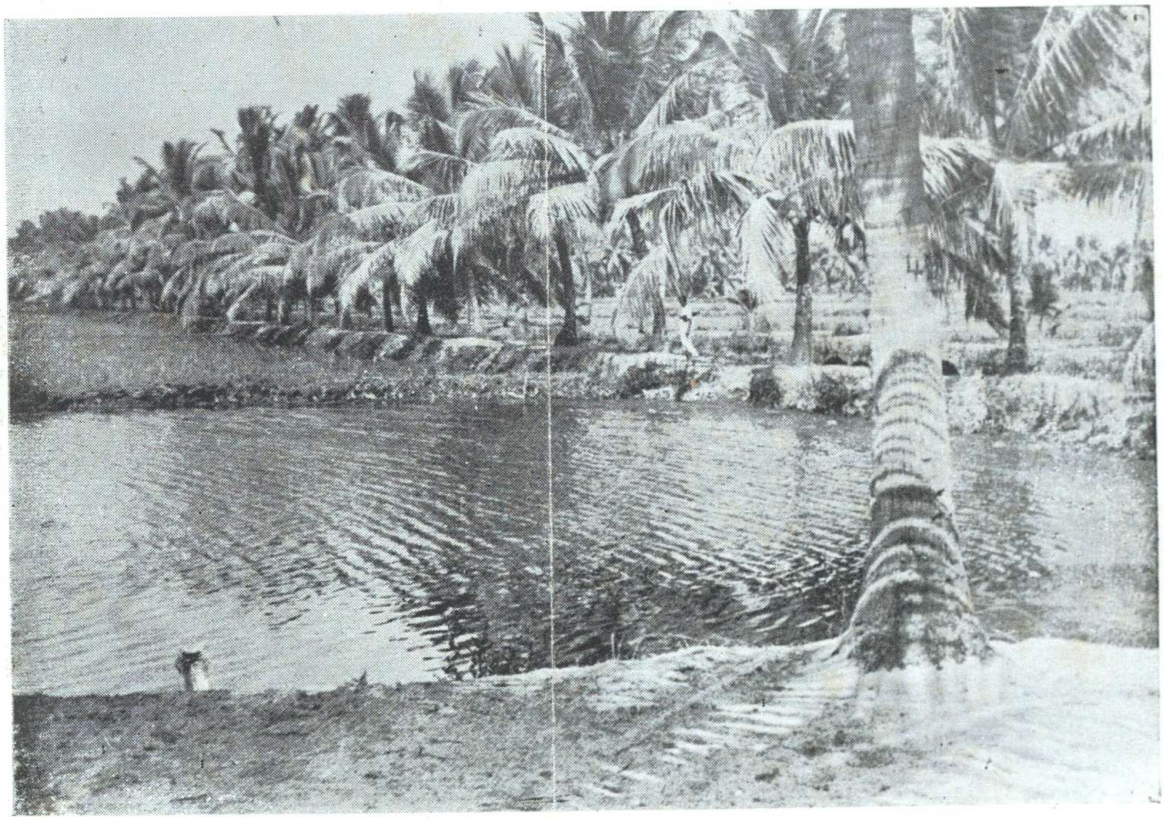
COCONUT BULLETIN



ISSUED BY THE INDIAN CENTRAL COCONUT COMMITTEE
(MINISTRY OF FOOD & AGRICULTURE, GOVERNMENT OF INDIA)
ERNAKULAM

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Editor :
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Issued by
THE INDIAN CENTRAL COCONUT COMMITTEE
(MINISTRY OF FOOD & AGRICULTURE, GOVT. OF INDIA)
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Editorial

CONSIDERABLE SPACE IN THIS ISSUE OF THE "BULLETIN" HAS BEEN DEVOTED to reports of the speeches made and the decisions taken at the 25th session of the Indian Central Coconut Committee, which was held at Kozhikode from the 28th to the 31st January, 1958. It was an exceedingly useful session at which a number of suggestions were made and decisions taken which, if properly implemented, should go a long way to give a fillip to the development and progress of the Indian Coconut Industry.

WE SHALL INDICATE HERE TWO OR THREE OF THOSE SUGGESTIONS AND decisions in implementing which the coconut grower must play a predominant part.

THE COMMITTEE WANTED TO HAVE THE WHOLE QUESTION OF THE SUPPLY of quality seedlings to coconut growers to be gone into thoroughly and realistically, and set up an expert sub-committee for the purpose. Now, the Committee has been running along with State Governments a number of nurseries, producing every year a few lakhs of quality seedlings. But this supply is only a part of the actual demand. The gap between the present supply and the potential demand is even greater. According to one estimate, the country requires 45 lakhs of seedlings every year for underplanting alone, that is to say, for replacing old and uneconomic palms in the existing gardens. For bringing new lands under the crop a certain additional number of seedlings will be required, depending upon the area to be planted up. The question is whether this enormous number of seedlings can be produced in nurseries jointly sponsored by the Committee and the State Governments. The answer would seem to be in the negative. It has been figured out that the cost of production, according to the present pattern, of such a large number of seedlings, would be too heavy and that other ways will have to be found to meet the needs of the situation. Naturally, the Special Sub-Committee which has been set up to examine the problem will make its own recommendations. In the meantime, it may not be out of place to draw attention to the suggestion made by Dr. M. S. Randhawa, the President of the Committee, that private nurserymen should be pressed into service for producing quality seedlings. The President was of the view that

(Continued on page 416)

LABORATORIES SHOULD BE ARSENALS OF AGRICULTURE

The meetings connected with the 25th session of the Indian Central Coconut Committee were inaugurated by SRI. M. V. KRISHNAPPA, Deputy Minister for Agriculture, Government of India, at Kozhikode at 10 A. M. on the 28th January 1958.

Inaugurating the session SRI. M. V. KRISHNAPPA, emphasised the importance of research institutions continuously supplying cultivators with the know-hows of increased agricultural production and the need for researchers to have an awareness of the urgency of the present situation.

The following is the text of the Deputy Minister's speech:-

I AM very glad to have had this opportunity of coming into personal contact with the President and members of the Indian Central Coconut Committee and of inaugurating this, the 25th session of the Committee. I was listening with interest to Dr. Randhawa's account of the Committee's research and developmental activities. From what he has said and from what I have been able to gather from elsewhere, the chief problem that confronts the coconut industry is the one of increasing coconut production so as to make the country self-sufficient in this commodity by the end of Second Five-Year Plan period. I quite realise that research on a perennial crop like the coconut is a long-term business and that quick or startling results to step up production may not be feasible. But at the same time, it cannot be denied that we have to bend our entire energy to the realization of the objective of self-sufficiency within the minimum time

possible. Today we are fighting the battle of production all along the agricultural front, and in order that millions of farmers and cultivators may wage the war effectively, laboratories must become the arsenals which will turn out the know-hows with which to arm the army of cultivators. Researchers have to have an awareness of the urgency of the situation and I am sure if this is present, quicker results of immediate value will flow from our research institutions.

I am glad to note that some valuable results have already been obtained from coconut research done so far and that these are being passed on to the cultivators.

Extension of area

Stepping up the production of coconuts under the Second Five-Year Plan will have to be achieved solely by intensive cultivation of existing coconut gardens. But we have to look ahead into the III and IV Plan periods and see whether an extension of the area now will not result in additional production during those periods.

In this connection, you will have to consider to what extent legislation regarding ceilings on land holdings will affect the incentive to expand the area under coconut. The Arecanut Committee has already considered how the Kerala Government's Agrarian Relations Bill would affect arecanut production. The Coconut Committee also will have to consider it with reference to the production of coconuts. It may be difficult to exclude coconut gardens in Kerala from the purview of the bill, for a large part of the holdings in Kerala consists of coconut gardens. But this aspect could be kept in view in places where new plantations are proposed to be raised and in States where no decisions have yet been reached regarding the ceiling on land holdings.

Immediate and future Production

Thus, we have to plan now from two points of view, one for increasing production immediately from existing gardens and plantations, and the other for bringing a larger area under the crop so that we may have new gardens yielding nuts at least by the IV Plan period.

I am sure that the Indian Central Coconut Committee must have started thinking on some such lines and formulating schemes accordingly. I wish the Committee every success in their endeavours and have great pleasure to inaugurate hereby its 25th Session, may I say, its Silver Jubilee Session!

Research Activities of the Indian Central Coconut Committee

Dr. M. S. RANDHAWA, President, Indian Central Coconut Committee and Additional Secretary to the Government of India, Ministry of Food and Agriculture, welcoming Sri. M. V. Krishnappa, Union Minister for Agriculture and requesting him to inaugurate the meetings connected with the 25th session of the Indian Central Coconut Committee gave a resume of the Research activities of the Indian Central Coconut Committee.

Dr. RANDHAWA spoke as follows:-

Honourable Shri. Krishnappa
and Gentlemen,

IT is with very great pleasure that I extend to you, Sir, on behalf of the Indian Central Coconut Committee and on my own, a hearty welcome to this 25th meeting of the Indian Central Coconut Committee.

Coming as you do from the farmers' stock of Mysore, your interest in agriculture and your sympathy for farmers are well-known. The Committee is fortunate in having a person like you who has such a deep understanding of the problems of tropical crops and we are indeed grateful that in spite of your pre-occupations and engagements you were good enough to agree to inaugurate the session today.

History of Coconut Research in India

Coconut research in India is more than 35 years old. The Governments of the coconut growing States had been, under the auspices of their respective departments of agriculture, investigating cultural and manurial problems of the coconut as well as those relating to diseases affecting the tree. In 1935, the Indian Council of Agricultural Research started, jointly with the late Government of Travancore, to finance a scheme for the investigation of the root and leaf diseases which were proving to be a serious menace to coconut cultivation in many taluks of that State. In 1937, the Council began to finance, along with the Madras Government, a research scheme to investigate certain economic and practical problems such as the criteria for the selection of quality seedlings, the causes of button shedding and the quantity and quality factors of coconut husk in the different stages of maturity of the nuts. The Indian Central Coconut Committee was set up in 1945, and it took over the Indian Council of Agricultural Research's share of responsibility regarding the coconut research schemes it was financing and appointed a couple of experts to report on the existing state of coconut research in the various parts of the country, so that future research could be planned and co-ordinated properly.

Central and Regional Research Stations

On the basis of the report presented to it, the Committee decided to establish two Central Research Stations. Of the two Central Research Stations, one was set up in 1948 at Kayangulam to investigate problems relating to the pests and diseases of the coconut palm and the other in 1947 at Kasaragod to tackle research problems of a fundamental character including, breeding for hybrid vigour and the cultural and manurial aspects of coconut cultivation. These Central Coconut Research Stations are wholly financed by the Committee and function under its direct control.

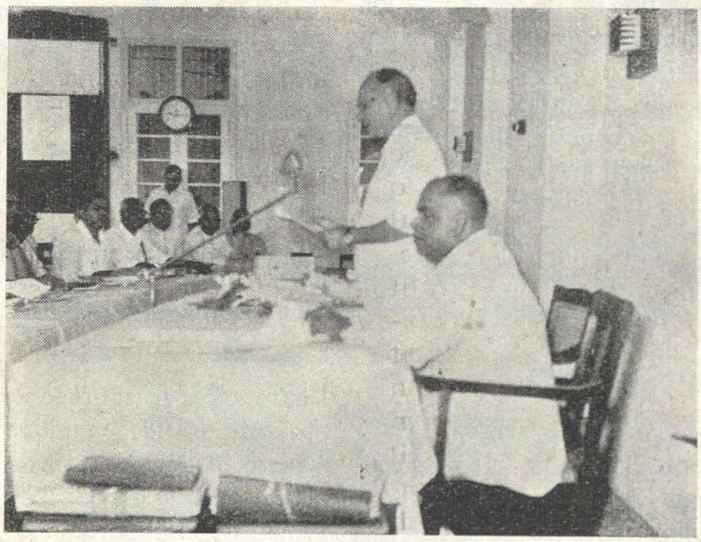
Three Regional Research Stations were started in 1947 in Travancore under the joint auspices of the Committee and the State Government. Since then, Regional Research Stations have been established on the same basis, one each in Orissa, Bombay and Andhra Pradesh. Madras, Mysore and Assam will shortly have a Regional Coconut Research Station each. Regional Stations are intended to undertake cultural and manurial trials of local importance with a view to passing on the results to cultivators of the region in which they are situated.

Some Results of Research

If agricultural research in general is slow to yield results, coconut research is even more so. Coconut is a perennial tree and it takes about 8 to 9 years for a seedling to grow into a yielding palm. Thus, breeding experiments in coconut are bound to prove long and laborious. The fact that coconut is a cross-pollinated plant makes the matter even more difficult. Though spectacular results in this field of research cannot be claimed, nevertheless, the hybrid variety obtained by crossing the tall and dwarf types of the palm is distinctly promising. The work done at the Central Coconut Research Station, Kasaragod, has also shown that certain exotic varieties of coconut such as the Laccadive ordinary, the Laccadive small, the Fiji and Straits Settlements and the indigenous Gangabondam variety are economic varieties useful for propagation, that the sprays of certain hormone mixtures could control the shedding of buttons or immature nuts, that optimum yields are possible from plots which are regularly cultivated and manured, that irrigation with sea

water has no adverse effect on coconut palms, that the burial of coconut husk in coconut gardens is beneficial to the palms for 5 or 6 years, that root pruning is effective in inducing the palms to produce inflorescences and that the application of complete fertilisers ameliorated the condition of foliar yellowing of palms.

Work done at the Central Coconut Research Station, Kayangulam has shown that spraying with a copper fungicide can keep the leaf disease under control, that the application of NPK plus lime plus cattle manure along with spraying of the foliage enables palms affected by the root disease to give economic yields, that the rhinoceros beetle can be controlled by treating its breeding places with BHC and filling the central leaf axils with sand and BHC dust in equal proportions, that the coconut caterpillar can be controlled by spraying the affected leaves with 0.2 percent DDT and by releasing on the infected palms the natural enemies of the pest, that the red palm weevil can be controlled by injecting Pyrocone E at 1 percent strength into the affected part of the palm, and that cockchafer grubs which damage the roots of the palm can be controlled by ploughing in 5 percent Chlordane at the rate of 28 lb. per acre.



Dr. M. S. Randhawa addressing the 25th Session of the Indian Central Coconut Committee.

These results of research have been passed on to the cultivators through the periodical publications of the Committee and the pamphlets it has issued.

Assessment of Work at Research Stations

At its last meeting held in February 1957, the Committee decided to have a proper assessment of the work done at the two Central Coconut Research Stations during the previous 5 years. It also decided that the work for the next few years should be properly planned, strengthening those lines of investigation which needed expansion and initiating new lines of research where necessary. With these ends in view, the Committee set up an Expert Reviewing Committee with Dr. K. Ramiah as Chairman and it has submitted a useful report.

At its last meeting, the Committee also set up three other Sub-Committees, one to suggest the lines along which research on coconut and arecanut could be co-ordinated, another to chalk out programmes for conducting manurial trials at the various Regional Coconut Research Stations and in demonstration plots on grower's lands and the third to go into the question of the organisation of technological research on coconut. The report of these Sub-Commit-

tees will also be coming up for consideration at this session of the Committee.

Development Work

The work done by the Committee on the development side has included (1) running coconut nurseries in the coconut growing States, jointly with the State Governments for supplying quality seedlings to the cultivators, (2) running a small scale scheme to demonstrate the efficacy of spraying coconut palms with copper fungicides to control the leaf disease, (3) setting up in collaboration with State Governments stations to breed the natural parasites of *Nephantis serinopa* for the biological control of the pest, (4) financing of coconut development schemes in West Bengal and the Andamans and (5) publication of a monthly "Bulletin" in English, Malayalam and Kannada and a quarterly "Journal" in English, besides several pamphlets on different aspects of coconut cultivation.

Increasing Production

India is a deficit country in the matter of coconut production. The short-fall has been estimated at about 30 percent of present production and under the Second Five-Year Plan, an increased production of 80,000 tons in terms of coconut oil has been fixed as the target to be achieved by the end of 1960-'61. The Central Government have made available to the Committee a grant of Rs. 38 lakhs under the plan for expanding the scope of work of the Central Coconut Research Stations, for starting Regional Research Stations and Parasite Breeding Stations in certain States and for implementing certain statistical schemes for the correct estimation of the area under and yield of coconuts in the different States of the Indian Union. The Central Government are also extending to the Governments of the coconut growing States grants to finance development schemes calculated to step up coconut production. It is hoped that, as a result of the proper implementation of these schemes, it would be possible to increase coconut production so as to achieve the target fixed by the Planning Commission for the coconut industry.

With these preliminary remarks in which I have made an effort to acquaint you with the work of the Committee and its research stations, I have great pleasure in requesting you to inaugurate the 25th Session of the Indian Central Coconut Committee.

PROBLEMS OF COCONUT INDUSTRY

The 25th Plenary Session of the Indian Central Coconut Committee was inaugurated by **Shri. E. M. S. Namboodiripad,** *Chief Minister of Kerala State at Kozhikode at 9 A. M. on the 31st January, 1958.*

Inaugurating the Session the Chief Minister said that the economy of Kerala was very much dependent on the coconut. He pointed out that the coconut industry at present had to face various problems like the conflicting aspects of price question and the crisis in the coir industry. The cultivator, the trader, the industrialist, the small producers of coir, the oil industry people, all were facing difficulties of one sort or other and these had to be tackled and removed.

The full text of the Chief Minister's speech is given below:—

I AM very grateful to you for giving me this opportunity to be in your midst and to learn from you some of the problems which the coconut cultivation and industry are facing today. I do not know whether it will come within the purview of your deliberations to take up the question of the industry based on coconuts. Probably it does not. But as Dr. Randhawa said, our State is the most important coconut producing State and that being so, we are interested not only in the production of coconut, but also in its processing and its use in all possible forms. You probably know that there is no part of the coconut palm which we do not use in some way or other. As a matter of fact we, the people of Kerala say that the 'Kalpavriksha' mentioned in Sanskrit literature refers to the coconut palm. I do not want to go into the details

of that. Probably, you are all aware of it, having been associated with the Coconut Committee for years. I only want to draw your attention, particularly the attention of the delegates from other States, to the fact that Kerala is the most important coconut producing State in this country and that for us coconut is the most important commodity that we are producing.

Kerala Economy is Coconut Economy

Our economy, it may be said, is mainly an economy of the coconut, just as the economy of West Bengal is the economy of jute. I do not want to enter into any discussion on the various aspects of coconut as it affects us, but would only draw your attention to the fact that the economy of Kerala, based as it is on coconut, is at present in a very difficult situation.

Coconut is a food crop too

Coconut is considered to be a cash crop or commercial crop. But for the people of this State it is also partly a food crop. I do not say that it is a food crop in the ordinary sense of the term, but a part of it is used for food also. It so happens that people are finding it more and more difficult to use coconut as part of their food.



The Chief Minister of Kerala addressing the 25th plenary session of the Indian Central Coconut Committee.

Formerly, it was very rare to find an ordinary Malayali family going without some preparation or other made out of coconut. But, now-a-days it so happens that the large section of the people are not using coconut in their food. Though ours is the most important coconut producing State, our people are not able to use it in the way in which they would like to use it. Perhaps, if coconuts were cheaper, they would use them for more purposes. At the last meeting of the National Development Council, when we were discussing food, the Food Minister of Andhra asked us half jocularly and half seriously "You are coming to us for rice' but why don't you eat your coconut?" He was under the impression that we can use coconut as a suitable food. But there comes the question of price which itself has its conflicting aspects. For the consumer the price is high, but for the producer at times it falls very low and sometimes not so very low. But at the same time the prices of other commodities are also high. The coconut grower has to pay for other consumable goods by selling his coconuts and the prices of the other goods are still high.

Problems of Coconut Industry

Another aspect is that the representatives of other States and the country as a whole expect us to produce more coconuts. Dr. Randhawa has asked the farmers of Kerala to produce more coconuts. But, at the same time, I want to draw your attention to the

(Continued on page 397)

INDIAN CENTRAL COCONUT COMMITTEE'S 25TH SESSION

Decisions & Resolutions

RESOLUTIONS requesting the Government of India to arrange for the immediate import of sufficient quantities of potassic and phosphatic fertilisers on the basis of the requirements of the States of Kerala, Mysore, Andhra Pradesh, etc., for manuring coconut palms and suggesting that the import quotas for coconut products be granted only to actual users of such products were unanimously passed by the Indian Central Coconut Committee at its 25th plenary session which was held at Kozhikode on the 31st January 1958 under the presidency of Dr. M. S. Randhawa, I. C. S., Additional Secretary to the Government of India and Vice-President of the Indian Council of Agricultural Research.

Extension of Regulated Markets

By another resolution the Committee requested the Kerala Government to extend the Commercial Crops Act (under which Regulated Markets are set up), now applicable to Malabar, to the whole of Kerala so that Regulated Markets for coconut and arecanut could be set up in the Travancore-Cochin area of the State also.

Supply of fertilisers

Among other things the Committee decided:

1) to implement the recommendations of the special committee which had reviewed the work at the Central Coconut Research Stations at Kayangulam and Kasaragod under the Chairmanship of Dr. K. Ramiah;
2) to popularise among coconut cultivators the conclusions drawn from the fertiliser trials conducted by Potascheme; and
3) to request fertiliser firms to put on the market fertiliser mixtures for coconut in 3½ lb. and 7 lb. bags in addition to 1 cwt. bags so that even those who owned a few trees could go in for manures in the required limited quantities.

Production of seedlings for under-planting and new planting

The Committee considered the question of producing seedlings for regular under-planting of coconut gardens and planting up new areas and set up a special sub-committee to

go into the whole question of producing additional seedlings and allied matters. It was decided to launch a campaign among coconut growers to fell and remove uneconomic palms and replace them with quality seedlings. Schemes for stepping up the production of existing coconut nurseries in Andhra Pradesh and Orissa were approved.

Agrarian Relations Bill and Coconut

The Committee considered how the Kerala Agrarian Relations Bill would affect coconut production and after a full discussion decided that, having regard to the paramount need of stepping up the production of coconuts and in order that the measures for this purpose may not be hampered, the Planning Commission, the Central Government and the Kerala Government be requested to exempt coconut from the ceiling on holdings, as in the case of plantation crops like tea, rubber and coffee.

Excise duty on coconut oil

Another decision of the Committee was to recommend to the Government of India to levy excise duty from all mills producing coconut oil subject only to the condition that the duty should be Rs. 56 per ton in the case of mills producing 125 tons and less of oil per annum and Rs. 112 per ton from mills producing more than 125 tons per annum. The Committee felt that as a result of the present law which exempts mills producing 125 tons and less of coconut oil from paying excise duty, larger mills were getting split up into smaller units and that this was leading to considerable evasion in the payment of the cess on copra, which is the Committee's source of revenue.

Abolition of Cess on Copra

The Committee re-iterated its earlier request to the Government of India to abolish the copra cess and give it a large enough grant from the excise duty on coconut oil to finance its activities.

Treating coconuts with water as perishables by Railways

Another decision was to request the Railway authorities to categorise coconuts with water (both husked and unhusked) as perishable articles and allot waggons for their transport accordingly.

Technological Problems

Discussing the report of a special subcommittee that had gone into the various aspects of coconut technological research, the Committee decided (1) to sanction for the Central Coconut Research Station, Kasaragod a scheme estimated to cost Rs. 1,08,500 to study the curing and storage of copra; (2) to request the Regional Research Laboratory, Hyderabad to undertake studies on the solvent extraction of oil from coconut oilcake obtained by different methods; (3) to undertake at the Indian Veterinary Research Institute, Izatnagar studies on the use of de-oiled coconut cake for cattle food; (4) to invite the Central Food Technological Research Institute, Mysore to submit a programme to study the use of coconut meal as a source of protein and the preparation of vinegar from coconut neera; and (5) to request the Regional Research Laboratory at Hyderabad to study the comparative efficiency of activated coconut shell charcoal.

Earlier, the Committee unanimously re-elected Shri. K. P. Madhavan Nair as its Vice-President for the year 1958-'59 and Shri. P. B. Kurup as its representative on the Indian Council of Agricultural Research for the next three years.

Coconut Improvement Through Introduction of Exotic Varieties

By

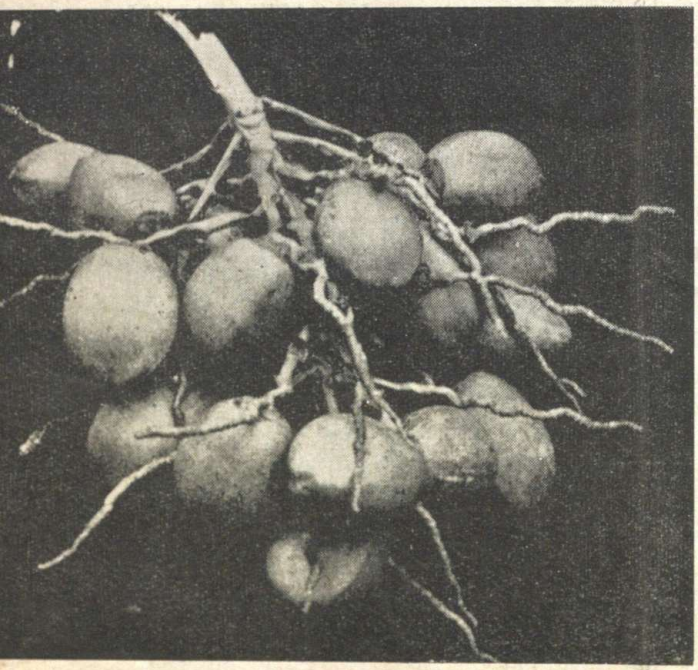
K. SATYABALAN

ONE of the well accepted methods of crop improvement is the introduction and study of desirable and economic varieties from foreign countries. The introduced varieties, if found suitable for the new environment, can be straightaway multiplied and released for large scale cultivation. Promising varieties and those exhibiting some specific characters of economic value can also be used in hybridisation work for transferring the desirable factors from them to adapted or local varieties. Many instances can be cited, especially in annual crops, where this procedure has been of considerable benefit. The introduction of groundnut, a native of Brazil, cashewnut, a native of South America, cinchona and para rubber from Kew Gardens have been of considerable benefit to India. The introduction of tapioca into Travancore-Cochin helped the State to tide over the food shortage and avert famine during the war period. Though this method of introduction is applicable in the case of coconut crop also, the time interval between the introduction and actual release for cultivation is very much, as it requires 15 to 20 years to study the adaptability and performance of new introductions to a particular environment. Besides, the rate of multiplication is

also very slow as the planting material that can be made available is very limited. In spite of all these limitations, the introduction of new varieties from other countries does offer fruitful avenues of crop improvement.

Introduction of coconut varieties

The importance of the introduction and study of exotic varieties of coconut has been recognised in India even about three decades back, as a few varieties introduced then are at present in bearing condition at the Agricultural Research Station, Pilicode in Kerala. Progenies of these varieties were also subsequently planted at the Coconut Research Station, Kasaragod. These varieties were studied for various characters like production of female flowers, setting percentage, yield of nuts, copra and oil content etc. Among the varieties introduced, a few varieties like Cochin China, Philippines, Laccadives, Andaman, etc. are found to be promising. Seedlings of these varieties are being made available in limited numbers to the cultivators from this Research Station. Attempts had also been made by the former Cochin and Mysore State governments to obtain and study certain varieties of coconut in their farms at Vyttila and Babbur respectively. There are also instances of private agencies introducing palms of fancy varieties with different colours of foliage, with nuts of different colour, size and shape, with early or late bearing nature, etc.



Laccadive small

Future Programme

The above mentioned attempts at introducing new varieties of coconut from outside are only of a preliminary nature and it cannot be said that all the varieties available have been obtained and studied. There are several forms of coconuts to be found in all the coconut growing countries of the world. It is very difficult to say how distinct they are and how they will breed true unless a detailed study of all the varieties under identical conditions is made.

An important item of research programmed at the Central Coconut Research Station, Kasaragod is the introduction and a detailed study of the world varieties of coconut. A systematic attempt to contact the important coconut growing countries of the world through the courtesy of the Indian Council of Agricultural Research for getting nuts of distinct varieties has been initiated. Already seednuts from countries like Guam, Philippines, Borneo, Malaya, Solomon Islands, Seychelles, Panama, East Africa and West Indies have been received and the seedlings have been planted out in the field and are being studied in detail. The seedlings of Indian varieties obtained from seednuts from the Andaman and Laccadive Islands,

East Godavari in Andhra State and Puri and Sakhigopal in Orissa State are also under study.

A note of warning

Considerable interest in the growing of new varieties has been noticed among growers in recent years and they are advised to remember a few important points. One is the purpose for which the variety is required. For example, dwarf varieties are good only for ornamental purposes and they should not be planted on a plantation scale. Another is that new varieties are better grown only on a small scale initially as one has always to guard against possible failures, though it might have fared well in a Research Station. The last, but not the least is that growers should realise that as the number of mother palms in varieties is very small, only limited number of seedlings could be made available each year.

Problems of Coconut Industry..... *(Continued from page 392)*

fact that those who are depending on coconut in various ways — cultivators and those who process the coconut fibre into coir — are today in a very difficult situation. The coir industry is facing a crisis now. Probably that does not come within the purview of the ICAR, but goes to some other ministry. But, when you are taking up the question of increasing the production of coconut, I want to draw your attention to the fact that these aspects are also very important. I do not want to enter into a detailed discussion of these various aspects. But as one who sees the problem as a whole, I find that the cultivators, the traders, the industrialists, the small producers of coir, the oil industry people, all these people are facing difficulties of one sort or other. That being so, I expect that you, in your deliberations before coming to conclusions, will apply your minds to these other aspects of the problem as well. The appeal which you are making today to the farmers of Kerala to produce more coconuts can be implemented only if the producers are assured that the various problems they are facing will be solved. This is all that I want to tell you by way of an inaugural speech.

More meetings in Kerala

I don't think I have made any contribution to the discussion of the various problems that you are discussing today. I am very happy to have had this opportunity of being in your midst and I extend to you a warm welcome and together with that I extend to you an invitation for holding more and more of your meetings in this State. I think we have a claim to have more than 50 % of your meetings to be held in this State. You know from close acquaintance and physical observation that coconut producers and those who are depending on coconut industry in Kerala have to face problems which are far more acute in this State than in other states. Thank you !

K. I. Tobias

PAPAYA



an intercrop for coconut gardens

THE fruit of the papaya plant (*Carica papaya* L.), introduced into this country from Tropical America, is one with which all are familiar. But, all are not familiar with the methods of successfully growing it; neither are many aware of the other products of it that are of utility to man and the very beneficial effects derived from the eating of its ripe fruits. It is common knowledge that fruit-eating is good for toning up bowels, for the purification of blood and for the supply of several much needed vitamins to the human body. Among the top-ranking fruits which have pronounced beneficial effects on the human body, papaya is indeed a recognised one. And as this plant can easily be grown on a large variety of soils, and more especially in coconut gardens, there is no reason why coconut growers cannot make a supplementary income from an extensive cultivation of it as an intercrop.

Description of the plant

Papaya is a fast growing herbaceous plant with a straight, usually unbranched stem, having an active life period of 3 to 4 years. This is a dioecious plant bearing the female and male flowers on separate plants. The tree with female flowers alone bears fruit. Flowers occur in every leaf axil. The fresh raw fruits which are dark green in colour turn yellow when ripe, the flesh inside having a yellow to orange-red colour. The seeds, which are arranged on the inner walls of the fruit in rows, are whitish in the raw fruit, but they turn brown with the ripening of the fruit, becoming almost black in the fully ripe one and covered with a translucent mucilagenous covering. The trunk is hollow, with non-woody soft tissues and provided with a root system which has a larger number of lateral roots, the lower ones not going below a depth of 4 to 5 feet.

Soil and Climate

Papaya grows in any type of soil which is not too clayey and is not situated on too low marshy grounds. In fact, any soil which is loamy to a depth of about 5 feet is fit for its growing. It loves too much of root aeration to tolerate any kind of occlusion of water between soil particles. In other words, water stagnation causes its immediate damage and death. So, in all parts of the country receiving heavy rainfall it can quite successfully be grown provided excellent drainage facilities are created. Water logged conditions make the 'Collar Rot' disease set in and kill the plant. It thrives well under a variety of climates, but not very frosty conditions. A tropical climate is the best for it. The flavour of the fruit is co-related to the temperature under which it is grown; low temperatures make the fruits insipid.

Preparation of land

The land should be well ploughed or dug and pits of 2 feet length, width and depth dug in February-March at a distance of about 10 feet both ways. After the pits are exposed to weathering for a few weeks they are each filled with good garden soil mixed up with 15-20 lb. of ash and about 40 lb. of well-rotted cattle manure. Seedlings are to be planted in these pits with the advent of rains. It is quite advisable to plant 2 seedlings in each pit, so that even if one turns out to be a male, it can be cut off enabling the other to come up and bear well.

Raising seedlings

While the preparation of the pits is going on on one side, seedlings may be raised by sowing seeds got from well-ripened fruits of good varieties such as Washington, Honey Dew, Gujarati, South African, Ceylonese Round, Ranchi, Saharanpur selections, Long, Round, etc. The nursery for sowing the seeds should be prepared by mixing some alluvial soil and leaf-mould on well raised beds to ensure perfect drainage and watered daily. Care should be taken to reject seeds having any mouldy appearance. They will germinate in about 3 weeks and the seedlings will be ready for planting when about 9 inches high.

Planting

Just before the south-west monsoon commences the planting may be done, shading the young plants and watering them daily. And by the time the rains are in full play the plants would have established themselves. A light application of fertilisers may be given now consisting of a mixture of about ¼ lb. ammonium sulphate, ¼ lb. bone meal and ¼ lb. sulphate of potash, well away from the trunk and covered up. In about 3 months the plants would grow up

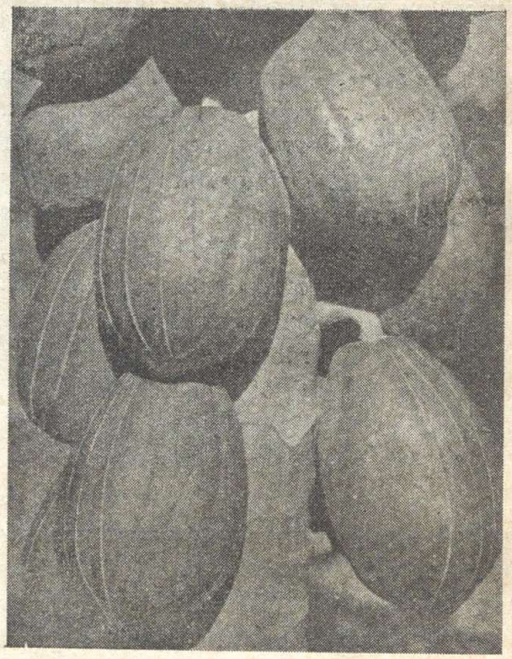
vigorously and would require the application of a basketful of cattle manure and ½ tin ash by September end. A weeding should also be done at this time. About 2 months afterwards, the plants would commence flowering, and the male plants may be cut off retaining only about ten for every hundred female plants. With the cessation of the north-east monsoon an intercultivation may be given which can coincide with the cultural operation for the coconut garden. Watering in summer twice a week would keep on the plants growing and fruiting well. Often, more than one fruit sets in a leaf-axil and in all such cases the best one may be retained plucking off the extra. At the commencement of the next monsoon, another manuring may be carried out and soil heaped up at the base of the trunk so as to help the plant withstand the strong monsoon winds.

Disposal of fruits

Vicinity of a town or city would make it no problem for the fruits available from regular harvests being sold away. Well-matured fruits, just when they begin to show a change over to slight yellowing, are harvested and sent to the market. Even raw ones, before ripening starts, can be plucked for sale in the market depending upon the demand for curry making.

Papain

This is a product prepared from the milky juice or latex which flows out of the raw fruit. It is the commercial importance created by the demand for papain in medicinal and other preparations for uterine and digestive disorders that calls for our starting the growing of this fruit plant on a plantation scale. Papain is the dried product got by drying the latex. Incisions are made along the length of well-developed raw fruits on the tree to a depth of ⅛ to ¼ inch. As the flow of the latex is plentiful in the mornings, the incising operation may be carried out in the early hours of the morning. Metallic knives should not be used for this purpose, but only a bone knife or ivroy blade. A number of scars are made on the skin and the latex collected in china-ware. Incisions on the same fruit are to be made after an interval of 4 to 5 days only. Thus, several tappings of the milky juice can be collected



Incised fruits after the latex has been collected from them.

and dried in the sun. Papain, prepared thus without the admixture of dirt and other extraneous matter is of a creamy or whitish colour. It is then ground into a fine powder and stored in glass containers. It can further be purified by treatment with alcohol and redried to obtain a better product. The final product obtained is about one-sixth of the latex.

Other uses

Apart from the delicious taste and nutrient properties of the ripe papaya fruit, the

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various portions of the tree can be used for several purposes. The fibre of the skin from the trunk can be processed to make ropes. Extracts prepared from the seeds of the fruit are useful in curing digestive disorders. As stated above, preparations from the seeds and papain are effective remedies for various uterine troubles of women. The leaves of the plant can be used to relieve bodily pains. The juice of the leaves, partly diluted with water can be used as an effective agent for removing stains from clothes. Experience has shown that rubbing the body regularly with a slice of the ripe papaya fruit imparts a very fair complexion to the skin. It is said that people of the Anteles island have developed their beautiful skin colour by this regular rubbing with papaya fruit. But of all these uses of the papaya plant, the preparation of papain has the greatest commercial importance. Realisation of the fact that much of our requirements of papain is being met from imports of this product from Ceylon and other islands of the Pacific should rouse us to bring about an extension of papaya cultivation in all lands suited for its cultivation and especially in coconut gardens.



APRIL in COCONUT GARDENS

THE cleaning of tanks and channels in coconut gardens is done in March and April. The silt from the tank bed is spread between the coconut palms and this does them a lot of good as the silt has some manurial value.

A Mysore Practice

Most villages in Mysore have big irrigation tanks. Most of the water in them dries up by April when the silt at the bottom is dug out, scattered in the coconut garden at the rate of 2 or 3 cartloads per tree and ploughed in.

Planting seedlings

The planting of coconut seedlings is an operation which can be carried out from February to May. If there are facilities for watering, it is better to plant the seedlings in April. Seedlings planted in April strike root before the heavy monsoon rains. If ammonium sulphate is applied to them in June-July, three or four times, at the rate of ¼ lb. at intervals of 15 days, the seedlings will register very good growth.

Spraying for Leaf and Root Diseases

Another important operation carried out in the month of April is the spraying of the coconut palms for the leaf and root diseases, with Bordeaux mixture or any other suitable copper fungicide. If a small quantity of DDT is added to the spray liquid it would help to control and prevent pest attacks also. The spraying has to be carried out thrice a year, once in January-February, a second time in April-May and again in September-October. Healthy trees standing near the diseased ones also should be sprayed as a prophylactic measure.

Preparation of coconut nursery

Nursery beds for sowing seed coconuts are got ready in April. If the selected plot is liable to white ant attack, soil to a depth of one foot should be removed from it and river sand put instead.

Monsoon Vegetables

Bendais, brinjals, green chillies and pumpkins are the important monsoon vegetables. It is at the end of April that preparatory work for sowing these vegetables

YOU ASK WE ANSWER



Question: I read in the 'Bulletin' that the application of silt to coconut gardens having sandy soil is good. Can paddy be grown in sandy soil if silt or clay is added to it? Should anything other than silt also be added?

Answer: If silt is added to paddy fields of sandy soil their water-holding capacity will be increased. In Kerala, this treatment has been found to benefit paddy cultivation. In addition to silt green manure at the rate of 3000 lb. per acre may be added and one of the following manures applied :—

Ammonium sulphate	1 cwt. per acre
Prawn dust	2 cwt. do
Groundnut oil cake	2 cwt. do

The green manure, prawn dust and oil cake should be applied at the time the land is got ready for sowing and the ammonium sulphate applied to the paddy seedlings.

Question: Marotti and other oil cakes are not available in the local market for manuring coconut trees. Can cashew poonac be used for purposes of manuring?

Answer: The residual matter left after the extraction of the oil from the kernel of oil-yielding seeds is known as poonac or oil cake. By cashew poonac you probably mean the shell left after the extraction of cashew shell oil. Poonacs are applied as manure to supply nitrogen and the shell residue is not known to be a source of nitrogen for plants.

If poonacs are not available you may apply about 3 lb. of ammonium sulphate per tree along with some green leaf at the rate of about 100 lb. per tree applied

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is taken up. The land for the vegetable garden should be converted into trenches and ridges about a foot apart, the trenches being about 6 inches deep. The trenches should be charred by burning rubbish in them and cattle manure applied to them and the soil turned over. The seeds of bendais and pumpkins are dibbled and watered with the rosepan. The seedlings should be protected with sun shades and watered daily.

in shallow trenches. The tree may also receive about 30 lb. of good ash about a month after the application of ammonium sulphate. The manures are best applied during the rainy season.

Question: What are the best manures for coconut in sandy areas? When and how are they applied? Where are these manures available?

Answer: The following manurial treatments are suggested for coconut in sandy areas :

Broadcast in February-March backwater silt at the rate of 300 baskets per acre and incorporate it into the soil by digging. This is usually done in the sandy gardens of backwater areas and this helps to improve the physical texture of the soil which is as important as the supply of plant food elements.

Early in September wide basins may be prepared round the trees and in each may be put 10-15 lb. of prawn dust and 50 lb. of ash and the basins covered up.

The manures referred to are locally available ones and the treatment proposed is the best and the cheapest.

Question: What are the manurial ingredients contained in groundnut cake, prawn dust and bone meal? Is lime a good manure for coconut? How much of each of these manures should be applied to coconut?

Answer: The following are the percentag of manurial ingredients contained in the different manures mentioned by you :

	Nitrogen	Phospho-ric Acid	Potash
Groundnut cake	7 to 8%	1.3%	1.2%
Prawn dust	6%	3.8%	
Bone meal	4.4%	23.6%	

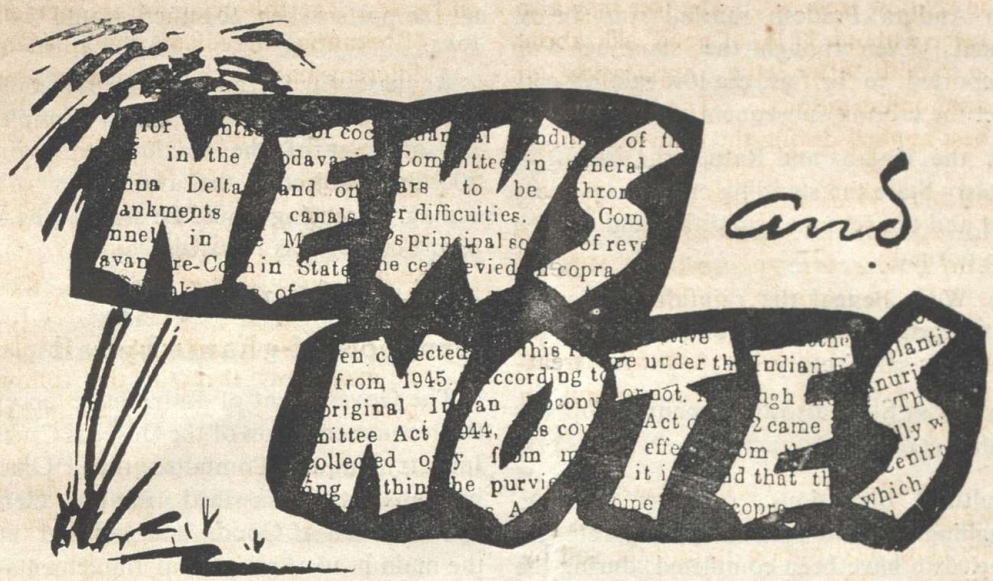
If these manures are easily available, you may apply them in the following doses :

Groundnut cake	10 lb.	per tree per year
Prawn dust	7 lb.	
Bone meal	1 lb.	

There is no harm in slightly increasing or decreasing the doses. Coconut can stand heavy manuring. It may, however, be noted that coconuts do require a plentiful supply of potash. You may, therefore, apply about 40 lb. of good ash per tree or about 2 lb. of muriate of potash along with the above manures.

The manures should be applied when there is sufficient moisture in the soil and towards the end of the rainy season. It is not desirable to apply them when the rains have stopped.

Lime may be applied before the monsoon rains, at the rate of about half a ton per acre. The lime may be broadcast in the whole plantation and ploughed in,



Dr. M. S. Randhawa's Visit to Central Coconut Research Station, Kasaragod

DR. M. S. Randhawa, D. Sc., F. N. I., I. C. S., President of the Indian Central Coconut Committee and Additional Secretary to the Government of India, Ministry of Food and Agriculture visited the Committee's Central Coconut Research Station at Kasaragod on the 17th January 1958. The President, accompanied by Dr. S. Krishnamurthy, Assistant Agricultural Commissioner with the Govt. of India arrived at the Research Station on the afternoon of the 17th and spent there two days inspecting the work in progress. He left for Calicut on the 19th instant. An exhibition was specially aranged on the occasion and the President was pleased to plant a coconut seedling in front of the Rest House where he stayed.



Photo taken on the occasion of the visit of Dr. M. S. Randhawa, President, Indian Central Coconut Committee (Centre, first row) to the Central Coconut Research Station, Kasaragod.

Coconut Crop Situation during the quarter ending December 1957

The stand of Coconut crop in Kerala was fairly satisfactory in the districts of Trivandrum, Alleppey and Trichur and somewhat below average in the districts of Quilon and Kottayam, due to the prevalence of pests and diseases.

In Andhra Pradesh rainfall was below normal. Even though the standing crop is reported to be fair, the low rainfall may affect the crop in subsequent years.

In the Kolaba and Ratnagiri Districts of Bombay State the standing crop was fairly good and the seasonal condition and rainfall were normal.

In West Bengal the rainfall was normal and the general condition of the crop on the whole was satisfactory.

In Orissa State also the coconut crop was satisfactory.

Cultural operations such as weeding, ploughing up the soil, manuring, etc. are reported to have been completed during the period under report in Andhra Pradesh, Bombay and Kerala. The attack of *Nephantis serinopa* and rhinoceros beetle was prevalent in the districts of Trivandrum, Trichur, Kottayam and Quilon in Kerala. Necessary control measures were adopted in all the affected districts. Leaf rot disease was noticed in some of the districts of West Bengal. No reports about the attack of pests and diseases were received from the States of Andhra Pradesh, Orissa and Bombay.

Export of Coconut Oilcake

The Government of India have decided to release a quota of 15,000 tons of coconut oilcake for export during the period January-September 1958.

The Joint Chief Controller of Exports, Bombay, announcing this has said that exports against this quota would be licensed freely to all shippers on shipping bills supported by valid firm sale contract as hitherto upto the end of September 1958 or till the ceiling was reached, whichever was earlier. The maximum quantity that an exporter would be allowed to export from all the ports taken together would be 500 tons.

Requests for further allotments would be considered on *ad hoc* basis on completion of shipment of the maximum quantity of 500 tons, subject to the availability of the ceiling. Licensing would be stopped as soon as the ceiling was reached.

Concessional freight for transport of ghanis by rail

The Government of India have accepted the recommendation of the Oilseeds Crushing Industry Enquiry Committee that "Ghanis" be separately classified in the General Classification of Goods and indexed under the main head 'Agricultural Implements and Machines NOC ' and charged accordingly (for transportation by rail).

Ceylon Lifts Ban on Coconut Export

The Ceylon Government has temporarily lifted the ban on the export of fresh coconuts.

Official sources said that the ban, which was imposed in the first week of December 1957 and intended to ease the local supply position, would continue.

Leading shippers said that the Government had only permitted the export of about 6,00,000 nuts which had long been held in stores for shipment.

India is the main buyer of fresh coconuts from Ceylon.

Fourth National Convention of Farmers

The Fourth National Convention of Farmers of India will be held in New Delhi from March 14th to 19th, 1958 under the auspices of the Bharat Krishak Samaj.

The Convention week will open on March 14th with a Seminar on "Krishak Samaj In Agricultural Extension". Eminent agricultural and extension experts, farm leaders and others interested in agricultural extension movement in the country are expected to take part in the seminar.

An Agricultural and Rural Industries Exhibition will also be held on the occasion. It will depict the latest advances made in the agricultural sciences in the country and techniques and new appliances evolved in the field of rural industries.

The Prime Minister will inaugurate the Convention in the afternoon of March 15th. After the inauguration the convention will divide into three Commissions which will hold discussions on agriculture and animal husbandry, co-operation and marketing and finance and organisation. The valedictory session of the Convention will be held on March 19th.

Distribution of seedlings

The Director of Agriculture, West Bengal has now reported that 2577 coconut seedlings were actually distributed among 74 growers during September and October, 1957 from the Coconut Nursery at Chandernagore and not 2976 seedlings among 74 growers as reported in the January, 1958 issue of the 'Coconut Bulletin'.

Reports received from the departments of agriculture of the different states go to show that quality coconut seedlings from nurseries jointly financed by the Committee and the concerned State Governments were distributed as shown below:

Kerala: In the months of November and December, 1957, 9399 coconut seedlings were distributed among 98 growers.

Andhra Pradesh: In October, 1957, 451 coconut seedlings were distributed among 18 growers.

Erratum

We regret to state that in the captions given below the pictures appearing on pages 372, 374 and 375 of the January, 1958 issue of the 'Coconut Bulletin' certain mistakes had crept in.

In the caption on page 372 the reference to Dr. K. Ramiah may please be corrected to read as follows:—

'Dr. K. Ramiah, Ex-Director, Central Rice Research Institute, Cuttack'.

In the captions on pages 374 and 375 the references to Dr. Vasudeva and Dr. Asana may please be corrected to read as follows:—

'Dr. R. S. Vasudeva, Head of the Division of Mycology and Plant Pathology, I. A. R. I., New Delhi and Dr. R. D. Asana, Plant Physiologist, I. A. R. I., New Delhi.

A Correction

The article "Plant Coconuts on Paddy Field Bunds" which appeared on page 104 of the July 1957 issue of the 'Coconut Bulletin' was contributed by Shri T. A. Davis, Central Coconut Research Station, Kayangulam and the article "How and Why of Spraying Coconut Palms" which appeared on page 315 of the December 1957 issue of the 'Coconut Bulletin' was contributed by Sarvashri T. A. Davis and U. K. Nair, Central Coconut Research Station, Kayangulam.

Gleanings FROM OTHER JOURNALS

Co. 1 Papaya

A new strain of payaya, called *Co 1.* has recently been released by the Madras Department of Agriculture.

Co. 1 papaya is a strain of the well-known *Ranchi* variety. It bears fruit at a low height of two feet six inches, facilitating early and better development of fruit and making harvesting easy. In the *Ranchi* variety, fruits are borne at a height of four feet six inches from the ground.

The unfavourable odour of the fruit in the *Ranchi* variety is almost missing in the new strain. Each fruit weighs three pounds, on an average, with uniform colour of flesh and skin.

The crop raised from the seeds of the strain is uniform in size. shape and quality.

I.C A.R. Farm News Release

Sunburn in Bananas

Every year, banana bunches in many plantations get damaged due to sunburn.

With certain precautions, such damage can be avoided and the fruits saved from loss.

The first precaution every banana-grower should take is not to space the plants wider than what is normally prescribed. A thick foliage in the plantation protects plants from sunburn.

The older leaves of individual plants that dry and hang down should not be removed, as they protect the stem from sunburn.

All exposed stems should be covered with banana leaves, especially in the tall varieties.

All exposed bunches and peduncles (main stalks of the bunches) should be carefully covered with dry banana leaves.

I.C.A.R. Farm News Release

Better cotton yields

Early sowings of cotton result in increased yields.

This has been shown in experiments conducted at the research stations at Abohar, Hansi and Jullundur, representing the three cotton-growing tracts of the Punjab.

The experiments showed that May for Abohar, mid-April to mid-May for Hansi and mid-April to the first week of May for Jullundur were the optimum sowing periods for the crop.

Early sowings resulted in a greater growth and fruiting of the cotton plants. It was also possible to give one or two intercultivations (dry cultivations) to the crop before the monsoon sets in. This helped in keeping the weeds down.

It was also seen that late sowings were prone to a greater attack of the leaf roller and jassids.

I.C.A.R. Farm News Release

Cannibalism in poultry

Crowding of chicks or birds in small enclosures is a major cause of cannibalism in poultry birds.

Cannibalism, also known as feather-pecking, is a serious vice among chicks as much as among grown-up birds. The vice spreads quickly in large flocks, and if not checked in time, causes serious losses.

Apart from overcrowding of the birds, a lack of protein and calcium in the diet also makes chicks and birds peck at their neighbours. Once the vice enters the flock, hard work and patience on the part of the poultry-keeper will be required to overcome the same.

When there is cannibalism in your flock, first find out the cause for the same. If it is due to overcrowding, put the birds in larger enclosures. If it is due to a defective diet, feed them with a mash rich in protein or calcium.

If, in spite of these steps, the birds do not discontinue the habit, "debeaking" them will be the only remedy. This is an operation by which the upper beak of each bird is shortened. It is necessary, however, that all birds are "debeaked".

I.C.A.R. Farm News Release

Controlling bhindi jassids

Spraying the bhindi (lady's finger) crop with DDT has been found to control the common pest of *bhindi* known as the jassid (tela)

The jassid is also an equally common and serious pest of potatoes and brinjal. The adults as well as the young ones of the pest feed on the leaves, as a result of which they curl upwards. Infected bhindi leaves turn red and then drop off. Such plants produce light crops.

For spraying, .05 per cent DDT (one chhatak of 50 per cent W. D. powder of DDT. in 1½ maunds of water) is recommended.

One to two pounds of DDT will be required to spray an acre of the crop.

Care should be taken, however, to see that all mature fruit is picked before spraying, and that crop is not plucked for at least 15 days after spraying.

I.C.A.R. Farm News Release

Cotton for the West Coast

Trials conducted at Pattambi in Kerala and at Mangalore on the West Coast in Mysore have shown that Sea-Island cotton *Andrews* is more suitable for cultivation in the area.

Sea-Island cotton is the world's finest cotton and in its home in the West Indies, which command a monopoly of this cotton, the staple length of some of these Sea-Island varieties is as high as 1¾ to two inches, capable of spinning over 150's counts.

Since the climatic conditions obtaining on the West Coast of India are similar to those of the West Indies, the possibility of fitting in the Sea-Island cotton as a rain-fed crop in the heavy rainfall areas of the coastal districts of Malabar and South Kanara was explored. The two regions receive rainfall, are exposed to moisture laden breeze and are kept humid during the cotton crop growing period, which are the conditions favourable for successful cultivation of the Sea-Island cotton.

Soils of the West Coast are of a coarse type with low nitrogen and potash contents and have more or less the same pH value as the soils of the West Indies. Trials were conducted on the modan, kumeri and bettu

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soils of this area. Experiments were also undertaken with Sea-Island cotton as an inter-sown crop, both annual and perennial.

The Sea-Island cotton was planted early in June with the onset of the South-west Monsoon and was planted on ridges two feet apart with one foot spacing between plants in the row as a pure crop, As an inter-sown crop, the spacing was 3½ feet between rows and one foot in the row.

It was found that pure cropping of Sea-Island cotton was better than an inter-sown perennial crop. The quality of the produce compared well with samples of Sea-Island received from the West Indies.

Of the three varieties tried - St. Vincent, Montesserrat and Andrews, - Montesserrat was better than St. Vincent, but Andrews was the best of all.

In 1955-56, Andrews gave a yield of 1,614 pounds of kapas per acre. In fibre properties, it was found better than imported Karnak suitable for spinning over 60's in small scale tests.

For getting good yields of Andrews, a basal application of three tons of farmyard manure, 30 pounds of superphosphate and 50 pounds of potash in combination with a topdressing of 40 pounds of nitrogen per acre gave the best yields.

By growing Andrews, it was found that the farmer could get an average profit of Rs. 500 to Rs. 600 per acre.

Indian Farming

Ration for poultry

Fishmeal is an important animal protein supplement, and should be included in rations given to poultry birds.

Sometimes, groundnut cake is added to the ration instead of fishmeal because of economy. Research has now shown that though groundnut cake supplies the necessary quantity of proteins, it does not supply the amino acids, minerals and vitamins needed for growth and production in poultry birds.

Where groundnut cake is used, there should be at least five per cent fishmeal in the final mash to supplement the proteins of the ration.

I.C.A.R. Farm News Release

WEATHER REVIEW
January 1958

	TEMPERATURE				RAINFALL		SUNSHINE	
	Maximum		Minimum		Quantity	Departure from normal	No. of rainy days	Total hours of bright sun-shine
	Highest	Average	Lowest	Average				
Central Coconut Research Station, Kayangulam	35.8° C	30.3° C	18.3° C	21.6° C	Nil	-18.4 m.m.	Nil	304.3
Central Coconut Research Station, Kasaragod	34.5° C	32.3° C	18.0° C	21.3° C	Nil	-11.93 m.m.	Nil	279.70

MARKET SURVEYS

General

A note on the prices of coconut oil and palm kernel oil and their supply situation during 1956 and 1957 published in a recent issue of the monthly Bulletin of Agricultural Economics and Statistics, FAO, Rome, states that the international prices of coconut oil and palm kernel oil moved upwards more moderately than the general level for fats and oils during the Suez Crisis in the second half of 1956 and subsequently also declined less sharply in 1957. The note adds that by October, 1957 the prices of coconut oil and palm kernel oil had fallen about 8 per cent below the peak of December, 1956 and were at the same level as one year previously.

Ample supplies of soft oils in 1958 and continued heavy exportable supplies of tallow are reported to be likely in the next few months and this is expected to restrain any major upturn in the prices of lauric acid oils in 1958.

Foreign Markets

1. Ceylon. *Copra:-* In Colombo, copra prices during November, 1957 fluctuated between Rs. 169.25 and Rs. 185.25 per candy of 560 lb. In the week ending 2-11-1957 it fluctuated between Rs. 169.25 and Rs. 173.75 per candy and finally closed at Rs. 169.25. In the next three weeks value per candy of copra steadily advanced reaching Rs. 181.50 in the week ending 23-11-1957. In the last week of November, 1957, the rise in the value of copra was somewhat steeper and reached a level of Rs. 185.25 per candy by about the end of the month.

In December, 1957 the market price of copra fluctuated between Rs. 184.75 and Rs. 208.75 per candy in the first week, between Rs. 197.50 and Rs. 208.50 in the second; between Rs. 193.75 and Rs. 202.50 in the third and in the last week values per candy dropped to only Rs. 195.00.

The prices realised during the month were the highest since early 1954. The sudden jump in local prices was the result of increased coconut oil prices in Europe as well as increased demand for copra, particularly from Bombay.

The flood havoc in Ceylon in December is reported to have caused little damage to coconut plantations.

Coconut Oil. The trend in coconut oil prices in November, 1957 was almost parallel to that of copra. Starting from Rs. 995 per ton in the week ending 2nd November, 1957, price of coconut oil at Colombo advanced steadily to Rs. 1100 per ton during the week ending 30th November, 1957.

In the first week of December, 1957 the price of coconut oil in bulk continued to advance to the highest level since February 1954. The price in Colombo increased from Rs. 1105 per ton to Rs. 1200 per ton. In the second week it fluctuated between Rs. 1120 and Rs. 1220 per ton. During the 3rd week, however, it dropped by Rs. 25 per ton and remained at about the lower level during the last week.

2. Straits Settlements. *Copra:-* In December, 1957 the Singapore copra market was slightly more active mainly on specula-

tive buying for January — February shipment to Bombay. With only a very limited quantity of copra available, the price of "loose" copra advanced in the first fortnight of December, 1957 from M$ 27¼ to approximately M $. 29¾ per picul, with trading for Bombay destinations reported from M $. 28 to M $. 30 per picul (f.o.b). In the Second fortnight of the month the price of copra in Singapore advanced from M $. 30 to M $. 31½ per picul (f.o.b.) mainly to destinations in India and Japan. There were some enquiries from Spain also.

Arrivals of loose copra have been fairly satisfactory during the month. Oil mills have apparently managed to secure a fair share of recently imported copra to enable them to keep going.

London quotation for Singapore copra remained fairly steady at the level of £ 69 per ton c.i.f. to £ 70 per ton c.i.f.

Coconut Oil. For destinations other than Russia, China and Burma, the market for crude coconut oil in drums has been idle during December, 1957. Indications from India and the Middle East markets have for several weeks been entirely out of line with the prices quoted by Singapore oil millers.

This applied also to coconut oil in bulk. Due to a temporary shortage of milling copra, oil manufacturers were compelled to raise the quotations which were completely out of paity with market values in Europe. In the second fortnight of December, 1957, sales were reported for December/January shipment up to M $. 47½ and for February shipment at M $. 46 per picul (f.o.b). Due to shortage of copra and uncertainty of future supplies Singapore and also Penang millers were eventually forced to raise their selling limits by about M $. 2 to M $. 3 per picul. Although there was still a moderate demand for early arrivals for forward shipment, buyers seem to be holding off in anticipation of lower prices.

3. Philippines. *Copra:-* In December, 1957, quotations for Philippines copra after reaching a peak level of U. S. $. 195 per ton reacted sharply with prices gradually declining to U. S. $. 183-185 per ton (c.i.f.). It was reported that the North European consumers purchased large quantities at the above lower prices and helped steady the market.

Exports of Philippines copra during November, 1957 were 95,130 tons, which bring the total for the period January-November, 1957 to nearly 900,000 tons, for 60 percent of which Europe directly or through London was the principal buyer.

Indian Markets

1. Cochin. The coconut oil market at Cochin showed a buoyant tendency when the market opened on 2 - 1 - 1958 at Rs. 2277.88 per ton and the tendency continued on the next day when the closing quotation touched a level of Rs. 2294.93 per ton. This is due mainly to some enquiries from dealers in Calcutta. On the 4th the Calcutta dealers stopped purchasing and the Cochin coconut oil market closed the week at Rs. 2277.88 per ton.

During the week ending 11-1-1958 enquiries from Calcutta and upcountry were not encouraging and a steamer fixed for Calcutta was cancelled. These factors accounted for the value of coconut oil sliding to a low level of Rs. 2,254.01 per ton by closing time on the 11th of the month.

Fair arrivals of local copra and lack of any substantial orders from Calcutta or Bombay caused a further fall in values and the market closed for the week ending 18-1-1958 at Rs. 2182.40 per ton.

In the week ending 25th January, 1958 the coconut oil market continued easy, values drifting to a lower level as Calcutta and up country demand had subsided and local copra arrivals had broadened. On the 21st, the value per ton of coconut oil at Cochin touched a level of Rs. 2178.99 per ton but looked up on the subsequent three days reaching Rs. 2206.27 on the 24th.

After the 25th, the market again turned easy and the closing quotation for the month was Rs. 2080.10 per ton.

2. Alleppey. Due to good demand from exporters, price of coconut oil at Alleppey. which started at a level of Rs. 2250.60 per ton on the 30th December, 1957 advanced to Rs. 2318.80 per ton when the week closed on 4-1-1958.

In the next week the market opened at a slightly higher rate of Rs. 2344.38 per ton but on the next day, due to a fall in demand and lower price advices from side markets, value per ton dropped to Rs. 2233.55. For the rest of the week the market was fairly steady at about the lower level, the closing quotation on the 11th being Rs. 2242.08 per ton.

During the week ending 18-1-1958, price of coconut oil at Alleppey showed a tendency to drift to lower levels despite fair demand from exporters due to large arrivals of local copra and selling pressure from millers expecting further fall in values. The market closed on the 18th at Rs. 2182.40 per ton.

The market opened on 20-1-1958 at Rs. 2190.93 per ton. Continued selling pressure from millers prevented the rising tendency of the market as a result of fairly good turn-over in ready oil. The market closed on the 25th at a rate of Rs. 2190.92 per ton.

Due to absence of fresh support from exporters and larger arrivals of copra at Alleppey, the price of coconut oil drifted to lower levels on subsequent days and the closing quotation on the 31st of January, 1958 was Rs. 2097.15 per ton.

The general expectation among traders is a further fall in values in the coming weeks due to larger seasonal arrivals of local copra.

MARKET REPORTS

COCHIN, ALLEPPEY & CALICUT.

The daily prices of coconuts, copra, coconut oil and coconut oil cake at Cochin, Alleppey and Calicut from 1—1—1958 to 31—1—1958 are given below.

Date	Coconut per thousand			Copra per ton			Coconut oil per ton			Coconut oil cake per ton		
	Cochin	Alleppey	Calicut	Cochin	Alleppey	Calicut	Cochin	Alleppey	Calicut	Cochin	Alleppey	Calicut
	Rs. n.P.	Rs. n.P.	Rs. n.P.	Rs. n.P.	Rs. n.P.	Rs. n.P.	Rs. n.P.	Rs. n.P.	Rs. n.P.	Rs. n.P.	Rs. n.P.	Rs. n.P.
1 - 1 - 58	N. R.	N. R.	158 75	N. R.	N. R.	1488 00	N. R.	N. R.	2368 00	N. R	N. R.	416 00
2 - 1 - 58	195 00	N. R.	163 75	1547 29	1602 70	1504 00	2277 88	2293 23	2400 00	417 73	404 94	416 00
3 - 1 - 58	200 00	N. R.	165 00	1559 22	1602 70	1504 00	2294 93	2293 23	2400 00	409 20	400 68	416 00
4 - 1 - 58	195 00	180 00	165 00	1547 29	1619 75	1504 00	2277 88	2318 80	2400 00	416 02	400 68	416 00
5 - 1 - 58	S	U	N	D	A	Y	S	U	N	D	A	Y
6 - 1 - 58	197 50	N. R.	170 25	1515 75	1585 65	1504 00	2226 73	2344 38	2400 00	417 73	392 15	416 00
7 - 1 - 58	195 00	N. R.	N. R.	1528 53	1577 13	N. R.	2247 19	2233 55	N. R.	417 73	392 15	N. R.
8 - 1 - 58	190 00	N. R.	174 00	1543 03	1604 41	1504 00	2267 65	2250 60	2400 00	417 73	392 15	416 00
9 - 1 - 58	190 00	N. R.	170 00	1551 55	1602 70	1488 00	2284 70	2263 39	2352 00	417 73	392 15	416 00
10 - 1 - 58	195 00	N. R.	167 00	1538 76	1602 70	1504 00	2271 06	2259 13	2384 00	409 20	383 63	416 00
11 - 1 - 58	195 00	185 00	167 50	1528 53	1585 65	1488 00	2254 01	2242 08	2384 00	409 20	383 63	416 00
12 - 1 - 58	S	U	N	D	A	Y	S	U	N	D	A	Y
13 - 1 - 58	185 00	N. R.	167 50	1513 19	N. R	1488 00	2236 96	N R.	2384 00	392 15	N. R.	416 00
14 - 1 - 58	N. R.	N. R.	168 75	N. R.	1568 60	1472 00	N. R.	2182 40	2352 00	N. R.	375 10	416 00
15 - 1 - 58	185 00	N. R.	168 75	1507 22	1534 50	1440 00	2223 32	2182 40	2304 00	392 15	370 84	416 00
16 - 1 - 58	180 00	N. R.	168 75	1496 14	N R.	1446 00	2216 50	N. R.	2304 00	375 10	N R.	416 00
17 - 1 - 58	180 00	N. R.	168 75	1474 83	1534 50	1432 00	2182 40	2173 88	2320 00	383 63	366 58	416 00
18 - 1 - 58	180 00	175 00	167 50	1471 42	N. R.	1408 00	2182 40	N R.	2304 00	375 10	N. R.	416 00
19 - 1 - 58	S	U	N	D	A	Y	S	U	N	D	A	Y
20 - 1 - 58	180 00	N. R.	167 50	1483 35	1551 55	1432 00	2199 45	2190 93	2320 00	366 58	362 31	416 00
21 - 1 - 58	180 00	N. R.	167 50	1470 56	1551 55	1430 00	2178 99	2182 40	2320 00	366 58	349 53	416 00
22 - 1 - 58	180 00	N. R.	167 50	1498 70	1534 50	1424 00	2192 63	2172 34	2320 00	366 58	345 26	416 00
23 - 1 - 58	180 00	N. R.	167 50	1470 56	N. R.	1412 00	2199 45	N R.	2320 00	349 53	N R.	416 00
24 - 1 - 58	180 00	N. R.	175 50	1468 00	1551 55	1432 00	2206 27	2199 45	2336 00	332 48	332 48	352 00
25 - 1 - 58	180 00	185 00	175 50	1466 30	N. R.	1440 00	2199 45	N. R.	2288 00	332 48	N. R.	352 00
26 - 1 - 58	S	U	N	D	A	Y	S	U	N	D	A	Y
27 - 1 - 58	N. R.	N. R.	182 50	N. R.	N. R.	1424 00	N. R.	N. R.	2288 00	N. R.	N. R.	352 00
28 - 1 - 58	180 00	N. R.	182 50	1452 66	1517 45	1416 00	2175 58	2148 30	2272 00	332 48	323 95	352 00
29 - 1 - 58	185 00	N. R.	185 00	1436 46	1534 50	1408 00	2151 71	2139 78	2272 00	319 69	323 95	352 00
30 - 1 - 58	185 00	N. R.	185 00	1407 48	N. R.	1376 00	2107 38	N R.	2256 00	323 95	N. R.	352 00
31 - 1 - 58	180 00	N. R.	185 00	1387 87	1483 35	1352 00	2080 10	2097 15	2240 00	315 43	306 90	352 00

N. R. : No Report

II Malabar Markets

Arrivals and sales of coconuts and copra in the different markets in Malabar during the month of January 1958.

Commodity-Markets	Carry-over	Arrivals	Sales	Balance
Coconut (in thousands)				
Kozhikode	150	3,700	3,350	500
Badagara	2,167	5,000	4,178	2,989
Ponnani	132	668	621	179
Tellicherry and Dharmadam	550	800	830	520
Copra (in candies of 700 lb.)				
Kozhikode	1,905	5,050	4,170	2,785
Badagara	275	3,550	2,880	945

Weekly prices of coconut and copra in some of the Malabar Markets during the month of January 1958

Commodity-markets	1st to 8th	9th to 15th	16th to 22nd	23rd to 31st
Coconuts (husked for 1000)				
Badagara	180.00	187.50	195.00	190.00
Ponnani	155.00	157.50	165.00	175.00
Tellicherry and Dharmadam	159.00	158.50	160.00	163.75
Copra at Badagara market per candy of 700 lb.				
Office	470.00	490.00	490.00	497.50
Edible copra				
Madras	435.00	440.00	440.00	450.00
Dilpas	N O	R E	P O	R T
Rajpur	495.00	495.00	495.00	500.00

General: **1. Coconut:** There was heavy demand from Bombay. Arrivals increased during the last week of the month. Despatches were mainly to Bombay, Madhya Pradesh and Broach.

2. Copra: Arrivals are on the increase as the season is progressing. Arrivals were mainly of office variety. Despatches were chiefly to Bombay and Tamilnad.

such nurserymen should be instructed in the methods of selecting parent palms and seednuts and protecting seedlings against pests and diseases. Another very useful suggestion made by the President was that knowledgeable persons from the research stations of the Committee and from the State departments of agriculture should mark the coconut palms fit to collect seednuts from with a special sign and that the owners of the palms should be provided with cards showing details of such marked palms. Such marking of suitable parent palms will, no doubt, go a long way to help in the collection of seednuts of the proper quality for raising small local nurseries all over the country. The ideal thing will, of course, be for the owner of every coconut garden to raise in his own place all the seedlings he requires. But pending the realization of the ideal, a very large number of private nurseries would seem to be necessary in addition to the nurseries run by the Committee and the State Governments. The latter will, no doubt, continue to be useful for setting the standard of quality for seedlings.

ANOTHER DECISION WAS TAKEN BY THE COMMITTEE ON A MATTER WHICH is corollary to underplanting. Underplanting is done in order to replace in a few years, old and uneconomic plams with young and high yielding palms. But in many gardens old and useless trees are allowed to stand and consume a share of the plant foods in the soil without giving any yield. It is highly desirable that such trees are cut and removed without letting sentiment or inertia to stand in the way. The Indian Central Coconut Committee has suggested that such trees should be marked with a special sign by the Agricultural Departmental staff of the States and propaganda done by them among the coconut growers regarding the advantages of removing useless palms and planting quality seedlings in their place.

IT IS TO BE HOPED THAT CO-OPERATION FROM COCONUT GROWERS WILL BE forthcoming in an ample measure in the implementation of the above-mentioned suggestions of the Committee.

KUTTETTAN SIVARAMAN



Advisory and Information Service

Advice regarding various aspects of coconut cultivation and the coconut industry will be gladly furnished on request, free of charge by appropriate officers of the Indian Central Coconut Committee.

Enquiries regarding breeding, cultivation, manuring, etc., of coconut may be addressed to the *Joint Director, Central Coconut Research Station, Kasaragod,* those about pests and diseases and their control to the *Director, Central Coconut Research Station, Kayangulam, Ochira P. O.,* and requests for information on the coconut industry in general to the *Secretary, Indian Central Coconut Committee, Ernakulam.*

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