BULLETIN

Issued by the INDIAN CENTRAL COCONUT COMMITTEE

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BULLETIN

Issued by

THE

Indian Central Coconut Committee

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In this Issue

COVER PICTURE.—Coconut-fringed water-way in Travancore-Cochin State

NOTICE

In view of the high cost of production of the "Bulletin Issued by the Indian Central Coconut Committee" the Committee had at its meeting held on the 30th April, 1952, decided to enhance the annual subscription per copy of the "Bulletin" (both English and Malayalam) from Six annas to Twelve annas (inclusive of postage). The new rate of subscription has been brought into effect from the issue for August, 1952 (Vol. VI. No. 1) and amounts with us standing to the credit of subscribers on 1st August, 1952 adjusted according to the new rate.

Secretary,
Indian Central Coconut Committee,
ERNAKULAM.

NOTICE

Non-receipt of copies of any particular issue of the "Bulletin" should be intimated to the Secretary, Indian Central Coconut Committee, Ernakulam before the 15th of the month next to that of the issue. Complaints received later will not be entertained. Subscribers may, however, please note that ordinarily the responsibility of this office would cease when the copy is posted and that it cannot hold itself responsible for loss which might occur in transit. When addressing the Committee subscribers should quote their subscriber number to ensure quick disposal of their complaints.

Secretary,
Indian Central Coconut Committee,
Ernakulam.

The 16th session of the Indian Central Coconut Committee was held in the Durbar Hall at Ernakulam on the 9th October, 1952. Sardar Datar Singh, Additional Secretary to the Government of India and President of the Committee is seen here addressing the session. On his left is the Secretary of the Committee, Sri K. Gopalan.

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PLANTING OF COCONUT SEEDLINGS

Different Regional Practices

THE method of planting coconut seedlings differs from place to place. The age of the seedling, the depth of the planting pit etc. vary according to the environments of each place. In Tanjore district (Madras State), for example, seedlings are planted when they are in the stage picturesquely described as "crow's bill", that is, when the sprout is of the size of a crow's bill. Planting in deep pits is seldom seen done here. Planting pits are usually only 1 ft. cube. As soon as the seedling is planted, two lines of screwpine plants are also planted round it. This is to prevent the seedling from being browsed on by cattle, as the seedling would not be visible from outside the circle of screwpine plants which also protect it from excessive heat. The grower does not bestow any attention on the seedling until the trunk is about 3 ft. high. In fact, he begins to think about it only when it is about to bear fruit. Then all the screwpine bushes are cut and removed, shallow basins prepared round the palms and the trees manured. As the soil in Tanjore district has good texture, as it retains moisture and is fertile, the trees yield well. Everywhere irrigation channels of the Cauvery-Mettur Project could be seen and the soil in the gardens does not lack in moisture. While the planting of coconut seedlings in this manner is easy and profitable, there is also no doubt that it can easily be improved upon. First, the seedlings planted must be at least nine months old. It is only then that the characteristics of a seedling will become manifest

and make its selection or rejection easy. Only healthy and vigorous seedlings with good girth at collar and with leaves that have split early ought to be planted, and at the "crow's bill" stage it would be impossible to judge the quality of a seedling according to these standards. The planting pit also can be improved upon. In almost all places in Tanjore district the boles of the palms are visible above the soil surface. This is the result of shallow planting. The pits for planting should be at least 3 ft. cube. In places where the water table is not too high it is essential that the planting pits should be of the above dimensions.

Plantation from Jungle

There is a special method of raising coconut plantations in the eastern parts of Kerala. The jungle is cleared and the land put under tapioca. Simultaneously, coconut seedlings are planted in properly spaced pits of sufficient depth. In such lands tapioca is cultivated for 3 years in succession. Afterwards inter-crops such as paddy, gram etc. are raised. Thus, waste lands in the course of 7 or 8 years become excellent coconut plantations.

Coconut seedlings are planted in a special manner in the reclaimed areas of Travancore-Cochin. Shallow areas in the backwaters are enclosed with long bunds of ample width and height. Coconut seedlings are planted on these bunds to serve the dual purpose of strengthening the bunds and bringing in an extra income. The seedlings are planted in pits filled with sand. As they grow, sand is dumped in the interspaces. A mixture of sand and silt is ideal soil for the growth of the coconut palm. Only seedlings which are 2 to 3 years old are planted on these bunds. In 4 or 5 years they begin to yield.

Backwater lands described above are used for paddy cultivation during the rainy season and prawn-breeding during summer. As the prawns are dried and cured on the bunds, a lot of waste matter which is good manure is left on the bunds. The bunds receive manurial matter from other sources also as the huts of the labourers are all situated on the bunds and the ash from their kitchens and other waste matter go to enrich the soil of the bunds. The yield from the palms planted on the bunds is first rate both from the point of view of quality and quantity. About 1500 nuts only are required to prepare a candy of copra.

Planting in Backwater Reclamations

Planting of coconut in reclamation backwater areas is done in the following manner also:-

Sand is heaped with the required space between heaps and the seedlings are planted on them. Some growers have been seen to heap up the backwater silt, give the heap a top dressing of sand and plant the seedling on it. But seedlings planted in the manner first described are known to grow better. As they grow older the interspaces between the sand heaps are filled with more sand and a bund brought into being. Then a mixture of sand and silt is added to the top of the bunds.

Such planting results in excellent coconut plantations.

Deep Planting in Sandy Elevations

Another method of planting is practised in elevated sandy regions. When the seedling has grown up and four or five feet of trunk have been formed it is transplanted in deep pits. Men experienced in this kind of transplanting do it skilfully with the aid of ropes and pulleys. The cost of transplantation will be about Rs. 5—10 per tree. All the leaves except the central shoot and all the roots are cut and removed before the young tree is lowered into the planting pit. The tree is held in position with the aid of bamboo props and the pit is partially filled with earth and manures. The pit is completely filled up in the course of the next two years. Sandy elevations suffer from lack of moisture and the water roots cannot reach down to the water table. That is why the young palms are transplanted in deep pits. If the seedling itself is planted in such deep pits, it may not get established easily; hence the practice of transplanting the young palms as described above. In sandy soils there will be aeration in the deeper layers and so it is not harmful to plant the yong plams in deep pits.

Sometimes deep planting in sandy elevations is avoided by transporting the sand to reclaim backwater areas. This not only enables planting to be done in the usual manner in the former area but makes available fresh backwater areas for planting.

Planting has to be done in a special manner in areas subject to floods. The seedlings are removed from the nursery and planted 5 ft. apart on small bunds in ordinary garden land and allowed to stand there for 3 or 4 years without receiving any special attention. They are then transplanted in the areas subject to floods. The transplantation is usually done on the new moon day in July-August or October-November. The seedlings so planted strike root quickly and are able to survive the floods.

In the plains coconut and arecanut are cultivated as mixed crops in irrigated gardens. The coconuts are planted properly spaced and the arecanuts in between. But if there is too much admixture of the two palms, both crops will be affected adversely. Those who want to have this demonstrated practically, could cultivate an acre each of coconut and arecanut only and a third acre of coconut and arecanut mixed up.

Underplanting

Practices in the different places differ in the matter of underplanting also. As the water table in fields and the sides of rivers and backwaters is rather high, deep-planting of seedlings is not possible there. And, as the life of palms which are not deep-planted is comparatively short, they do not bear for more than 40 to 50 years. Therefore, in such areas, underplanting can be done when the tops of the palms begin to get thin. Some growers do the underplanting when the palms are still in their middle age. This will result in overcrowding and reduced yield until

the older palms are cut and removed.

In elevated regions where the coconut can be deep-planted it continues to bear for 60 to 80 years. Here under-planting should not be done until the palms are over 50 years. Some under-plant at the foot of the older palm. This is wrong. When under-planting is done on bunds the seedlings should be put in the middle of the space between the trees and when it is done in gardens, the seedlings should be planted at points equidistant from every four trees.

In overcrowded gardens underplanting should not be done on the basis of a seedling for every aged palm. The number of seedlings planted should be at the rate of only 60 per acre. Overcrowded gardens can be thinned down gradually in this manner.

Two things must be specially remembered when planting coconut seedlings. One is that they should have adequate soil space for the roots to develop and spread and the other that they should get plenty of light. In Tanjore district one can come across both overcrowded and properly spaced gardens. The yield of the former is not more than 1000 nuts per acre while in plantations with the palms spaced properly, the yield is 5000 to 8000 nuts per acre.

The Best Coconut Seedligs

By A. B. Budihal, Agricultural School, Kumta, Bombay State

"As you sow, so shall you reap," is very much true in the case of coconuts. Whether you are planting a few seedlings or raising a whole plantation, you should plant the best coconut seedlings.

PLANTING coconuts? You can't do better. Because the famed food plant of the coast, and especially of Karwar and Ratnagiri Districts, is a multi-purpose plant, yielding oil from the nut, timber from the stem, coir from the husk and fuel from the shells, let alone a variety of beautiful utility products it can give for every man.

Yet, this *'Kalpavriksha'* is sorely neglected, as we neglect very many other good things that pay us well for all the attention that we can give them. The tree lives long, for over 80 years, and its bearing capacity can be judged only after about 12 to 15 years of planting. Yet, when we go about planting coconut trees, we pay so little attention to what we plant. More often than not, we are satisfied with just a coconut seedling, and do not go beyond that, and probably never enquire as to from where it came and how it was raised.

That is where we go wrong.

Because oncewe plant a seedling, we have to let it stay, even if it turns out to be unproductive, as by the time it begins to bear we would have spent so much labour and money on it, that to remove and replace it would be unremunerative.

The choice of planting material, therefore, is cent per cent important. In an indiscriminate use of the material, chances are that unknown or doubtful quality plants are grown, resulting in the establishment of a plantation containing trees giving poor or indifferent yields and it will always be a source of loss and regret to the farmer and the plantation will remain a constant reminder of a 'should not have been'.

Mother Tree

What then is the right way to start a plantation? Let me begin with the mother tree—the tree from which seed nuts are harvested for planting to raise seedlings. The mother tree should be properly selected. In such a selection, certain factors have to be born in mind. The y are:

1. The tree should be selected from centres reputed for coconut cultivation and production and from gardens which contain a fairly large proportion of healthy and middle-aged and properly-bearing trees.

2. The mother tree should be a heavy yielder, giving from 80 to 100 nuts per tree per annum.

3 The tree should be a regular bearer, yielding heavy crops every year and not in alternate years.

4. The tree should be healthy-looking, vigorous and robust, with a thick-set crown, having 30 to 35 leaves borne on short thick stalks and arranged in the shape of an umbrella. Medium-sized round-shaped nuts should be selected, as such nuts are associated with heavy yield and high copra content.

5. Nuts from very young or very old trees should not be used for propagation as these are not properly developed.

6. Trees growing under peculiarly favoured conditions should be avoided as it is difficult to differentiate intrinsically good palms under such conditions.

7. Trees producing barren nuts (nuts which are empty and which do not contain well-developed kernel inside) or trees that shed their nuts before the nuts attain full maturity should not be selected as mother palms.

Selection of Seednuts

The seednuts are selected from about the middle of February to about the middle of May, as nuts harvested during this period are heavy and well-developed, give the maximum percentage of germination and produce healthy and vigorous seedlings.

A few nuts at the base and at the top of the fully matured bunch as also

nuts having cracks or showing unhealthy development should be discarded. Nuts which do not show the signs of presence of water inside and those having loose kernels which rattle on shaking should be rejected.

It is the practice on the west cost to lower the seednuts after picking by means of a rope to prevent breaking or cracking. To prevent the nuts from drying up, they should be first stocked in a dry, cool, airy place to cure at least for a month before planting. In stocking, the nuts are spread with the stalk end up in sand. While planting in the nursery, nuts that do not contain water or those that rattle on shaking should not be planted.

Nursery

The best place for the nursery is well drained sandy soil, located near a well or other water source to facilitate easy watering. The place should be free of white ant trouble. If at any time there be an attack of white ants, a small dose of common salt and ash applied to the seed beds will minimise the trouble. It is not necessary to manure the seed beds. For convenience of working, the breadth of the seed beds should not be more than 4 to 5 feet and lengh not more than 20 feet so as to facilitate hand-watering from the sides without tampering with the nuts. The seednuts are buried in the seed beds a foot apart in a vertical position with the stalk end up leaving two inches of their tops exposed.

The usual season for planting seednuts is from the middle of June onwards. It is done in order to keep the nuts sufficiently moist and to ensure good germination. Germination of nuts commences in three months after planting and normally ends by the fifth month of planting. Regular watering of nursery and providing light shade to the seedlings during the summer months are necessary. The seedlings are ready for transplanting after 8 to 9 months of normal completion of germination, *i. e.* in June next.

Selection of Seedlings

Selection of seedlings in the nursery is as important as the selection of mother trees and seednuts. Seedlings should be healthy, vigorous and robust-looking with a large number of leaves, good girth at the base, short thick stalks and large number of roots. As seedlings obtained from nuts which germinate after 5 months of planting in the nursery do not bear properly, such seedlings should be rejected. Early splitting of leaves into leaflets is a good sign of vigour. Unhealthy seedlings with poor stunted growth and those that are thin and markedly different from the general lot should be rejected.

The selected seedlings should not be pulled out of the seed-bed by force, but the roots should be neatly cut and the seedlings with the nut gently removed from the bed by holding the nut. Great care should also be taken to see that seedlings are carefully packed and transported if they are to be sent over

a long distance for planting. The trees from such seedlings will undoubtedly be heavy yielders.

In order to supply the best coconut seedlings to cultivators, two coconut nurseries have been established, one at Kumta and the other at Ratnagiri in Bombay State. They are partly subsidised by the Bombay Government and partly by the Indian Central Coconut Committee. At these nurseries, proper seednuts are selected from selected mother palms from surrounding villages, harvested and preserved in sand till planted in the nursery in about the middle of June. By about the middle of June next, they are ready for transporting and out of the lot best seedlings are selected and sold to the cultivators at reasonable rates.

During 1951-52, from the Kumta Coconut Nursery 7,000 best seedlings were sold at the rate of As. 8 per seedling. During the 1952-53 season (from June onwards) 10,000 seedlings would be available for sale.

—The FARMER.

(Besides the two nuseries in Bombay State mentioned above the Indian Central Coconut Committee is also financing jointly with the State Governments concerned, 11 nurseries in Travancore-Cochin State, 9 nurseries in Madras, 3 in Orissa, 2 in West Bengal and 1 each in Mysore and Assam with a total annual output target of 457,000 seedlings. The seedlings are sold at the concession rate of eight annas each ex-nursery. The Indian Central Coconut Committee pays 50 per cent of the recurring expenditure on the nurseries and takes 40 per cent of the receipts. *Ed. B.*)

Maxims for Coconut Growers

Do not plant Coconut Seedlings of doubtful quality.

* * * *

Plant only the best selected Coconut Seedlings to make the garden most remunerative. Government nurseries supply the best seedlings.

The Indian Central Coconut Committee and Coir Development

THE Indian Central Coconut Committee has been with us for more than seven years now and it is heartening to see its beneficent activities bearing fruit. Coconut growers now know where to turn to for help and advice. No more are they called upon to grope in the dark. Do they require quality seedlings to plant? The nurseries financed by the Committee are there to supply them. Do they require advice about manuring or cultivation? They have only to write to the Committee and they are given prompt and proper advice. Where necessary an expert of the Committee visits the growers' gardens, diagnoses the troubles and prescribes the remedies. The Committee's publications, periodical and otherwise, carry the message of better coconut cultivation to the remote corners of the coconut-growing regions of the country.

Yet with all this there is a hiatus in the Committee's programme of work. It is not authorised to deal with matters connected with coir and coir products. That seems strange, for coir and coir products are made out of the husk, the outer fibrous covering of the coconut which is an important part of it.

It would be interesting to know how this curious state of affairs has come into being. It would appear that in 1943 or 1944 when the idea of setting up a Central Committee for the development and improvement of the coconut industry was mooted, the various coconut-growing States were invited to co-operate in the matter. The former State of Travancore where the coir industry had reached a high degree of development stipulated that their participation in the work of the Central Coconut Committee could be had only if coir and coir products were left outside the purview of the Committee. The coir interests in Travancore perhaps thought that their monopoly would be broken if the development of coir were undertaken on an all-India basis.

The Central Government conceded to the wishes of the State Government **for the time being** but it was never their intention to let coir remain outside the jurisdiction of the Central Coconut Committee for all time. They no doubt felt that the anomaly of the situation would be realised sooner or later, rather sooner than later, and that the development of coir would become as much a legitimate function of the Committee as that of any other part of the nut.

The Indian Central Coconut Committee which has on it, members drawn from all the coconut growing States of India, itself began to feel shortly after it was set up that the taboo placed on it in respect of coir was unwarranted. The quantity of husk used in the Travancore area was only a

fraction of the large quantities of this raw material available in the country and most of the husks available in areas other than Travancore was being practically wasted as there was none to sponsor schemes for the better utilisation of the husk in those areas. The Committee, it was thought, was the most appropriate body to take up and prosecute schemes for developing coir and the exclusion of matters relating to it from the Committee's jurisdiction was felt to be an unfair curtailment of the Committee's legitimate functions. This point of view was ventilated at several meetings of the Committee by the non-Travancore members but those from Travancore opposed it.

However, at the request of the Cmomittee, its President Sardar Datar Singh (Additional Secretary to the Government of India) had discussions on the matter with the Chief Minister of Travancore in October, 1948. Two conferences of representatives of the various interests involved and of the Committee were then held - one in June, 1949 and the other in January, 1950. At both, the voice of the coir manufacturing and trade interests prevailed, and the Government felt themselves unable to agree to coir being brought within the purview of the Committee.

Some of the manufacturers of coir argued that the coir industry in Travancore did not stand in need of further research and improvement. They also feared that if coir was brought under the Committee's jurisdiction a cess on coir might be imposed.

Both would appear to be groundless. There is no justification to feel complacent about the present state of development of the coir industry. The extraction of fibre from the husk by methods which are quicker, cheaper and more efficient and the utilisation of the husk for the purpose in areas other than Travancore are major problems that need tackling. The grading and standardisation of the products of the industry and expanding markets both within and outside the country are also important problems. All these cannot be postponed any further if the coir industry is to be established on a national basis and is to command a steady international market.

There is also no reason to fear that a cess on coir will be imposed in addition to the present cess on copra. There is no precedent in the case of any commodity committee for cess being levied at more than one point. After careful consideration the framers of the Indian Coconut Committee Act decided that the cess in respect of coconut should be levied on the copra crushed in mills and there is no cause to apprehend that another cess will be levied on coir.

At present the cess is levied only on the copra crushed in mills coming under the purview of the Factories Act. But there are innumerable non-factory mills crushing copra which do not pay the cess and it is proposed to amend the

Coconut Committee Act to enable the collection of cess from these small mills also. When this becomes a *fait accompli* the Committee's revenue will be adequate to finance schemes of coir research and development.

Recently, however, a move seems to have been initiated to set up a separate Coir Board as though the Indian Central Coconut Committee did not exist and had not been demanding that it should be permitted to undertake coir development work. In this connection it is interesting to note that while the coir manufacturing interests of Travancore would still seem more or less to hold fast to the view that the industry needs no outside intervention, other interests would seem to be anxious to see that a separate Coir Board is brought into existence.

This attitude goes counter to the generally accepted policy of developing commodities and their products on an all-India basis and having for this purpose a single central organisation with representatives of all the interests concerned with the commodity and undertaking all the functions required for an all-round, integrated development of that commodity. The supporters of the separate Coir Board seem to argue that a separate organisation would make for efficiency while the Cotton and Jute Committees dealing on more important Commodities did not consider it necessary to go in for such a luxury. It would be interesting to note that the Indian Central Cotton Committee, the oldest of the Commodity Committees handles all the problems connected with the cotton industry,—the agricultural research at the Institute of Plant Industry, Indore and technological research at the Committee's laboratory in Bombay, their officers attending to the marketing and allied problems also. There is no separate organisation for the purpose. So also the Indian Central Jute Committee has its Jute Agricultural Research Institute, Technological Research Laboratories and its marketing wing. Similarly the Indian Central Tobacco Committee also undertakes all functions connected with the crop—agricultural and technological research and marketing which include development of foreign markets for Indian tobacco. It has not been found necessary to have a separate oraganisation to develop markets for Indian tobacco. The same is the case with the Indian Lac Cess Committee too. In this connection it may be stated that the Indian Central Tobacco Committee and Lac Cess Committee have jointly appointed a Marketing Officer with headquarters in London for developing the European markets for their commodities. The Indian Coffee Board also attends to all the aspects of the work connected with the coffee industry—marketing, agricultural investigations etc. Similarly it is understood that the Indian Tea Board has under its purview all the agricultural, marketing, technological and other developments connected with the industry. None of these Committees and Boards have

RETTED HUSK BEING TAKEN OUT OF RETTING PIT:
Research is necessary for shortening the period of retting, examining the economics of chemical and mechanical methods of retting coir on a commercial basis, etc.

WEAVING OF COIR MATTING:

Markets, both Indian and foreign for the finished products of the Coir Industry have to be expanded and held.

found it necessary to have a separate Board for marketing work divorced from the agricultural and other aspects of the work connected with the commodity.

Why is it then that in the case of the coconut alone there is this anxiety to treat it differentially and take coir, which is a primary product of the coconut outside the Committee's purview? To do so would result in a division of functions leading to a great deal of duplication of effort and wastage of efforts and funds. It would be without any precedent whatsoever and would render the very name of the Indian Central Coconut Committee, a misnomer.

As has already been said the Indian Central Tobacco and Lac Cess Committees have jointly appointed a Marketing Officer in Europe for finding larger markets for tobacco and lac, for pushing their sales by means of propaganda and exhibition of samples and helping Indian merchants with introductions and personal and other contacts. The Indian Central Coconut Committee could take steps to participate in the scheme or appoint separate marketing officers for studying the extent and nature of the foreign demand for various qualities of coir, yarn, mattings etc., the various types and designs of mattings etc. in demand in foreign countries and the general position of the trade and for tendering advice to the producers how to improve their goods to enable them to compete effectively in the foreign markets with substitute products. There is also considerable scope for expanding the Indian markets by devising more attractive patterns, cutting down cost of production of coir goods, carrying out propaganda etc. About 44 per cent of the coir and coir products produced in India is consumed in the country and our domestic demand for them is steadily increasing. The internal market needs to be developed on a planned basis. The Indian Central Coconut Committee could undertake to do these items of work with efficiency inferior to no other organisation set up for the purpose.

There is also need for the establishment of a Coir Research Institute for undertaking investigations f or effecting improvements in chemical retting, shortening the period of retting, examining the economics of chemical and mechanical methods of retting on a commercial scale, effecting improvements in the spinning of yarn, bringing down the cost of production ofcoir the fibre by scientific investigations etc. These could be attended to by the Indian Central Coconut Committee on the lines of the Cotton Technological Institute at Bombay and the Jute Technological Institute at Calcutta run under the auspices of the Indian Central Cotton and Jute Committees. This Committee has already got a fully equipped laboratory established at Kayangulam at a cost of about Rs. 4 lakhs for investigation of coconut diseases. The coir research institute

could be established as a department of the Committee's Central Coconut Research Station thereby effecting considerable economy in expenditure.

An appreciable body of information on the economics of the coir industry has already been collected in the office of the Indian Central Coconut Committee. Research work on the suitability of husks obtained from nuts of different stages of maturity for the manufacture of coir fibre has been done under the Coconut Research Scheme, Madras, which the Committee began to finance from the 1st January, 1946 in the place of the Indian Council of Agricultural Research. A Technological Sub-Committee set up by the Committee as far back as 1946 has already listed the technological problems relating to coir. Thus the ground has already been prepared by the Indian Central Coconut Committee for undertaking work on coir.

Besides, in case coir is included within the purview of the Committee the membership of the Committee could be expanded to include representatives of the coir interests. Various sub-committees dealing with the different aspects of the coir industry could also be set up consisting principally of the representatives of coir interests to tender advice about the development of the coir industry and to watch over the progress made.

In short the problems related to the coir industry could be attended to with greater attention by the Indian Central Coconut Committee. The work on coir could be constantly kept under scrutiny by a proper coir sub-committee established under the Committee. A full-fledged marketing wing could also be established under the Coconut Committee to devote itself to the exploitation of markets, internal and foreign as also a coir research institution as a department or wing of the Central Coconut Research Station, Kayangulam. These would make for considerable economy in expenditure and efficiency in tackling the various problems. Above all, funds will be available for coir research and development without recourse being had to a seperate cess on coir.

Viewed from whichever angle, there is every justification for the development of the coir industry under the auspices of the Indian Central Coconut Committee and none at all for a separate Coir Board.

What Coconut Growers Should Do in December

(THIS series of short notes regarding what coconut growers should do in each month of the year was started in November 1951 and a year has already been completed. The question may naturally be asked why the series should be continued. The answer is that such notes can never be exhaustive and that fresh points can be quoted every time. Ed-B.)

Intercultivation: Digging or ploughing of coconut gardens is done in November or December according as the north-east monsoon is over early or late. The nature of the land also has to be taken into account in deciding upon the time of the operation. In hill-slopes digging should commence before the rains are over as otherwise the soil would become too hard to be stirred easily.

In the plains intercultural operations may be done one or two weeks after the rains. In the areas bordering the backwaters, the mounds of soil heaped up earlier are not scattered until December or January. In areas like Ernakulam and Cochin if the heaps are scattered earlier, grass will grow again on account of the moisture present in the soil.

If the soil in coconut gardens is not properly stirred by digging or ploughing the yield from the trees will decline. In countries like Ceylon, Malaya, Indonesia and the Philippines there is rainfall in all the months of the year. Consequently the soils there, are not affected by drought and there is very little button shedding. On the west coast there is a long summer that lasts from November to May. A few rains may or may not fall during this period. Therefore, in order to prevent drought during the summer the soil must be disturbed at the beginning of the hot season. Weeds must be collected and burnt and if the soil gets cemented on account of occasional rains it must be stirred with the triangular harrow.

In low-lying lands, it is during December that, in addition to digging the garden, pits and trenches for growing vegetables are prepared. As irrigation is easy in such lands vegetables which require watering can easily be grown in them. Greens, tomato, bitter gourd, snake gourd, ash gourd, cucumber etc., can be grown profitably.

In all vacant spaces shallow trenches should be prepared and charred by burning rubbish in them. Plenty of rotted cattle dung should then be added to the trenches and forked in. Seeds are dibbled or seedlings planted afterwards. If seeds are kept soaked in water for 12 hours their germination would be made easy.

In the case of greens and tomato seedlings, they should be transplanted three or four weeks after germination of the seeds. The seeds are best sown in flat pots filled with a mixture of equal quantities of garden soil, sand and rotted cattle dung. After the seeds are sown they should be watered with a rose

pam and a little ash sprinkled over them. If this is done the seeds will not be carried away by ants. Until the seeds germinate watering should be done both morning and evening and after every watering, ash sprinkled. The pots must be placed in a shady place until the seeds germinate. Afterwards they could be transferred to the sun. Until the seedlings are ready for transplantation they should be watered twice a day.

The seedlings should be uprooted in the evening, after they are watered and planted in the prepared trenches which should have been watered beforehand. The seedlings should be planted 18" apart and again watered.

The next morning the seedlings should be provided with sunshades which should be kept in position for about 8 to 10 days. The shades should be removed only on the evening of the last day of use. Until the roots have got establised the seedlings should be watered twice a day.

The seeds of bitter gourd, snake gourd, ash gourd, cucumber etc., should be dibbled in the prepared trenches 18" apart. The seeds should not be placed at more than ½" depth. If placed too deep they will rot for lack of aeration. After the appearance of 3 or 4 leaves ash gourd and cucumber must be left unwatered for about a fortnight. If after this period, they are watered and manured with a mixture of rotted cow dung and ash they will come up nicely and yield well. If a little fish manure is also applied the fruits will improve both in size and number. Manuring should be done thrice at intervals of 10 days.

The above manures can be applied to bitter and snake gourds also. But they need not be left unwatered as the other two vegetables. Bitter gourd requires only moderate watering while snake gourd can do with any amount of watering.

Tomato plants should be supported with the aid of props. Bitter gourd and ash gourd should be trained on to overhead pandals while ash gourd and cucumber should be allowed to trail over twigs and small tree branches or arecanut leaves spread out on the ground for the purpose. They should be trained so as to spread towards the east.

Burning rubbish at night near vegetable patches is an effective way of destroying fruit flies which attack the vegetables, as such flies, attracted by the fire, dart into it and perish. The charred earth and ashes at the points where rubbish has been burnt can be collected once a week and applied to the vegetables. The most important thing about vegetable cultivation is that the garden should be kept free from grass and weeds, and pests, if any, eradicated as soon as detected.

Growing summer vegetables in coconut gardens is very good for them. The coconut palms benefit to some extent from the incidental cultivation, manuring, watering etc. If there are no watering facilities then yam, colocasia etc., which do not require to be watered can be grown, also to the benefit of the coconut palms.

You Ask, We Answer.

Question: Which type of coconut palm is best for the production of tender nuts? What manures should be applied for the maximum production of tender nuts of good size?

Answer: The Andaman Dwarf varieties are the best types of coconut palm for tender nuts. They are generally known as king coconuts. Although the nuts are small they are used in this country in the tender stage. The water inside is sweet and cool and the tender kernel is very tasty. The copra from the mature nuts of these palms is not, however, good enough. Some types of the ordinary tall variety, the Cochin China and New Guinea types are also noted for their tender nuts.

Seedlings about one year old of the Dwarf palms should be planted in pits of the proper size which have been charred well and have plenty of sand in them. If the planting site is free from white ant attack, plenty of cattle manure and ash can be applied to the seedlings. A little ammonium sulphate and prawn dust applied occasionally will hasten the growth of the seedlings. If good rains are not to be had the seedlings should be watered well. In applying ash and ammonium sulphate, care should be taken to see that the two are not applied together and that at least an interval of 15 days should be allowed to elapse between the application of the one and the other.

Frequent manuring, and liberal watering in summer will result in the palms beginning to bear in the 4th year after planting. Tender nuts can be harvested from the 5th year. From the 6th year, not less than 100 tender nuts can be collected from each palm.

MAXIMS FOR COCONUT GROWERS

Plant the seedlings at proper depth according to the height of water table in the locality.

* * * * * *

Don't plant the coconut in water-logged soils.

NEWS AND NOTES

"THE translation into practice by the bulk of coconut growers of the research done at these Stations (the Central Coconut Research Stations of the Indian Central Coconut Committee) will, by and large, be the true measure of the success of the Committee's work. It is, therefore, of the utmost importance that the programme of work at the two Stations are so designed that the maximum results are obtained in the minimum possible time," observed Sardar Datar Singh, President, Indian Central Coconut Committee, addressing the 16th meeting of the Committee which met here this morning at the Durbar Hall. The President added that he was not unaware of the fact that coconut was a perennial crop, researches in respect of which were of longer duration than those relating to the annual crops, but they could not overlook the natural impatience of the common grower whose enthusiasm was apt to be damped if there was too much delay in the fruits of research being made available to him. He referred in this connection to the welcome which coconut growers had given to the demonstration scheme for combating the leaf disease of the coconut by spraying the coconut crown with copper fungicides, and also the high appreciation which the activities of the propaganda officers of the Committee had come in for.

Continuing, the President referred to the great importance which the Committee attached to the supply of quality seedlings among coconut growers and the high demand for these seedlings and made an appeal to the State Governments concerned to see to it that in all the nurseries jointly financed by them and the Committee, the target number of seedlings fixed for them was invariably produced. He expressed the hope that the Indian Coconut Committee Act, 1944, would be amended in the next session of Parliament so that all power mills crushing copra would be liable to pay cess, bringing to the Committee more money to enable it to finance more and more research and development projects.

The President also expressed the hope that the development of coir would soon be brought within the purview of the Committee and that no separate Coir Board would be set up for the purpose.

The Committee considered and approved of the annual progress reports on its Central Coconut Research Stations at Kasaragod and Kayangulam, in the former of which fundamental research on coconut is undertaken and in the latter, investigations on the pests and diseases of the coconut palm. They also reviewed the progress reports on the nursery schemes financed by the Committee, under which 29 nurseries distributed over seven States from Bombay to Assam with an annual target output of about 5 lakhs of seedlings, were functioning.

The Committee approved of proposals to extend the scheme, worked in

Travancore-Cochin under the Committee's auspices, for spraying coconut palms with fungicides, to control the leaf disease They approved also of schemes for continuing for a further period of 5 years, the three Regional Coconut Research Stations in Travancore-Cochin and the Kumta Nursery, Bombay State. Schemes were also approved for the organisation of demonstration plots on growers' lands in the Orissa and Assam States which have considerable scope for extending coconut cultivation.

It was further decided to undertake an enquiry into the cost of cultivation of coconuts in the Malabar and South Kanara Districts in continuation of similar enquiries conducted earlier in Travancore-Cochin and to bring out a Kannada edition of the monthly "Bulletin" issued by the Committee and a Bengali edition of the handbook on "Coconut Cultivation" published by it. The Committee considered and passed at this meeting its budget for 1953-54 which estimates for an income of about Rs. 10 lakhs and an expenditure of about Rs. 9 lakhs.

Earlier in the day the President, members and others watched with interest a "Rotavator" (mechanical hoe) being worked on the Durbar Hall grounds.

* * * *

The Government of Madras have reported that, during the month of August 1952, 22,095 coconut seedlings were distributed among 396 cultivators from the nine nurseries of the State jointly financed by them and the Indian Central Coconut Committee. The number of seedlings distributed in July 1952 from the above nurseries was 57,085.

* * * *

According to information furnished by the Director of Agriculture, Bombay State, 1217 coconut seedlings were distributed to growers of coconut during August, 1952 from the Nursery at Kumta in the North Kanara District of Bombay State, financed jointly by the Bombay Government and the Indian Central Coconut Committee. It will be recalled that 8217 seedlings had been distributed in June and July 1952.

* * * *

It is proposed to bring out in January 1953 the first number of the Kannada edition of this "Bulletin". Intending subscribers are requested to remit by M. O to the Secretary, Indian Central Coconut Committee, Ernakulam, the annual subscription of 12 annas, and make sure of their copies.

* * * *

In the issues of the "Bulletin" for June 1952, we had reported that the Central Government had amended the Vegetable Oils and Oilcakes (Forward Contracts Prohibition) Order, 1944 so as to make it applicable to part 'B' States of the Indian Union, with effect from the 22nd May 1952 and that forward contracts in coconut oil thus stood prohibited.

By a notification of the Ministry of Commerce and Industry published on the 29th September 1952, the Government of India have exempted Travancore-Cochin from the Order. Accordingly, forward trading in coconut oil has been resumed in the Cochin and Alleppey markets.

MARKET REPORTS

I. COCHIN, ALLEPPEY & CALICUT.

The daily prices of coconuts, copra, coconut oil and coconut oil cake at Cochin, Alleppey and Calicut from the 11th September 1952 to 10th October 1952 are given below:—

Date	Coconuts per 1000			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.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
11-9-52	125	*	112-8	1101-7	1120-1	1144	1543	1624-8	1676	315-7	299-4	304
12-9-52	125	*	113-12	1106-9	1137-2	1152	1653-14	1641-10	1680	315-7	299-4	304
13-9-52	125	132-8	108-12	1122-12	1147-7	1152	1679-7	1684-6	1680	315-7	316-6	304
14-9-52					SUNDAY							
15-9-52	127-8	*	110	1109-2	1120-1	1120	1662-6	1641-10	1680	306-14	290-11	304
16-9-52	125	*	105	1109-2	1120-1	1136	1662-6	1641-10	1728	306-14	290-11	288
17-9-52	125	132-8	106-4	1103-15	1120-1	1136	1653-13	1624-8	1728	306-14	290-11	292
18-9-52	125	*	108-12	1104	1111-8	1136	1653-13	1633-1	1712	306-14	290-11	296
19-9-52	125	*	105	1108-4	1111-8	1128	1662-6	1633-1	1712	306-14	282-2	296
20-9-52	125	130	103-12	1109-2	1101-4	1120	1662-6	1564-10	1712	306-14	307-13	296
21-9-52					SUNDAY							
22-9-52	127-8	*	105	1115-1	1102-15	1120	1670-14	1637-5	1704	306-14	299-4	296
23-9-52	125	*	105	1109-2	1094-6	1120	1662-6	1633-1	1704	306-14	299-4	296
24-9-52	125	127-8	97-8	1104	1090-2	1120	1653-14	1624-8	1700	306-14	303-8	288
25-9-52	125	*	97-8	1104	1090-2	1120	1653-14	1624-8	1696	306-14	307-13	288
26-9-52	*	*	106-4	*	*	1120	*	*	1696	*	*	288
27-9-52	*	*	*	*	*	*	*	*	*	*	*	*
28-9-52					SUNDAY							
29-9-52	127-8	*	97-8	1116-12	1111-8	1112	1670-14	1641-10	1680	306-14	307-13	288
30-9-52	*	*	105	*	1137-2	1112	*	1667-4	1680	*	307-13	288
1-10-52	125	130	102-8	1136-6	1145-11	1152	1696-8	1675-13	1680	323-15	307-13	288
2-10-52	*	*	105	*	*	1152	*	*	1728	*	*	304
3-10-52	127-8	*	110	1144-15	1137-2	1168	1705	1667-4	1728	332-8	324-14	304
4-10-52	127-8	130	113-12	1144-15	1128-10	1168	1705	1667-4	1728	332-8	324-14	304
5-10-52					SUNDAY							
6-10-52	127-8	*	114-8	1138-1	1137-2	1168	1696-8	1667-4	1728	332-8	324-14	304
7-10-52	130	*	112-8	1139-13	1145-11	1168	1696-8	1667-4	1728	332-8	324-14	320
8-10-52	130	132-8	112-8	1133-13	1137-2	1152	1687-15	1663-0	1728	332-8	316-6	320
9-10-52	130	*	112-8	1133-13	1137-2	1168	1687-15	1667-4	1712	328-3	316-6	320
10-10-52	130	*	112-8	1143-3	1145-11	1152	1705	1684-6	1712	328-3	316-6	320

* No Supply.

Trend of Coconut Oil Price in Cochin

FROM the 6th September 1952 till the end of the month, the variation in the price of coconut oil in the Cochin market was within a limited margin. The lowest point touched was Rs. 1653/- per ton and the highest Rs. 1670- per ton. The phenomenon was attributed to lack of demand from Calcutta buyers and limited facilities of booking oil by rail to destinations in Upper India.

The beginning of October saw the resumption of forward trading in the market and the price of coconut oil reacted with an upward swing. On the 3rd October coconut oil was quoted at Rs 1705- per ton. But owing to the tightness of the money market and the absence of any large scale speculative buying the above price which was sustained on the 4th also, came down to Rs. 1696-8 on the 6th and to Rs. 1687-15 on the 8th and the 9th. Since then, however, there has been an improvement. From Rs. 1705- on the 10th, it has steadily looked up to Rs. 1841- on the 21st. The upward trend is attributed to increased demand from Calcutta and Bombay buyers and the rise in the price of coconut oil in the Colombo market where the U. K. Government are said to be negotiating to effect large purchases.

II. TIPTUR AND ARSIKERE (MYSORE STATE)

The weekly wholesale prices of coconuts, copra and coconut oil at Tiptur and Arsikere during the month of September 1952 are given below.

Week ending	Name of Market.	Coconuts per 1100 Nos. Rs.	Copra per satta of 10 Mds. or 315 lbs. Rs.	Coconut oil per tin of 35 lb net. I A Rs.	II A Rs.	III A Rs.
6—9—1952	Tiptur	126½-177½	236¼-239	30	28	26
	Arsikere	102½-180¼	232½-241	—	—	28
13—9—1952	Tiptur	118 -170½	244¾-248¼	25¾	24¾	21¾
	Arsikere	146¾-174½	242¼-245¾	—	—	28—30
20—9—1952	Tiptur	108—160	243¾-249¼	25¼	24¾	21¾
	Arsikere	101—174	245½-249	—	—	29—31
27—9—1952	Tiptur	98½-161½	241—245	25¾	25¾	21¾
	Arsikere	70¼-160	242¾-246¾	—	—	30—31

The prices of coconuts at both the markets have registered a gradual fall owing to heavy arivals in the markets and want of wagon facilities.

The prices of copra at both these markets have remained steady, and those of coconut oil at Arsikere have shown gradual rise, whereas, at Tiptur (except during the first week) they have remained steady throughout the period.

III Madras City and Andhra Markets.

The weekly prices of coconuts, copra and coconut oil at Madras City, Vijayawada and Ambajipeta during September, 1952 are given below:-

Market and date	Coconuts per 100 (unhusked)			Copra per maund (25 lb.)			Coconut oil per tin (37½ lb.)		
Madras City	Rs.	A.	P.	Rs.	A	P.	Rs.	A.	P.
1—9—52	15	0	0	25	0	0	28	13	0
8—9—52	15	0	0	25	0	0	29	1	0
15—9—52	14	0	0	24	0	0	29	13	0
22—9—52	14	0	0	24	0	0	29	9	0
Vijayawada									
1—9—52	18	0	0	13	12	0	23	12	9
8—9—52	18	0	0	13	12	0	23	12	0
15—9—52	18	0	0	13	12	0	23	12	0
22 9—52	18	0	0	13	12	0	23	12	0
Ambajipeta									
1—9—52	10	0	0	16	0	0	27	0	0
8—9—52	10	0	0	16	0	0	27	0	0
15—9—52	10	0	0	16	0	0	27	0	0
22—9—52	10	0	0	16	0	0	27	0	0

IV. BOMBAY

The weekly wholesale prices of coconuts, copra, coconut oil and coconut oil cake at Bombay during the month of August and September 1952 are given below.

Date	Coconuts per 1000						Copra per Candy of 22½ qrs.			Coconut oil prices naked per quart.	Oil Cake per bag of 168 lbs.
	New			Old				Edible			
	Small Rs.	Medium Rs.	Large Rs.	Small Rs.	Medium Rs.	Large Rs.	Milling Rs.	Rajapur Rs.	Alleppey Rs.	Rs.	Rs.
1—8—52	200	240	290	...	...	...	330	440	360	21-12	27
8—8—52	195	235	290	...	...	...	325	430	370	21-8	27
15—8—52	195	235	290	...	...	...	320	460	370	21-12	28
22—8—52	190	235	275	...	...	...	330	455	370	22-0	29
1—9—52	190	235	275	...	...	...	315	460	370	21	23
8—9—52	190	235	275	...	...	...	317	450	380	21½	23
18—9—52	185	240	275	...	...	...	327	420	350	21-14	23
25—9—52	160	220	265	...	...	...	318	400	340	21-14	21

V. CALCUTTA

The weekly prices of coconuts and copra at Calcutta from the 4th to the 25th September 1952 are given below..

Commodity.	Unit.	September 1952.			
		4th	11th	18th	25th
		Rs.	Rs.	Rs.	Rs.
Coconuts (green)	Per 100	20	16	15	16
Do (husked)	,,	22	22	22	28
Do (unhuske)	,,	...	...	...	...
Copra (Calicut)	Per Maund	100	...	...	78
Do (Bombay)	,,	80	80	80	88
Do (Andaman)	,,	...	...	...	...
Coconut oil (Penang)	,,	68	67½	72	75

... No Supply.

VI Straits Settlements

The weekly prices of coconut products at Singapore and Penang during the month of August and September 1952 are given below.

1952	Singapore		Penang	
	Copra	Coconut oil	Copra	Coconut oil
AUGUST				
	$	$	$	$
1st week	24.25	38.00	24.25	38.00
2nd week	23.50	37.50	23.25	37.50
3rd week	24.50	38.25	24.50	38.25
4th week	25.75	39.00	25.75	39.00
SEPTEMBER				
1st week	25.50	38.00	25.25	39.00
2nd week	26.25	40.50	26.00	40.50
3rd week	27.00	41.00	27.00	41.00
4th week	27.25	42.00	27.00	42.00

Coconut Oil Cake: Price remianed unchanged at $ 9.10/- per picul in August. In September it was quoted at $ 9/-

The prices quoted above are per picul f. o. b Singapore and Penang respctively inclusive of cost of containers i. e. second hand steel drums in the case of coconut oil and gunny bags in the case of copra.

1 picul=133⅓ lb. 1 Malayan $=Rs. 1-9-0.

VII. COLOMBO

The weekly prices of coconuts and coconut products at Colombo during the month of September 1952 are given below.

Commodity.	Unit.	September 1952. 1st Rs. Cts.	8th Rs. Cts.	15th Rs. Cts.	22nd Rs. Cts.	29th Rs. Cts.
Fresh Coconuts (Husked) used for copra making and local consumption	Per 1000 nuts	100·00 to 105·00	100·00 to 105.00	110·00 to 115.00	110·00 to 115·00	116·00 to 120·00
Copra—Estate No. 1 Quality at Buyer's stores	Per Candy of 560 lbs.	135.00	135.00	143.75	145·00	155·00
Desiccated Coconut-Wharf delivery or Buyer's stores— Medium and fine 50%	Per lb.	0.45	0.43	0·47	0 50	0·52
Coconut oil—white, naked wharf delivery	Per ton.	850·00	850·00	885 00	925 00	1000·00

Commodity	Unit.	6-9-52 Rs. Cts.	13-9-52 Rs. Cts.	20-9-52 Rs Cts.
Coconut (Husked) for export at Buyer's Stores	Per 1000 nuts	295.00	280.00	295·00 to 300·00

VIII. Malabar Markets

Arrivals and sales of coconuts and copra in the different markets in Malabar during September, 1952.

Commodity and Market	Carry-over	Arrivals	Sales	Balance
Coconuts (in thousands)				
Kozhikode	745	7,306	7,506	545
Badagara	1,190	2,002	2,376	816
Ponani	521	1,549	1,272	797
Tellicherry & Dharmadam	557	833	1,171	218
Copra (in candies of 700 lb)				
Kozhikode	1,035	2,297	2,480	852
Badagara	5,943	4,202	8,982	1,163

Weekly prices of coconuts and copra in some of the Malabar markets during September, 1952.

Commodity and Market	1st week Rs.	2nd week Rs	3rd week Rs.	4th week Rs.
Coconuts (Husked for 1000)				
Badagara	120	120	118	110
Ponani	105-110	105-107½	100-110	100-110
Tellicherry & Dharmadam	97½-100	97½-100	100-102½	95-97½
Copra at Badagara Market per candy of 700 lbs.				
Office	350	350	350	350
Edible Copra				
Dilpas	370	375	370	365
Madras	445	435	430	400
Rajapur	490	460	445	430

IX. Import of copra and coconut Oil into India during the month of July 1952

COMMODITY AND SOURCE	STATE INTO WHICH IMPORTED								TOTAL FOR ALL STATES FOR THE MONTH		TOTAL FROM THE BEGINNING OF APRIL, 1952	
	TRAV-COCHIN		MADRAS		BOMBAY		WEST BENGAL					
	QTY.	VALUE RS.	QTY.	VALUE RS.	QTY.	VALUE RS.	QTY.	VALUE RS.	QTY.	VALUE RS.	QTY.	VALUE RS.
COCONUT Nos.												
Ceylon	...	...	40,000	10,585	...	...	...	...	40,000	10,585	40,000	10,585
TOTAL	...	...	40,000	10,585	...	...	...	...	40,000	10,585	40,000	10,585
COPRA (in cwts.)												
Ceylon	5,000	2,045,68	400	16,556	30,680	15,92,935	...	...	36,080	18,14,059	82,660	42,25,430
Seychelles	...	...	...	...	...	...	...	...	...	...	11,960	601,057
St. Settlements	...	...	...	...	...	...	...	...	...	...	500	30,000
Maldives	...	...	...	...	...	...	...	...	...	...	60	2,754
TOTAL	5,000	2,04,568	400	16,556	30,680	15,92,935	...	...	36,080	18,14,059	95,180	48,59,214
COCONUT OIL (in cwts.)												
Ceylon	...	...	581	37,857	4,849	3,77,464	32,795	23,48,693	38,225	27,64,014	88,247	60,74,159
St. Settlements	...	...	...	...	10,500	10,56,795	49,483	33,50,400	59,983	44,07,195	1,04,928	74,63,347
F.M.S.	...	...	...	...	1,000	80,000	...	...	1,000	80,000	1,188	92,946
Philippines	...	...	...	...	...	...	...	...	...	...	25,334	16,69,528
TOTAL	...	...	581	37,857	16,349	15,14,259	82,278	56,99,093	99,208	72,51,209	2,19,697	1,52,99,980

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INDIAN CENTRAL COCONUT COMMITTEE,
Ernakulam.

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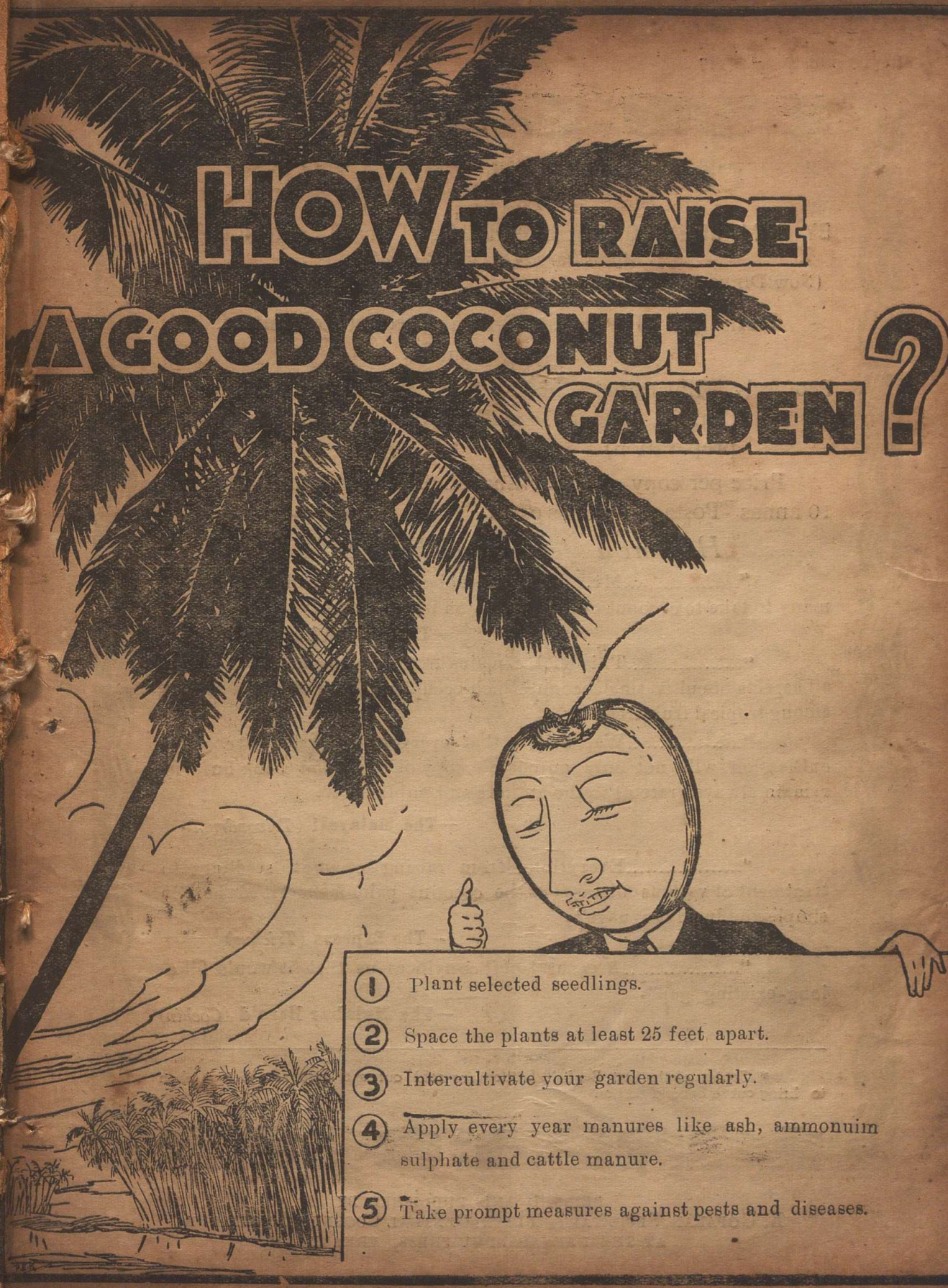
HOW TO RAISE A GOOD COCONUT GARDEN ?



1. Plant selected seedlings.
2. Space the plants at least 25 feet apart.
3. Intercultivate your garden regularly.
4. Apply every year manures like ash, ammonuim sulphate and cattle manure.
5. Take prompt measures against pests and diseases.

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BY C. M. JOHN, OILSEEDS SPECIALIST & VICE-PRINCIPAL,
Agricultural College, Coimbatore.
(NOW DIRECTOR, CENTRAL COCONUT RESEARCH STATION, KASARAGOD)

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