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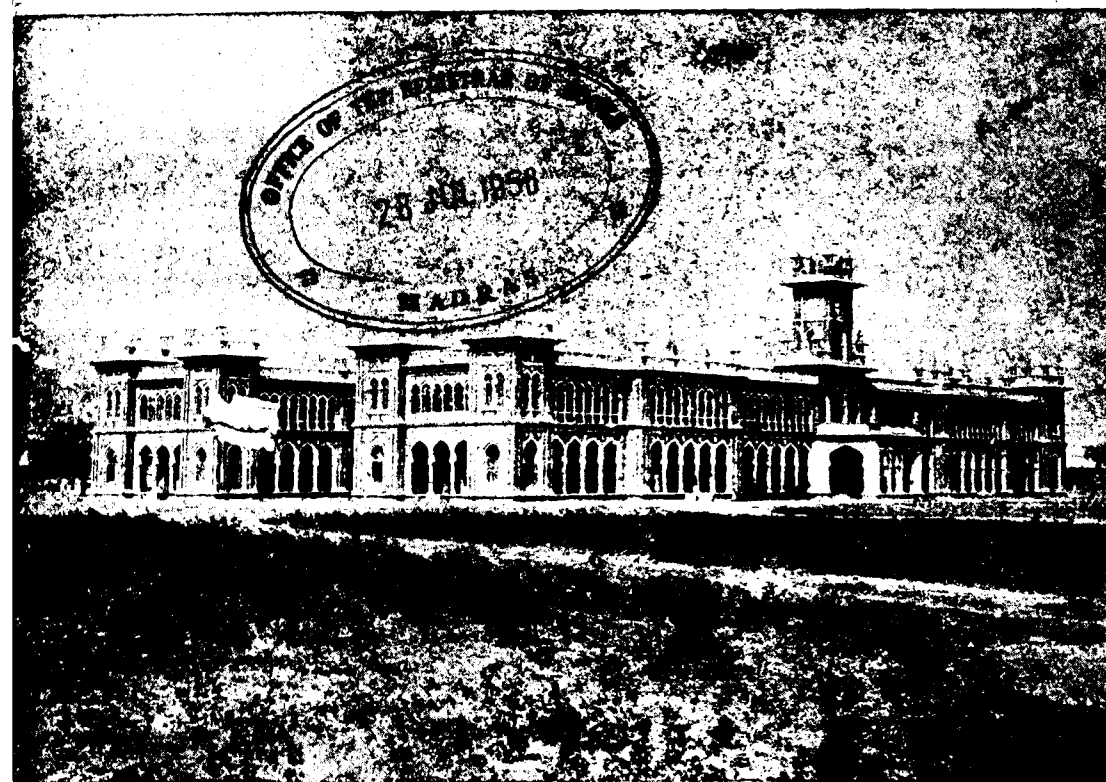
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March 1956

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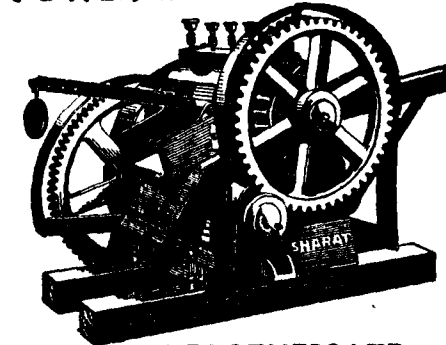
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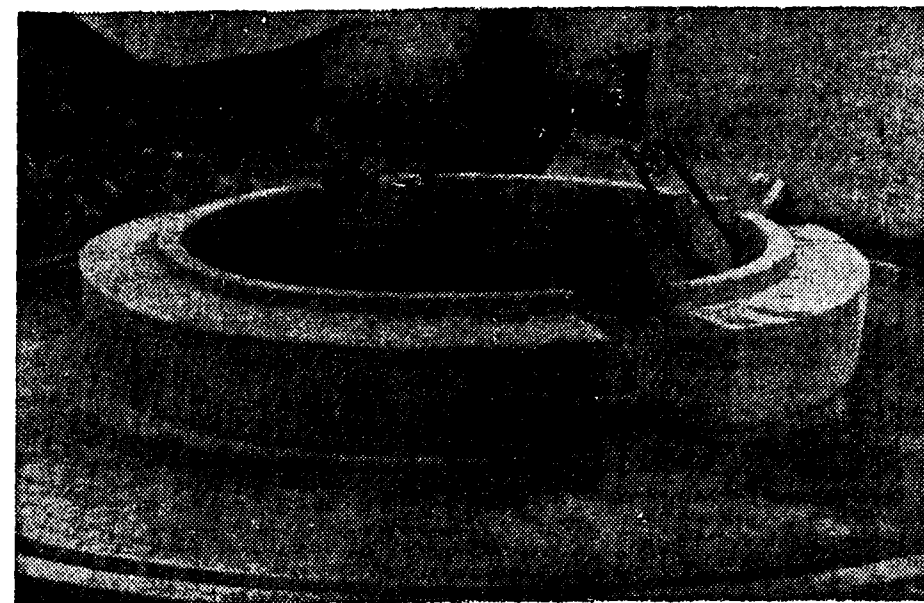
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The Madras Agricultural Journal

Vol. XLIII

MARCH 1956

No. 3

CONTENTS

	PAGE
Editorial ...	101
Original Articles:	
1. Additional Notes on some Aphids in the Madras State ... by S. Kanakaraj David	103
2. A Note on the Double Cropping of Paddy in Wynad ... by K. Fazullah Khan and K. Kannan	108
3. Sugarcane Yield Competitions in Madras State ... by S. V. Parthasarathi	110
Research Notes ...	114
Review ...	120
Gleanings ...	121
Notes and News ...	123
Weather Review ...	124
Departmental Notifications ...	125
Market Committees Chronicle ...	127

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Editorial

The Frontiers of Science: An army on the march consists not only of regular troops with their armaments, but also includes a whole host of auxiliary equipment, not to mention camp followers and hangers-on. A similar analogy holds good in the field of science as well. Right from the days of the Phlogiston theory there has always been a fringe of pseudo-science on the outskirts of genuine scientific work and particularly in recent times, when specialisation has reached such a stage that one is virtually as ignorant as the proverbial man in the street in all fields of knowledge except one's own special field, it is difficult to judge where exactly the dividing line comes, between genuine science and its pseudo counterpart.

Thus, we have in many advertisements of commercial products, fine-sounding names of new and wholly imaginary chemicals, furnished with cunningly-worded claims for their miraculous properties in turning every woman into a Helen of Troy and every man into an Adonis. Then we have the vitalists, a very hardy breed, who keep on harping upon the "proven fact" that crops grown with anything other than "natural or organic manures" are bound to be inferior not only in their vigour and freedom from pests and diseases, but, also in their power of keeping healthy the persons who consume such "unnaturally manured" crops. This view persists even today, in spite of countless experiments to prove the contrary, that crops raised with inorganic nutrients are in no way inferior to those grown with organic manures. Some have even gone to the extent of saying that the increase in the incidence of cancer is due to the increasing use of artificial fertilisers, although here again, the facts point to the opposite view.

Thus Switzerland, which uses only about 14 lb. of potash per acre of arable land has a mortality from cancer, of 173 per 100,000 inhabitants, while Belgium, which uses 744 lb. per acre of potash has a cancer mortality of 117 per 100,000. Another set accuses mineral manuring of merely

raising the yields while the quality of the product is impaired. This of course is merely another form of the "good old times" - notion, that "nothing today is as good as it used to be". The use of fertilisers, it is claimed, makes vegetables "melt away in the saucepan", whereas in actual fact, it is only vegetables that are grown on soils too rich in organic nitrogen, as in sewage farms, that contain hardly anything but cellulose and water and are lacking in flavour and in mineral salts.

Another borderland region between real and pseudo-science is the inheritance of acquired characters which comes into prominence every now and then, from Lamarckianism, through Kammerer's newts down to Lyssenko's conversion of wheat into rye, barley and oats. Lyssenko claimed that if *durum* wheat of the 28-chromosome type, were sown late in autumn, in two or three generations some of these plants were converted in to the 42-chromosomed, soft-wheat, *Triticum vulgare* and this claim was further underlined by the statement that the "abnormally arising grains were confirmed as belonging to *T. vulgare* by sowing the seeds, when soft wheat plants were produced as a rule". A discreet silence is maintained, however, regarding the remaining cases, whether they failed to germinate or produced only *durum* plants. Similarly, various claims are made from time to time about methods of predicting the sex of the progeny in animals and human beings, by swinging an ivory pendulum over the prospective mother and noting whether it swings in a 'straight' or oval fashion. Another interesting claim has been made recently that plants are encouraged to grow better and faster if certain tunes are played near them on certain types of musical instruments, but until such results are found reproducible by independent workers elsewhere in the world, it seems wiser to reserve our judgment on these claims. Science is of course only organised commonsense, but nevertheless it should not get so peculiarly organised as to become a substitute for common sense.

Additional notes on some aphids in the Madras State

by

S. KANAKARAJ DAVID
Agricultural Research Institute, Coimbatore

Of the seventy species of aphids recorded by the writer (David 1954 a, b, c), sixty-eight are known to occur within the Madras State. Collections made since then include three species which were noted by George (1927) previously. In this paper these species are reviewed as to their present systematic position, distribution and status in economic entomology. For fourteen other aphids which have already been commented upon in previous papers, additional notes are given.

1. *Dactynotus (Uromelan) carthami* HRL. (Syn. *Macrosiphum solidaginis* (Fab) sec. George 1927 and Ullah 1940): This aphid is easily recognised by the deep black colour of the nymphs and the apterous and alate forms. Only the distal portion of the femora are yellow. Siphunculi have reticulations on the distal 1/5th of its length. The cauda bears about 18 long and thick hairs.

Measurements in mm.

	Length of body	Antennæ	Siph.	Cau.	Antennal segments				
					III	IV	V	VI	
Apteræ	2.85	3.26	.83	.54	.95	.54	.40	.14 +	.97
Alatæ	2.85	3.37	.92	.43	.91	.56	.45	.15 +	1.06

Rhinaria on the III antennal segment in apteræ number 58 to 60 and in alatæ about 100. Length of last rostral segment 0.17 mm.; length of second joint of hind tarsi 0.14 mm.

Host: *Carthamus tinctorius* (Safflower).

Locality: Coimbatore. November to January.

This is one of the largest aphids in South India. It feeds mainly on the stem of the plant but when it gets crowded it feeds on the undersurface of the lower leaves. The colonies are large and are easily detected by their colour though ants are not found attending on them. It has been noted as affecting safflower to a considerable extent in Bellary and Coimbatore (Ayyar 1940). But large numbers of aphids occur on these plants only when they have already flowered and the damage is not severe.

Das (1918) recorded an aphid on *Sonchus* sp. as *Macrosiphum solidaginis* (Fab). Though he was keeping safflower under close observation for studying in detail two other aphids, he did not find his *M. solidaginis* feeding on safflower. It is evident that this is a species which does not feed on *Carthamus*. George (1927) and Ullah (1940) identified their safflower aphids as *M. solidaginis*. But Hille Ris Lambers (1939, 1948) showed that the European form for which this name has to be applied, is a distinct one and described an aphid on *Carthamus glaucus* from Israel as *Uromelan carthami* HRL. The South Indian form is similar to this species but has about twice the number of rhinaria on the third antennal segment in both apteræ and alatae. Since the variability of this character in the species from Israel is not known, this is tentatively retained in this species.

2. *Greenidea artocarp* (Westwood): The nymphs of this species are pale green in colour. The apterous form is pale brownish green with black siphunculi which are very long and slightly swelling in the middle. These also bear thick, long hairs of varying length and are covered over with small spinules which mark out a pattern of reticulation on the surface. The caudal process is small, narrow and conical. The alate form is dark green and has oval irregular rhinaria on the third antennal segment. The abdominal segments 2 to 6 have broad transverse sclerotic bands. The last segment of the rostrum is slender and tapering and rostrate with about 13 small hairs in the proximal portion. The apical hairs in the rostrate portion are minute.

Measurements in mm.

	Length of body	Ant.	Siph.	Cau. process	Antennal segments				
					III	IV	V	VI	
Apteræ	2.46	2.64	1.31	.06	.74	.31	.39	.28	+ .77
Alatae	2.06	2.91	1.93	.06	.91	.36	.39	.31	+ .75

Rhinaria on the third antennal segment in alate 38 & 35; length of last rostral segment .15 and second joint of hind tarsus .12 mm.

Hosts: *Artocarpus heterophylla* (Syn. *A. integrifolia*) (jack fruit) and *A. incisa* (bread fruit).

Locality: Coimbatore and Kallar (The Nilgiris).

Date: January-February and September-October.

The aphids are found feeding on the under surface of tender leaves [usually on the leaves near the main trunk of the tree. Even a large colony did not cause any visible injury to the leaf or plant. Ants are not found attending on them nor could any predators or parasites be found on them. Previous records of this aphid are from Malabar (George 1927) and Mysore (Krishnamurthy 1930). Though Ayyar (1940) regards it as an important pest of jack, no serious damage by this insect has been brought to the notice of the writer so far.

3. *Acyrtosiphon pisum* (Harris). (Syn. *Macrosiphum pisi* Kalt, *Illinoia pisi* Kalt): The aphid is pale green in all stages with long, slender, tapering siphunculi.

Measurements in mm.

	Length of body	Ant.	Siph.	Cau.	Antennal segments				
					III	IV	V	VI	
Apteræ	3.50	3.83	1.00	.33	.86	.68	.68	.26	+ 1.04
Alatae	2.81	3.84	.69	.39	.82	.74	.69	.28	+ 1.08

Rhinaria on the III antennal segments in alate 15 & 16; Length of last rostral segment .12 mm. and second joint of hind tarsus .15 mm.

Host: *Pisum sativum* (Pea).

Locality: Ootacamund (7200 ft. above M. S. L.)

Date: July to September.

This is a familiar, large green aphid found on peas, especially the sweet variety. It occurs sometimes in considerable numbers and causes appreciable damage to the plant. Though it feeds on a number of other plants and is considered to be a pest of clover and lucerne in America, it has not so far been noted on any other plant in this region.

A closely allied form occurs on *Sesbania grandiflora* (Agathi) on the plains. Among the collections at Bangalore it was found that this species was recorded on the same host there also, as well as on linseed. But the aphid collected on peas in this locality was only *A. pisum*.

4. *Aphis craccivora* Koch: In the collections at Bangalore the slides labelled *Aphis rumicis* L on cowpea and *Anuraphis cynariella* Theob. on *Cyamopsis psoralioides* were found to be this species.

Hosts: *Achyranthes aspera* in February; *Indigofera oblongifolia* in June; *Amarantus gangeticus* and *A. viridis* in February; *Erigeron asteroides*, *Solanum melongena* (brinjal) and *Vernonia cineria* in March.

A severe infestation of this aphid occurred on brinjal and amarantus during February and March 1955. This is an unusual occurrence as this aphid has not been noted to feed on these plants at other times.

5. *Aphis gossypii* Glover.

Hosts: *Cleome chelidonii* and *Emelia sonchifolia* in March. *Ficus banyan*, *F. tsiela* and *Holoptelia integrifolia* in November, *Prosopis juliflora* and *Stenolobium stans* in March.

6. *Aphis punicae* Pass.

Distribution: Madras, in January.

7. *Hyadaphis coriandri* (Das).

Hosts: *Foeniculum vulgare* and *Cuminum sativum*. *Carum copticum* in the vicinity was not affected.

8. *Macrosiphum euphorbiae* (Thomas).

Host: *Echeveria* sp. Locality: Ketti. Date: July and September.

9. *Macrosiphum* (*Sitobion*) *avenae* subsp. *eleusinae* (Theob).

Hosts: *Bothriochloa insculpta*, *Dactyloctenium aegyptium*, *Eragrostis superba* and *Cymbopogon martini*.

10. *Macrosiphum* (*Sitobion*) *graminis* (Takahashi).

Host: *Chloris barbata*. Locality: Coimbatore. Date: February.

11. *Macrosiphum* (*Sitobion*) *lambersi* David.

Hosts: *Ischaemum aristatum*, and *Digitaria marginalis* in March-April and *Eremopogon foveolatus* in November at Coimbatore. *Cynodon dactylon* and *Paspalum conjugatum* at Kallar (The Nilgiris) in November.

12. *Oregma bambusae* Buckton. Distribution: Coimbatore.

13. *Pentalonia nigronervosa* Coq.

Hosts: *Musa paradisiaca*, *M. cavendishii*, *M. superba*, *M. rosacea* in June. *Calladium* sp., *Elleteria cardamomi* and *Colocasia* sp. in November at Coimbatore.

14. *Rhopalosiphum maidis* (Fitch).

Host: *Cenchrus ciliaris*, and *Panicum antidotale* at Coimbatore.

15. *Tetraneura hirsuta* (Baker).

Host: *Echinochloa colona* in June.

16. *Toxoptera aurantii* (B. d. F.)

Hosts: *Artocarpus heterophylla*, (jack) *A. incisa* (breadfruit), *Santalum album* (sandalwood), *Tamarindus indicus* (tamarind) at Coimbatore.

17. *Toxoptera odinae* (v. d. Goot).

Hosts: *Hibiscus rosasinensis* (shoe-flower) and *Hamelia patens* at Coimbatore.

Acknowledgements: The kind help of Dr. D. Hille Ris Lambers, Bennekom, for arriving at the determinations is gratefully acknowledged. The writer is also thankful to Sri K. P. Anantanarayanan, Government Entomologist, for giving the necessary facilities for work.

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A Note on the Double Cropping of Paddy in Wynad

by

K. FAZULLAH KHAN, B. sc. (Ag.), D. I. H.
and

K. KANNAN, B. sc. (Ag.)

In Madras State, Malabar is one of the deficient districts in rice production, even though the total area under paddy in Malabar is fairly high. Malabar records a total production of 3.17 lakhs tons from an area of 8.45 lakhs acres which compares very unfavourably with the production of 8.5 lakhs tons from a cultivated area of 13.38 lakhs acres in Tanjore district. On this basis Tanjore records a mean acre yield of 1400 lb. per acre while in Malabar the average yield works out only to 900 lb. per acre (Natarajan 1941). This situation therefore calls for consideration of the ways and means to augment the production of rice in this district.

Ramiah (1953) has observed that many parts of Orissa which were more or less akin to Wynad, a high-lying taluk of Malabar in respect of terrain and climatic conditions, have made a mark in rice production by adopting the "double cropping" of paddy lands. It was therefore considered possible that the same practice could be applied to parts of Wynad with advantage. One major handicap, however, which confronts the rice grower in Wynad is the prolongation of duration of paddy crops, as a result of which sufficient time is not available for raising a second crop. But with suitable short-duration varieties, there is scope for raising two crops of paddy in this region.

With the object of securing two crops in a year, trials were conducted at the Agricultural Research Station, Ambalavayal (Wynad) to determine the optimum combination of two paddy varieties that could be usefully raised in the double-cropping scheme in wetland blocks which commanded satisfactory irrigation facilities. Several combinations of long and short duration types of paddy previously tested and found promising under Wynad conditions for the first and second crop seasons, were included in this trial. The yields obtained from these combinations are set out as follows:

First Crop				Second Crop				
Name of Variety strain or culture	Duration in days	Yield per acre in lb.	Value in Rs.	Name of Variety or culture	Duration in days	Yield per acre in lb.	Value in Rs.	Total yield in lb. Value in Rs.
Combination I. Short duration first crop variety followed by long duration second crop variety.								
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do. 2801	142	2554	279/-	Kothandan	202	1727	189/-	4281 468/-
Combination II. Medium duration first crop variety followed by long duration second crop variety.								
Palthondy 9114	165	3638	398/-	MTU. 19	218	771	84/-	4409 482/-
do. 9114	165	3710	406/-	Kothandan	202	1519	166/-	5229 572/-
Combination III. Long duration first crop variety followed by short duration second crop variety.								
MTU. 19	218	3075	330/-	Co. 13	120	1515	166/-	4590 502/-
Kothandan	202	3932	430/-	Palthondi 9114	165	2081	228/-	6013 658/-

It would be observed from the above data that the most profitable combination on considerations of yield was of *Kothandan* 517 in the first crop, followed by *Palthondi* 9114 in the second crop seasons. Growing of short duration varieties in the first crop followed by long duration varieties in the second crop invariably led to low yields. In terms of monetary value, the third combination has yielded an income of Rs. 658/- per acre, as compared to the maximum income of Rs. 430/- realised from a single crop of *Kothandan*.

These methods of raising two crops of paddy seem to have caught the imagination of the growers in Wynad. In the course of the past three years, the area under second crop paddy has steadily increased from practically nothing in 1950-51 to over 500 acres in 1954-55. This would mean that the Wynad growers have contributed in a measure towards food production and have earned for themselves an additional income of Rs. 1,14,000/-. If the above practice of double cropping is adopted on a more extensive scale, it will help to narrow down the rice deficiency in this district considerably.

Thanks are due to Sri K. Ramaswami, Paddy Specialist, who has given valuable guidance in preparing this note.

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Sugarcane yield competitions in Madras State

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Genesis: It is now four years since the first award was given for the highest yield of sugarcane in this State. In 1951, a high-yielding crop of sugarcane was noted in Kuniamuthur near Coimbatore. Sri N. L. Dutt, Director of the Sugarcane Breeding Institute was so much impressed with this crop that he arranged for an estimation of its yield. It recorded an average of 97 tons of cane over six acres. Sri Venu Naidu, the cultivator was honoured at the Coimbatore Agricultural College Day Conference. Subsequent to this, a scheme was suggested to the State Government and this is still in force from 1951-'52. The highest yields recorded in the last four years are 102.4 tons, 107.12 tons, 94 tons and 129 tons respectively.

Objectives: The yield estimates are from small plots and hence are liable for error in estimation. Still the Government-sponsored scheme achieved its objective in rousing the ryots towards increased production. The average yield in development zones has increased from about 25 tons to 35 tons of cane per acre. The average in Nellikuppam factory itself has recorded a definite increase.

The objective before the ryots may be fixed as 50 tons of cane with 12.5% sugar recovery. It is not possible for all to achieve an average of 70 tons of cane per acre. It is more difficult to produce 70 tons of cane with 7.16 tons sugar per acre as in prize plots, than 50 tons with 6.25 tons sugar per acre.

The prize winners are normally resourceful ryots and do not usually look for profit from prize plots. Achievement of high yield may depress quality, if the increased production is not properly planned.

The objectives are therefore to produce good yields of high quality canes for ryots and high efficiency in extraction of sugar from cane by the factory.

Yield potential: When talking of yields, it is often mentioned that the yield in India is low. This is true in regard to subtropical

India. The yield of cane and sugar per acre in different countries are presented below.

TABLE I
Yield of cane and sugar recovery in different countries
and in different States.

Country	Average yield of sugarcane per acre	Sugar recovery percent
Australia	21.34	14.33
Cuba	17.12	12.25
Mauritius	19.63	12.08
Louisiana	19.84	8.06
Puerto Rico	24.16	12.23
Java	56.00	11.49
Hawaii	62.05	10.46
India	13.50	9.98
East Punjab	17.80	9.41
Bihar	16.10	10.32
Bombay	40.50	11.08
Madras	33.50	8.62
Uttar Pradesh	18.40	9.27

It is seen that sugarcane yields in Madras compare favourably and it ranks fourth in the world.

In respect of quality, Australia leads the world. Cane per acre there is 21.34 tons with 3.06 tons sugar per acre, while in Madras it is 33.5 tons with 2.89 tons sugar. In a thickly populated country like ours, production per acre and cost are the criteria and not the recovery percent alone. Even in respect of cost cane or sugar, the cost towards land lease in Madras forms 20 to 40% and this is purely non-agricultural. The economics of our country do not permit of aiming at quality alone. It is sugar per acre combined with quality and cost.

Efficiency in field and factory: The yield potential according to agrobiologists is 197 tons, while ryots here have achieved 129 tons; i. e. 65.5%; the average yield in this State is 35 tons; i. e. 17.7% of the potential. The sugar factories achieve an over-all efficiency of about 83-85 per cent. Therefore, the cane grower is far behind the potential and he definitely requires more help in reaching the maximum potential.

The Coimbatore canes are potential of high yield and the best yield out of them is yet to be achieved. The average ryot lacks timely help for manuring his field or irrigating it. Research on pests and diseases have not progressed beyond the doubtful uses of chemicals in respect of sugarcane. The high-yielding new varieties take larger quantities of nutrients from the soil both from surface and from depths. The soil therefore requires to be replenished progressively to a greater extent. Prevention of deterioration of varieties due to ill-balanced nutrition and diseases is an important aspect. It is not known to what extent the natural fertility of soil is impaired by the production of high yields as in prize plots.

Our Needs: There is an urgent need to expand the sugar industry in the state. The total requirement of sugar for Madras is estimated at about 1,30,000 tons in the next few years. Our present production is only about 40,000 tons. With one more factory coming up in Tanjore, our production may go up to 55,000 tons. It is not possible to forecast as to how many of the projected factories will come into production in the near future.

The per capita consumption of sugar in Madras is 4½ lb. plus 12 lb. of *gur*. Compare this with the per capita consumption of sugar in other parts of the world. It is reported to be 143 lb. in Australia.

Out of about 1·20 lakh acres under sugarcane only about 20,000 acres are crushed by sugar factories. The balance of cane is converted to *gur*. The loss of sugar in baggase etc. in *gur* making is about 35%, while it is only 20% in a sugar factory.

TABLE II

	Gur manufacture	Sugar manufacture
Sugar percent on cane	12·0	12·0
Juice extraction percent on cane	60	...
Sugar extraction percent (i.e. overall efficiency)	...	80
Jaggery recovery percent	11	...
Sugar percent in <i>gur</i>	70	...
Recovery of sugar percent cane	7·7	9·6
Loss in extraction percent cane	4·3	2·0
Percent loss of sugar	35·8	20·0

Cane is therefore better utilised in a sugar factory than by a ryot in making *gur*. Increased production of cane in a *gur* area is faced with the technological problem of converting it to *gur*, as the latter does not set well. The increased production also cannot be efficiently utilised. It is for such reasons that the Agricultural Department has not proposed yield competitions in *gur* areas.

The economics of *gur* are different from those of sugar. The ryots in *gur* areas are advised to take active steps for erecting sugar factories; as otherwise, they cannot step up their yields and achieve a high standard of efficiency.

Payment for quality: The sugar industry in India did not progress much in the field of research during the period of protection from 1932 - '1950. When payment on weight of cane was made the ryots achieved high yields, even though it was at the sacrifice of quality. He is not to be blamed for this.

Madras, particularly the ryots and the sugar factory at Nellikuppam led the way in exploring the means of improving quality of cane. In the early stages, payment was made on the basis of *gur* recovery and later premia for varieties and *adsali* were paid. The latest in the field here is the SISMA formula and some preliminary tests conducted at Samalkot have proved the possibilities of payment on quality basis. The Government of India have appointed an expert Committee under the chairmanship of Sri P. A. Gopalakrishnan, I.C.S. Madras should be in a position to suggest a suitable formula, if not on an all-India basis, at least on a regional basis.

While awards of prizes may indicate the general direction towards our goal, it will not lead us there. The ryots of Pugalur, may get about Rs. 4 - 5 lakhs as reward for 10·52% in the last season. The factory authorities have paid several lakhs in the past as premia for quality. The award of Rs. 20,000 as prizes in yield competitions at Nellikuppam is probably the biggest award in India. The sugar factory authorities and the ryots deserve all praise for the progressive policy they have adopted so far.

The small ryot: The small ryot is alert to profit and can ill afford to look for publicity. The cost of cane from prize plots may be more than that from a small ryot. But the production per acre is small and it is not tuned to the needs of the State. He needs help for manuring irrigating and harvesting the crop. Given these

aids, he can increase the average production. The small ryot cannot compete on equal terms with the prize-winners here and his potentials are placed on a different level. He can benefit only from development aids and payment of price on quality basis. The average yield which has now increased to about 35 tons, may soon increase to 50 tons in the next few years.

Research Notes

A Note on the occurrence of the 'Phyllody' Disease in Certain Sesame (*Sesamum orientale* L) Types and their Behaviour

One of the common diseases of the cultivated gingelly (*til*) crop is a virus disease called 'phyllody' which transforms the flowers on the main axis and branches of the plant into cup-like, leafy growths. The capsules also when set, are either malformed or not formed at all. Odell (1925) and Kashi Ram (1931) reported this transformation of the vegetative parts as the sepaloid condition and found that this phenomenon though not heritable, was influenced by seasonal conditions. Rhind (1935) met with such sepaloid plants in both the late and early Burmese types when sown earlier than the normal season and attributed that a longer light period for the late types caused this abnormality. Rhind and Thein (1932) found variation in the incidence of the disease between different types and also with the season. They also observed that sepaloidy was more prevalent in the unbranched types than branched ones. Pal and Pushkarnath (1935) reported that it was possible to transmit the disease by grafting. In Sind a black-seeded variety was found to be fairly resistant to phyllody (Vacchani, 1945).

Gingelly is generally cultivated in the Madras State during two seasons viz., the cold weather season (November–December to February–March) and the Summer season (February–April to May–July). It is sometimes raised in certain tracts during the monsoon season (June–July

to October–November) also, but the area cropped during this season is very limited. From past experience the disease has been observed to occur to a noticeable extent in the crops raised during the monsoon and summer seasons.

Utilising the extensive collection of gingelly varieties and types maintained at the Agricultural Research Station, Tindivanam, observations on the incidence of the disease, conditions favouring the same, behaviour of the different varieties with regard to resistance and susceptibility were made for a period of three years. The crops were raised during the summer season in all the three years. Counts of affected plants were taken at the time of harvest and their percentage to the total population in the plot was calculated for assessing the degree of resistance to the disease. The varieties were sown in randomised and replicated plots. The results obtained therefrom are given below:—

S. No.	Varieties	Percentage of 'phyllody' attacked plants		
		I Year	II Year	III Year
1.	S.1.1 South Arcot Local	...	2.16	16.4
2.	S.1.89 Palni	...	0.36	20.8
3.	S.1.53 Malan	...	0.92	1.9
4.	S.1.57 Tekkajan	...	0.80	21.0
5.	S.1.246 Barisol	...	0.37	4.3
6.	S.1.249 Talma	...	0.80	3.8
7.	S.1.251 Jessore	...	30.66	78.4
8.	S.1.152 Jaipal Bang	...	1.15	3.9
9.	S.1.778 Entebbe Uganda	...	1.82	0.9
10.	S.1.867 Salem	...	—	14.1
11.	S.1.871 Kandikuppam	...	0.37	12.9
12.	S.1.911 Kudligi	...	1.53	8.2

From the figures of infection recorded during these years, it will be seen that the variety 'Entebbe Uganda' (S.1.778) appears to be highly resistant to the phyllody attack while the variety 'Jessore' (S.1.251) is highly susceptible to the disease. Similar observations on the monsoon crop are also being recorded.

An experiment was also carried out both at the Agricultural Research Station, Tindivanam and Oilseeds Section, Coimbatore for a period of three years during the summer season to find out whether the attack of the 'phyllody' disease could be warded off by changing the sowing time. The experimental plots under the different treatments

were sown at fortnightly intervals commencing one month ahead and after the normal sowing time. Though no significant differences between them in respect of incidence of the disease were obtained, still there was an indication to the effect that the incidence of the disease was greater in the late-sown crop. The three improved strains of gingelly (viz. TMV.1, TMV.2, and TMV.3) showed a similar reaction to the attack of the disease. At Coimbatore it was also observed that seeds from the badly phyllody-attacked plants when sown during next summer season gave rise to normal plants.

From the observations recorded in this note it will be seen that the findings generally are in agreement with those of earlier workers. Both the resistant and susceptible varieties are being observed further for their susceptibility to phyllody attack. To determine whether this character is governed by Mendelian inheritance, hybridization work between the resistance and susceptible forms is also being undertaken.

The authors are thankful to Sri C. R. Seshadri, Oilseeds Specialist for his valuable guidance during the course of this investigation.

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Note on the White Fly—(*Aleurolobus barodenses* Mask) and its control in the Madras State

Introduction: Like other crops, sugarcane is a victim of many pests, one of which is *Aleurolobus barodenses* M. popularly called mealy wing or sugarcane white fly. It was considered as only a very minor pest of sugarcane, but of late it is increasing in such large numbers that it is one of the serious pests of sugarcane now in the Madras State especially in Tiruchirapalli district. Since information on this pest under South Indian conditions is meagre, studies were made on the control of this pest, details of which are given in this short paper.

Distribution: Karan Singh (1931) records a fairly wide distribution from all over India such as Bengal, Central Provinces, the Punjab, Baroda, Pusa, Madras and Burma. Studies by Misra (1921), Karan Singh (1931) Lefroy (1909), Fletcher (1914) and Ramakrishna Iyer (1940) have given some information on the aleurodids under North Indian conditions. In South India a much wider distribution is recorded for the first time in the Madras State. The whitefly is found in the districts of Coimbatore, Tiruchirapalli, South Arcot, North Arcot and also in Mysore and Andhra State.

Nature of Damage: The fly is scattered by wind from leaf to leaf. Infested leaves are covered with all stages of the pest. When there is a heavy infestation the crop looks pale and stunted in growth. As sugarcane is planted all the year round in the Madras State, the pest can easily continue throughout the year on this crop but it appears in serious form only when the season is most favourable for multiplication.

Incidence of the pest: The incidence of the damage is localised, being confined to the cane crops where the eggs are first laid. Generally the attack is severe in young crops, but in the mature cane crop, it was sometimes seen in serious form in Tiruchirapalli district (Madras) during 1953. The cane crop planted in March in the Tiruchirapalli district is subject to severe attack by this pest in May and June and the whole crop looks pale yellow, rusty and stunted. The most susceptible variety to this pest was observed to be Co. 419, as compared to the other cane varieties. When there is drought or when the cane crop is grown under neglected conditions, this pest is seen in serious form. Infested leaves turn reddish due to loss of sap. The maximum activity of the pest, therefore, occurs at high temperatures and low humidity with no rainfall.

Life-History: Eggs are laid in rows on the under-surface of cane leaf during the winter. Nymphs, puparia and adults are seen during December, January and February. Eggs when freshly laid are pale-white and turn sepia in a day or two. They are generally laid near the

mid-rib or any part of the lower surface of the leaf. Nymphs are yellow at first and later on they turn grey, light black and shiny black. It completes its life-cycle in 24 to 25 days. Hence there will be easily 13 to 15 generations in an year with slight variations in the life history.

Materials and Methods: The experiments were carried out during April 1953 at Karur in Tiruchirapalli district in the Madras State. The insecticidal trials were conducted as sprays on Co.419, one of the most susceptible varieties. The crop was eight months old at the time of the trials. The area of each plot was 22 by 120 feet and six treatments were replicated four times.

The treatments were as follows:

- (1) Sytam ($\frac{1}{2}$ oz. in 2 gallons of water)—0.15% (Systemic insecticide).
- (2) Parathion ($\frac{1}{2}$ oz. in 2.5 gallons of water)—0.025%, (Synthetic insecticide).
- (3) Control.
- (4) BHC 520—12 oz. in 2.5 gallons of water; 0.2%, (Synthetic insecticide).
- (5) BHC 520—6 oz. in 2.5 gallons of water; 0.1%, (Synthetic insecticide).
- (6) Fish oil rosin soap— $\frac{1}{2}$ lb. in 2 gallons of water 2.5%.

A preliminary count of the population was taken just before spraying. Later the mortality counts after spray were taken in six leaves over a length of four inches (one inch space being at 4 different places in a leaf) in each leaf after 24 hours, 48 hours and 72 hours. The data gathered on the trials are summarised below:—

Treatment	Strength	Population before spray	Percentage of mortality after spray		
			24 hours	48 hours	72 hours
1. Sytam	0.15%	155	61.7	30.5	71.9
2. Parathion	0.025%	187	70.9	85.9	58.3
3. Control	—	292	—	—	—
4. BHC	0.2%	165	77.5	98.8	76.5
5. BHC	0.1%	181	89.3	98.1	73.3
6. F. O. R. S.	2.5	252	20.9	64.9	40.9

The results show the high efficacy of BHC at 0.2% and 0.1%, Parathion 0.25% and their superiority over fish oil rosin soap and Sytam. To obtain an immediate mortality of the pest, BHC at 0.2% concentration is found to be better than all the other insecticides tried.

Alternative hosts: A number of varieties of *Saccharum spontaneum* serve as alternative host plants, on which it thrives very well. The most susceptible varieties of *Saccharum spontaneum* are SES. 13, 14, 28, 45, 77, 78, 85 E and 88 C. Two parasites (*Cardeogaster semundus* Mani and *Azotus deltricusis* Lal) have been recorded on *Aleurolobus barodenses* M. and the most important and common parasite observed by the author is *Azotus delhiensis* Lal. The percentage of parasitisation in nature ranged from 19 to 35 in Tiruchirapalli district during the month of April. Similar observations were made in Coimbatore district during May 1953, the percentage of parasitisation ranging from 70 to 80.

Summary: The whitefly, *Aleurolobus barodenses*, though considered to be only a minor pest till recently, became a serious pest in Madras especially in Tiruchirapalli district during 1953. BHC 0.2% has given good effect against the pest. Subsequently trials with Parathion, has also given encouraging results, but as it is a poisonous insecticide it should be used with extreme caution. *Saccharum spontaneum* and a few other species of grasses belonging to the same genus are highly susceptible to this pest. Co.419 is highly susceptible to this pest, as compared with other cane varieties such as Co. 527 and 449. The most common parasite, *Azotus delhiensis* L. found on this scale and this can be well utilised for the biological control of this scale.

Acknowledgements: Thanks are due to the Indian Central Sugarcane Committee, New Delhi, under whose auspices this work was undertaken in the Madras State and which shared the finances of this Sugarcane Pests Scheme along with the Madras Government on a 50:50 basis. Acknowledgements are also due to Sri. N. L. Dutt, Director of Sugarcane Breeding Institute, Coimbatore, who was kind enough to give the names of the varieties of *Saccharum spontaneum*.

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Statement showing the Rainfall, Humidity and Temperature for the year—1954
(Tiruchirapalli)

Month	Mean Humidity in %		Total rain-fall in inches	Mean Maximum Temperature °F	Mean Minimum Temperature °F
	8-30 A.M.	2-30 P.M.			
January	79	53	0.81	87.4	69.7
February	78	46	0.99	91.1	71.4
March	71	34	0.00	96.0	73.6
April	70	44	0.45	99.1	79.9
May	65	42	0.44	101.2	81.5
June	55	38	0.00	100.5	81.3
July	61	41	5.45	95.1	79.0
August	61	44	1.88	96.2	79.1
September	65	42	0.02	96.4	78.0
October	75	61	4.41	92.1	75.7
November	70	58	1.14	89.1	74.1
December	80	69	6.96	84.8	71.5
Mean	69	47	22.55	94.1	76.2

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Review

Poona Agricultural College Magazine: Vol. 46, No. 2 & 3 Aug. - Nov. 1955. Special Millet Number. Rs. 5/- pp. 259. Edited by Dr. G. A. Patel.

This special number, solely on Millets is prefaced by the inaugural address by Sri. Punjab Rao Deshmukh, Union Minister for Agriculture, and gives a comprehensive view of the various items of research that are being conducted by the Agricultural Department of Bombay State. Apart from breeding for improvement of yield it contains an account of extensive work on agronomical researches, pest and disease resistance, drought resistance, conservation of soil moisture and its effect on sorghum crop. This serves a useful purpose of conveying to Millet workers in other States the programme of work and the achievements so far attained by the Bombay Department of Agriculture. A useful bibliography, though not exhaustive, has been appended at the end on the eight millets. A few printers' mistakes appear here and there, such as the chromosome number $2n=26$ instead of $2n=20$ for *S. nitidum* on p. 81 and *S. alum* instead of *S. alum* and *S. sudanensis* instead of *S. sudanense* on p. 110.

[N. K. S.]

Gleanings

Chemical Caponisation: The chemical method of caponisation (by injecting the hormone stilboestrol) produced birds equal in growth and quality with birds which had been surgically caponised. There is some gain by the chemical method of caponisation in that (a) there is less likelihood of losses which may occur when birds are surgically caponised, and (b) there is no check or setback for birds which are chemically caponised. The effect of injecting stilboestrol tablets' becomes obvious within the first month after the injection. There is a significant difference in the quality of the carcass of a capon and that of a cockerel, both in market appearance when it is killed and plucked and also in palatability, when it is cooked and eaten. Australorp X White Leghorn cockerels, if caponised, reach their prime for marketing and palatability as capons at from 21 to 22 weeks of age, when treatment with stilboestrol is started at 10 weeks of age. [T. R. N.]

New Zealand Journal of Agriculture, January 1954. Vol 88. (1)

Pure cultures of fungi produced by ants: It has been observed that several species of ants are able to cultivate and maintain a pure culture of some particular species of fungi. Such ants are termed as *Attine* ants. These ants are found exclusively in the tropical regions of the New World. Each nest of the *Attine* ants, has a fungal garden of some single species, cultivated by the ants on a vegetable substrate. How the ants maintain the fungus in a pure form without contamination, has been an interesting problem for mycologists. The fungal garden in any nest, becomes contaminated and overwhelmed, soon after the ants are removed. Also, it has not been possible to cultivate a pure culture of these fungi, on agar media. The ants are dependent on these fungi for their feed. The fungi, maintained by *Attine* ants, have not been recognized so far.

It is postulated that the salivary and anal secretions of the ants may play a primary role in maintaining the culture in a pure form. Because of the habit of stripping the leaves of economic plants, the *attine* ants must be ranked as major agricultural pests. (Identifications of these fungi are desired, and cultures will be sent to mycologists on request). [N. K. S.]

(Neal A. Weber, Science-1955: 121: p. 109)

Recent Researches on the Sea Island Cotton in Madras State: Attempts are being made for the past six years to introduce Sea Island Cotton in the West Coast of Madras in the districts of South Malabar, Kanara, as a rain-grown crop in the 'Modan' and 'Kumeri' lands respectively. The results have indicated so far that varieties like 'Andrews' or 'Montserrat' thrive well and with proper attention fetch remunerative yields up to 1200 lb. of seed cotton per acre in favourable years. Planting may be done on ridges by direct seed sowing in June in South Malabar and by transplanting in South Kanara. It is not desirable to sow the crop in beds and on flat ground, particularly in South Kanara where the rainfall is torrential and chances for erosion and water-logging occur, which cause seedling mortality, incidence of blackarm and poor growth in the case of surviving plants. A basal dose of 3 tons of farmyard manure plus 30 lb. of P_2O_5 as superphosphate plus 50 lb. of K_2 and 50 lb. lime per acre should be applied with a top dressing of 60 lb. of Nitrogen as ammonium sulphate or Chilean nitrate in two split doses, for raising a successful crop. The crop should be protected from pests like jassids, boll-worm etc. by application of pesticides like Folidol. A spacing of 2½ feet between rows and 1 foot between plants in the row is desirable to establish proper growth and development of branches. Care is also necessary during picking and good locules are to be sorted out. The land should be kept free from weeds, both in the seedling stage and the later stages

of growth and intercultivation is necessary. The crop that is sown in June with the onset of monsoon will complete its harvest by the end of December or early in January. The lint that is finally obtained after careful ginning has a staple length of $1\frac{1}{2}$ inches in the case of Andrews and $1\frac{1}{4}$ inches in Montserrat and spins 80 and 100 counts respectively. The yarn is very strong and is suitable for the manufacture of sewing threads, parachute cloth and in rubber tyre manufacture etc. Thus this special purpose cotton has a great future in the industrial economy of the Indian Union and its cultivation may be tried on the West Coast in suitable centres, under proper attention as suggested above. It is also very necessary to instal suitable machinery to utilise this cotton properly.

Tomato Seed—Method of Extraction: If you want to collect tomato seed seed, keep a careful watch over the plants earmarked for this purpose. Watch the plants from time to time for the colour of the green as well as the ripe fruits, as also for their shape and size. Pull out all diseased plants and those that are not true to type. Allow the selected fruits to ripen on the plants. For extracting seed, first cut the fruits into halves and squeeze out the pulp into a vessel made of a non-corrosive material. Allow the pulp to ferment for two to five days, depending on the season. When the seed settles down at the bottom of the container, remove the pulp. The remaining seed can also be removed from the pulp by repeatedly washing the pulp, stirring it and pouring off the liquid. Thinly spread out the seed and dry it in the shade. [I. C. A. R.]

Scientists explore Effects of Tea Drinking: Psychological tests reveal that a cup of tea gives both an immediate and a delayed lift without inducing secondary depressing effects. Pharmacologists report that beverage tea tends to facilitate actual effort, to diminish drowsiness and fatigue, and to produce a sensation of comfort and cheerfulness without being followed by depression. The unpleasant gastric reactions or insomnia that occasionally occur when caffeine or tannins alone are ingested in beverages or when they are administered parenterally, are not produced by drinking tea. Tea, on the contrary, because of the combination of these components produces a mild and pleasant, stimulating and also a soothing effect upon the gastric processes.

Dr. Frohman, in speaking of the vitamin content of tea, reminds us that 'occasionally forgotten is the fact that caffeine is not the only physiologically effective substance found in tea. Also present are volatile oils, certain trace elements and B vitamins, proteins, chlorophyll, various carbohydrates, and finally water-solubles of tannin, sometimes erroneously called tannic acid, as well as appreciable amounts of riboflavin (Vitamin B-2) and pantothenic acid—a substance regularly associated with riboflavin. Fresh green tea leaf is rich in vitamin C, almost comparable with fresh lemon juice. Tea can be considered nutritional but not a high-calorie beverage, and is therefore excellent for the obese person. This is especially true in summer when the liquid intake naturally increases. From $2\frac{1}{2}$ to 4 quarts of water can be lost through normal perspiration on a hot day; in fact, this loss has been known to reach to 6 quarts under extreme conditions. Thus it is of the utmost importance for the overweight person to know what beverages (other than water) will replace his fluid loss without adding to his adipose tissue. Tea is one of the happier answers to this question.

A lack of riboflavin is evidenced by poor growth in the young and by digestive depression and lowered vitality at any age. It is also considered an important factor as a deterrent to the ageing process. Riboflavin cannot be stored in the body and therefore should be included in the daily diet.

Dr. Henry, J. L. Marriott, Associate Professor of Medicine, University of Maryland stated that 'Tea is a beverage that is allowed in almost every medically prescribed diet. In the Diet Manual of the Mayo Clinic, for example, tea is permitted in all diets except those catering to acute gastric emergencies. By some authorities tea is considered the beverage most suitable for any disease of the digestive system. [T. R. N.]

The Planters' Chronicle—October 15, 1955. Vol. L. (No. 20.) Page 350-551.

Notes and News

The 46th. Madras Agricultural College Students' Club day was celebrated on the 9th. March with the Director of Agriculture, Madras, Sri. P. P. I. Vaidyanathan, I. C. S., in the chair. Sri. R. Balasubramaniam, Principal, welcomed the President and the other distinguished guests. After presentation of the reports on the literary and sports activities of the club the President distributed the prizes to the several winners. In the course of his address the President made special mention of the excellent health and good physique of the students of this college and dealt with the expansion that is programmed in the development of agriculture and rural improvement in the Second Five year Plan. He placed before the audience the important role that the students of this college will be called upon to play in the national development hereafter. Dr. A. Mariakulandai, the Vice-President of the Students' Club proposed the vote of thanks. The students then entertained the audience with a series of well-staged dramatic pieces.

For the first time in the annals of the Agricultural College, Coimbatore, 15 students of the Second Year B. Sc., (Ag.) class with Sri. U. S. Sree Ramulu as Student Representative and Sri S. Venugopal, Assistant Lecturer in Entomology as Staff Leader left Coimbatore on 15-2-56 on an All-India Tour under the Youth Welfare Programme sponsored by the Government of India. They visited Poona, Bombay, Agra, Delhi, Nagpur, Hyderabad, Bapatla and Madras and returned on 3-3-1956. In addition to visiting important places like the Meteorological Station and the National Chemical Laboratories at Poona, Prince of Wales Museum, and the Tharaporevala Aquarium at Bombay, the Taj Mahal at Agra, Red Fort, Rajghat, Birla Mandir, Birla House etc. at Delhi, they also visited all the Agricultural Colleges, and Agricultural Research Institute like the Pusa Institute and Science College. They had the unique opportunity of visiting both the Houses of the Parliament in session at Delhi and also seeing the Shah of Iran at Hyderabad. The students owe a great debt of gratitude to all those who helped them during the tour. The tour was of great educative value and widened their outlook and it is hoped that it will become a regular annual feature thereafter.

Weather Review — For February, 1956

RAINFALL DATA (IN INCHES)

Division	Station	Total rainfall for the month	Departure from normal	Total since 1st January	Division	Station	Total rainfall for the month	Departure from normal	Total since 1st January
North	Madras (Meenam-bakkam)	0.1	— 0.3	1.4	South	Madurai	Nil	— 0.5	1.3
	Tirur-kuppam*	Nil	— 0.2	1.3		Pamban	Nil	— 0.9	0.6
	Vellore	0.1	— 0.2	0.9		Koilpatti*	Nil	— 0.3	0.7
	Gudiyatham*	Nil	— 0.2	0.6		Palayam-cottai	Nil	— 1.2	3.0
						Amba-samudram*	0.1	— 0.5	3.3
East Coast	Palur*	Nil	— 0.3	1.1	West Coast	Trivandrum	Nil	— 0.8	0.8
	Tindivanam*	Nil	— 0.3	1.6		Fort Cochin	4.4	+ 3.6	4.4
	Cuddalore	Nil	— 0.9	0.7		Pattambi*	0.9	+ 0.1	1.1
	Naga-pattinam	0.1	— 0.7	2.7		Kozhikode	Nil	— 0.7	Nil
	Aduthurai*	Nil	— 0.8	2.1		Taliparamba*	Nil	— 0.2	Nil
Central	Pattukottai*	Nil	— 1.0	2.6	Hills	Wynaad*	1.1	+ 0.4	1.1
	Salem	Nil	— 0.3	0.3		Nileshwar*	Nil	— 0.1	Nil
	Coimbatore (A. M. O.)*	Tr.	— 0.4	0.1		Pilicode*	Nil	— 0.1	Nil
	Coimbatore	Nil	— 0.4	Tr.		Mangalore	Nil	— 0.2	Nil
	Tiruchirappalli	Nil	— 0.3	0.5		Kankanady*	Nil	— 0.1	Nil
						Kodaikanal	1.2	— 1.3	2.1
						Coonoor*	0.1	— 2.5	2.7
						Ootacamund*	Nil	— 0.5	0.3
						Nanjanad*	Nil	— 0.6	0.2

Note:— * Meteorological Stations of the Madras Agric. Dept.
Tr = Trace (0.01" to 0.04")
£ = Actual Deviation is 0.02".

The weather was practically dry in the first four days of the month. On 5—2—1956 localised showers were received in Travancore-Cochin and at a few places in north coastal Andhradesa. Localised showers were received on the next day also at a few places in Coastal Andhradesa. The weather became dry again on 7—2—1956. On 8—2—1956, widespread thunder-showers were received in Travancore-Cochin. About 350 miles South-South-West of Port Blair a depression was noticed in the Bay of Bengal on 9—2—1956 and on the third day of its formation it weakened into a shallow depression. Thundershowers were fairly widespread on 9—2—1956 in Travancore-Cochin and at a few places in Mysore. The weather from 10—2—1956 to 24—2—1956, both days inclusive, was mainly dry throughout the region. But during this period there were fluctuations in the night temperatures. On 25—2—1956 a few light showers were received at a few places in Tamilnad and this sort of weather continued on the next day also. The weather in the last three days of the month was mainly dry with mild variations in the night temperatures.

An earthquake of moderate intensity at its origin was noted in the Pacific Ocean, about 3880 miles away from Madras at 7—22 P. M. on 1—2—1956.

Monsoon Rainfall Summary (June to September 1955)

This year's monsoon will be remembered for its vagaries, particularly its abnormal activity towards the end of the season, which was unusually prolonged and carried well into the month of October. The monsoon set in good time and kept up its normal activity during the first month. But thereafter, the monsoon weakened considerably, particularly in July. It revived over the country towards the end of July and it finally withdrew from the country only by the 15th of October. (Supplement to the Indian Daily Weather Report for 17—11—1955).

Considering the month of February 1956, as a whole the rains were uniformly sub-normal throughout the region with the exceptions of Fort Cochin, Wynaad and Pattambi. Mainly dry weather was experienced throughout the month.

The noteworthy rainfalls and the zonal rainfall in inches are furnished below:—

Noteworthy Rainfalls			Zonal Rainfall			
Date	Place	Rain-fall in inches	Name of Zone	Rainfall for the month	Departure from normal	Remarks
8/2/56	Fort Cochin	3.0	North	0.05	— 0.2	Far below normal
do.	Alleppey	1.5	East Coast	0.02	— 0.7	do.
			Central	Nil	— 1.3	do.
			South	0.02	— 1.1	do.
			West Coast	0.64	+ 0.2	Above normal
			Hills	0.08	— 1.2	Far below normal

Agricultural Meteorology Section,
Lawley Road P. O.,
Coimbatore, 15—3—1956.

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

Departmental Notification

Gazetted Service—Postings and Transfers

Name and present post	Posted as
Kanakaraj David, S., Lecturer in Entomology, Coimbatore,	Gazetted Assistant in Entomology, Coimbatore
Muthuswami Iyer, S., Additional D. A. O., Tanjore,	D. A. O., Sattur
Nagarajan, K. R., Assistant, Entomologist, Coimbatore,	P. P. O., (Entomology) Coimbatore
Raman Moosad, C., (On reversion)	Special Assistant Marketing Officer, Livestock, Hosur
Seshadri, A. R., Lecturer in Entomology,	Assistant Entomologist, Aduthurai
Subramania Sarma, A.H., Special Assistant Marketing Officer, Livestock, Hosur,	Lecturer in Agriculture, Coimbatore
Uthaman, P., S. D. O., Vellore,	Assistant Paddy Specialist, Pattambi
Srinivasan, S., Superintendent, A. R. S., Aduthurai,	S. D. O. Vellore
Abdul Samad, Superintendent, A. R. S. Pattambi,	Oil-Seeds Specialist, Coimbatore

Upper Subordinates

Name and present post	Posted as
Abraham, E. V., Entomology, Assistant, Aduthurai,	Entomology Assistant, Cashewnut Scheme, Coimbatore
Arumugavel, N. R., A. D., Tanjore,	A. D., Jayankondan
Abdul Khader, M., A. D. Pattukottai,	A. D. Kulithalai
Boominathan, E., Certification Inspector, Coimbatore,	Certification Inspector, Rajapalayam
Elumalai, T., A. D. Cheyyur,	Extension Officer in Agriculture, Kadambathur
Gnanasambandam, B., A. D. Muthupet,	Special Marketing Assistant, Thiruthuraipoondi
Jayaraj, M. V., A. D. Paramakudi,	Do. Do. Paramakudi
Kumaran, V., Soil Conservation Assistant,	Soil Conservation Assistant, Vellore
Lakshmanan, T. S., Assistant in Chemistry, Coimbatore,	Assistant Lecturer in Chemistry, Coimbatore
Mathew, V. G., A. D., Cheyyur,	Pepper Development Assistant, Kanhagad
Masilamani, S., Soil Conservation Assistant, Satyamangalam,	A. D., Kadpadi
Mohamad Ibrahim, P. K., Assistant in O. S. Pilicode,	Coconut Nursery Assistant, Adirampatnam, Tanjore
Narayanan Nambiar, P. K., Coconut Nursery Assistant, Adirampatnam,	Oil Seed Assistant, Pilicode
Nagaraja Rao, K. R., P. P. O., Coimbatore,	Assistant in Entomology, Coimbatore
Narasimhan, R., A. D., Orthanad,	Special Marketing Assistant, Tanjore
Perumal A. S., A. D., Tuticorin,	Do. Do. Pudukottai
Peter, S. D., Certification Inspector, Gobichettipalayam,	Certification Inspector, Rajapalayam
Ramakrishnan, C., Chemistry Assistant, Coimbatore,	Mycology Assistant, Coimbatore
Ramiah, S., Certification Inspector, Pollachi,	Certification Inspector, Rajapalayam
Ramalingam, A. N., Soil Conservation, Mulanur,	Soil Conservation Assistant, Satyamangalam
Shanmugasundaram, N., A. D., Vedasandur,	Special Marketing Assistant, Madurai
Sivaraman, A. K., A. D., Pennadam,	Coconut Nursery Assistant, Nilleshwar
Sundaram, N. V., Mycology Assistant, Coimbatore,	Mycology Assistant, Cashewnut Scheme, Coimbatore
Sivasubramaniam, T., Trainee in Soil Conservation Scheme, Ootacamund,	Soil Conservation Assistant, Avanashi and Coimbatore
Srinivasan, K. V., A. D. Jayankondan,	A. D., Tanjore
Subramaniam, K. P., Extension Officer in Agriculture, Kadambathur,	A. D., Vellore
Seshagiri Rao, T., Assistant Lecturer, Chemistry, Coimbatore	Assistant in Chemistry, Coimbatore
Subramaniam, N., A. D., Dharmapuri,	Soil Conservation Assistant, Vellore
Srirangaswami, Soil Conservation Assistant, Satyamangalam,	Soil Conservation Assistant, Avanashi and Coimbatore
Vrishabadass, C., A. D., Sankarapuram,	Special Marketing Assistant, Pattukottai
Ummerkutty, O. V., Coconut Nursery Assistant, Nilleshwar,	Assistant in Oilseeds, Badagara

DISTRICTS

S. ARCOT, COIMBATORE
MALABAR, S. KANARA
RAMANATHAPURAM
TIRUNELVELI
NORTH ARCOT

CROPS

COTTON, GINGELLY
GROUNDNUT
COCONUT
ARECANUT
TOBACCO



Ghee and Butter Trade in Coimbatore District

by

R. MADHAVACHARY, B. Sc. (Ag.)
Marketing Assistant, Madras.

Ghee is one of the chief byproducts of milk and is also a handy form for the disposal of surplus milk without spoilage.

The total output of milk products in Madras State is estimated as below :

	Quantity in tons
Milk	8,45,400
Butter (consumed as butter)	250
Ghee	13,800
Curd	1,28,055
Khoa and other milk products	500

In Madras State, the chief ghee-producing areas are Coimbatore, Salem, Tiruchirapalli, Madurai and to a little extent Ramanathapuram and Tirunelveli districts. However among all these, Coimbatore district ranks as first both in overall milk production and preparation of ghee. The table below gives in detail the estimated production of milk and the ghee in the various districts of Madras State.

District	Total production of milk, in tons	Total potential output of ghee, in tons
Coimbatore	1,26,300	2,046
Tiruchirapalli	1,07,100	1,928

District	Total production of milk, in tons	Total potential output of ghee, in tons
Salem	1,11,200	1,775
Madurai	66,600	1,106
South Arcot	82,600	1,167
Chingleput	67,400	1,139
Tanjore	53,000	1,009
North Arcot	63,900	988
Tirunelveli	47,100	845
Ramanathapuram	45,800	729
Malabar	39,700	495
South Kanara	30,200	498
Nilgiris	4,500	75
Total, Madras	8,45,400	13,800

In Coimbatore district the production of ghee is not uniformly spread out, but is confined to only seven taluks out of the ten taluks. The quantities of ghee estimated to be produced annually in Coimbatore district, are as below:

Name of the taluk	Estimated actual production of ghee in tons
Dharapuram	300
Palladam	300
Erode and Gobichettipalayam	400
Bhavani	40
Coimbatore	30
Avanashi	30
Pollachi 50 }	120
Udumalpet 40 }	
Kollegal 30 }	

Butter or Ghee production is a cottage industry, scattered about in houses of medium and low income group families and is largely in the hands of the women folk. It is usual in such farm houses to keep, according to capacity one or more milch cattle, either a cow or buffalo or both. Each day's collection of milk is boiled, cooled and set to ripen with the addition of a little buttermilk as starter. The ripened milk is churned the next day and the butter is extracted. The daily collection of butter in most cases is less than a pound a day and is stored in mud pots, with a little fresh buttermilk. Collections of each day are accumulated upto about a week and then sold, either as butter or as ghee after melting.

The trade in butter fat has developed partly in the shape of butter to be converted ultimately into ghee and partly as ghee

itself from the chief production centres. Almost every village or town is a production centre where the surplus milk from each day's collection is partly converted into butter for ghee production. In the overall picture this quantity is liable to wide variations from year to year, based on the demand for milk. In spite of the keen demand for milk, particularly in urban centres, small surpluses are left over with milk dealers on many days. A part of this milk, which cannot be disposed of in any other form is made into butter. This surplus milk is relatively small in urban centres and areas of highly developed arable farming where the population is also high. In areas remote from towns and where the population is comparatively less dense the surplus of milk is relatively higher. The scope for preparations like Khoa is also very limited in these areas.

Such areas therefore become established ghee-production centres and a few of these happen to be cattle-breeding centres also. Centres of this kind occur in the taluks of Avanashi, Palladam, Erode, Gobichettipalayam, Coimbatore, and Dharapuram.

In Coimbatore district, ghee or butter produced in villages is marketed by two methods, viz:

- (i) the villagers themselves bringing the ghee or butter to the assembling market;
- (ii) the ghee or butter produced being sold at the village site itself to merchant's agents.

The producers from villages bring their ghee in mud pots as headloads representing the collection of about seven or eight days and offer them for sale to the wholesale merchant who make purchases in the shandies. Sometimes village merchants who go about in the villages bring to the shandy, their purchases (about one or two tins) of butter and offer them for sale, to the wholesale merchants. The producer, when coming to the shandies usually brings the produce in the form of only butter. However, at the time of sale, the butter is melted in the presence of the purchaser into "KATCHA" ghee. This system of purchase is resorted to because the butter offered for sale represents the collection of over a week and hence contains butter in layers of different qualities. Melting such butter to a certain extent enables the purchaser to judge the quality more easily and accurately. Agents of merchants purchasing at the village site, visit the various villages and collect from individual holdings the small quantities available as butter and arrange for its despatch as soon as a tin or two of butter is obtained.

They get a commission of Re. 1/- per tin of 40 lb. butter purchased. On an average, about a tin of 40 lb. butter can be collected if the agent visits 10 to 12 holdings in a day. The wholesaler attains a double advantage by adopting this method of purchase. Firstly, he is able to arrange for the supplies being received at regular intervals and also in a fresh condition. Secondly by the appointment of agents the wholesaler is enabled to make purchases from a much wider area. Actually by this method of purchase, merchants are able to obtain butter from villages 30 to 40 miles from the market. (Example: Coimbatore merchants purchasing butter from Dharapuram, Mulanur etc). In former years the trade in ghee or butter used to be only at the shandies but in recent years with the springing up of a large number of merchants in various centers, dealers purchase ghee or butter at the village site itself through their agents.

The important ghee or butter-assembling markets in Coimbatore district are (1) Tirupur; (2) Dharapuram; (3) Kangayam; (4) Avanashi; (5) Uthukuli; (6) Perundurai; (7) Andiyur; (8) Nambiyur; (9) Bhavani; (10) Mulanur; (11) Somanur; (12) Sulur; (13) Palladam; (14) Annur. In practically all the markets mentioned, the ghee or butter is brought for sale to the shandies once in the week, as given below:

Name of market	Shandy day	Quantity brought for sale every week
Tirupur	Tuesday	35 maunds
Dharapuram	Tuesday	70 "
Kangayam	Saturday	25 "
Avanashi	Saturday	15 "
Uthukuli	Monday	10 "
Perundurai	Monday	10 "
Andiyur	Wednesday	15 "
Nambiyur	Wednesday	10 "
Somanur	Monday	25 "
Palladam	Wednesday	25 "

Usually these shandies receive ghee or butter from villages within a radius of about 5 or 6 miles. It is estimated that out of the total production only about 30% is assembled in shandies and 70% is purchased in the village site itself. In these shandies more than 80% of the quantity assembled is sold in the form of "katcha" ghee while the redeeming feature in the purchases at the village site is that over 90% of the transactions is in the form of butter. However in a few centres like Uthukuli and Perundurai, there is a

practice of assembling milk from neighbouring areas by creamery men who separate cream soon after purchase of milk and prepare butter out of the cream. The creamery men seldom undertake preparation of ghee. This butter is either despatched as butter to terminal markets like Madras City or sold to merchants in ghee locally. Thus it is seen that the conversion of milk into butter (to be ultimately converted into ghee) or ghee is essentially an important outlet for the disposal of surplus milk to the best advantage.

The economics of utilising milk for ghee production may be considered next. The outturn of butter to milk ranges from 11% to 12% in the different centres (viz. Dharapuram, Uthukuli, Perundurai, Avanashi, Tirupur and Kangayam). The outturn of ghee to butter works out to 70% to 80%, the average being 75%. Thus the outturn of ghee to milk works out from 8 to 9%. The cost of production of ghee of cows and buffaloes in important markets of Coimbatore district, is as follows:—

	Tirupur & Avanashi	Coimbatore	Uthukuli	Dharapuram Kangayam
Cost of milk to obtain one maund of ghee	195 0 0 (900 lb. milk at 0 3 6 per lb.)	230 0 0 (920 lb. milk at 0 4 0 per lb.)	210 0 0 (950 lb. milk at 0 3 6 per lb.)	245 0 0 (1120 lb. milk at 0 3 6 per lb.)
Cost of boiling milk	2 0 0	2 0 0	2 0 0	2 0 0
Proportionate labour charges for churning and extracting butter	2 0 0	2 0 0	2 0 0	2 0 0
	197 0 0	234 0 0	214 0 0	249 0 0
Less cost of butter	55 0 0	86 0 0	65 0 0	105 0 0
Milk obtained	(900 lb. at 0 1 0 per lb.)	(920 lb. at 0 1 0 per lb.)	(950 lb. at 0 1 0 per lb.)	(1120 lb. at 0 1 0 per lb.)

	Tirupur & Avanashi			Coimbatore			Uthukuli			Dharapuram Kangayam		
Net cost for 1 1/3 maund of butter	142	0	0	148	0	0	149	0	0	144	0	0
Add labour and fuel charges for melting butter	1	0	0	1	0	0	1	0	0	1	0	0
Net cost of one maund of ghee	140	0	0	149	0	0	150	0	0	145	0	0

Having determined the cost of production of ghee, the income for the producer by the sale of ghee under the present market conditions is examined with the price spread of ghee in Tirupur area as an example:—

	Rs.	A.	P.
(a) Net amount received by the producer in villages for 1-1/3 maund of butter ...	144	12	0
(b) Proportionate charges incurred for transporting from village site to the market centre (average distance 10 miles) ...	1	4	0
(c) Commission charges to agent ...	3	0	0
(d) Proportionate labour and fuel charges for melting into ghee ...	1	0	0
(e) Proportionate charges for packing the ghee... Cost of tins Rs. 1 12 0 Sealing and soldering charges „ 0 3 0 Label charges „ 0 12 0 Cost of rope for tying „ 0 5 0	3	0	0
(f) Wholesalers' margin of profit ...	7	0	0
(g) Wholesale merchants, selling price or retail merchants, purchase price ...	160	0	0
(h) Proportionate charges incurred by the retail merchant for transport of ghee to places like Madras city ...	3	4	0
(i) Margin of profit to retailer ...	4	12	0
(j) Retail merchants' sale price or consumers' purchase price ...	168	0	0

Thus it is seen that the producer is able to realise the full value of the milk that goes in the production of ghee, provided he finds a market for the butter milk. These enquiries show that utilisation of milk in the manufacture of ghee is economical for the producers and can be resorted to in areas where there is a surplus production of milk.

A study of the production data of milk and ghee in Coimbatore shows that there is still a large surplus of milk in the villages that can be profitably utilised by conversion into ghee and there is a great scope for increasing the output of ghee in the district. However, any scheme to increase the output of ghee should also provide facilities side by side for the disposal of buttermilk which now fetches a market only with difficulty and which is likely to act as a stumbling block in the improvement of trade in ghee.

Secondly, any scheme for increasing the output of ghee will be the location of the producing centres. A great majority of the producing centres are in isolated villages with poor transport facilities. Under the present conditions the primary factor which affects the production of ghee is the difficulty experienced in transporting the produce at frequent intervals to the assembling market, due to lack of facilities for easy transport. Hence a network of agencies for the collection and transport of ghee or butter to assembling markets at short intervals should be the primary problem to be tackled. If such an arrangement can be established it will act as an impetus to increase the production of ghee, much above the present level. Considering the prominent position the Co-operative organisations occupy in the trade in Coimbatore district they can well take up the assembling and marketing of butter or ghee and arrange for collection of ghee or butter in adequate quantities by covering a wide area and also arrange to sell the produce at quick intervals either daily or on alternate days. Such a wide organisation might not be feasible for private dealers, whose finances are limited.

The suggestion of Co-operatives functioning successfully in ghee trade can be realised if all the Co-operative societies associate themselves with the Milk Union at Coimbatore and pass on their daily collections of ghee or butter (after meeting the immediate local demands) collected from a wide area through their branch societies to the Union. The Union will thus be able to pool a large quantity of ghee or butter every day which can be

marketed easily and profitably in cities where a great demand always exists. Further, Co-operatives stepping in the ghee trade can also afford credit facilities to ghee or butter producers for purchase of milch animals etc. would stimulate an incentive to produce more ghee or butter.

If improvements on the aspects mentioned above can be pushed through the ghee trade in Coimbatore has a very bright prospects ahead.

Acknowledgments: Grateful thanks are due to Sri K. Sriraman, B. sc. (Ag.), M. sc., Assistant Marketing Officer, Coimbatore, for his valuable guidance and to the various ghee merchants at Coimbatore at Coimbatore for their co-operation in furnishing information.

Review of Market Conditions of Commercial Crops in the Areas of Market Committees for January 1956

I Cotton: (In this Section 1 candy = 784 lb., Pothi = 280 lb.)

Cotton Stocks: Tirupur: Lint. At Tirupur the cotton market opened with a stock of 3294 candies of Cambodia and 1354 candies of Karunganni lint. Estimated arrivals include 1861 candies of Cambodia and 501 candies of Karunganni lint. Despatches from Tiruppur accounted for 3,425 candies of Cambodia and 1586 candies of Karunganni lint. Chief movements were to Travancore-Cochin State, Bombay, Andhra, Mysore, Tirunelveli, North Arcot, South Arcot, Tanjore, Tiruchirapalli, Salem, Ramanathapuram and Madras. The month-end stock comprised of 1,730 candies of Cambodia and 266 candies of Karunganni lint.

Kapas: The kapas market at Tirupur started its activity with 5,119 pothies of Cambodia and 392 pothies Karunganni kapas. 2,061 pothies of Cambodia and 16 pothies of Karunganni kapas arrived into the market. A total of 6,122 pothies of Cambodia and 204 pothies of Karunganni kapas were disposed of during the month. The market closed with a stock of 1058 pothies of Cambodia and 204 pothies of Karunganni kapas at the end of the month.

Koilpatti: Lint: The cotton market at Koilpatti opened with a stock of 483 candies of Karunganni lint and 250 candies of Uganda lint while arrivals accounted for 100 candies of Karunganni and 50 candies of Uganda. Disposals included 100 candies of Karunganni and 50 candies of Uganda thereby leaving about 283 candies of Karunganni and 200 candies of Uganda lint.

Kapas: There was no stock of either Karunganni or Uganda kapas.

Ramanathapuram district: The three markets of Virudhunagar, Sathur, Rajapalayam together held a stock of 1015 candies (20 Karunganni and 995 Uganda). Total arrivals in all these markets amounted to 795 candies (210 Karunganni, 260 Uganda and 325 Cambodia). Sale transactions were in the order of 230 candies of Karunganni, 265 Uganda and 295 Cambodia leaving a month-end stock of 990 Uganda and 30 Cambodia.

Kapas: No stock of 1955-56 seasons remain and fresh arrivals from the current season 1955-56 are still to commence.

South Arcot district: Kapas; Arrivals were confined to Villupuram and Panruti markets which together amounted to 7 pothies, besides a carry-over of 126 pothies of the previous month. Despatches in the month amounted to 57 pothies chiefly to Tirupur leaving a closing balance of 76 pothies at the end of the month.

Cotton prices: Lint: Tirupur: The market ruled firm during the month. Prices of Cambodia lint ranged from Rs. 831/- to Rs. 891/- per candy of 794 lb. There were no transactions in Karunganni lint.

Koilpatti: Karunganni lint opened at Rs. 760/- to Rs. 780/- per candy for the best quality and remained steady throughout the month. Second quality ruled firm and stood around Rs. 730/- to Rs. 760/- per candy. Inferior qualities of Karunganni were quoted at Rs. 650/- to Rs. 660/- per candy. Prices for Uganda lint certified quality ruled at Rs. 1,100/- while uncertified quality fetched Rs. 960 to Rs. 1,000/- per candy. There were small exports of Uganda lint to Calcutta during the month.

Ramanathapuram District: Prices of Karunganni lint first and second crop were in the range of Rs. 730/- to Rs. 781/- and Rs. 630/- to Rs. 690/- respectively per candy of 784 lb. The rates for Tinny stood at Rs. 590/- to Rs. 626/- per candy. Uganda certified MU. 2 were quoted at Rs. 1,186/- per candy while uncertified Uganda were transacted at Rs. 900/- to Rs. 1,001/- per candy. Cambodia rates fluctuated from Rs. 500/- to Rs. 700/- according to quality.

Kapas : Tirupur : Karunganni and Cambodia kapas were transacted at Rs. 102-8-0 and Rs. 100-115 respectively per pothi of 280 lbs.

Koilpatti : No transactions.

Ramanathapuram District : Karunganni first and second crop were quoted at Rs. 93 to 104 and Rs. 75/- to Rs. 82/- respectively while Uganda and Cambodia kapas ruled in the range of Rs. 131-4-0 to Rs. 138-4-0 and Rs. 75/- to Rs. 100/- respectively.

South Arcot District : The average prices of cotton kapas marketed in this district ranged from Rs. 80-12-0 to Rs. 82-4-0 per pothi of 286 lb.

Cotton Seeds : Koilpatti : The prices of Karunganni and Uganda seeds continued to be firm. Karunganni seeds were transacted at Rs. 38/- to Rs. 40/- per pothi of 280 lb. while Uganda rates were in the range of Rs. 35/- to Rs. 37/- per pothi.

Ramanathapuram District : Price ranges of cotton seeds of different varieties are extracted below :

Varieties	(Prices per pothi of 280 lb.)	
	Opening	Closing
Karunganni	Rs. 28-14 to Rs. 39-2	Rs. 39-15
Uganda	Rs. 24-12 to Rs. 30-10	Rs. 30-10 to Rs. 35-11
Cambodia	Rs. 18-0 to Rs. 19-1	Rs. 24-13 to Rs. 27-3

II Groundnut : (In this section: candy = 531 lb. of kernels bag = 80 lb. of pods)

Stocks : All the markets of South Arcot opened with a total stock of 13,983 tons. Arrivals into the markets accounted for 4,646 tons while 3,952 tons were received from other districts. Imports from Andhra totalled 295 tons. The chief consumers were the crushers in the order 7,911 tons by the millers and 395 tons by the country *chekkus*. Despatches to a total of 2,518 tons to places like Madras, Salem, Coimbatore and Tanjore took place, besides 19 tons sent to Pondicherry. The stock at the month end was estimated at 13,809 tons, after deducting some wastage.

North Arcot District : Nearly 4,100 tons of groundnut kernels and 1,300 tons of pods came to the market during the month and the produce was readily disposed of as a result of keen demand. The regulated market at Vellore received 397 bags of kernels during the month.

Prices : South Arcot District : The average prices at several markets ranged from Rs. 115-2-0 to Rs. 123-8-0 per candy of 531 lb. kernels.

North Arcot District : Prices of kernels ruled around Rs. 138/- to Rs. 145/- per candy of 531 lb. and prices of pods ranged between Rs. 13/- to Rs. 15/- per bag of 80 lb.

Ramanathapuram District : The opening and closing prices of groundnut pods, kernels in different markets were as follows :

(Pods: Price per bag of 82½ lb. each)

(Kernels: Price per candy of 531 lb. each)

	Opening	Closing
Pods	Rs. 8-8-0 to Rs. 11-8-0	Rs. 10-0-0 to Rs. 12-8-0
Kernels	Rs. 110-0-0 to Rs. 118-0-0	Rs. 120-0-0 to Rs. 132-0-0

III Gingelly : (In this section bag = 168 lb.)

Stocks : South Arcot District : The market started with a carry-over stock of 881 bags. Arrivals were confined to three markets and was of the order of 761 bags. Vridhachalam alone was prominent, registering 672 bags of arrivals. 280 bags were received from other districts in the State. Country *chekku* consumed 564 bags. Despatches to other districts of Ramanathapuram and Tirunelveli accounted 768 bags. The stock with the trade was estimated at 576 bags exclusive of wastages in handling.

Prices : The average price of gingelly ranged from Rs. 41 to 48/2 per bag in this district.

IV. Coconut and its products : (In this section: candy = 700 lb.)

Coconut stocks (In Thousands) : The particulars of stocks in the districts of Malabar and South Kanara are given below :

Name of the market	Opening balance	Arrivals	Disposals	Closing balance
Malabar district :				
1. Kozhikode	6,275	3,300	2,700	6,875
2. Badagara	304	1,432	1,224	512
3. Ponnani	775	675	750	700
4. Tellicherry & Dharmadam	713	1,032	1,055	691
South Kanara district :				
1. Mangalore	60	225	240	45

Prices : (a) Minimum and maximum prices of coconut as between the different markets of Malabar district ranged as follows :

(Prices per thousand)

		Minimum	Maximum
1. Kozhikode	...	Rs. 85	Rs. 125
2. Ponnani	...	" 124	" 127
3. Badagara	...	" 105	" 145
4. Dharmadam & Tellicherry	...	" 100	" 110

(b) The opening and closing prices of coconuts that prevailed in Mangalore market are furnished below: (per thousand)

Raw	Rs. 130 — 165
Dry	Rs. 160 — 210

Copra: The stock position of copra in Malabar and Mangalore is extracted below:

Name of the market	Opening balance	Receipts	Disposals	Closing balance
<i>Malabar district (in candies)</i>				
1. Kozhikode	3,525	5,560	2,200	5,825
2. Badagara	632	1,725	1,540	817
<i>South Kanara district (in tons)</i>				
1. Mangalore	27	214	178	63

Prices: (a) The prices of copra as between the different grades at the several Malabar markets are given below:

Variety	(Prices/candy of 700 lb.)			
	Kozhikode		Badagara	
	Minimum	Maximum	Minimum	Maximum
Office	Rs. 270	Rs. 280	Rs. 270	Rs. 280
Edible	" 275	" 375	" 280	" 300
Madras	" 275	" 305	" 280	" 300
Rajpur	" 325	" 335	" 325	" 335
Gola	" 300	" 300	" —	" —

(b) The prices at Mangalore market ranged between Rs. 260/- to Rs. 300/- per candy of 700 lb.

V. Arecanut: (In this Section, Bag = 100 lb.)

The stock particulars of arecanuts in the markets of Malabar and South Kanara districts are extracted below:

Name of the market (in bags)	Opening balance	Receipts	Disposals	Closing balance
Kozhikode	1,242	—	1,085	157
Palghat	330	80	120	290
Ponnani	1,700	465	665	1,500
Mangalore (in cwts)	4,180	28,000	17,600	15,380

Prices: (a) Prices of Arecanut (*choor*) in Palghat market of Malabar district ranged at Rs. 150/- to 164/-

(b) The price ranges of *supari* of the different varieties in the Mangalore market were as noted below:

Variety	(Price in cwt.)	
	Minimum	Maximum
Koka	Rs. 75	Rs. 125
Choll	" 175	" 186
Malabar Supari	" 115	" 145
Mangalore "	" 130	" 170

VI. Tobacco: (In this section, Candy = 500 lb.)

Stocks: The Tobacco market at Tiruppur started with an opening balance of 6282 candies of chewing and 2437 candies of cheroot tobacco. Despatches included 3385 candies of chewing and 910 candies of cheroot tobacco to places like Madurai, Travangore-Cochin State, Tanjore, Palghat and Madras. The month-end stocks were estimated at 4245 candies of chewing and 250 candies of cheroot types.

(b) The prices of different varieties of tobacco for different grades are furnished below:

Variety	I grade II grade III grade		
	Rs.	Rs.	Rs.
1. Chewing Tobacco, Sun-cured:			
(a) Meenampalayam	425 to 475	360 to 425	275 to 325
(b) Other varieties	290 to 350	190 to 220	120 to 150
2. Cheroot varieties sun-cured (grown in Bhavani & Erode taluks)	340 to 400	220 to 340	125 to 210
3. Chewing varieties pit-cured (grown in Palladam & Sulur taluks)	250 to 290	135 to 200	110 to 135

Review of Market Conditions of Commercial Crops in the areas of Market Committees for February, 1956.

I. **Cotton:** (In this section: candy = 784 lb. pothi = 280 lb.)

Cotton Stocks: Tiruppur: Lint: The cotton market at Tiruppur started with an opening balance of 1730 edys. of Cambodia and 266 edys. of Karunganni lint. Estimated arrivals during the month amounted to 2382 edys. of Cambodia and 181 edys. of Karunganni lint which included 479 edys. of Cambodia and 3 edys. of Karunganni produced by ginning arrivals to the market. Despatches during the month accounted for 2809 edys. of Cambodia and 145 edys. of Karunganni lint which include 1317 edys. of lint sent to Travancore - Cochin State, Bombay, Ahmedabad, Orissa, Madras, Tiruchirapalli, South Arcot and North Arcot. There was a closing stock of 1303 edys. of Cambodia and 302 edys. of Karunganni lint at the end of the month.

Kapas: The kapas market at Tiruppur started with an opening balance of 1058 pothies of Cambodia and 204 pothies of Karunganni. Arrivals during the month amounted to 8465 pothies of Cambodia and 290 pothies of Karunganni kapas. Disposals in the month totalled 7170 pothies of Cambodia and 292 pothies of Karunganni, leaving a closing stock of 2353 pothies of Cambodia and 202 pothies of Karunganni.

Koilpatti: Lint: The Cotton Market at Koilpatti opened with a stock of 483 edys. of Karunganni and 250 edys. of Uganda while arrivals in the month accounted for 50 edys. of Karunganni alone. Disposal was of the order of 400 edys. of Karunganni and 200 edys. of Uganda, leaving a closing stock of 83 edys. of Karunganni and 50 edys. of Uganda at the month end.

There was no transaction in kapas of either Uganda or Karunganni.

Ramanathapuram: Lint: The three markets of Virudhunagar, Sathur and Rajapalayam put together opened with a stock of 1,20 edys of lint while the arrivals during the month amounted to 325 edys. Disposals during the month were 980 edys leaving a closing stock of 365 edys of all varieties at the end of the month.

Kapas: In the markets of Virudhunagar and Rajapalayam 400 pothies of kapas arrived during the month and the entire quantity was disposed of.

South Arcot District: Kapas: Arrivals were continued to Kapas only in Villupuram Market, amounting to 4 pothies. There were no despatches during the month. The closing balance of stock at the end of the month was 63 pothies.

Cotton Prices: Lint: Tiruppur: The Cotton Market in this Market was very brisk during this month. The price of Cambodia lint of average variety was Rs. 850/- per cdy while that of Karunganni was Rs. 775/- per cdy.

Koilpatti: Karunganni lint opened at Rs. 760/- to Rs. 780/- for the best quality and remained steady at that level throughout the month. Second quality Karunganni fluctuated narrowly between Rs. 700/- to Rs. 730/- Inferior second crop of Karunganni cotton ruled steady around Rs. 650/- per cdy. About 200 edys of Uganda cotton was exported to Bombay at prices ranging from Rs. 1,080/- to Rs. 1,100/- for the certified quality and Rs. 970/- to Rs. 1,000/- for the un-certified quality.

Ramanathapuram District: The opening and closing rates per candy of 784 lb. of Cotton lint in all the markets of the district ruled as follows:

		Opening:	During:
Karunganni	...	Rs. 626—681	Rs. 796—836
Cambodia	...	Rs. 600—700	Rs. 650—900
Tinny	...	Rs. 600	N. S.
Uganda	...	Rs. 990—1011	Rs. 986—1030
(N. S. = No Stock.)			

Kapas: Tiruppur: Prices of Cambodia Kapas were quoted at Rs. 115—132 per pothi of 280 lb. and Karunganni Kapas at Rs. 102—1030 per pothi in this Market.

Koilpatti: There was no transaction of kapas in this Market during the month.

Ramanathapuram District: The fresh and season crop of Karunganni kapas is quoted at Rs. 70/- to 116/- per pothi during the month.

South Arcot District: The average price of kapas in the markets of this district is quoted at Rs. 83—4—0 per pothi.

Cotton Seeds: Koilpatti: The prices of Karunganni seeds in this market are quoted at Rs. 37—39 per pothi while the prices of Uganda seeds ruled at Rs. 35/- to Rs. 37/- per pothi.

Ramanathapuram District: The opening and closing prices of cotton seeds of all varieties in all the markets of this district are quoted as follows:

(Prices per standard maund of 82 2/7 lb.)			
		Opening	Closing
Karunganni	...	Rs. 12-0-0 to Rs. 14-8-0	Rs. 15-0-0
Cambodia	...	Rs. 8-0-0 to Rs. 9-0-0	Rs. 10-0-0 to Rs. 12-0-0
Uganda	...	Rs. 10-8-0 to Rs. 11-0-0	Rs. 13-0-0 to Rs. 13-5-0

142

The Madras Agricultural Journal

II. **Groundnut:** (In this section: candy = 531 lb. of kernels; bag = 80 lb. of pods).

South Arcot District: All the Markets of South Arcot District opened with a stock of 13,809 tons and the arrivals during the month accounted for 1,525 tons, which included 74 tons of receipts from other States and 1,248 tons of receipts from other Districts. Consumption by oil mills and country *chekku* in the district amounted to 5,833 tons and 123 tons respectively. Despatches in the month accounted for 403 tons leaving a month and stock of 8,170 tons of groundnut kernels.

The average price of Groundnut Kernels at the several markets ranged from Rs. 118-5-0 to Rs. 136-12-0 per cdy., according to quality.

North Arcot District: Nearly 12,000 bags of kernels (bag: 177 lb.) were received in the Markets and 6,793 bags were transported to Madras, South Arcot, Salem, Erode and Coimbatore.

The prices of groundnut kernels started at Rs. 145/- per cdy. at the beginning of the month, declined at Rs. 133/- and finally dropped to Rs. 125/-.

Ramanathapuram District: The opening and closing prices of groundnut pods and kernels in the markets of this district are quoted as follows:

	Opening	Closing
Groundnut pods per bag of 82 lb. ...	Rs. 12-13	Rs. 13-14
Groundnut kernels per cdy. ...	Rs. 130-142	Rs. 125-135

III. **Gingelly: South Arcot District:** (In this Section: Bag = 168 lb.)

Arrivals in the three markets of the district amounted to 426 bags of which 344 bags were received by Virudachalam alone. Receipts from other districts amounted to 236 bags. Consumption of *chekkus* and despatches to other districts took away 710 bags and 181 bags respectively leaving a closing stock of 334 bags at the end of the month.

The average price in the several markets ranged from Rs. 61/- to Rs. 66/2 per bag.

IV. **Coconuts:** (In this section: Candy = 700 lb.)

Stocks (in thousands): The particulars of stocks in the districts of Malabar and South Kanara are extracted below:

Malabar District:	O. B.	Arrivals	Disposals	C. B.
Kozhikode ...	6,875	4,400	4,900	6,375
Badagara ...	512	1,810	1,640	682
Ponnani ...	700	2,318	2,415	600
Tellichery & Dharmadam ...	691	1,098	1,109	680
South Kanara District:				
Mangalore ...	45	325	315	55

Prices: (a) The minimum & maximum prices of coconut as between the different markets of Malabar district ranged as follows:

		(In Rupees)	
		Minimum.	Maximum
Kozhikode	...	110	117
Ponnani	...	100	145
Badagara	...	108	115
Tellichery & Dharmadam	...	105	130

(Prices per thousand)

(b) The opening and closing prices of coconuts in Mangalore Market are furnished below:

Raw	Rs. 135-165
Dry	Rs. 160-200

Copra: The stock position of copra in Mangalore and Malabar are extracted below:

Malabar District:	O. B.	Receipts	Disposals	C. B.
(In cdy.)				
Kozhikode ...	5,180	7,300	6,400	6,008
Badagara ...	817	1,930	2,150	597
South Kanara District: (In tons)				
Mangalore ...	63	232	235	60

(a) The prices of copra as between the different grades at several markets of Malabar district are furnished below:

		(Prices in Rs. per cdy.)			
		Kozhikode.		Badagara.	
		Minimum	Maximum	Minimum	Maximum
Office	...	270	275	270	270
Edible	...	285	290	285	290
Madras	...	281	300	280	300
Rajpur	...	325	330	325	330
Cola	...	300	315	—	—

(b) The prices of copra in Mangalore market ranged between Rs. 260-285 per cdy. of 700 lb.

V. **Arecanut:** (In this section: Bag = 100 lb.)

Stocks: The stock particulars of arecanuts in Mangalore and Malabar markets are extracted as follows:

Malabar:	O. B.	Receipts	Disposals	C. B.
(in bag of 100 lbs. each.)				
Kozhikode ...	157	—	157	—
Palghat ...	293	75	10	275
Ponnani ...	1500	460	600	1,360
South Kanara District:				
Mangalore ...	15,380	39,424	33,405	21,400
(Supari in cwts.)				

Prices: (a) Prices of arecanut (*choor*) in Palghat ranged at Rs. 158/- to Rs. 165/- per bag of 100 lb. each.

(b) The price ranges of *supari* in Mangalore market in the different varieties are noted below:

Variety	Minimum	Maximum
Kokal ...	75	120
Choll ...	165	195
Malabar Supari ...	115	145
Mangalore Supari ...	140	167

IV. Tobacco: (In this section: candy = 500 lb.)

Stocks: The tobacco market at Tirupur opened with a stock of 4,245 cdis. of chewing and 250 cdis. of cheroot varieties. Despatches included 1,480 cdis. of chewing and 94 cdis. of cheroot varieties to places like Palghat, Malabar, Ramnad, Tanjore, Vedaranyam, North Arcot District, Madras and Travancore Cochin State. The month-end stock is estimated at 3,058 cdis. of chewing and 460 cdis. of cheroot tobacco.

Prices: The prices of different varieties of tobacco for different grades ruled at ranges furnished below:

Variety	(Prices in Rupees per cdy. of 500 lb.)		
	I grade	II grade	III grade
1. Chewing, tobacco sun-cured:			
(a) Meenambalayam ...	400—450	300—375	200—250
(b) Other varieties ...	280—335	190—225	110—150
2. Cheroot varieties sun-cured (grown in Erode and Bhavani taluks). ...	350—450	250—350	140—200
3. Chewing varieties (pit-cured (grown in Palladam and Sulur taluks). ...	250—275	200—250	100—150

Review of the Activities of the Market Committees during February 1956

All the Market Committees continued to function during the month. Except the Coimbatore Market Committee which is working under an elected body all the other Market Committees are in charge of their respective Collectors or his nominees under Section 6A of the Madras Commercial Crops Markets Act. Necessary steps are being taken for the conduct of fresh elections for these Committees.

The following progress was made by all Market Committees in the matter of issue of licenses under the provisions of the Madras Commercial Crops Markets Act.

	Section 5 (1)		Section 5 (3)		Weighmen		Broker	
	A	B	A	B	A	B	A	B
North Arcot Market Committee	166	339	145	289	82	144	—	—
South Arcot Market Committee	280	714	261	671	237	618	—	—
Coimbatore Market Committee	87	115	99	195	77	178	—	3
Tirunelveli Market Committee	2	3	—	1	—	—	—	—
Ramanathapuram Market Committee	1	3	—	3	—	—	—	—
Malabar Market Committee	57	194	316	748	22	138	—	3
South Canara Market Committee	31	117	20	97	8	42	—	—

A: During the month. B: Upto the month from January 1956.

The total volume of transactions in commercial crops in all the regulated markets in the State during February 1956, is extracted below:

Crop	Quantity	No. of regulated markets
Groundnut kernels	.. 2,248 tons	10
Gingelly	.. 445 bags of 168 lb. each	1
Cotton kapas	.. 7,039 pothies of 280 lb. each	2
Coconut } Arecanut }	.. Nil	

II Meetings: No meetings were conducted in any of the Market Committees during the month.

III. **Quality appraisal:** 363 samples of groundnut kernels drawn from 3796 lots comprising of 24536 bags of 177 lb. each in six markets of South Arcot Market Committee and were analysed for quality factors.

Total Common refraction was below 4% in 219 samples, between 4 to 8% in 119 samples and above 8% in 25 samples. The details of analysis are extracted below:

Particulars	Cuddalore	Villupuram	Tindivanam	Viruadachalam	Panrut	Kallakurichi
1. Dryage:						
2% and below	5	—	1	59	2	6
above 2% and upto 3%	9	—	—	13	1	1
above 3% and upto 4%	9	—	2	7	14	11
above 4% and upto 5%	4	2	8	3	6	23
above 5% and upto 10%	31	5	28	—	60	22
above 10%	11	5	2	—	13	—
2. Total refraction:						
4% and below	4	—	33	52	95	34
above 4% and upto 8%	47	10	8	30	—	24
above 8%	18	2	—	—	—	5



Marketing Notes: On 25-1-1956 the prize distribution ceremony of summer quality competition for Kallakurichi and Chinnasalem jurisdiction was held under the presidency of Sri P. Rathnaswamy, Block Development Officer of Chinnasalem. A large gathering of ryots and traders were present on the occasion.

The Madras Agricultural Students' Union.

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A detailed black and white illustration of a wristwatch. The watch features a round, polished metal case with a prominent crown and a pusher on the right side. The dial is light-colored with dark Arabic numerals from 1 to 12. The hands are dark and slender. A small sub-dial is located at the 6 o'clock position. The watch is attached to a metal link bracelet. The entire watch is set against a dark, circular background with a dense, stippled texture.

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