sulur	139.37	355.00	...	...
Coimbatore	155.00	360.00	...	...
Avanashi	140.00	315.00	...	...
Erode	102.36	275.86	...	...
Gobi	129.25	275.86	...	...

RAMANATHAPURAM DISTRICT : *Season :* There was no rainfall during the month. Dry weather prevailed during the month under report.

Arrivals and Transactions : The following were the arrivals and disposals of cotton kapas and lint during the month in Ramanathapuram District.

Kapas : (Kapas in pothy of 127 kilograms or 280 lbs.)

Name of Market	Opening Stock	Receipts	Disposals	Closing Stock
Virudhunagar	Nil	1750	1750	Nil
Rajapalayam	Nil	350	350	Nil
Total	...	2100	2100	...

Lint : (Lint in candy of 355.151 kilograms or 784 lbs.)

Name of Market	Opening Stock	Receipts	Disposals	Closing Stock
Virudhunagar	40	120	90	70
Sattur	50	Nil	Nil	50
Rajapalayam	400	Nil	Nil	400
Total	490	120	90	520

Prices :

Kapas : (Per pothy of 127 kilos or 280 lbs.)

	February, 1961	January, 1961
Karunganni	Rs. 105 to 122	...

Lint: (Per candy of 355·151 kilograms of 784 lbs.)

	February, 1961	January, 1961
Karunganni	Rs. 881	Rs. 900
Uganda Certified	...	„ 1240 to 1306
Uganda Uncertified	...	„ 1025

Cotton Seed: (Cotton seed in 37·3 kilograms or 82·2/7 lbs.)

	February, 1961	January, 1961
Karunganni	Rs. 14·36 to 15·34	Rs. 15·34 to 15·83
Tinny	...	Rs. 15·66 to 16·16

TIRUNELVELLI DISTRICT: Season: There was no rain except a slight drizzle during the month.

Arrivals and Transactions: The following were the arrivals and disposals of cotton in Koilpatti and Sankarankoil markets during February, 1961.

(Price per candy of 360 kgs.)

Market	Crop	Opening Balance	Arrivals	Disposals	Closing Balance
Koilpatti	Karunganni	1420	220	940	700
Koilpatti	Uganda	Nil	Nil	Nil	Nil
Sankarankoil	Uganda	580	500	320	310
	Total	2000	720	1260	1010

Price: Kapas:

Karunganni	1st Sort	Rs. 115/-	pothi of 127 Kgs.
Karunganni	2nd Sort	Rs. 100/-	pothi of 127 Kgs.
Uganda		Rs. 140/-	pothi of 127 Kgs.

SOUTH ARCOT DISTRICT: Season: A rainfall of 39 mms. was received at Tindivanam and 30 mms. at Cuddalore. Rainfall in other places was negligible. The condition of standing irrigated crops was reported to be fair.

Cotton Kapas: Arrivals and Transactions: Nil.

Groundnut:

SOUTH ARCOT DISTRICT: Arrivals and Transactions:

Groundnut Kernels: Arrivals declined as the marketing season for winter crop was coming to a close and the stock with producers were diminishing. The local produce that was brought for sale amounted to 1907 tonnes and arrivals from North Arcot, Madurai, Ramnad and Tiruchi Districts came to 1070 tonnes. The oil mill and country chekkus

consumed 2759 tonnes and 219 tonnes respectively. Despatches to Madras, Salem, Thanjavoor, Chingleput and North Arcot amounted to 1102 tonnes. A quantity of 26 tonnes was exported to Pondichery State. Wastages were calculated at 165 tonnes. The stock with the trade at the end of the month stood at 8693 tonnes.

Prices improved and the average prices ranged from Rs. 65·73 to 75·00 per bag of 80 kgs. according to quality.

RAMANATHAPURAM DISTRICT: Arrivals and Transactions:

Name of Variety	Opening Stock	Arrivals	Sales	Closing Stock
Groundnut pods (in tons)				
Virudhunagar	300	1900	1900	300
Groundnut kernels				
(in candy of 240·861 kgs. (531 lbs.) Virudhunagar	5300	6700	7500	4500

Prices: The following were the prices for groundnut and groundnut products that prevailed during February, 1961 and previous month.

	February, 1961 Rs.	January, 1961 Rs.
Groundnut pods bag of 37 kgs. (82·2/7 lbs.)	20 to 24	18 to 22
Groundnut kernels 240 kgs.	212 to 238	210 to 227
Groundnut oil (tin of 15·876 kgs.)	29·88 to 30·00	28·00 to 29·50
Groundnut oil cake per bag of 37 kgs. (82·2/7 lbs.)	12·20 to 13·38	12·37 to 14·04

NORTH ARCOT DISTRICT: Season: Tiruvannamalai and Chetput in the district received about 18 mm. of rains during the month under report. There were drizzles during the third week of the month under report with cloudy weather. The standing summer crop of groundnut is in good condition in the District.

Arrivals and Transactions: The arrivals, disposals, stocks etc., of Groundnut in the districts during the month were as follows:

(quantity in tonnes)

	Opening Stock	Arrivals	Disposals	Closing Stock
Groundnut pods	18	300	283	35
Groundnut kernels	370	1263	1261	342

Prices :

Groundnut pods bag of 40 kgs. Rs. 24 to 28-00

Groundnut kernel candy of 240 kgs. Rs. 215 to 234-25

Groundnut oil candy of 226 kgs. Rs. 414 to 450-00

TIRUCHIRAPALLI DISTRICT: *Season:* The weather was mainly dry in the region during the period under report. Sowing of summer groundnut was continued. The peak season for winter groundnuts has come to a close. The production having been poor this year the arrivals into the markets have been considerably low.

Arrivals and Transactions: The regulated market Jayankondan received 2505 bags of 80 kilograms each and Ariyalur 602 bags of groundnut kernels. The increase in the arrivals to the regulated market, Ariyalur was maintained during this month also. This market has been slowly picking up. The other two markets were inactive as usual.

Price: The price of groundnut kernels ranged on the average between Rs. 190/- to 223-50 per candy of 240-861 kilograms.

Gingelly : (bag of 80 kilograms)

SOUTH ARCOT DISTRICT: Arrivals were poor. A total quantity of 111 bags representing 88 bags from local produce and 23 bags from Madras was received in the Markets for sale. Despatches to other districts amounted to 35 bags. A quantity of 82 bags was crushed for extracting oil. The trade had a stock of 28 bags at the close of the month.

The average price per bag of 80 kilograms was from Rs. 68.40 to Rs. 112.40 according to quality.

Tobacco :

COIMBATORE DISTRICT: *Arrivals and Transactions:* At the end of the month under report there was a stock of 18229 quintals of chewing and 3155 quintals of cheroot tobacco. About 3225 quintals of chewing and 313 quintals of cheroot tobacco were exported to places in Kerala and Mysore States and to Salem, Tiruchy and Thanjavoor districts of Madras State.

The activity in the tobacco market was moderate with prices of tobacco maintaining the level of the previous month. There was only limited demand from merchants of other states.

The prices of Meenampalayam tobacco ranged upto Rs. 235 per quintal. The prices of the cheroot variety ranged upto Rs. 176 per quintal.

Prices : (In Rupees per quintal)

Variety	Ist Grade	IIrd Grade	IIIrd Grade
1. <i>Chewing tobacco sun-cured :</i>			
(a) Meenampalayam	176—235	154—184	88—113
(b) Other varieties	132—220	110—178	88—110
2. <i>Cheroot varieties sun-cured :</i>			
Grown in Erode and Bhavani Taluk	154—176	132—154	44—66
3. <i>Chewing tobacco pit-cured :</i>			
Grown in Palladam and Sultur areas.	—	—	66-13—100-00

Cardamom :

MADURAI DISTRICT: Rainfall in cardamom plantation areas was reported to be fair. Agricultural operations like preparation of land etc., were going on to be fair. Arrivals of cardamoms in all the markets were reported to be fair. Prices were reported to be almost steady. Prices prevailed in the important cardomom assembling markets were as hereunder :

1. <i>Bodinaickenoor :</i>	(Prices in Rs. per lb. (0.450 grams))
Medium bulk	Rs. 7.40 to 7.86
Inferior bulk	„ 6.27 to 7.38
Smalls	„ 7.32 to 7.35
Splits	„ 6.86 to 6.91
Lights	„ 3.00 to 5.94
Seeds	„ 6.50 to 8.94
2. <i>Thevaram :</i>	
Chalu Best	„ 8.41 to 8.49
Chalu Ordinary	„ 8.00 to 8.12
FAQ. Standard	„ 7.41 to 7.88
FAQ. Ordinary	„ 6.57 to 7.40
3. <i>Virudhunagar :</i>	
Bold Quality	„ 9.00
Bulk	„ 7.25 to 7.50
Rabin	„ 8.00 to 8.25
Shipment	„ 6.75
Smalls	„ 7.25
Seeds	„ 10.50

**Review of administrative activities of Market Committees
in the State during the month of February 1961**

The Market Committees of South Arcot, North Arcot, Coimbatore, Trichirapalli, Tirunelveli and Ramanathapuram are functioning briskly under report.

Enforcement :

Name of the Market Committee	Section 5 (1)		Section 5 (3)		Weighmen	
	A	B	A	B	A	B
South Arcot Market Committee	216	832	163	550	154	503
North Arcot Market Committee	176	423	171	410	112	246
Coimbatore Market Committee	106	544	87	396	54	284
Tiruchirapalli Market Committee	288	567	360	256	215	421
Tirunelveli Market Committee	31	77	24	43	27	75
Ramanathapuram Market Committee	86	147	80	214	54	148

A = Licences issued during the month.

B = Licences issued upto this month.

Meetings: In the South Arcot Market Committee the ex-officio Chairman passed orders for 15 subjects on 22—2—1961. The election of chairman and Vice-Chairman for the Committee were conducted by the District Revenue Officer on 23—2—1961. Sri S. Rangaswamy Nadar of Villupuram and Sri N. Nataraja Gounder of Ponpathi were declared elected as Chairman and Vice-Chairman respectively. The elected Chairman assumed charge on the fore-noon of 23—2—1961.

Quality Analysis: Nil.

Quality Competition: Nil.

**STATEMENT ABOUT OWNERSHIP AND OTHER PARTICULARS
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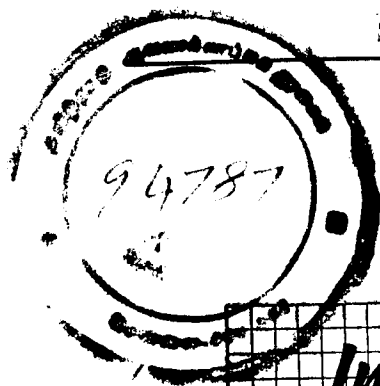
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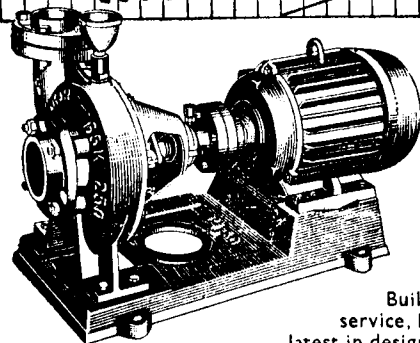
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