

106

Madras Agricultural
Journal

Vol. 47 No. 11

Nov 1960

52
Jm 211, N13

N60.47.11

947.8.2

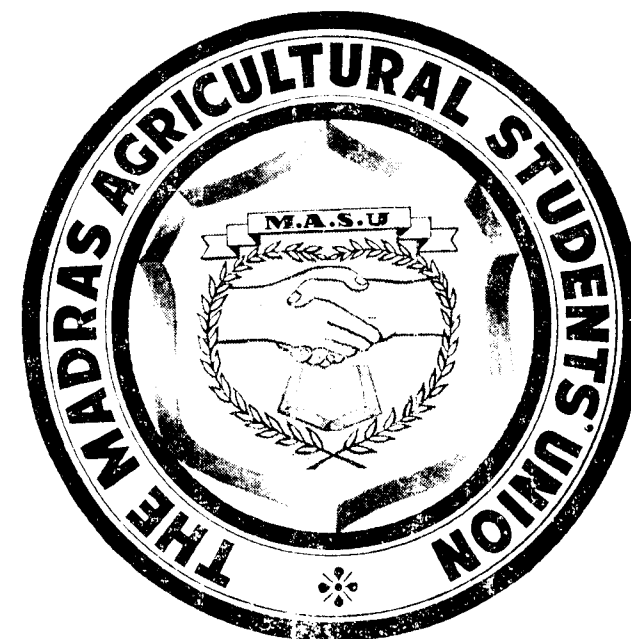
61
Regd. No. M. 5155

THE
Madras Agricultural Journal

Vol. XLVII

November 1960

No. 11



(ESTD: 1911)

Published by
THE MADRAS AGRICULTURAL STUDENTS' UNION,
(M. A. S. U.)
AGRICULTURAL COLLEGE AND RESEARCH INSTITUTE,
COIMBATORE, S. INDIA.

Annual Subscription:

Inland Rs. 8-00
Foreign Rs. 9-00

Single Copy
Re. 0-70



THE MADRAS AGRICULTURAL STUDENTS' UNION.
OFFICE-BEARERS FOR 1960-'61.

Dr. S. Krishnamoorthi, President (Ex-officio)
Dr. B. W. X. Ponnaiya, Vice-President (Ex-officio)
A. H. Subramania Sarma, Resident Vice-President
Dr. S. Kanakaraj David, Editor
M. Bagavandoss, Secretary

Council

President
Vice-President
Resident Vice-President
Editor
Secretary

Mofussil Vice-Presidents

C. R. Seshadri
S. M. Sulaiman
T. S. Francis

Mofussil Members

K. R. Sundaresan
V. Subbiah
B. P. Masillamani
V. Srinivasan
P. V. Marappan

Resident Members

Dr. V. Santhanam
E. G. Sivasami
M. K. Seetharaman (Editor, Tatler)
T. M. Kandaswami
(Secretary, Students' Club)

Managing Committee

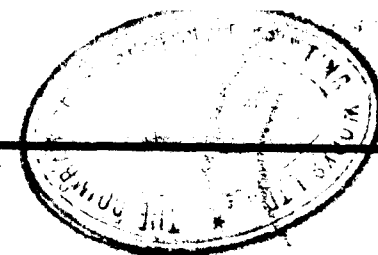
Resident Vice-President
Editor
Secretary
K. R. Nagarajan, Treasurer
S. Sankaran, Manager
Dr. D. Daniel Sundararaj
M. V. Jayaraman
M. Dinakaran

(Student)

Secretary, Students' Club

Editorial Board

Editor
Secretary
Manager
T. Nataraj
D. John Durairaj
Dr. K. Ramakrishnan
M. K. Seetharaman (Editor, Tatler)
T. M. Kandaswami
(Secretary, Students' Club)



FOR
GREATER PRODUCTION
& GREATER PROFIT



“LOTUS” BRAND
BALANCED MANURE MIXTURES

Latest Scientific Research has definitely indicated the necessity of Balanced Manure Mixtures for maintaining the fertility of the soil essential for each crop to yield a bumper harvest.

“LOTUS” Brand range of well-balanced Manure Mixtures are available for every specific crop according to soil conditions.

These chemically compounded fertilisers contain all the major plant foods to suit plant requirements.

Hence they invigorate the soil and ensure a healthy Vitamin-rich bumper crop.

**OUR ADVISORY SERVICE
FREE WITHOUT OBLIGATION**

Contact:

THE MYSORE FERTILISER CO.,
31-A, NORTH BEACH ROAD, MADRAS-1

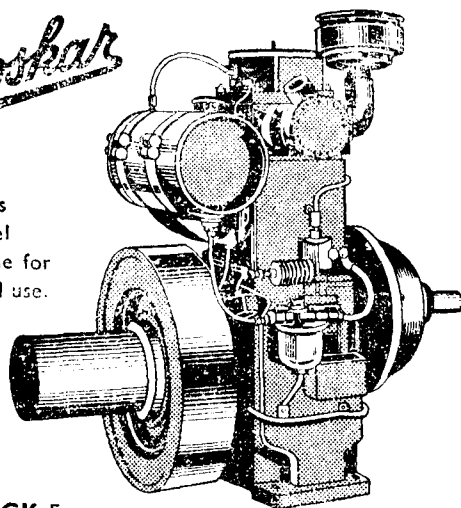
Branches:

BANGALORE, KUPPAM, ANDHRA PRADESH, MERCARA (COORG), ERODE,
COONOR, OOTACAMUND, METTUPALAYAM, VIJAYAWADA, KADUR

When answering our advertisers, please mention 'The Madras Agricultural Journal'

Kirloskar

Kirloskar 5 B.H.P. Series
11 Single Cylinder Diesel
Engine. The ideal Engine for
agricultural and industrial use.
Suitable for operation
of pumps, hullers, oil
ghannies and industrial
machinery.



Available **EX-STOCK** From

PARRY & CO. LIMITED	P.O. Box No. 12, Madras.
	P.O. Box No. 506, Bombay.
	P.O. Box No. 208, Calcutta.
	P.O. Box No. 172, New Delhi.

When answering our advertisers, please mention 'The Madras Agricultural Journal'

Copies of back Issues of the
Madras Agricultural Journal are
available. Kindly direct your
enquiries to the Secretary.

THE MADRAS AGRICULTURAL STUDENTS' UNION.

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

THE MADRAS AGRICULTURAL JOURNAL A Premier Agricultural Monthly in India

Editorial Board:

Dr. S. Kanakaraj David, B. Sc. (Ag.), M. Sc., Ph. D.
T. Nataraj, B. A., B. Sc. (Ag.) M. Bagavandoss, B. Sc. (Ag.)
D. John Durairaj, M. Sc., M. S. S. Sankaran, B. Sc. (Ag.)
Dr. K. Ramakrishnan, B. Sc. (hons.), Ph. D. M. K. Seetharaman (Editor, Tatler)
T. M. Kandaswami (Secretary, Students' Club)

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

Rate of Subscription:

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

Annual subscription rates for others:

Inland Rs. 8'00, Foreign Rs. 9'00, Single number Re. 0'70.

Rate of Advertisement:

For single insertion:

	Rs.
For full page ...	20'00
For half page ...	10'00
For quarter page ...	5'00

Inside cover pages 25 percent extra

Outside cover pages 50 percent extra

Preparation of blocks unless supplied by advertisers, charged extra.

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

Contributions to the Journal:

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

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

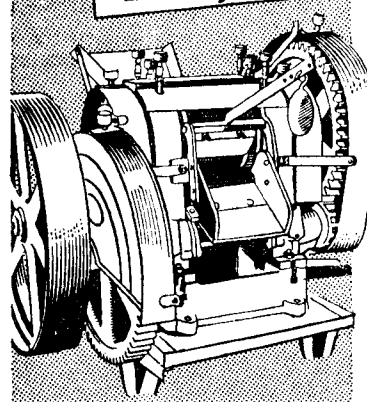
N. B.:— The Editorial Board does not hold itself responsible for the opinions expressed by the contributors.

All communications should be addressed to:

The Secretary, M. A. S. Union,
Coimbatore—3.

CONTENTS		PAGE
Editorial	...	461
Original Articles:		
1. Betelvine Cultivation in India	... — M. R. Iyathaya Raj	463
2. Notes on the Biology and Habits of the Black Ant, <i>Camponotus (Tanacymrux) compressus</i> (Latreille)	... — A. Leela David	474
3. Further Studies on Guar as Green Manure Cum Vegetable Crop	... — A. Subramaniam and S. Premsekar	478
Research Notes	...	481
College and Estate News	...	489
Weather Review	...	490
Departmental Notifications	...	491
Market Committees' Chronicle	...	493
A Short Note on Cardamom Market Prices	...	502
Review of Market Conditions of Commercial Crop in Ramanathapuram District	...	504

Every Ounce Counts!



Kirloskar
ESTD. 1888

SUGARCANE CRUSHERS FOR MAXIMUM EXTRACTION

Kirloskar Sugarcane Crushers symbolise efficient and economical operation. Finest material and excellent workmanship make these crushers, the best buy for your money. Manufactured in two types to suit the varied requirements. Available in 7 sizes — 4 power driven and 3 animal driven models.

KIRLOSKAR BROTHERS, LTD.
KIRLOSKARVADI, DIST. SOUTH SATARA

Q. 54

The Madras Agricultural Journal

Vol. XLVII

November 1960

No. 11

Editorial

106

Natural Calamities and Agricultural Production: During the last month cyclones hit the Madras coast causing untold havoc and misery to men and women and property. Unprecedented rains brought in flooded conditions all over the state which accounted for similar devastation and suffering to people.

Such natural calamities have not been uncommon. During the year there have been floods in many rivers in North India, severe drought conditions in parts of Mysore and Andhra and an unusual locust invasion in Central India. South India itself was in the grip of a prolonged drought due to failure of the South West monsoon when the North East monsoon burst in late in the season in rather a severe form bringing in damage to crops and property.

The immediate outcome of such calamities has been a call for help especially for helping the poor people who are rendered homeless. It has been pointed out that this amounts to charity whether it is doled out by the Government or other agencies, and that there should be an organised effort to safeguard people against such incidences by providing them more permanent residences than mere huts, by long range efforts at flood control and by providing funds in the budget against such un-looked-for events on a national basis.

In the industrial front such unusual occurrences have very little effect. The work of bringing conditions to the normal state is easily accomplished although it may call for investment of some extra capital. The workers suffer little on that account. Even if there is a loss it is adequately covered by such methods as insurances against such unusual happenings.

On the food front the drought and flood conditions which existed during the first five-year plan period gave sufficient warning that food should be preserved against such lean years of food production. It has been realised that maintaining buffer stocks in

warehouses and procuring food material from countries which can supply the demand have been resorted to in order that the insufficiency may be overcome and the supply of food maintained at an even level.

There is, however, the agriculturist who is hard hit at such times by these natural events. During periods of drought and unprecedented rains at unwanted times, the crops in the field suffer severely and agricultural production falls to a low level. The utmost that the government does to help the agriculturist is to remit the kist which it has to levy from him. But the agriculturist has to live through the year on the products of the land and when his efforts are laid waste by such unseen forces, he is frustrated.

There is very little that has been done to protect the agriculturist from the losses he suffers by these calamities. Crop insurance has been talked about but due to the difficulties attendant on implementing it, has not been given effect to. But it seems necessary that some provision should be made for helping him when due to causes beyond his control, the production from the land which benefits all people suffers heavily. Surveys in such affected areas and pooling of aid from national and other sources through co-operative and other efforts will have to be carefully planned if there should be incentive for the cultivator to keep the production from land at a high level.

Betelvine Cultivation in India

by

M. R. IRUTHAYA RAJ,
(Assistant Lecturer in Agronomy)

Introduction: Betelvine or *Pan* (*Piper betle*) is a perennial aromatic creeper which is cultivated in certain localities throughout India. According to Burkill (1935) this crop is apparently a native of Central and Eastern Malaysia which became a cultivated plant, spread through tropical Asia and Malaysia and to West Indies. He also claims that the plant seems to be known to North India before 600 A. D. George Watt (1892) indicates that it is highly probable that Java is the native home of betelvine. So it is seen that East Indies is the native home of this crop. Mukherji (1915), Balakrishnan (1930), Kantiraj (1941), Chowdhury (1944), Asthana and Mahmud (1945), Chowdhari (1945), Mahmud (1950 a to f), Malelu *et al* (1951), Mahmud (1952), Nagabhushanam (1956), Iyyer (1958), Nikam *et al* (1958) and Randhawa (1958) have detailed the cultivation aspects of betelvine in their respective states. This paper deals with the different states in India.

Rainfall and Soils: Betelvine is cultivated up to 3000 feet elevation in India with a wide range of rainfall from 10 inches to 80 inches or more. The soils best suited for this crop are clayey loam rich in organic matter, friable with good drainage. Red loams both light and heavy with adequate manuring and application of tank silt and other bulky organic manures are also needed.

Varieties: The following are the important varieties grown in Madras State:—

1. *Karpurakodi*: This smells like camphor and is light green to greenish yellow in colour, and linear in shape.
2. *Kallasakodi*: The leaves are broad and taper at the tip suddenly. The leaves are usually dark green, coarse in texture and very pungent but leaves from a older crop get lighter in colour, finer to the feel and less pungent to the taste.
3. *Vattakodi*: The leaf is big in size, more circular in shape than other varieties and keeps much longer than others.
4. *Chittukodi*: This is the most aristocratic of all. It is small in size, velvety to touch and very agreeable to the taste neither insipid nor very pungent.

5. *Ravesi* : The leaves are medium sized, light green and not too pungent.

6. *Kammar* : The leaves are deeper green and broader than *Ravesi* and *Karpurakodi*.

The varieties grown in Mysore are as follows :—

1. *Kumbala balli* : The leaves are very large (like pumpkin leaves), dark green in colour, some-what pungent and generally yields a smaller number of leaves than the other varieties.

2. *Kari balli* (black vines) : The leaves are medium-sized and dark green in colour and generally coarse in texture.

3. *Naga balli* : This is bland in taste and has small leaves shaped like the hood of a snake and light in colour.

4. *Ambadi* : The leaves are long and narrow, light green in colour and have a pronounced aroma somewhat resembling camphor (like the *Karpurakodi* of Madras).

5. *Kanigalu* (Oleander leaves) : These are very small, narrow and light green in colour and very bland in taste.

In Bombay two varieties are grown viz :—

1. *Kali* : The leaves are dark in colour, thick and pungent to taste.

2. *Dethi* : The leaves are pale green, smaller, elongated and less pungent to taste. This is similar to *Karpurakodi* of Madras.

Assam grows three main varieties viz *Parwa*, *Purathi*, and *Sanchi* or *Chandana*; the description of these are as follows :—

1. *Sanchi* : This has a fine sweet flavour. The leaves are considerably longer than their breadth and dark green in colour. The stem and the petiole are blackish green.

2. *Purathi* : The stem is slightly reddish and the petiole is light green in colour. Leaves are large cordate and light green in colour.

3. *Parwa* : The stem and the petiole are light green in colour. The leaves are large, cordate and light green like *Purathi*.

Madhya Pradesh grows these varieties viz *Sohagpuri Bangla*, *Desi Bangla*, *Kapuri*, *Ganger*, *Kakher*, *Bariga* and *Phaphade*.

The three main varieties that are grown in Bengal are *Deshi*, *Sanchi* and *Mitha* but there are some special sub-varieties such as *Nuntia-Bantul*, *Ujani* (*Backergunge*), *Maghai*, *Karpurkath* which are specially appreciated by the connoisseur.

Rotation : This crop is rotated with many crops in different ways in different places. In Coimbatore, Madras State, the crop is usually preceeded and followed by Paddy. Sugarcane for one year followed by Paddy for one year with betelvine for three years is common in Madras. In Guntur, Andhra Pradesh, betelvine is followed by Turmeric, Sugarcane or vegetables.

Betelvine is also rotated with crops like Sugarcane, Turmeric, Onion, Garlic or Chillie in most parts of Madhya Pradesh except in the Northern districts where the land is neither allowed to rest after the period of five years nor rotated with other crops as done in other parts of that state.

In Bombay betelvine is preceeded and followed by Banana, *Phaseolus mungo* or *Phaseolus radiatus* or vegetables.

Preparatory Cultivation : No ploughings are given in Madras State, but trenches are dug 2' broad and 1½' deep along the length of the field during June—July. *Agathi* (*Sesbania grandiflora*) is sown on the ridges of these trenches.

During June—July in Guntur, Andhra Pradesh, the land is ploughed 3 or 4 times, levelled and furrows are made three feet apart.

The previous crop *Phaseolus mungo* or *Phaseolus radiatus* or vegetables are cleared and furrows are made in October in Bombay. The furrows are 10' long, 7" to 8" wide and 5" to 6" deep.

During April—May 40 to 60 cart loads of farm yard manure are applied to the land in Madhya Pradesh ploughed and covered except in Gwalior where this operation is carried out during December—January. The land is then laid into series of ridges and furrows.

In Assam during April—May the land is ploughed a number of times and heavily manured with well rotten cowdung and laid into ridges and furrows.

Bengal adopts a method by which a trench is dug up around the area where the cultivation is taken up. The soil is dug up to a depth of 18 inches and then ridges and furrows are formed.

Manures and Manuring: Cattle manure and horse dung are usually applied in parts of Madras State. Sometimes tannery refuse is also applied. Three months after planting the cuttings, farm yard manure is applied at the rate of 25 to 30 cart loads per acre once in 3 or 4 months.

No manure is applied before planting in Coimbatore, Madras State. A fortnight after planting the vine cuttings, a dressing of 15 cart loads of cattle manure is given in 3 or 4 doses. The second dose is just before the first picking and the third in December before pruning and the fourth in the 3rd years. There is also a special practice in this area of applying *Calotropis* leaves at the rate of 4 to 6 cart loads per acre each time. *Kolingi* or *Wild Indigo* leaves are preferred because they are supposed to give colour to the leaves.

In Guntur district of Andhra Pradesh well decomposed farm yard manure is applied. Heavy manuring is believed to give good colour and fine texture to the leaves. Groundnut cake or castor cake is applied in the absence of farm yard manure. Usually 50 to 60 cart loads of farm yard manure and 8 to 10 bags of groundnut or castor cake are applied in 2 or 3 doses once in 4 to 6 months.

Castor cake is preferred as manure in Bombay since it is believed to be a preventive against white ant attack. Nearly 15 to 16 applications are given during the life period of the crop, the rate of each application being 1500 to 1600 pounds per acre. A special practice adopted in Bassein is to apply raw fish which is available in plenty as manure. In cold season dry fish is also applied alone or mixed with castor cake.

Amaravathi and Western districts of Madhya Pradesh have a practice of applying 40 cart loads of farm yard manure before the commencement of preparatory cultivation. Then before the planting, the ridges and furrows are dressed with farm yard manure at 20 cart loads per acre. In June every year after earthing up, 20 cart loads of farm yard manure are applied. If available, sheep and goat manure is also used. In addition to this the crop is applied with Linseed or 'til' (*Sesamum orientale*) oil-cakes once every month from February to September at the rate of 7 maunds per acre per application. i. e. 8 to 56 maunds per acre per annum. In northern districts of Madhya Pradesh Linseed flour or Linseed or 'til' oil-cakes or castor cakes or Neem (*Azadirachta indica*) cakes are used as manures.

Mahmud (1950. b.) has described that there are two forms of application of this manure to the crop in the northern districts of Madhya Pradesh.

In Chuikkadan and southern districts of Madhya Pradesh no dressing is given, but the crop is top-dressed with oil-cakes like 'til', Linseed, Sarso and Neem cake.

Mahmud (1950. f.) reports that the application of Linseed cake at the rate of 40 maunds per acre per annum gave the maximum growth and yield.

After planting and cutting, the crop is irrigated with a liquid manure made up of cowdung in Assam which is said to accelerate rooting. Mustard cake is considered to be the most suitable manure in this area. The manuring is done only in May — June to October.

In Bengal dried, pulverized pond-mud, dried, powdered cowdung and powdered oil cakes are used as manure each time when earthing-up is done. Castor cake is not used since it is said to be injurious to the crop and mustard cake alone is used. As a special practice, brick dust is also used as manure sometimes.

Sowing the Standard: Generally in Madras, Andhra Pradesh and Mysore *Agathi* (*Sesbania grandiflora*) seeds are sown on the ridges at 4 to 6 seeds in each hole at a spacing of 6". *Cassia occidentalis* is mixed with agathi in the ratio of 4:1 and sown on the ridges in Chingleput district of Madras State. Sometimes along with agathi gogu (*Hibiscus cannabinus*) and moringa (*Moringa oleifera*) are also sown in Coimbatore district of Madras State, the former for fibre and and the latter for standard.

In Guntur district of Andhra Pradesh *Sesbania grandiflora* and *Leucina glauca* are mixed and sown on the ridges. In some parts of Andhra Pradesh and Mysore there is a practice of growing *Erythrina indica*, *Moringa oleifera*, *Eriodendron pentrandum* as standards.

In Nellimerala of Vizayanagaram, Bombay, Madhya Pradesh, and Assam thin bamboos are used as standard while in Bengal daicha or jute stalk are preferred.

In some parts of Mysore and in the south there is a practice of using arecanut as standard where arecanuts are grown. Pits are dug near the bases and they are allowed to weather for a month and cuttings are planted.

Inter cropping: Banana suckers are planted at the end of the ridges in Madras, Mysore, Andhra Pradesh, Amaravathi and Western districts of Madhya Pradesh for mainly obtaining fibre to tie the vine with the standard. In Madras, Banana suckers are planted for subsidiary income and for leaves and fibre for packing.

Piper longum is often intercropped with betelvine in northern districts of Madhya Pradesh. *Basella rubra*, *Cephalandra indica*, *Tricosanthus sp*, *Zingiber officinale*, *Musa paradisiaca*, *Colocasia anti-quorum*, *Capsicum frutescens*, *Pogostemon patchauli* are also often raised as catch crops in this area.

Gourds and pumpkins are grown in Bengal round the garden to give additional shelter.

Shade and Fencing: Fencing is intended to protect the crop against the beating force of the wind and against dust and dirt. Roofing is done (1) to give shade to the vines, (2) stabilise the temperature and (3) protect the crop from strong wind and scorching sun that causes sun burn of the leaves.

In Madras and Mysore the rows of agathi are tied as 'Boroj' and these provide the required shade. As a fence wild cane (*Saccharum*) and *Euphorbia tirucalli* are used according to the availability.

The crop is shaded in the other states by fixing bamboo stalks and covering the top at a height of 7' from the ground level with cholam (*Sorghum vulgare*) straw or gogu stalks or coconut and banana leaves or jute and daincha stalks according to the availability of the material in that area.

This kind of roofed betelvine gardens go by the name of 'Boroj' or 'Chick house' in the north.

As a peculiar practice in Gwalior where the seasons are severe a stone wall is erected all round the plantations as a wind break.

Planting: Usually cuttings with 3 to 4 nodes are planted as planting material. The cuttings are usually got from one year old vines. The planting season differs from place to place. September-October planting is done in Chingleput district whereas November-December planting is done in Coimbatore district in Madras State. Cuttings are planted in pairs in a slanting manner. The July-August

planting is carried out in Andhra Pradesh. In certain parts of Mysore Bengal and Madhya Pradesh there is a practice to plant rooted cuttings and then transplant them in their permanent place.

Cuttings are planted from mid September to mid October in Amaravati and Western districts of Madhya Pradesh. A slit is made on one side of the ridge with a sickle and neem (*Azadirachta indica*) is placed over the cutting to protect it against direct sun light. After a month the twigs are removed.

In northern districts of Madhya Pradesh the cuttings are planted during February-March. Mahmud (1950. a.) has described that there are three methods of planting the cuttings in the northern districts of Madhya Pradesh.

Planting is done usually in June, July, September and October in Assam and the planting material consists of vine cuttings with at least six nodes.

During July and October the plantings are taken up in Bengal. The cuttings are covered with date palm leaves and watered twice daily till they strike root.

Irrigation: Irrigations are frequently given in required amounts by means of splash method in Madras, Mysore, Andhra Pradesh, Bombay and Madhya Pradesh. Pot watering is carried out in Hoshnabad and Gwalior. In Assam and Bengal the rides and furrows are irrigated frequently.

After cultivation: In Madras after 3 or 4 months of the planting of the cuttings 'Arching' is carried out. No arching is done in other states, since the crop is grown in 'Chick houses'.

When the vines have grown to 6' to 7' in height, it becomes difficult to pluck the leaves and so lowering of the vines is carried out. This is done once in the first year, once or twice in the second and third year.

The vine gardens are weeded and kept clean systematically. The earthing up is done after the application of manures. The 'Chick houses' are repaired every year.

Harvest: The picking of the leaves differs from state to state and place to place. In Chingleput district (Madras State) the first picking starts after six months of planting the cuttings; whereas in Coimbatore district (Madras State) the first picking starts when the crop is 8 to 9 months old.

In Bombay and Assam the first picking commences after 8 months of planting; whereas in the western and northern districts of Madhya Pradesh the first picking commences after 11th and 5th month of planting respectively.

Harvest is taken up in two seasons in Bengal. When planting is done in July the plucking commences in October and when planting is done in October plucking commences in May.

Usually the interval given between two pluckings in the first and second year is about a fortnight and then it is reduced to ten days in the 3rd year.

Yield: The yield of the crop varies from state to state. The yield in the south is much more when compared to yield in other states. The following table gives the yield of leaves per acre per annum in different states.

1. Madras	: 90,00,000 to 1,00,00,000
2. Andhra Pradesh	: 30,00,000
3. Mysore	: 5,00,000 to 12,00,000
4. Madhya Pradesh	: 52,00,000 to 96,00,000
5. Assam	: 60,00,000
6. Bengal	: 80,00,000

Pests and Diseases: The crop suffers heavy loss throughout India due to the following diseases:

1. Foot rot and Leaf rot caused by *Phytophthora* sp.
2. Wilt caused by *Sclerotium rolfsii*.
3. Leaf spot caused by *Gloeosporium* sp.

As a control measure the vine gardens have to be changed once in every 3 or 5 years. The planting materials have to be free from any disease. The cuttings have to be dipped in a solution of 2:2:50 bordeaux mixture before planting.

Where agathi is used as standard the crop is sometimes attacked by two insects (a) Agathi borer (*Azygophleps scalaris*) and (b) Agathi weevil (*Alcidodes bubo*).

Marketing: In Madras the plucked leaves are washed, cleaned, counted and arranged in baskets before they are sent out for sale. The unit of sale in Chingleput is one 'Kavuli' of 100 leaves whereas in Coimbatore one 'Kavuli' is 200 leaves. The unit of packing in Coimbatore is one 'Palagai' of 2000 leaves.

For the purpose of marketing, the leaves are graded in Andhra Pradesh into three types viz. (1) 'Kalli' (first sort) (2) 'Papadam' (second sort) and 'Kalagotha' (medium sort). They are packed in baskets containing 3000 leaves.

In Bombay the leaves are graded into two grades viz. 'Bibla' (large sized) and 'Modwan' (small sized). They are packed in baskets containing 4000 and 6000 leaves respectively.

The leaves are graded in Madhya Pradesh in two grades viz. 'Bade pan' (big leaves) and 'Khitti' or 'Natwan' (small leaves). These are arranged in bundles of 50 or 100 in baskets.

In Bombay and other parts of North India the betel leaves are sold after bleaching (cream coloured). This is known as 'Pucca pan'. Bleaching increases the essential oil content and possesses a higher diastatic activity and increases the market value twice or thrice depending upon the market and as such is highly profitable. Nagabhushanam (1956) has indicated that this kind of bleaching is also done in parts of Vizayanagaram by a few well trained people. Chowdhari (1945) has also described that there was a practice some years ago by the growers of Chuikkadan of bleaching the leaves before selling. The method was to dip the leaves in milk and arrange them in baskets. They are washed before being packed for the market. But this is not in vogue at present.

Dastane *et al.* (1958) have detailed the method of bleaching the leaves.

Conclusions and Suggestions: The cultivation of betelvine is under a very intensive system and great care has to be taken in its culture. It is observed that in general operations such as planting in South West monsoon season, application of farm yard manure as basal dressing, shading and fencing, selection of cuttings etc are some of the common practices adopted. But some differences are however noted with regard to other operations. For example the type of material used as standard is invariably decided on the climatic conditions as well as the easy availability of the raw materials in that area. Similarly the type of manure applied also follows the availability of that particular manure in abundance. Further the soil texture, water availability, source of irrigation and climatic conditions also significantly influence the type of cultivation peculiar to each place. In Bombay and other North Indian cities

the 'Pucca pan' fetches a higher price which may be also adopted by the cultivators of Madras and other States. The bleaching of the leaves before marketing has to be done by co-operative societies managed by the ryots themselves and the profit will depend upon the share of supply of leaves. The Government must grant concessional fares for the transport of the leaves by rail and top most priority for movement from one place to another.

Acknowledgement: I am grateful to Sri T. Natarajan, B. A., B. Sc. (Ag.), Agronomist and Associate Professor of Agronomy for his helpful suggestions and valuable guidance.

REFERENCES

- Anonymous 1954 *Mem. Dept. Agri., Madras. Madras Government Press.* 36 : p. 676.
- Asthana, R. P. and Mahmud, K. A. 1945 Vegetative propagation of *Piper betle* in the Central Provinces. *Proc. Indian Acad. Sci.* 22 : (2). p. 70.
- Ayyar, A. K. Y. 1958 Field Crops of India. Bangalore, Bangalore Printing and Publishing Co. Ltd. Sec. VIII. Ch. V. P. 520.
- Balakrishnan, M. R. 1930 Betelvine. *Madras Agric. J.* 18. p. 323, 405.
- Burkill, I. H. 1935 A Dictionary of the Economic Products of the Malay Peninsula. London, S. W. I., Crown Agents for the colonies, Vol. II. (I-Z) P. 1737.
- Choudhari, B. L. 1945 Study of the cultivation of *Pan* at Chuikkadan. *Madras Agric. J.* 33 : p. 49.
- Chowdhury, S. 1944 Cultivation of *Pan* in Sylhet, Assam. *Indian Fmg.* 5 : (3). p. 122.
- Dastane, N. G., Patel, R. G. and Chaugule, B. A. 1958 This business of bleaching betel leaves. *Indian Fmg.* 7 : (10) p. 10.
- George Watt 1892 *Dictionary of the Economic Products of India.* London, W. H. Allen & Co. Vol. VI Part I. P. 248.
- Krishnan, R. H. and Kantiraj 1941 Cultivation of betelvine in Poonamalle. *Madras Agric. J.* 29 : p. 12.
- Mahmud, K. A. 1950 (a) Propagation of *Pan* (*Piper betle*) in the northern districts of the Central Provinces. *Sci. Cul.* 15 : (8). p. 324.
- 1950 (b) Cultivation of *Pan* in the Northern districts of Central Provinces. *Nagpur Agric. coll Mag.* 24 : (3) p. 24.
- 1950 (c) Propagation of Bangla variety of *Pan* (*Piper betle*) in the Central Provinces. *Proc. Indian Acad. Sci.* 31 : (2). p. 120.

- Mahmud, K. A. 1950 (d) Construction of *Pan* garden in northern districts of Madhya Pradesh. *Nagpur Agric. coll Mag.* 25 : (3). p. 13.
- 1950 (e) Cultivation of *Pan* (*Piper betle*) in Amaravati district of Madhya Pradesh. *Nagpur Agric. coll Mag.* 25 : (1). p. 23.
- 1950 (f) Manurial requirements of *Pan* (*Piper betle*) on Morand soils in Madhya Pradesh. *Nagpur Agric. coll Mag.* 25 : (1). p. 13.
- 1952 Betel *Pan* cultivation in Madhya Pradesh. *Sci. Cul.* 18 : (1). p. 39.
- Malelu, J. S., Kamal M. N. & Patel, M. K. 1951 Cultivation and diseases of betelvine at Bassin. *Poona Agric. coll Mag.* 42 : (3). p. 137.
- Mukherji, N. G. 1915 Hand Book of Indian Agriculture. Calcutta, Thacker, Spink & Co. Ch. LXVI.
- Nagabhushanam, T. D. J. 1956 Betel leaf production and marketing in Guntur district. *Andhra Agric. J.* 3 : (2). p. 100.
- Nickam, B. G. and Mahadik, G. 1958 Delicate pan needs specialised care. *Indian Fmg.* 8 : (4). p. 8.
- Randhawa, M. S. 1958 Agriculture and Animal Husbandry in India. New Delhi, Indian Council of Agricultural Research. Ch. XXIX. p. 197.

CURE FOR BLOOD PRESSURE

Every body over fifty is nowadays afflicted with any one of the three diseases. (1) Blood pressure (2) Heart disease (3) Diabetes.

By taking two ounces of boiled drumstick leaf at the time of midday meal daily for 25 days blood pressure is cured completely. Salt is added to the boiled leaves, not coconut or dhal.

Those suffering from B. P. can take to this and be cured of it. More leave will do harm for the aged people. So two ounces will do. Readers will propagate this simple cure to others suffering from blood pressure.

— Abstract from *Light of India*

Notes on the Biology and Habits of the Black Ant, *Camponotus (Tanaemyrmex) compressus* (Latreille).

by

A. LEELA DAVID,

Agricultural College and Research Institute, Coimbatore.

Introduction: The large black ant *Camponotus (Tanaemyrmex) compressus* (L) is a familiar insect all over India and has been known to be of considerable economic importance because of its habit of attending on several Homopterous insects. Accounts of its habits have been given by Wroughton (1892), Rothney (1895), Dutt (1912), Mukerji (1930, 1934), Negi *et al* (1930) and others and the seasonal incidence and other characteristics by Krishna Ayyar (1935, 1937). Still its life history and its behaviour towards its herds are not fully known. The present account gives further information on the insect as observed in Coimbatore during the past few years.

Nesting: The ant is terrestrial, building its nests in loose loamy and semi-dry soil in open places. It can occasionally build its nests in logs of wood, under stones and so on. The nests are marked, especially after soaking showers, by large craters of loose earth spread on all sides evenly to a radius of about 3 inches. The soil is heaped close to the entrance to the nest so that part of the particles excavated topple over the nest. The size of the particles brought out are fairly large, about 1 to 2 mm in width. According to necessity, especially when there are insects to attend on, the nests increase in number and are formed within a yard of the others. The permanent nests are usually situated in sheltered places where moisture can be retained like the base of trees, sides of field embankments and so on. The entrances are fairly large, about $\frac{1}{2}$ inch breadth accommodating a number of individuals to walk abreast freely. The galleries extend in the soil to a radius of about 3 feet all round and can go up to 1 foot and occasionally to even 3 feet. The nests contain only the brood and the ants.

Seasonal History: The ant is active all through the year and attends on many Homopterous insects like leaf and root aphids, the cholam shoot fulgorid, *Peregrinus maidis*, membracids, Lycaenids and so on. It also feeds on extra-floral nectaries and oil glands on many plants.

The swarming goes on from April to October and the mating takes place either in flight or on the ground. Swarming depends on the receipt of rains after which large numbers emerge out from the

nests. The established colonies do not show any change during the different seasons except for shifting the site of operations from time to time.

Organisation in the nest: The colonies are always populous and contain 3 or more queens (up to seven have been noted), about 100 eggs, 500 larvae, 300 pupae, 100 soldiers and 1000 workers. The numbers vary in different seasons and in different nests. The temporary nests contain 50 to 100 individuals all of which are workers and no brood or any other form.

The nests are kept scrupulously clean and except for the ants no other insect or hoarded material is found.

Life History: The observations on the life history were made in nests kept in jars which were quite adequate for rearing the ants. However, the ants being of a suspicious nature, any interference was resented. The different stages were separated out in tubes for noting their development. These survived only with some difficulty.

The queens laid the eggs in any place at the rate of from one to four a day. The workers separated out the eggs and larvae according to their instars in different places in the nest. These were attended on by the workers. The egg stage lasted 4 to 9 days with an average of 6 days. The larvae underwent three instars with 2 to 6, 5 to 8 and 2 to 5 days in each instar with averages of 3.7, 6.2 and 3.1 days. The total larval period thus lasts 13 days. The pupal period lasted 5 to 8 days with an average of 5 days.

The larvae begin to spin the cocoon after the second moult itself and finishes it within the period of this stadium. The spinning is done by the larva bending over and using its mouth to spin the cocoon all round. The pupa is oval and sac-like without any differentiation between the anterior and the posterior ends. The pupae are also attended by the workers which are stacked in their proper place, licked and a slit made in the cocoon to help the imagines to come out.

The callows which emerge are yellowish white and turn light brown after one day, brown after two days and black and shiny after two or three days. The total life cycle comes to 24.9 days.

Food and other habits: The ant does not possess a sting and is, therefore, not pugnacious. But it bites with its mandibles. In spite of this the ant is one of the most successful ones and has dominated

the places where it occurs. This has been possible, as in the case of other ants of Formicinae, by its varied food, ability to withstand different weather conditions, ability to combat the attack of other ants and its adaptability to live in communes of many queens and in certain cases with inquilines in the same nest.

The ant mainly feeds on sugary solutions and the honey dew of many Homopterous insects. . Krishna Ayyar includes 30 insects from 35 food plants as being attended on by the ant. It also feeds on the extra-floral nectaries and oil glands of many plants. Feeding of fatty substances has led it to attend on the bamboo aphid, *Astegopteryx* sp. and the Calamus aphid *Cerataphis variabilis*, H.R.L, which produce profuse wax on their bodies. The ants feed on the honey dew as well as the wax but afford the protection which the wax might have afforded the aphids.

The ants forage singly and bring home the food as repletes by storing them in the stomach. There is no concerted action for carrying the food to the nest by a group of individuals. There is no regular track which is followed by all of them. In trees and in confined places, however, the track may be common. The ants feed for a long time by themselves, without trying to give information to the others in the colony. In the case of shoot aphids very few ants feed on a large colony showing that they feed for themselves and take the food home when it has accumulated in its stomach.

The ant forms the food of many other species of ants, certain other insects, lizards and birds. There must be a great depletion of their numbers in the normal course of their living. Still in any season they are found to be the most abundant. This is brought about by the queens living for a number of years and producing brood any time of the year.

Inquilines and Parasites: No inquilines have so far been found in the nest or in the track of the ant.

A mite, *Acotyledon* sp., belonging to the family Tyroglyphidae, has been found living on the body of the ant in Coimbatore. It attaches itself to the leg or other portions of the body of the ant. This is the first record of parasite on the ant in this region.

Economic Status: This ant has been said to be of considerable economic importance because of its attendance on plant-feeding insects and transporting them from one plant to another. From the

observations made here, however, it is found that such transportation of aphids and coccids does not occur. The ant attends on them when they have settled on the plants but do not help in transporting them. The crawling nymphs are left to themselves and only after they establish themselves on the plants, the ants approach them. This has been found to be the case in the root aphids also where the dispersal of the aphid is brought about by the flight of the winged forms which settle on new plants and produce nymphs. These nymphs crawl along the leaves to the roots by themselves. When the ants which feed on the honeydew of these insects are disturbed, they do not carry the insects about. The actual transportation, if any present should, therefore, be very limited. In other parts of the world also it has been found that such transportation is limited to some forms like *Acanthomyops flavus* of Europe which rears aphids in its subterranean nests all through the year and affords all facilities for their living.

The ant is a fast runner and depends on its sight for its escape from enemies and natural calamities like rain or poisonous gases. When the nests are submerged the ants are able to swim through the water and climb the trees. They remain there till the water subsides. When insecticides are applied for their control they easily run over them and unless the area covered by the chemical is broad enough - to about a foot or so - the ants get across the barrier. Higher concentrations of hydrocarbons like BHC or Chlordane are found to kill the ants. But they make excavations a little away from the original site and are able to live again.

Acknowledgments: The writer is grateful to the University of Madras for kindly permitting the publication of the material of the M. Sc. thesis. Thanks are due to Sri M. Basheer, Entomologist and Associate Professor of Entomology, for affording the facilities for the work and acting as supervisor.

REFERENCES

- | | | |
|---|------|---|
| Dutt | 1912 | Mem. Dept. Agric. Pusa, Vol. 4: 246-267 |
| Krishna Ayyar | 1935 | Bull. Ent. Res. 26: 575-585 |
| Do. | 1937 | J. Bombay Nat. Hist. Soc. 39: 2: 298-308 |
| Mukerji | 1930 | Ibid. 34: 149-163. |
| Do. | 1934 | Indian Forest Records 20: 5: 1-15 |
| Negi, P. S., Misra, M. P., and Gupta, S. N. | 1930 | J. Bombay Nat. Hist. Soc. 34: 182-188 |
| Rothney, G. A., | 1895 | Trans. Ent. Soc. London, 195-211 |
| Wroughton, R. C. | 1892 | J. Bombay Nat. Hist. Soc. 7: 13 60, 175-202 |

The results from the seed rate trial (Table I) show that 50 lb. seed rate is the best for yield of pods and green matter and also money value. Though, in yield of pods the differences among the treatments were not significant, the seed rates of 40 lb. to 50 lb. recorded significantly higher yields of green matter compared to other seed rates.

The data presented in Table II shows that type C. P. 380, C. P. 66 and ECR. 67 are the best in total money value. In choosing the most preferable one among the three types, C. P. 380 is to be favoured because of its fairly good yield of whole plants and soft green pods which are of superior quality. For yield of green matter alone, C. P. 177 was the best among the types but the total income obtained from it was the lowest due to poor yield of pods.

Summary: Previous trials at the Millets Breeding Station, Coimbatore have shown that Guar (Clusterbeans) is best suited as short duration green manure crop in lighter soils under gardenland conditions. The present study has indicated that for obtaining maximum return from this crop as a green manure, a seed rate of 40 lb. to 50 lb. per acre is to be recommended and that type C. P. 380 may be preferred which can be harvested in 60 days.

Acknowledgment: The authors wish to express their thanks to Sri S. G. Aiyadurai, B. Sc. (Ag.), Millets and Pulses Specialist for the help and guidance given in conducting these trials.

REFERENCE

Veeraswami, R. and
Kunjamma, V. K.

1958 Guar and its scope as a short duration green manure crop. *Madras Agric. J.* 45: 7-9.

Research Notes

Drino (Prosturmia) inconspicua (Mg.) (Tachinidae - Diptera) A Parasite of *Utetheisa pulchella* Linn. In South India

Utetheisa pulchella Linn. (Arctiidae, Lepidoptera) is a common specific pest of the green manure crop Sunnhemp (*Crotalaria juncea* L.) in India. The caterpillars feed on the leaves and bore into the capsules and are often very destructive. A few natural enemies have been recorded on this pest as keeping them under check.

While rearing the caterpillars of the insect on sunnhemp the authors noticed a tachinid fly parasitic on the larvae. Three maggots were found inside the body of one parasitised caterpillar. The maggots when full grown came out by piercing the body of the host and pupated as loose puparia. The puparium was brown in colour and just before emergence of the adult fly, it changed to dark brown. The fly has been identified as *Drino (Prosturmia) inconspicua* (Mg.).

A braconid, *Bracon brevicornis* Wesmael (Synm: *Microbracon serinopae* Ramakrishna (Ms. Name; Cherian, 1928), and a tachinid, *Padomyia setosa* D. (Ramakrishna Ayyar, 1940) have been noted to parasitise the caterpillars of the insect in South India. Ramakrishna Ayyar and Margabandhu (1934) have noticed *Phanurus* sp. parasitising the eggs of *U. pulchella* Linn. in Coimbatore in large numbers. It is therefore interesting to record here the occurrence of one more tachinid larval parasite of *U. pulchella* Linn., since Tachinidae are considered to be one of the groups of greatest importance among the different groups of insects employed in the biological control of pests.

Acknowledgment: Our thanks are due to Dr. S. Kanakaraj David, Reader in Entomology, Post-Graduate Training Centre, Coimbatore for his guidance in the preparation of this note. To Dr. B. R. Subba Rao, Division of Entomology, I. A. R. I., New-Delhi, we are grateful for the valuable suggestions.

Post-Graduate Training
Centre,
Coimbatore - 3.

B. VASANTHARAJ DAVID.
T. KUMARASWAMI.

REFERENCES

Cherian, M. C.
Ramakrishna Ayyar, T. V.

Ramakrishna Ayyar, T. V.
and Margabandhu, V.

1928 Year Book Dept. Agric. Madras, pp. 12-22.
1940 *Hand Book of Economic Entomology for South India*, pp. 114.
1934 Hymenopterous parasites of economic importance in South India - *Madras Agric. J.* 22, 430-46.

The results from the seed rate trial (Table I) show that 50 lb. seed rate is the best for yield of pods and green matter and also money value. Though, in yield of pods the differences among the treatments were not significant, the seed rates of 40 lb. to 50 lb. recorded significantly higher yields of green matter compared to other seed rates.

The data presented in Table II shows that type C. P. 380, C. P. 66 and ECR. 67 are the best in total money value. In choosing the most preferable one among the three types, C. P. 380 is to be favoured because of its fairly good yield of whole plants and soft green pods which are of superior quality. For yield of green matter alone, C. P. 177 was the best among the types but the total income obtained from it was the lowest due to poor yield of pods.

Summary: Previous trials at the Millets Breeding Station, Coimbatore have shown that Guar (Clusterbeans) is best suited as short duration green manure crop in lighter soils under gardenland conditions. The present study has indicated that for obtaining maximum return from this crop as a green manure, a seed rate of 40 lb. to 50 lb. per acre is to be recommended and that type C. P. 380 may be preferred which can be harvested in 60 days.

Acknowledgment: The authors wish to express their thanks to Sri S. G. Aiyadurai, B. Sc. (Ag.), Millets and Pulses Specialist for the help and guidance given in conducting these trials.

REFERENCE

Veeraswami, R. and
Kunjamma, V. K.

1958 Guar and its scope as a short duration green manure crop. *Madras Agric. J.* 45: 7-9.

Research Notes

Drino (Prosturmia) inconspicua (Mg.) (Tachinidae - Diptera) A Parasite of *Utetheisa pulchella* Linn. In South India

Utetheisa pulchella Linn. (Arctiidae, Lepidoptera) is a common specific pest of the green manure crop Sunnhemp (*Crotalaria juncea* L.) in India. The caterpillars feed on the leaves and bore into the capsules and are often very destructive. A few natural enemies have been recorded on this pest as keeping them under check.

While rearing the caterpillars of the insect on sunnhemp the authors noticed a tachinid fly parasitic on the larvae. Three maggots were found inside the body of one parasitised caterpillar. The maggots when full grown came out by piercing the body of the host and pupated as loose puparia. The puparium was brown in colour and just before emergence of the adult fly, it changed to dark brown. The fly has been identified as *Drino (Prosturmia) inconspicua* (Mg.).

A braconid, *Bracon brevicornis* Wesmael (Synm: *Microbracon serinopae* Ramakrishna (Ms. Name; Cherian, 1928), and a tachinid, *Padomyia setosa* D. (Ramakrishna Ayyar, 1940) have been noted to parasitise the caterpillars of the insect in South India. Ramakrishna Ayyar and Margabandhu (1934) have noticed *Phanurus* sp. parasitising the eggs of *U. pulchella* Linn. in Coimbatore in large numbers. It is therefore interesting to record here the occurrence of one more tachinid larval parasite of *U. pulchella* Linn., since Tachinidae are considered to be one of the groups of greatest importance among the different groups of insects employed in the biological control of pests.

Acknowledgment: Our thanks are due to Dr. S. Kanakaraj David, Reader in Entomology, Post-Graduate Training Centre, Coimbatore for his guidance in the preparation of this note. To Dr. B. R. Subba Rao, Division of Entomology, I. A. R. I., New-Delhi, we are grateful for the valuable suggestions.

Post-Graduate Training
Centre,
Coimbatore - 3.

B. VASANTHARAJ DAVID.
T. KUMARASWAMI.

REFERENCES

- | | |
|--|---|
| <p>Cherian, M. C.
Ramakrishna Ayyar, T. V.

Ramakrishna Ayyar, T. V.
and Margabandhu, V.</p> | <p>1928 Year Book Dept. Agric. Madras, pp. 12-22.
1940 <i>Hand Book of Economic Entomology for South India</i>, pp. 114.
1934 Hymenopterous parasites of economic importance in South India - <i>Madras Agric. J.</i> 22, 430-46.</p> |
|--|---|

Fusariose wilts of brinjal (*Solanum melongena*) and chilli (*Capsicum* spp.) in Madras State.

Wilt diseases caused by *Fusarium* spp. on some of the important Solanaceous crops like brinjal, chilli, etc., is quite common in the Madras State. Subramanian (1951) has isolated many species of *Fusarium* from wilted brinjal plants; Sarojini Damodaran (1953) the wilt disease of brinjal caused by *Fusarium oxysporum* and Varma (1954) the occurrence of different species of *Fusarium* on tomato in this State. Apart from these few records based on limited collections there appears to have been no other reports in this State of wilt diseases due to *Fusarium* spp. on these crops.

Extensive observations made during the years 1956-'59 in different districts of the Madras State have revealed the prevalence of wilt diseases in all places wherever these crops are grown. A large number of wilt-affected specimens from various places were collected and several isolations have been made. It was observed that more than 90 per cent of the isolations have yielded *Fusarium* spp. while the remaining 10 per cent of the isolations were found to comprise species of *Rhizopus*, *Aspergillus*, *Rhizoctonia*, *Pythium* and some unidentified fungi.

Detailed studies of 65 isolates of *Fusarium* from brinjal and chilli have been made on their morphology, mainly conidial size and shape, cultural characters like the nature of mycelial growth, colour, production of conidial fructifications like sporodochia or pionnotes and pathogenicity tests on their own as well as on other Solanaceous hosts. The various isolates were then identified following the classification proposed by Wollenweber and Reinking (1935) and Snyder and Hansen (1941). According to Snyder and Hansen's classification all the isolates could be identified as *Fusarium solani*. According to Wollenweber and Reinking's classification all the isolates were found to belong to the Section, *Martiella* of the genus *Fusarium*. The distribution of various members of the Section *Martiella* in different districts of the Madras State is given in the table below.

Distribution of various members of the Section *Martiella* in Madras State.

Name of district	Number of isolates of				
	<i>F. solani</i>	<i>F. solani</i> v. <i>minus</i>	<i>F. solani</i> v. <i>martii</i>	<i>F. solani</i> v. <i>striatum</i>	<i>F. javanicum</i> v. <i>radicicola</i>
BRINJAL :					
Nilgiris	1	—	—	1	1
Coimbatore	2	3	—	—	2
Salem	2	1	2	—	1
N. Arcot	2	—	—	2	3
Madurai	6	1	—	—	—
Total	13	5	2	3	7
No. of pathogenic isolates	8	2	1	1	3

Name of district	Number of isolates of				
	<i>F. solani</i>	<i>F. solani</i> v. <i>minus</i>	<i>F. solani</i> v. <i>martii</i>	<i>F. solani</i> v. <i>striatum</i>	<i>F. javanicum</i> v. <i>radicicola</i>
CHILLI :					
Coimbatore	6	8	1	—	—
Chingelput	2	—	—	—	—
Madurai	2	3	1	—	—
Ramnad	4	1	—	1	—
Tirunelveli	2	3	1	—	—
Total	16	15	3	1	—
No. of pathogenic isolates	14	14	3	1	—

The ubiquitous distribution of the various members of the Section *Martiella* in different districts of the Madras State is noteworthy. It is clear from the table that *F. solani* and *F. solani* var. *minus* have very wide distribution and are predominant over other species and varieties in the case of both brinjal and chilli. These two may, therefore, be considered as largely responsible for the causation of wilt diseases on brinjal and chilli in the Madras State. The pathogenicity tests carried out have indicated that both pathogenic and non pathogenic isolates are present in each variety and species of the genus *Fusarium*. More detailed work on various other aspects is in progress in this laboratory.

My thanks are due to Dr. K. Ramakrishnan, Professor of Plant Pathology, for suggestions in the preparation of this note.

Mycology Section,
Lawley Road P. O.,
Coimbatore-3.

C. V. GOVINDASWAMY.

REFERENCES

- Sarojini Damodaran, A. P. (1953) Brinjal wilt caused by *Fusarium oxysporum*, Proc. First. Sci. Worker's Conf., 1-11, Madras Agric. Dept.
- Subramanian, C. V. (1951) Is there a 'wild type' in the genus *Fusarium*? Proc. nat. Inst. Sci. India, 17: 403-11.
- Snyder, W. C. & Hansen, H. N. (1941) The species concept in *Fusarium* with reference to section *Martiella*. Amer. J. Bot., 28: 738-42.
- Varma, R. P. (1954) Soil conditions and root diseases X. The tomato wilt *Fusaria*. J. Indian Bot. Soc., 33: 43-72.
- Wollenweber, H. W. and Reinking, O. A. (1935) Die *Fusarien*, 355 pp. Berlin; Paul Parey.

Fusariose wilts of brinjal (*Solanum melongena*) and chilli (*Capsicum* spp.) in Madras State.

Wilt diseases caused by *Fusarium* spp. on some of the important Solanaceous crops like brinjal, chilli, etc., is quite common in the Madras State. Subramanian (1951) has isolated many species of *Fusarium* from wilted brinjal plants; Sarojini Damodaran (1953) the wilt disease of brinjal caused by *Fusarium oxysporum* and Varma (1954) the occurrence of different species of *Fusarium* on tomato in this State. Apart from these few records based on limited collections there appears to have been no other reports in this State of wilt diseases due to *Fusarium* spp. on these crops.

Extensive observations made during the years 1956-'59 in different districts of the Madras State have revealed the prevalence of wilt diseases in all places wherever these crops are grown. A large number of wilt-affected specimens from various places were collected and several isolations have been made. It was observed that more than 90 per cent of the isolations have yielded *Fusarium* spp. while the remaining 10 per cent of the isolations were found to comprise species of *Rhizopus*, *Aspergillus*, *Rhizoctonia*, *Pythium* and some unidentified fungi.

Detailed studies of 65 isolates of *Fusarium* from brinjal and chilli have been made on their morphology, mainly conidial size and shape, cultural characters like the nature of mycelial growth, colour, production of conidial fructifications like sporodochia or pionnotes and pathogenicity tests on their own as well as on other Solanaceous hosts. The various isolates were then identified following the classification proposed by Wollenweber and Reinking (1935) and Snyder and Hansen (1941). According to Snyder and Hansen's classification all the isolates could be identified as *Fusarium solani*. According to Wollenweber and Reinking's classification all the isolates were found to belong to the Section, *Martiella* of the genus *Fusarium*. The distribution of various members of the Section *Martiella* in different districts of the Madras State is given in the table below.

Distribution of various members of the Section *Martiella* in Madras State.

Name of district	Number of isolates of				
	<i>F. solani</i>	<i>F. solani</i> v. <i>minus</i>	<i>F. solani</i> v. <i>martii</i>	<i>F. solani</i> v. <i>striatum</i>	<i>F. javanicum</i> v. <i>radicicola</i>
BRINJAL :					
Nilgiris	1	—	—	1	1
Coimbatore	2	3	—	—	2
Salem	2	1	2	—	1
N. Arcot	2	—	—	2	3
Madurai	6	1	—	—	—
Total	13	5	2	3	7
No. of pathogenic isolates	8	2	1	1	3

Name of district	Number of isolates of				
	<i>F. solani</i>	<i>F. solani</i> v. <i>minus</i>	<i>F. solani</i> v. <i>martii</i>	<i>F. solani</i> v. <i>striatum</i>	<i>F. javanicum</i> v. <i>radicicola</i>
CHILLI :					
Coimbatore	6	8	1	—	—
Chingelput	2	—	—	—	—
Madurai	2	3	1	—	—
Ramnad	4	1	—	1	—
Tirunelveli	2	3	1	—	—
Total	16	15	3	1	—
No. of pathogenic isolates	14	14	3	1	—

The ubiquitous distribution of the various members of the Section *Martiella* in different districts of the Madras State is noteworthy. It is clear from the table that *F. solani* and *F. solani* var. *minus* have very wide distribution and are predominant over other species and varieties in the case of both brinjal and chilli. These two may, therefore, be considered as largely responsible for the causation of wilt diseases on brinjal and chilli in the Madras State. The pathogenicity tests carried out have indicated that both pathogenic and non pathogenic isolates are present in each variety and species of the genus *Fusarium*. More detailed work on various other aspects is in progress in this laboratory.

My thanks are due to Dr. K. Ramakrishnan, Professor of Plant Pathology, for suggestions in the preparation of this note.

Mycology Section,
Lawley Road P. O.,
Coimbatore-3.

C. V. GOVINDASWAMY.

REFERENCES

- Sarojini Damodaran, A. P. (1953) Brinjal wilt caused by *Fusarium oxysporum*, Proc. First. Sci. Worker's Conf., 1-11, Madras Agric. Dept.
- Subramanian, C. V. (1951) Is there a 'wild type' in the genus *Fusarium*? Proc. nat. Inst. Sci. India, 17: 403-11.
- Snyder, W. C. & Hansen, H. N. (1941) The species concept in *Fusarium* with reference to section *Martiella*. Amer. J. Bot., 28: 738-42.
- Varma, R. P. (1954) Soil conditions and root diseases X. The tomato wilt *Fusaria*. J. Indian Bot. Soc., 33: 43-72.
- Wollenweber, H. W. and Reinking, O. A. (1935) Die *Fusarien*, 355 pp. Berlin; Paul Parey.

Response of the new strain K. 6 (Pandyan) to Manuring

In Madras State, unirrigated *desi* cotton is grown in the black soil over an area of 6.6 lakh acres. Two different Karunganni strains (*G. arboreum*) viz. K. 2 and K. 5 are now under cultivation in southern zone and central zone.

Recently, a new strain, K. 6 (Pandyan) (*G. arboreum*) has been evolved suitable for cultivation in the two zones, replacing the existing strains K. 2 and K. 5. This new strain K. 6 (Pandyan) is being multiplied under seed farm conditions for general distribution during 1960-'61. This strain gives about Rs. 53/- higher monetary return per acre than K. 2 and K. 5.

Agronomic studies with this new strain to determine the optimum dosage of manure to be applied would be of immediate benefit since it enables to assess crop expression under better manuring. Harland (1955) while drawing attention to the role of agronomy in increasing yields, pointed out the that "it is on physiology of yield in relation to nutrition activity on growth and development that we must largely look to, for increased yield in future".

Preliminary observation trials with ammonium sulphate in different levels of nitrogen, viz. 0 lb., 20 lb., 40 lb., and 60 lb/acre were laid out at the Agricultural Research Station, Kovilpatti during 1958-'59 season with the strain K. 2 and the new strain K. 6 (Pandyan) with a view to assess the response of this new strain for different levels of nitrogen. The area of each plot was 3 cents for each treatment. Three tons of green leaf compost were applied uniformly as basal dose. Ammonium sulphate was applied about 15 days before sowing and incorporated in the soil by working with Junior hoe.

Observations on the height of plants, number of nodes, size of bolls and average bolls per plant were recorded for 25 random plants in each treatment, in addition to yield of kapas, mean halo-length, ginning percent age and seed index and the data are presented in the table below:—

S. No.	Characters studied	K. 2				K. 6 (Pandyan)			
		N ₀	N ₂₀	N ₄₀	N ₆₀	N ₀	N ₂₀	N ₄₀	N ₆₀
1.	Plant height in cm.	40.5	40.1	49.1	51.7	54.8	50.1	55.4	67.1
2.	Node Nos.	11.0	11.3	11.3	11.6	10.5	9.4	10.0	10.2
3.	Boll length in cm.	3.3	3.0	3.0	3.0	3.1	3.0	3.1	3.1
4.	Boll breadth in cm.	2.1	2.1	2.0	2.2	2.0	2.0	2.0	2.2
5.	No. of bolls per plant	4.5	5.4	5.9	6.5	5.1	7.0	7.2	10.4
6.	Yield of kapas lb./acre	128	274	281	284	184	358	375	534
7.	Mean halo length	22	22	22	21.4	24.9	25.2	25.7	25.2
8.	Ginning %	32	31	31	33	31	32	32	31
9.	Seed index	5.0	5.4	5.0	4.7	4.8	5.4	5.4	5.5
10.	Accumulated rainfall upto sowing in inches	10.44							
11.	Rainfall from sowing to harvest	11.36 inches							

It will be seen that the plant height, node numbers, boll size and number of bolls per plant have increased with the increase of nitrogen level in both the varieties. This is in conformity with the earlier finding by Christidis and Harrison (1955), that cotton plant growth increases with the addition of nitrogen. It is also indicated that increased dosage of nitrogen increases the yield of kapas. Neelakantan and Guruswamy Raja (1958) stated while discussing about direct manuring of cotton, that 20 lb. nitrogen per acre in the shape of ammonium sulphate raised the yield of K. 1 cotton under high and low levels of fertility and the yield differences in low level fertility were significant with varying degrees of dosage. Twenty lb. nitrogen as ammonium sulphate was found to be the best economic dose to be applied by drilling.

Results obtained now indicates that in K. 2, the differences in yield level are close between 20 lb. to 40 lb. and 40 lb. to 60 lb. Nitrogen. In 60 lb. nitrogen level K. 6 (Pandyan) gives highest yield of 534 lb. kapas per acre, indicating its favourable reaction to increased nitrogen dosage. There is no appreciable difference in halo-length and ginning percentage under different levels of nitrogen in both the strains. The results obtained from the present study seem to indicate that probably even higher dosage of manuring upto 60 lb. nitrogen per acre may be economical for K. 6 (Pandyan), which being a hybrid strain involving *indicum* and *Cernuum* blood. The observation trial indicates the need for a more detailed and replicated experiment in respect of K. 6 (Pandyan) and capable of statistical interpretation to find out the most economic dosage of Nitrogen for full expression of yield.

Acknowledgement: The authors wish to express their thanks to the Cotton Specialist, Coimbatore, and the Assistant Cotton Specialist, Kovilpatti for their suggestions and guidance in preparing this note.

Agricultural Research Station,
Kovilpatti.

P. SENNAIAN,
ANDREW DESABANDU DEVOTTA.

REFERENCES

1. Neelakantan, L. and Guruswamy Raja, V. D. 1958 Some Agronomic experiments with unirrigated *desi* Cotton at the Agricultural Research Station, Kovilpatti from 1901—1949. *Madras Agric. J.* 45 (3) 99—109, 1958.
2. Harland 1955 Report on his visit to India, submitted to the Indian Central Cotton Committee, Bombay.
3. Christidis and Harrison. 1955 Cotton Growing problem, McGraw-Hill Book Company Inc.

MCU 3 - a new cotton strain tolerant to stem weevil

The cotton plant is beset by many pests, the chief among them is the *stem weevil* (*Pempherulus affinis* Faust) which accounts for heavy losses. Dharmarajulu *et al.*, (1948) have recorded plant mortalities between 45.5% to 81.3% in irrigated Cambodia cotton at Coimbatore. The grub invades the stem fairly early in the growing period and tunnels through the conducting tissues in a spiral fashion. It emerges to pupate in the soil after causing damage to the plant. According to Dharmarajulu *et al.*, (1948) Moco cotton (*G. hirsutum* race *Marie galante*) was found to arrest the development of the grub by producing a gummy exudate and plugging the grub inside the stem thus suffocating it to death. In order to override the attack of this pest, a scheme to breed tolerant American Upland varieties was initiated at Coimbatore.

A few tolerant selections were synthesised by crossing Moco with other annual *hirsutums*. One of these is 7168 (Moco x Cambodia) x Cambodia) which constitutes one of the parents in devising an inter-specific multiple hybrid derivative 9030.

A reselection of 9030 namely 9030 G and renamed as MCU 3 was found to be superior in all desirable attributes over MCU 1, the present strain of Winter irrigated Cambodia zone in Madras State. This reselection was also found to be more tolerant to the stem weevil attack than its counterpart MCU 1. In order to confirm the adaptability of MCU 3, district trials were undertaken in Coimbatore and Salem districts during the three year period from 1956-1959, in cultivators' holdings. While testing for the general adaptability, an interesting observation was made i. e., the better resistance of MCU 3 to stem weevil attack over MCU 1. Big galls at the base of the stem in the case of MCU 3, where the grub was seated, were observed and plugging the bore hole by secreting gummy exudate enclosing the pest inside, while in MCU 1 the gummy exudate was completely absent.

In order to assess the comparative damage in the two strains, plant mortality counts were recorded in all the district trials. This mortality was expressed as a percentage over the initial population in each strain.

During 1956-57 the stem weevil attack was very severe in parts of Coimbatore district. In order to bring out the better resisting attribute of MCU 3, three plots raised during 1956-57 season showing difference in incidence of the pest were chosen for observation. The pest incidence was assessed as follows:

1. Mild or negligible attack.
2. Medium attack.
3. Heavy attack of the pest.

The results are given in Table I.

TABLE I.
Particulars of Stem weevil attack in trials of 1956-57 season.

Sl. No.	Location of trial	Mortality of plants due to stem weevil attack (%)		Yield of kapas	
		9030 G (MCU 3)	MCU 1	9030 G (MCU 3)	MCU 1
1.	Pudur (Heavy attack)	19.0	37.0	600	280
2.	Thadagam Road (Medium attack)	1.0	7.1	1760	880
3.	P. N. Palayam (Mild attack)	0.5	3.0	2180	1960
	Mean	6.8	15.7	1513	1040

In the next two seasons viz., 1957-58 and 1958-59 the incidence of the pest was low. During 1959-60, while testing MCU 3 against MCU 1 in yield trends a very considerable amount of damage was done by this borer. The results are tabulated in Table II below:

TABLE II.
Plant mortality due to stem weevil.

Name of strain	Mortality of plants due to stem weevil attack (Percentage)	Yield of kapas (as % over MCU 1)
9030 G (MCU 3)	24.5	139
MCU 1	11.0	100

From the tables I and II it could be seen that (i) MCU 3 suffers less due to the attack as compared to MCU 1; recording only 19% death as against 37% of MCU 1 in heavily infested areas like Pudur and a higher yield of 600 lb. of kapas per acre as against 280 of MCU 1. Even when the infestation is low, the kapas yields of MCU 3 are higher.

(ii) MCU 3 has maintained its tolerance to stem weevil by surviving with a higher stand over MCU 1 during 1959-60 season also and yielding 39% better than MCU 1.

The strain MCU 3 is being multiplied and is to replace the existing strain MCU 1 in the winter cambodia tract of Madras State.

Acknowledgement: The work was part of the programme for the Winter Cambodia Scheme sanctioned by the Indian Central Cotton Committee. The authors thank Sri C. K. Ramachandran, Cotton Extension Officer, Coimbatore for valuable help given in preparing this note.

Cotton Breeding Station,
Coimbatore,
16-3-1960.

M. BAGAVANDOSS.
M. NATARAJ.

LITERATURE CITED

Dharmarajulu, K. *et al*

1948 Indian J. Agric. Sci. 18 (3).

Fused fruits in Chillies (*Capsicum annuum*, L.,)

Sankharam Rao, (1950) has described the occurrence of two fruits with fasciated pedicels, in *Capsicum annuum*, L., wherein the fruits were completely free and the pedicels alone were joined. In this paper the abnormal fusion of two fruits is described.



PLATE 1.



PLATE 2.

In a bulk crop of chillies grown at the Millet Breeding Station, Coimbatore during the year 1960, a case of abnormal fusion of two fruits was noticed. The calyx was flattened and much thicker than in the normal flower. One of the fruits was shorter in length (2.3 c. m.) and bigger in size than the other (4.5 c. m.) (Plate No. 1). An examination of the transverse section of the fused fruit revealed that each fruit is a berry with seeds packed round the central septum, just as in the case of the normal fruit (Plate No. 2). Therefore it is confirmed that the fruits must have developed from two separate flowers. The fusion of the individual ovaries must have taken place at a very early stage, and is not due to the freakish development in an individual flower. No other explanation however could be put forward for the fusion of the fruits.

Agricultural College &
Research Institute,
Coimbatore-3.

A. K. NAGARATNAM.
L. SIVAGNANAM,
A. SUBRAMANIAN.

College and Estate News

The Members of the Joint Select Committee of the Madras Land Ceiling Reform Bill visited the Agricultural College & Research Institute on 10—11—1960. The Dean received and took them round the Central Exhibition, Crop Breeding Stations and College Orchards.

Sri M. R. Balakrishnan, B. A., B. Sc. (Ag.), F. A. O. Irrigation Expert, Thailand addressed the Academy of Agricultural Sciences, Coimbatore and the Students' Club.

The General Body meeting of the Agricultural Upper Subordinates' Association was held on 10—11—1960 with Sri M. V. Jayaraman, the President in the chair. The following new office bearers were elected.

- | | | |
|--------------------|---|-----------------------|
| 1. President | : | Sri M. V. Jayaraman |
| 2. Secretary | : | Sri K. S. Alamgeer |
| 3. Joint Secretary | : | Sri V. Mariappan |
| 4. Treasurer | : | Sri G. S. Thangamuthu |

Managing Committee Members.

- | | |
|------------------------|--------------------------|
| 1. Sri M. Dinakaran, | 2. Sri Kandaswamy, |
| 3. Sri K. Palaniappan, | 4. Sri S. Purushothaman, |
| 5. Kumari Sukanyabai. | |

The question of weightage for the seniors and two advance increments for the Upper Subordinates having M. Sc. (Ag.) degree was discussed. The meeting came to a close with a vote of thanks by the Secretary Sri Khaleel Ahamed.

In the Inter-Collegiate Debate of the Madras University for 1960—'61 Sri K. S. Subbiah, Final year B. Sc. (Ag.), won his way through the English and Tamil debates to the finals at Madras, and Sri Kunni Kannan for Malayalam. However, they were not lucky enough to win the final contest.

In the Rotary Club debate held on 17—11—1960 Sri C. R. Srinivasan, Final year B. Sc. (Ag.) was awarded the second prize.

Award of Research Degree: Sri S. Kannan, Assistant Lecturer in Agronomy, now deputed to U. S. A. for training, has been awarded the M. Sc. Degree by the University of Madras for his Thesis in Agricultural Economics.

Weather Review — for October, 1960.

RAINFALL DATA (IN INCHES)

Region	Station	Total rainfall for the month	Departure from normal	Total since 1st January
North	Madras (Meenambakkam) ...	8.2	— 3.8	29.2
	Tirurkuppam* ...	2.5	— 6.8	20.3
	Vellore ...	5.9	— 0.9	25.1
	Gudiyatham* ...	6.2	+ 0.3	28.7
East Coast	Palur* ...	7.1	— 1.2	22.6
	Tindivanam* ...	4.7	+ 3.2	20.5
	Cuddalore ...	6.9	— 4.6	25.7
	Nagapattinam ...	13.2	+ 2.6	34.9
	Aduthurai* ...	3.5	— 3.9	17.0
Central	Pattukkottai* ...	4.8	— 2.4	24.9
	Salem ...	6.3	£ ₁	31.5
	Coimbatore (A. M. O.) * ...	8.0	+ 2.2	12.8
	Coimbatore ...	6.1	£ ₂	15.0
South	Tiruchirapalli ...	1.8	— 4.5	18.3
	Madurai ...	2.9	— 4.6	22.8
	Pamban ...	11.8	+ 3.2	22.3
	Koilkatti* ...	5.3	— 0.9	22.0
Hills	Palayameottai ...	7.7	+ 0.7	24.1
	Ambasamudram* ...	10.1	+ 5.3	31.2
	Nagercoil* ...	5.1	— 0.5	39.7
	Capcomorin* ...	9.1	+ 5.9	37.8
Hills	Kodaikanal ...	10.4	+ 0.2	55.0
	Coonoor* ...	14.5	+ 4.5	62.1
	Ootacamund* ...	6.7	— 3.3	36.9
	Nanjanad* ...	6.3	— 2.2	44.6

- * Meteorological Stations of the Madras Agricultural Department.
- £₁ = Actual value = — 0.04
- £₂ = = — 0.01

In the first three days of the month localised or scattered showers were received in Madras State with fairly widespread rainfall in North Madras State on 2—10—1960. From 4—10—1960 to 13—10—1960 the weather was mainly dry throughout the State. On 14—10—1960 scattered showers were received. On the next day again the weather became dry. During the period 16—10—1960 to 22—10—1960 either scattered or localised showers were received in Madras State. From 23—10—1960 onwards North East Monsoon set in over Madras State, with the result that localised and fairly widespread heavy showers were received throughout the State till the end of the month.

2. In the first nine days of the month the day temperatures were practically normal throughout the State. From 10—10—1960 to 18—10—1960 the day temperatures were above normal throughout the State. Palayamkottai recorded the highest temperature of 39°C on 12—10—1960. Thereafter till the end of the month the day temperatures were practically normal throughout the State.

Weather Review

491

Noteworthy rainfalls in inches

No.	Date	Name of Place	Rainfall in inches
1.	1—10—1960	Gudiyatham	3.5"
2.	22—10—1960	Palayamkottai	2.8"
3.	23—10—1960	Nagapattinam	3.2"
4.	24—10—1960	Cuddalore	2.8"
5.	"	Palur	2.7"
6.	"	Pattukottai	2.9"
7.	26—10—1960	Pamban	3.5"
8.	"	Madras (Nungambakkam)	3.2"
9.	"	.. (Meenambakkam)	2.8"

Zonal rainfall (in inches)

Name of the Zone	Rainfall for October 1960	Departure from normal	Remarks
North	5.7"	— 2.8	Far below normal
East Coast	6.7"	— 1.1	"
Central	5.6"	— 0.6	Below normal
South	7.4"	+ 1.3	Above normal
Hills	9.5"	— 0.2	Below normal

Agricultural Meteorology Section,
Lawley Road Post, Coimbatore-3.
10th November, 1960.

C. B. M., & K. P. N.

Departmental Notifications

Gazetted Officers—Madras Agricultural Department Postings and Transfers during the Month of November, 1960

Name and Designation	Posted or Transferred to
Dr. S. Krishnamurthy, Dean, Agricultural College and Research Institute, Coimbatore.	Earned leave for 28 days from 30—10—'60.
Dr. B. W. X. Ponniah, Associate Dean, Agricultural College, Coimbatore.	Full additional charge of the post of Dean.
Sri G. Thulasidas, Assistant Lecturer in Botany.	Cytogeneticist, Agricultural College and Research Institute, Coimbatore.
Smt. Indira Raja, Assistant in Chemistry.	Assistant Agricultural Chemist, Coimbatore.
Dr. P. Madhava Menon, Assistant to Professor of Plant Breeding and Genetics.	Superintendent, Agricultural Research Station, Palur.
Sri N. K. Venkatasubramaniam, Superintendent, Agricultural Research Station, Palur.	Retired.

Name and Designation	Posted or Transferred to
Sri P. V. Rajappan, Asst. in Horticulture.	Asst. Horticulturist, Periakalrayan Hills, Salem Dist.
„ M. C. Appaiyan, Assistant in Horticulture, Banana Research Station, Aduthuri.	Assistant Horticulturist, Coonoor.
„ A. N. Venkateswaran, Assistant in Oil seeds.	Asst. Oil Seeds Specialist, Pollachi.
Kumari P. S. Chandramathi, Assistant in Cotton.	Assistant Cotton Extension Officer, Coimbatore.
Sri K. Sriraman, Assistant Marketing Officer, (Agmark Grading).	Additional Charge of the post of Asst. Marketing Officer, Madras.
„ V. Nataraja Iyyer, Asst. Marketing Officer, Madras.	Retired.

Upper Subordinates—Agricultural Department
Postings and Transfers during the month of November, 1960

Name and Designation	Posted or Transferred to
Sri T. E. Sivaprakasam, Assistant in Entomology.	Resigned.
„ K. K. Krisnamurthy, Soil Survey Asst. Coimbatore.	„
„ P. Narayanaswamy, Asst. in Mycology.	„
„ K. C. Alexander, Asst. in Mycology, Coimbatore.	„
Smt. T. Kalyanikutty, Upper Subordinate.	Reverted from Indian Central Arecanut Committee and Allotted to Agricultural College & Research Institute.
Sri K. Radhakrishna Menon, Upper Subordinate.	„
„ P. S. Thejomurthy, Agricultural Demonstrator, Villiwalkam.	Special Officer (Upper Subordinate) for Weights and Measures, Madras.
„ M. Gopalan, Plant Protection Asst., Cuddalore.	Resigned.
Smt. V. Savithiri, Asst. in Oil Seeds, Coimbatore.	Granted leave for 81 days from 1-9-'60.
Smt. Raniperumal, Asst. in Oil Seeds.	Extraordinary leave for 85 days from 12-9-'60.
Sri V. Balasubramaniam, Senior Asst., Regional Coconut Research Station, Veppamkulam.	Earned leave for 60 days from 8-10-'60.
„ V. C. Dasarathy.	Asst. in Entomology (Rat Scheme), Aduthurai.
„ R. Janarthanam.	Plant Protection Asst. (Entomology), Sankarankoil.
„ S. Lakshminarayanan, Supervisor (Simple fertilizer Trials), Madras.	Resigned.

DISTRICTS
 SOUTH ARCOT, NORTH ARCOT
 COIMBATORE
 RAMANATHAPURAM
 TIRUNELVELI



CROPS
 GROUNDNUT, GINGELLY
 COTTON
 &
 TOBACCO

Review of market conditions of commercial crops in the notified area of Madras State for the month of October, 1960.

Cotton :

COIMBATORE DISTRICT : *Season :* The rainfall received during the month under report is 16 cms. The rains received were moderate to heavy in certain areas of the district. The rainfall has enabled growers to sow cotton in dry lands. The rains were beneficial to the early sown crop of Cambodia Cotton, Groundnut, Paddy and other standing food crops. It is reported that early sown crop of Cambodia Cotton was affected by pests in some areas of the district and that they were brought under control by the effective steps taken by the department. In parts of Avanashi, Erode and Gobi taluks, the winter crop groundnut was affected by pests. Transplanting of tobacco is in progress in all the taluks of the district.

Arrivals and Transactions : *Lint :* On 24-9-1960 there was a stock of 44,009 quintals of Cambodia and 103 quintals of Karunganni lint in Tiruppur Market Area. The total arrivals into the Tiruppur during the month of October 1960 (upto 29-10-'60) were 38638 quintals of Cambodia and 217 quintals of Karunganni lint which included 3941 quintals of Cambodia and 334 quintals of Karunganni lint locally ginned. Despatches from Tiruppur were 52081 quintals of Cambodia and 320 quintals of Karunganni lint. On 29-10-1960 there was a stock of 30616 quintals of Cambodia.

Kapas : On 24-9-1960 there was a stock of 5987 quintals of Cambodia and 4035 quintals of Karunganni Kapas in Tiruppur Market area. The total arrivals into Tiruppur during the month of October 1960 (upto 29-10-'60) were 21886 quintals of Cambodia and 10 quintals of Karunganni Kapas. The disposals during the month were 34575 quintals

of Cambodia and 1247 quintals of Karunganni Kapas. On 29—10—1960 there was a stock of 3298 quintals of Cambodia and 2798 quintals of Karunganni Kapas.

Prices: The Cotton Market was steady with prices of Cambodia Kapas ranging upto Rs. 122/- per quintal. Transactions in lint were done subject to survey by the East India Cotton Association, Bombay and the prices of lint ranged upto Rs. 292/- per quintal. Arrivals of kapas from South Arcot District continued.

The price ranges of cotton lint and kapas during the month as compared to that of previous month were as hereunder :

	Prices in Rs./nP.	
	October, 1960 (Quintals)	September, 1960 (Candy of 784 lbs.)
Cambodia Superior quality	Rs. 276—292	900—1040
Cambodia Average quality	„ 267—276	830— 930
Kapas:		
	(Quintals)	(Pothe of 280 lbs.)
Cambodia Superior quality	„ 114—129	150—163
Cambodia Average quality	„ 102—114	115—145
Karunganni Superior quality	„ 102	115—120
Karunganni Average quality	„ N. A.	N. A.

RAMANATHAPURAM: Season: The first fortnight of the month witnessed hot sun and dry weather throughout the district. During the Second fortnight that too by the close of the month fairly heavy and widespread rains were recorded throughout the district. The rainfall received was less than the corresponding period of last year.

Due to lack of sufficient rains during the closure of September and during the first fortnight of October the irrigated groundnut harvest were delayed. The rains though received late was reported to be helpful to the late sown groundnuts and for Karunganni Cotton. The Uganda Season was over by the middle of the month. Plants were removed and preparatory tillage for the next crop is in progress.

Arrivals and Transactions: The continued receipts and demand for kapas coupled with the firm trend that prevailed for cotton seeds caused for a practically a firm trend for Karunganni Kapas Market. This firm trend also prevailed for Uganda Kapas in spite of gradual decline in arrivals.

The demand for superior quality, Karunganni Lint continued firm and prices were ruled high since the arrivals were poor. This was not the case of Uganda Lint. Fairly good transactions in full pressed bales for

survey conditions were effected during the month. The arrivals of both Karunganni seeds and Uganda seeds were poor in the market. The lack of rains during the first fortnight caused delay in the harvest and as such the market arrivals of irrigated groundnuts. During the close of the month the North Indian demand declined, this caused for a mild set back in prices of both kernels and oil during the close of the month. The irrigated groundnut arrivals were reported in stray cases by the close of the month and is expected to improve by next month. Hence groundnut market closed with a quiet trend.

Market Arrivals and Disposals: The following were the arrivals and disposals of kapas and lint important market of the district during October 1960.

Name of Market	Opening Stock	Receipts	Total	Disposals	Closing Stock
Kapas in pothy of 280 lbs.					
1. Virudhunagar	... 1000	6600	7600	6600	1000
2. Sattur		6000	6000	6000	...
3. Rajapalayam	... 3000	15500	18500	16000	2500
Total	... 4000	28100	32100	28600	3500

Name of Market	Opening Stock	Receipts	Total	Disposals	Closing Stock
Lint in Candy of 784 lbs.					
1. Virudhunagar	... 150	760	910	810	100
2. Sattur	... 200	600	800	650	150
3. Rajapalayam	... 1800	1900	3700	2050	1650
Total	... 2150	3260	5410	3510	1900

Prices: The following were the prices that prevailed for kapas and lint during the October, 1960 as compared to the prices in September, 1960.

Lint:	October, 1960	September, 1960
Karunganni lint	... Rs. ...	Rs. 900 to 930
Karunganni	... „ 900 to 971	„ ...
Tinny Karunganni	... „ ...	„ ...
Karunganni II crop	... „ ...	„ 900 to 930
Tinny	... „ 785 to 871	„ 840 to 910
Uganda certified	... „ 1135	„ 1100 to 1125
Uganda uncertified	... „ 1036	„ 1080 to 1100

Kapas :

Karunganni	...	Rs. 120 to 130	Rs.	N. A.
Tinny Karunganni Mix.	...	" "	"	N. A.
Karunganni II crop	...	" 87 to 118	"	92 to 119
Tinny	...	" 99 to 118	"	80 to 120
Inferior quality	...	" "	"	"
Uganda I quality	...	" 142 to 155	"	125 to 150
Uganda II quality	...	" 118 to 137	"	92 to 137

Cotton Seeds.

Prices in Md. of 82 2/7 lbs.

Karunganni	...	Rs. 15.34 to 16.92
Tinny	...	" 16.96 to 17.13
Uganda I quality	...	" 12.74 to 13.54

TIRUNELVELI DISTRICT: *Season:* Fairly good rainfall were recorded during the month. Rainfall was considered to be very timely and beneficial. Cultivation activities were proceeding.

The local market was not very active. Nearly 90% of the Karunganni Crop has already moved into the market and the remaining stock was being gradually moved by the producers to the market as per his necessity. The price remained almost steady. The price of first sort was about Rs. 110 to 115 and the second sort Rs. 100 to 105 per pothi of 127 K. G.

Arrivals of Uganda Cotton to Sankarnainarkoil market were fair. The price was around Rs. 145/- per pothi of 127 K. G.

The price of cotton seeds varied between Rs. 45/- and Rs. 51/- per pothy of 127 K. G.

SOUTH ARCOT: *Season:* The North East Monsoon set in at the end of the third week of the month and under its influence widespread rains were received in the various parts of the district. The condition of standing winter groundnut crop was good and regular and the harvest is expected to be in full swing in November-January.

Arrivals and Transactions: Arrivals of groundnut kernels declined due to the exhaustion of summer crop coupled with the absence of regular harvest of winter crop.

Prices: With the commencement of new winter crop, arrivals, prices were on the decrease. The pucca price declined by Rs. 10/- per bag. There were unprecedented and heavy arrivals of gingelly at Vridhachalam Market. Prices were on the decline in the first three weeks and improved in the last week. Improved arrivals of cotton kapas were reported at Villupuram Regulated Markets. Prices of Cotton were on the increase.

II. Groundnut:

SOUTH ARCOT MARKET: Harvest of winter crop commenced and consequently arrivals of the crop were in progress. The receipts from the districts produce amounted to 3584 tonnes apart from 598 tonnes from other districts of Tiruchi, Salem and Coimbatore and 12 tonnes from Mysore State. Despatches to other districts viz. Madras, Thanjavur, Tirunelveli, Salem, North Arcot and Chingleput came to 970 tonnes. A quantity of 150 tonnes was exported to Pondicherry State. The consumption by Mills and Chekkus totalled 2997 tonnes and 332 tonnes respectively. Wastages were calculated at 323 tonnes. The stock with the trade at the end of the month stood at 1689 tonnes.

The average price per bag of 80 kilograms ranged from Rs. 66.60 to Rs. 75.20 according to quality.

RAMANATHAPURAM DISTRICT: During the month the arrivals, Sales and stock of pods and kernels in the district were as follows:

Name of Market	Opening Stock	Arrivals	Disposals	Closing Stock
Groundnut pods				
Virudhunagar	Nil	100	100	Nil
Groundnut kernels				
Virudhunagar	1300	2400	3000	900

Prices: The following were the prices that prevailed for groundnut pods, kernels, oils and cake in the district, during the month as compared to previous month.

Prices in Rs./nP.

	October, 1960	September, 1960
Groundnut pods (maund of 82-2/7 lbs.)	23.00 to 23.50	N. A.
Groundnut kernels (sandy of 551 lbs.)	215.00 to 235.00	210.00 to 225.00
Groundnut oil (Tin of 35 lbs.)	28.75 to 30.00	27.75 to 29.25
Groundnut oil cake (maund of 82-2/7 lbs.)	13.71 to 15.38	13.04 to 15.05

TIRUCHIRAPALLI DISTRICT: *Season:* Light to moderate showers were received in some parts of the district towards the end of the month under report. Though this rain has helped the standing crops including the winter groundnut in these places from completely withering away, more rains are still necessary in the entire district to save crop failure particularly that of winter groundnut.

Arrivals and Transactions: The Canal irrigated groundnut crop of Karur has been completely harvested and about 50% of the marketable surplus already disposed of by the growers. Even this groundnut is reported to have yielded out-turn only below normal this year. As regards tobacco, transplanting operations were seen in most of the places in Karur Taluk.

Prices: The prices of groundnut and its products were more or less steady during the month in every other market centre except in Karur where it showed a declining tendency towards the end of the month. The average price of kernels for the month was Rs. 226/- per candy of 241 K. G.

NORTH ARCOT DISTRICT: Season: The month experienced fairly widespread and scattered rainfall throughout the district. The rains were timely and were helpful for harvest of winter groundnuts. The harvesting of winter groundnuts commenced towards the last week of the month in parts of the districts like Vellore, Wallajah, Tiruvannamalai, Arni and Polur. In these centres arrivals of wet pods were on the increase. Estimates made so far place the area under winter groundnut at about 156330 (Hactares) 3680 (386000 acres). The production is estimated at about 74268 Metric Tons (73,000 tons) which is expected to yield a marketable surplus of 60960 Metric Tons leaving 13178 Metric Tons for seed and local consumption in villages.

Arrivals and Transactions: The arrivals, disposals, stocks etc., of groundnuts in this district during the month were as below:

Quantity in Metric tons

	Opening Stock	Arrivals	Disposal	Closing Stock
Groundnut pods	217	1181	344	1055
Groundnut kernels	119	356	415	60

Prices:

	Prices in Rs./nP.	
	October, 1960	September, 1960
Groundnut pods	21-00 to 26-00	23-00 to 26-00
Kernels candy	210-00 to 238-00	201-00 to 232-00
Oil (candy of 226 K. G.)	410-00 to 440-00	400-00 to 437-00

Gingelly:

SOUTH ARCOT DISTRICT: Unprecedented and heavy arrivals amounting to 14757 bags were received at Vridhachalam Market. The arrivals to five other markets came to 345 bags only. Despatches to other districts of Madras, Thanjavur, Tirunelveli and Salem totalled 12755 bags. A quantity of 1314 bags was crushed for extracting oil. The trade had a stock of 1817 bags at the close of the month.

Prices: The average price per bag of 80 K. G. ranged from Rs. 74/- to Rs. 88-73 nP. according to quality.

Tobacco:

COIMBATORE DISTRICT: At the end of the month there was a stock of 34674 quintals of chewing and 2452 quintals of cheroot tobacco. About 13064 quintals of chewing and 193 quintals of cheroot tobacco were exported to places in Kerala, Bombay and Mysore States and Ramnad, Kanyakumari and North Arcot Districts in Madras State.

Prices of tobacco were steady with prices of Meenampalayam tobacco ranging upto Rs. 242/- per quintal. There was good demand from traders of Kerala State. The prices of tobacco cured by Jaffna method ranged upto Rs. 550/- per quintal.

Per candy of 500 lbs. or 226.80 kilo-grams

Variety	I Grade	II Grade	III Grade
A. Chewing Tobacco			
(Sun cured):			
1. Meenampalayam	198 — 243	132 — 194	110 — 154
2. Other varieties	154 — 243	132 — 176	110 — 132
B. Cheroot Varieties			
(Sun cured):			
(Grown in Bhavani taluks)	176 — 198	132 — 165	66 — 88
C. Chewing Tobacco			
(Pit cured):			
(Grown in Palladam and Sullur areas)	132 — 168	99 — 128	40 — 66

Cardamom:

MADURAI DISTRICT: Season: During the month of October, 1960 there was good rainfall in the Cardamom plantations areas in Madurai district as well as in Kerala hills adjoining Madurai District. The stand of the crop was good.

Arrivals and Transactions: The following were the opening stock, arrivals and despatches of Cardamom during the month:

Name of Markets	Opening Stock	Arrivals	Sales	Closing Stock
Quantity in lbs.				
1. Bodinaickanoor	1,500	1,11,500	1,12,000	1,000
2. Thevaram	...	25,000	23,000	2,000
3. Pannaipuram	...	...	...	...

Name of Markets	Opening Stock	Arrivals	Sales	Closing Stock
Quantity in lbs.				
4. Kombai	...	14,000	14,000	...
5. Uthamapalayam	...	10,000	8,000	2,000
6. Cumbum	8,000	1,000	1,000	8,000
7. Cudalur	...	1,000	1,000	...
8. Pattiveeranpatti	...	75,000	71,000	4,000
9. Virudhunagar	17,000	58,000	47,500	27,500

Prices :1. *Bodinaickanoor :*

Name of quality.	Price in Rs./n.P. per lb.
(1) Extra Green	8-96 to 9-56
(2) Green	...
(3) Medium	8-30 to 9-22
(4) Inferior	7-75 to 8-88
(5) Seeds	10-91 to 11-36

2. *Pattiveeranpatti :*

	Rates per lb.
(a) Sundried :	
Superior and bold	9-00 to 9-72
Medium and bulk	8-96 to 9-24
Inferior and small	8-27 to 8-95
(b) Store Green :	
Medium and bulk	8-96 to 9-24
Inferior and small	8-27 to 8-95
(c) Splits	8-18 to 8-84
(d) Lights	6-25 to 7-64
(e) Seeds : I	11-68 to 12-36
II	...

3. *Virudhunagar :*

(1) Bold quality	9-88 to 10-25
(2) Smalls	8-50 to 8-62
(3) Seeds	12-25 to 12-50

7L
JUN 21, 1961
N60-47-21

94783

Review of administrative activities of Market Committees during October, 1960

The Market Committees of South Arcot, North Arcot, Coimbatore, Ramanathapuram, Tiruchirapalli and Tirunelveli continued to function during the month under report.

Enforcement : The progress of enforcement during the month were as detailed below :

Name of Committee	Section 5 (1)		Section 5 (3)		Weighment	
	A	B	A	B	A	B
South Arcot Market Committee	220	2098	149	1421	146	1342
North Arcot Market Committee	583	2325	583	2230	88	781
Coimbatore Market Committee	141	1192	51	1472	19	685
Ramanathapuram Market Committee	21	354	5	292	10	244
Tirunelveli Market Committee	16	107	16	92	11	88
Tiruchirapalli Market Committee	231	1825	222	1518	201	1364

A = Licences issued during October, 1960.

B = „ „ upto the end of this month.

Meetings : Sri M. A. Manickavelu, B. A., B. L., Hon'ble Minister for Revenue declared open the Regulated Market Buildings at Tiruvannamalai constructed by the North Arcot Market Committee at the cost of about Rs. 1,18,000/-. Sri A. Venkatesan, I. A. S., Director of Agriculture, Madras presided over the function.

Sri D. Shanmugasundaram, State Marketing Officer, Madras who spoke on the occasion gave a vivid picture about the role of Regulated Markets in the Marketing of Agricultural Produce, the progress made by the other Market Committees in the State and the good progress shown by the North Arcot Market Committee.

The Committee got up an impressive exhibition, with posters and charts of Agricultural Marketing and improved seeds, manures and pesticides. The Hon'ble Minister and the gathering went round the Exhibition, evincing keen interest.

Regulated Markets : All the regulated markets were continued to function briskly during the month under report.

Quality Analysis : Nil.

Quality Competition : Nil.

A Short Note on Cardamom Market Prices.

During the month of September, 1960 there was good rainfall in the cardamom plantation areas in Madurai district as well as in Kerala hills. Stand of the crop was good. Agricultural operations like weeding, spraying, picking and curing of the fruits were in progress.

Arrivals of cardamon in the important assembling centres in Madurai district were heavy. In the auction centres like Santhanpara, Vantamedu and Kallar, in Kerala hills, also the arrivals were heavy.

Despatches were mainly to Bombay, Delhi, Calcutta, Kanpur and Amritsar. Exports were made from Bodinayakkanur via Tuticorin port to places like Stockholm, Sweden Copenhagen and U. K.

During the month sales at Bombay were 1030 bundles of cardamom.

Prices were steady during the first three weeks of the month. During the last week of the month there was a reduction of about 12 to 30 nP. per lb. of cardamon. During the last week prices and sales were poor at Bombay compared to the previous week.

Prices as prevailed at Bodinayakkanur, Virudhunager and Pattiveeranpatti are given below. (As obtained in the public auctions held in September)

I Bodinayakanur:

Name of the quality or variety of cardamom	Rate per lb. in Rs. nP.
1. Superior quality	9.95 to 10.77
2. Medium quality	9.13 to 9.94
3. Inferior quality	9.00 to 9.45
4. Splits	8.65 to 9.05
5. Lights	8.00 to 8.72
6. Seeds	12.00 to 12.28

II Pattiveeranpatti:

1. Sundried:	
Superior and bold	9.90 to 10.18 per lb.
Medium and bulk	9.16 to 9.86 "
Inferior and small	8.31 to 9.48 "
2. Store green:	
Superior and bold	9.92 to 10.93 per lb.
Medium and bulk	9.31 to 9.90 "
Inferior and small	8.50 to 9.52 "
3. Splits	8.85 to 9.32 "
4. Lights	7.39 to 8.46 "
5. Seeds (i)	11.80 to 12.88 "
(ii)	8.37 "

III Virudhunager:

Bold quality	10.37 to 10.50 "
Shipment quality	8.60 to 8.75 "
Smalls	9.00 to 9.12 "
Seeds	12.75 to 13.00 "

Estimated stock position during the month of September, 1960 at the different assembling centres.

Name of the Assembling centre	Opening balance in lbs.	Arrivals in lbs.	Despatches in lbs.	Closing stock in lbs.
1. Bodinayakkanur	1,000	1,57,000	1,56,500	1,500
2. Uthamapalayam	nil	7,500	7,500	nil
3. Cumbum	11,000	2,000	5,000	8,000
4. Gudalur	nil	2,500	2,500	nil
5. Thevaram	nil	15,000	15,000	nil
6. Pannaipuram	nil	nil	nil	nil
7. Kombai	nil	3,000	3,000	nil
8. Pattiveeranpatti	nil	50,000	50,000	nil
9. Virudhunager	4,000	59,000	46,000	17,000

Other Markets

(Prices during the month of September, 1960.)

Name of the market centre and quality of cardamom	Rate per local unit of weight in Rs. nP.	Rate per lb. in Rs. nP.
Rate per seer		
I Bombay		
1. Cardamom white	17 to 20	8.24 to 9.70
2. Cardamom Soneri	18.50 to 22	8.97 to 10.66
II Delhi		
Small green cardamom	20 to 30	9.70 to 14.56
III Amritsar		
1. Motta green	19 to 22	9.21 to 10.66
2. Mysore Rabin	21 to 23	9.70 to 11.15
3. Bold	24 to 25	11.64 to 12.12
4. Extra bold	26 to 30	12.60 to 14.56
Rate per 10 Kgms.		
IV Sakalespur	130 to 246.50	5.90 to 11.18
Rate per maund of 82 2/7 lbs.		
V Mangalore	676 to 740	8.21 to 8.99
VI Sirsi	701 to 740	8.63 to 8.99
VII Mercara		
1. Coorg Faq	602.36 to 690.22	7.32 to 8.38
2. Coorg Nad	704.88 to 793.13	8.56 to 9.64
3. Coorg Male	602.36 to 690.22	7.32 to 8.38
4. Coorg Green	690.22 to 764.55	8.38 to 9.25

**Review of Market Conditions of Commercial Crop
in Ramanathapuram District during August, 1960.**

Seasonal Conditions :

The month was characterised by hot sun and dry weather throughout the district for the 1st 3 weeks and by wide spread rains during the last week of month. The rain fall recorded during last week was reported to be beneficial to the early sown dry crops like Cholan and groundnuts.

(a) **Trend of the Market:** Consequent on the enforcement of the Cotton Control Order strictly from 1-8-60, direct dealings between traders and mills were prohibited. Hence the cotton lint market was dull with practically no transactions. Kapas arrivals into markets from stocks were also poor in line with the lint market. However kapas prices ruled steady with narrow fluctuations in sympathy with the firm trend that prevailed for cotton seeds during the month.

(b) **Uganda:** In view of the strict enforcement of the Cotton Control Order, dealing in Uganda cotton lint was also negligible during the month. Hence receipts of kapas which would have reached its peak level by this time was reported to be only moderate. The kapas prices however ruled quiet in view of the interested purchase of superior quality kapas by firms representing mills and due to the firm trend reported for cotton seeds through out the month. Heavy stocks of kapas and lint were left unsold by the close of the month.

(c) **Groundnuts:** The Pollachi groundnut season expected earlier was delayed due to adverse seasonal conditions followed by heavy rains in Pollachi area. Hence prices ruled high during the 1st fortnight. But during the 2nd fortnight receipts of both pods and kernels were reported from Pollachi and Theni areas. Hence prices declined gradually during the 2nd fortnight.

Arrivals and Disposals :

Name of market	O. P. Stock	Receipts	Total	Disposals	C. L. Stock
<i>Kapas in pothy of 280 lbs.</i>					
V. Nagar	2000	4250	6250	4500	1750
Sattur	—	9500	9500	9500	—
R. Palayam	1500	34500	36000	30000	6000
	3500	48250	51750	44000	7750

Lint in candy of 784 lbs.

Name of market	Opening Stock	Receipt	Total	Disposals	C. L. Stock
V. Nagar	100	650	750	550	200
Sattur	50	750	800	600	200
R. Palayam	1000	2100	3100	1500	1600
	1150	3500	4650	2650	2000

G. N. Pods in Tons.

V. Nagar	300	400	700	600	100
----------	-----	-----	-----	-----	-----

G. N. Kernels in Candy of 531 lbs.

V. Nagar	1500	1800	3300	2000	1300
----------	------	------	------	------	------

Prices: The following were the prices that prevailed during August for Kapas, Lint, Seeds, Pods, Kernels and Oil in the District.

Name of the commodity. Price during July, '60 Price during August '60

Kapas in Pothy of 280 lbs.

Karunganni 1st crop	123 to 126	122 to 125
Karunganni 2nd crop	94 to 123	92 to 121
Tinny	100 to 118	75 to 115
Uganda 1st quly	141 to 152	133 to 154
Uganda 2nd quly	125 to 136	100 to 133
Uganda 3rd quly	108 to 123	—

Lint in Candy of 784 lbs.

Karunganni	981 to 993	N. T.
Karunganni 2nd crop	911 to 946	900 to 930
Tinny	881 to 935	840 to 910
Certified Uganda	1100 to 1160	1100 to 1125
Uncertified	1046 to 1100	1080 to 1100

Cotton seeds in Maund of 82 2/7 lbs.

Karunganni	13-87/14-85	14-36/15-50
Tinny	15-52/16-32	15-33/16-16
Uganda	11-42/11-76	11-88/12-05
G. N. Pods in Md. of 82 2/7 lbs.	23-00/25-00	24-00/25-00
G. N. Kernels in } Pucca	210/235	220/237
Candy of 531 lbs. } Average	200/228	210/215
G. N. Oil in tins of 35 lbs.	27-25/29-25	28-80/29-25
G. N. Oil cakes in maunds 82 2/7 lbs.	12-86/15-38	13-71/15-38



The Madras Agricultural Students' Union.

PATRONS

1. Dowan Balakrishna C. Arunachala Mudaliar, Zamindar of Chunnampet, Chunnampet P. O.
2. Raja Sri Krishnachandra Gajapathi Narayana Dev, Parlakimidi P. O.
3. Sri V. C. Palaniswami Gounder, M. L. A., Vellakinar, Coimbatore Dist.
4. Dr. C. P. Ramaswami Iyer, Ootacamund
5. Sri Jeevandass, Varnasi, Parlakimidi P. O.
6. Sri Ramachandra Ananga Bhima Dev, Kesari Gajapathi, Raja Saheb of Budokhemidi, Borhampore, Ganjam Dist.
7. Rao Bahadur K. T. Alwa, Retd. Deputy Director of Agriculture, Mangalore
8. Sri R. K. Kandaswamy, "Brindavan", Tiruchi Road, Coimbatore
9. " G. D. Naidu, "Gopal Bagh", Avanashi Road, Coimbatore
10. " K. Thiruvankata Mudaliar, 34, 2nd Main Road, Gandhinagar, Madras-20
11. " P. G. Karuthiruman, B. Sc., M. L. A., Nanjaipuliampatti, Thukkanaickenpalayam, P. O., (Via) Anthiyur, Coimbatore Dist.
12. " K. Venkataswami Naidu, B. A., B. L., Gopalapuram, Coimbatore
13. " M. S. Palaniappa Mudaliar, B. A., 125, Rajah Street, Coimbatore
14. " A. K. Balaramaraju, Land-Lord, Rajapalayam
15. " K. P. Amrithanatha Iyer, Monkomp P. O., Kerala State
16. " N. S. Vydianatha Iyer, Sengalipuram, (Via) Kodavasal, Tanjore Dist.
17. " M. Subba Rao, B. Sc., (Ag.), Mango Range P. O., Nilgiris
18. " M. R. Balakrishnan, B. A., B. Sc. (Ag.), F. A. O., Irrigation Agronomist, Bangkok, Thailand
19. " S. Raja Iyengar, Land-Lord and Agriculturist, Madurai
20. " R. Ramakrishna Naidu, Palamalai Ranganathan Mills, Perianaickenpalayam P. O.
21. " C. M. John, B. A., Agricultural Technical Adviser, The Potash Scheme-India, 7, Lavello Road, Bangalore-1
22. " S. N. Venkataraman, B. A., B. Sc. (Ag.), Retd. Deputy Director of Agriculture (H. Q.), 33, Third Main Road, Gandhinagar, Madras
23. Dr. T. S. Sadasivan, Director, Botany Laboratory, Madras University, Triplicane, Madras-5
24. Sri W. P. A. Soundara Pandian & Sons., Pattiveeranpatti P. O., (Via) Kodai Road
25. " M. A. Ayoo Gounder, Kasipalayam, (Via) Gobichettipalayam
26. " K. S. Vengu Chettiar, "Kottaachi House", Kornad, Mayuram
27. " V. P. K. Kayarohanam Pillai, Agriculturist & Businessman, Nagapattinam
28. " A. K. Subramania Odyar, Mirasdar, Attur Village, Namnilam Taluk
29. " R. V. Sundara Reddiar, B. A., B. L., Advocate, "Bhaskara Vilas", Cuddalore
30. " N. M. Rajaram Reddiar, Nathapet P. O., Cuddalore
31. " M. Arunachalam, B. Sc. (Ag.), C/o. Sri Muthunara Reddiar, Pagandai Village P. O., (Via) Panrutti
32. " S. D. Rama Reddiar, Purnasugaipalayam P. O., (Via) Pallianellur, Villupuram
33. " S. Kothandapani Pillai, Purnasugaipalayam, Pallianellur, P. O., Villupuram
34. " G. Venkatamuni, B. Sc. (Ag.), Partner, Mysore Fertiliser, 34, North Beach Road, Madras
35. " C. K. N. S. Nagarajan, Valavanoor, S. Arcot Dist.
36. " D. Konda Reddiar, Municipal Chairman, Villupuram, S. Arcot Dist.
37. " V. Sarangapani Gounder, M. L. A., Mirasdar, Maharajapuram, (Via) Villupuram East P. O., S. Arcot Dist.
38. " R. Subramania Reddiar, Mirasdar of Irvelpot, P. O., Villupuram Taluk
39. " G. Govindan, Proprietor, Ramson & Co., Madras
40. " C. K. N. S. Bhaskaran, Valavanoor, S. Arcot Dist.
41. " K. Santhanam, Suvarnavur, Villupuram
42. " S. Sivasankaran Chettiar, Land-Lord & Merchant, No. 2, Big Kannara Street, Mayuram, Tanjore Dt.
43. " K. M. Venkatachalam, Dip. Econ., 16, Chockalingam Pillai Street, Chidambaram
44. " S. Ramamurthy Iyer of Kunnam, Land Holder, Kunnam House, Sirkali, Tanjore Dist.
45. " S. Balasubramaniam, Brinda, 7, Vallabai Road, Tallakulam, Madurai
46. " S. P. Sekkappan, Gopdana Estate, Betta Damano P. O., Chickmagalur Dist., Mysore State



Control
all your crop pests
with

Folidol- E605

Distributed in India by:
Chika (Private) Limited, 5th Floor,
Industrial Assurance Building,
opp. Churchgate Station, Bombay - 1



Regional Distributors: Messrs. A. V. THOMAS & CO. LTD. P. B. No. 47, ALLEPPEY.
When answering our advertisers, please mention 'The Madras Agricultural Journal'

94783

1160-47-11

Agriculturists

PROTECT YOUR CROPS BY USING OUR WELL-KNOWN



PLANT PROTECTION PRODUCTS:

1. PADDY:

STEM BORER	—	PARAMAR 50 (Parathion 50% E. C.)
FIELD RATS	—	ZINC PHOSPHIDE
RICE LEAF ROLLER	—	BHC 10% Dust, BHC 50% w. d. p.
THRIPS JASSIDS	—	DDT 5%, & 50% ENDRIN 20% E.C.
PADDY BLAST	—	CUPRAMAR (50% Cu. Copper Oxychloride)

2. TOBACCO:

PRODENIA CATERPILLAR	—	DDT 50% W. P.
STEM BORER	—	PARAMAR 50(Parathion 50%E.C.) ENDRIN 20% E. C.
APHIDS	—	MALAMAR 50% E. C. (Malathion 50% E. C.)
	—	PARAMAR 50
MILDEW	—	HEXACHLOR-SOIL FUNGICIDE

3. GROUNDNUT:

APHIDS & SURAL	—	BHC 5% Dust, BHC 10% Dust
RED HAIRY CATERPILLAR	—	BHC 10% Dust, BHC. 50% w. d. p. PARATHION 1% Dust.

4. CHILLY:

THRIPS, CUTWORMS	—	CHILLY SPRAY BHC 50% w.d.p.
ROOT GRUBS, MITES &	—	CUPRAMAR (Copper Oxychloride 50% Cu.)
MEALY BUGS FRUIT ROT	—	WETTABLE SULPHUR.
MILDEW	—	

**5. FOR SEEDS DRESSING OF
ALL CEREALS AND FOR
CONTROL OF SEED-
BORNE DISEASES**

HEXASAN
(Organo Mercury Compound)

Please Contact :

BHARAT PULVERISING MILLS PRIVATE LIMITED,

589, TIRUVOTTIYUR HIGH ROAD, MADRAS - 19.

TELEGRAM: 'HEXAMAR'

TELEPHONE: 51240

HEAD OFFICE AT: 38-A, SAYANI ROAD, BOMBAY - 28.

Sole Selling Agents:

RALLIS INDIA LIMITED,

320, LINGHI CHETTY STREET, MADRAS - 1.

DEPOTS: COIMBATORE, TINNEVELI, METTUPALAYAM, OOTY, TUTICORIN,
MADRAS, CUDDALORE, SALEM ETC.