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ADVANTAGES OF CULTIVATING COCONUT ON A PLANTATION SCALE

II

Efficient Marketing: By far the greatest advantage the large scale cultivator has over the small holder is in his ability to command the most favourable price for his produce in relation to the state of the market. The outturn from a large plantation being appreciable, the planter can erect his own stores and processing outfits such as copra drying kilns, oil mills etc., and sell his produce to the wholesale merchants directly at competitive rates without the intermediary middleman. Instances have also been noticed in which planters owning large areas have marketed profitably minor produce like coconut shell, dried fronds, husks etc., in the adjoining towns which in small plantations it would have been difficult to dispose off efficiently.

Growing of subsidiary crops: Large scale plantations afford facilities for the raising of subsidiary or inter crops like paddy, samai, varagu, ragi, root crops, vegetables etc. in rotation on an economic scale and thereby enable the planter to realise additional income.

In view of the foregoing advantages of cultivating coconuts on a plantation scale it is considered very desirable to raise coconut on a large scale in suitable localities instead of in small isolated plots. In starting such plantations care may be bestowed on the following aspects:-

i) **Selection of site:** Even though coconut is capable of adapting itself to varied conditions of soil and climate, it is necessary to undertake large scale planting in suitable localities in order to get remunerative yields. Soils which are shallow and

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lacking in water holding capacity or suffering from excessive dryness or improper drainage should be avoided.

ii) **Layout:** The area selected for coconut plantation should be properly fenced or protected against cattle trespass and laid out into convenient plots with suitable bunds erected at proper intervals to prevent soil erosion during rains. Provision of cart tracks which will give access to the plantation is desirable for facilitating the easy transport of produce, manures etc.

iii) **Planting:** Selected seedlings from heavy and regularly bearing palms obtained from a reliable source should be planted in straight rows adopting a spacing of 25 to 30 feet between trees. The square or triangular method of planting may be adopted. The latter arrangement will accommodate more trees per acre. It is generally desirable to plant coconuts in 3 feet cube pits except in the low lying areas where the water table is fairly high and the plantation is subject to floods. Selected seedlings can be obtained at cheap rates from the Government Coconut Nurseries established recently in the Provinces and States with financial aid from the Indian Central Coconut Committee.

iv) **Care and management:** The newly planted seedlings should be frequently examined and protected against white ants, black beetle etc. Intercultivation and manuring should be done regularly. Necessary equipment such as iron ploughs, cultivators (Junior-hoe), sprayers, insecticides, fungicides etc. should be provided.

v) **Harvesting:** Nuts intended for making copra should be harvested only when they are fully mature. Immature nuts will give rise to inferior copra and poor quality oil. Only ripe nuts can be stored without loss or deterioration.

vi) **Processing:** Copra made by sun drying is generally considered as the best. To get good quality copra it is desirable to provide proper drying floors or copra yards. Making copra during rainy months should be avoided as far as possible. If it is necessary to make copra during rainy season, copra drying kilns may be erected. Direct smoking of copra as practised in many places gives rise to smoky copra of inferior quality.

vii) **Marketing:** It is desirable to sell the produce in a recognised market rather than to petty merchants or through middlemen. Converting nuts into copra, crushing oil and selling oil and poonac is more profitable than selling as nuts.

Consult the Agricultural Department of your Province or State or the Secretary, Indian Central Coconut Committee, Ernakulam, if any help in coconut cultivation, production and marketing is necessary.

—Mr. C. M. John, Oil Seeds Specialist, Coimbatore.

DRY COCONUT PLANTATIONS IN SOUTH KANARA

(BY MR. A. G. SOANS, BASEL MISSION FARM, MOODBIDRI)

(Mr. A. G. Soans, a trained Agriculturist, an experienced coconut grower of South Kanara District and an ex-member of the Indian Central Coconut Committee sets forth in this article his experience of running a dry coconut plantation.)

THE expression "dry coconut plantation" is meant to cover coconut plantations which do not have facilities for artificial irrigation. Such plantations were unknown in South Kanara except in Kasaragod taluk until the Madras Agricultural Department demonstrated the possibility of raising them. In response to the Department's propaganda a good number of dry coconut plantations varying in extent from an acre to 35 acres were started by the District Board and private landlords during the decade ending with 1929. It fell to my lot to take charge of the biggest of such plantations, started by the Basel Mission in 1927 at Moodbidri in South Kanara District.

Need for Deep Planting

The first thing I did immediately I took charge of the above plantation was to lower all the plants which were planted on the surface, although there existed in those days a school of thought that recommended surface planting. This school held that surface planting was an imitation of what happened in nature. They held that in nature a ripe coconut falls down and is carried by water to a distant island or delta where it is deposited and where it germinates and finally develops into a healthy good bearing coconut tree.. The argument was sound as long as it pertained to deltas and islands with ample moisture both in air and soil; but we were adopting the coconut to a poorer and less moist soil which was subject to erosion. Thus arose the need for deep planting.

Pests

During the first two years after lowering, the progress was very satisfactory, in spite of the shock the plants received by the lowering, whereas the next seven years meant a critical period for the whole plantation which was seriously attacked by Rhinoceros beetles and Nephantis Serinopa. The latter was quickly brought under control by the liberation of anti-parasites namely, bathislides and eulophides, while the former could not be brought under control for seven long years and it looked as though the whole plantation would end in a miserable failure. The following account of beetle attack on a plant under observation in 1932 will give the reader an idea of the seriousness of the attacks.

January	..	0
February	..	0
March	..	3
April	..	12
May	..	28
June	..	47
July	..	5
August	..	2
September	..	9
October	..	7
November	..	1
December	..	0

Please note the rise in the rate of attack from March to June. The attack on the whole farm would

rise and fall in almost the same way month by month.

It was interesting to note that some plants in the neighbourhood of the above plant were not so seriously attacked. Under the most disheartening conditions, a number of boys had to be trained to detect and pick out the beetles during the season which meant a very costly item of expenditure unthought of by the Agricultural Department. Besides picking, the following measures also were tried to control the attack:—

(1) Powerful petromax lamps were burnt during the nights and the following was the observation made one night early in June 1932:—

The beetles darted at the light and fell into a basin of water placed under the light.

7-8 p. m.	..	1 beetle
8-9 „	..	5 beetles
9-11 „	..	11 „
11 p. m.-4 a. m.		3 „

It was also observed that the beetles were more between 8 and 11 p. m. than at other parts of the night and the height of their flying would rarely exceed 15-16 feet.

(2) Wild castor seed decoction was kept in earthen vessels at various places. Addition of night soil to these vessels had quicker effect. The foul smell attracted many beetles into the vessel where they perished. These beetles included a few rhinoceros beetles, although the attack on the trees did not decrease to any appreciable extent.

(3) Cleaning of the crowns during the monsoon resulted in the reduction of attacks in October-November.

(4) Addition of salted or tarred sand to the leaf axiles kept out the beetles for a few days and later they began to bore the petiole about two feet above the axil. A gentle breeze was sufficient to break the leaf. Many beetles were noted to have been crushed within the hole at the time of the breaking of the leaves.

(5) Naphthalene balls in the crown had a pretty good effect, but the procedure was too costly to be adopted.

(6) Burning fire in the coconut garden attracted quite a good many beetles which perished in it. The method could not be followed during the rains when the beetle attack used to be high.

(7) Control of the manure pits by picking the grubs in them has been helpful in reducing the attack of beetles.

(8) Sanitation in and around the garden reduced the breeding of the beetles and many people in the surroundings of the plantation were encouraged to bring their lands under chilli, ginger and vegetables which required clean cultivation.

Manuring

This was done every year between June and the middle of September. Green manure and cattle manure were liberally applied in trenches. In addition, each plant got 3 lbs. of bone-meal and 18 lbs. of ash once in every two years. The exact depth to get the best out of the manure applied is still a matter to be tried out. Ever since the trees began to yield fruits, all the cajan leaves and husks were put in trenches between the coconut rows with great advantage. In shallow and poor soils it became a necessity to open the sub-soils and enrich them. The pine-apple crop which demanded deep trenching and liberal manuring was introduced in the plantation as a crop

with great advantage. In certain plots where this crop was introduced the average yield per tree rose up to 20 in 1946 while in some plots with no pine-apple cultivation it was as low as 5 nuts per tree.

It is, however, difficult now to make any definite statement about the economics of coconut dry farming in South Kanara since the fruition takes place late. In my farm 2 plants out of 1500 flowered in the fourth year and the first flowers brought forth 2 fruits. In the 5th year 30 trees flowered but yielded no fruits for the next five years. In the 6th year about 100 more flowered with no fruits for 5 years. At the end of the 18th year there were 3 trees which did not flower at all so far. When the flowered trees began to yield fruits the average yield per tree would not exceed 4-5 for another 5 years unless some intensive cultivation like pine-apple was made in the interspaces.

Since no income was got for more than a decade after planting coconuts, most of the cultivators in the district abandoned their gardens and consequently the statement 'money in coconut' could not be justified. However, I see that with patience, the trees can be improved and the plantation proved a success in the long run. Here again, I have to state that the psychology of the cultivator has to be given as much importance as the selection of site or soil in starting coconut plantations under the dry system of cultivation.

The abandoned plantations should not be given up as lost. Their present condition is apt to create a prejudice against coconut cultivation and every effort has to be made to improve these gardens.

ORGANIC & INORGANIC MANURES

MANURES derived from plants, and animals are known as organic manures. In this category are included leaf manure, compost, farm-yard manure, oil cakes, fish manure and bone-meal.

There are several manures which are dug out of the earth or made by chemical processes. These are known as chemical manures. Ammonium sulphate, sodium nitrate, super phosphate, African phosphate, kainite, potassium sulphate etc. belong to this class.

The results of the application of organic manures are rather slow to show themselves. These manures decompose slowly and plants absorb only gradually the nutrition contained in them.

Soil which apparently is lifeless is in fact the home of countless minute living organisms. In a handful of soil may be found millions of bacteria. They are, however, visible only to the powerful eye of the microscope. It is the function of these bacteria to convert the organic manures to the state in which they can be easily assimilated by plants. Organic manures help the bacteria to multiply and augment the fertility of the soil. They feed the soil and as the results of their application are felt over a long period of time, plants are not seriously affected even if there is failure to manure them for a season.

Inorganic or chemical manures are readily assimilated by plants. But they help neither to enrich the soil nor to retain its fertility without impairement. Nor are they useful to increase the bacteria, improve the soil texture or increase its capacity for absorbing moisture.

They feed the plants directly. If chemical manures are applied regularly what will happen is that the plants will gradually consume also the organic manures that exist in the soil and deprive it of its reserves of fertility. If, in these circumstances, there is failure to apply to the plants artificial manures in any season, they will be seriously affected. The ordinary coconut grower has learnt this by experience and he says: "English manures are very good indeed. But if you start applying them, you should not stop doing so. Any interruption in their regular application will adversely affect the coconut tree". The chief defect of inorganic manures is that they do neither enrich the soil nor keep in tact its natural fertility.

Scientists are of the view that organic manures are the best from the point of view of the health of the plants as well as the taste and nutritive qualities of their fruits. Experience bears out this view to a large extent. Coconut trees which receive plenty of light and are treated to organic manures are singularly resistant to diseases.

In the Coconut Station at Vyttilla (Cochin State) experiments were conducted over a period of ten years to ascertain the comparative merits of organic and inorganic manures. Coconut trees which received an application of inorganic manures gave very quick results. The yield increased considerably. The trees to which organic manures were applied showed only gradual improvement but in the fifth year they were on a par with those which were treated to chemical manures. Later, they went one better and gave higher yields than the other set of trees. It may thus be seen that organic manures are better in the long run,

That does not, however, mean that chemical manures are to be despised. They are required where quick results are wanted. Ammonium sulphate and sodium nitrate help the plants to overcome weakness; they promote their growth. Famished looking coconut trees show surprising improvement when treated to these manures. Plants which have neither flowered nor borne fruit will put forth flowers and fruits when treated to super phosphate and African phosphate. Kainite and potassium sulphate promote the health of the plants and add to the taste and size of their fruits. The best course, therefore, is to treat trees both to organic and inorganic manures.

A first rate manure treatment for the coconut tree consists of a bundle of rotten leaves, two or three baskets of cattle manure, two pounds of bone meal and two tins of ash. At the beginning of the south west monsoons broad circular trenches should be prepared round the trees and the rotten leaves and cattle manure put in them. The manure should be applied away from the base of the tree and without touching it. If the manure is applied to the base of the tree it becomes overgrown with surface roots. The remaining manures should be applied in August —September only. They should be spread out evenly in the trenches and the trenches covered up.

When the crowns of the trees are cleaned at the beginning of the monsoons it would be desirable to sprinkle on them a mixture of one measure of common salt and two measures of sand. This prevents the breeding of rhinoceros beetles. Moreover, when it rains the salt is dissolved and carried down to the soil where it adds to its fertility. It has been observed that the soil in the interior parts of the country where the trees are more subject to attacks from the rhinoceros beetle, is deficient in salt. Needless to say that salt is a good food for the coconut tree.

Please note that whenever you apply chemical manures you do so after consulting the officers of the Agricultural Department; otherwise the results may prove undesirable.

O. RAMAN MENON,
Agricultural Assistant,
Coconut Nursery,
IRINJALAKUDA.

YOU ASK, WE ANSWER

Questions:

Are the nuts of coconut trees to which ammonium sulphate is applied deficient in vitamins?

Does ammonium sulphate deprive the soil of its fertility? Can it be applied by itself to the coconut tree?

(T. P. Y. and K.K., Edarikode)

Answers:

The use of ammonium sulphate as manure does not decrease the vitamin content of the fruits (nuts).

2. Ammonium sulphate does not destroy the fertility of the soil.

3. Ammonium sulphate supplies only the nitrogen requirement of the coconut palm and therefore it is not enough if this alone is used to mauure coconut trees. Potash is very necessary for coconuts and this has to be supplied to the tree as good quality firewood ash. Every alternative year it is advisable to give a basal dressing of some organic manure like cow-dung, minicipal compost or green manure to coconut gardens.

(Plant Pathologist, Quilon).

PHILIPPINE COPRA EXPORTS

EXPORTS of copra in the Philippines estimated to reach about one million tons this year (1947) are well below the figure needed to ease the world shortage of coconut oil, says a report in "The Oil and Colour Trades Journal" (London). Exports have been increasing steadily in the later part of the year and in October reached 100,000 tons as compared with 600,000 tons in July, and the peak figure of 113,000 tons in March. Exports during the first ten months of this year passed the 800,000-ton mark and compare with total exports during the whole of 1946 of 596,000 tons.

But even a million tons of copra exports from the Philippines will mean only about 600,000 to 660,000 tons of coconut oil to help meet the world's oils and fats deficit which was recently estimated by the chairman of Unilevers at 4,000,000 tons. Copra and coconut oil exports from the Philippines would thus be only a small factor in relieving this tight supply situation in an important food group for which Europe will have more and more need during the coming season.

The rising prices of fats and oils in the United States this year have been attributed basically to the shortage of these items. The effect on Philippine copra and coconut oil for a time was depressing and this resulted in the sharp slump of the market here during the middle of the year.

Meanwhile, vegetable oil manufacturers, in an appraisal of the world's fats and oils situation, point out that against the heavy demands on the existing short supplies is the inability of former consumers to restore purchases to normal.

Germany is mentioned as an example of a country which before the war imported about 1,000,000 tons but which is now able to import only a few thousand. Germany at one time was the largest buyer of Philippine coconut oil in Europe.

NEWS & NOTES

Homage to Gandhiji

Homage to the last remains of Mahatma Gandhi was paid by the Indian Central Coconut Committee when, on behalf of the Committee, a wreath was placed by the Secretary before the urn containing a portion of Gandhiji's ashes which was brought to Ernakulam on the 11th February on its way to Cape Comorin for immersion in the sea there, on the next day.

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Seventh Meeting of the Committee

The seventh meeting of the Indian Central Coconut Committee has been fixed to be held at Ernakulam on the 17th April 1948 when Sardar Bahadur Sir Datar Singh, Vice Chairman, Indian Council of Agricultural Research and President of the Committee will preside. The various sub-committees will meet on the previous two days.

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Coconut and Coir Survey in Travancore

The Government of Travancore are undertaking a "Coconut Survey" of the State with a view to obtaining more reliable statistics of coconut production than are now available. Both the enumeration and sampling methods will be applied to a test area comprising a taluk and if the figures obtained by the two methods agree or the margin of difference is negligible, the whole survey will be by the sampling method. A "Coir Survey" for the collection of statistics relating to the Coir industry and for studying the economics of the industry is also being undertaken.

Act Amendment Sub-Committee

At the last meeting of the Committee it was thought that the Indian Coconut Committee Act required to be amended in certain respects and a special sub-committee consisting of Messrs. S. Krishna Iyer, K. P. Madhavan Nair and A. Karunakara Menon was set up to suggest such amendments as might be deemed necessary. A meeting of the special sub-committee was held at Ernakulam on the 30th January 1948. Its report will be considered by the Committee at its next meeting.

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The Tellicherry Exhibition

The All-India Industrial and Commercial Exhibition at Tellicherry between the 16th February and 2nd March was availed of by the Committee to popularise its publications copies of which were exhibited for sale in the Madras Agriculture Department's stall by kind permission of the Director of Agriculture, Madras. Visitors to the Exhibition evinced keen interest in the "Bulletin Issued by the Indian Central Coconut Committee," "The Indian Coconut Journal" and the various pamphlets issued by the Committee.

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Sprayers

Messrs. Darragh, Smail & Co., Alleppey inform us that they have certain varieties of hand-operated and power-driven sprayers which can be used for spraying coconut trees. Readers who are in need of sprayers may contact the above firm.

MARKET REPORT

(FEBRUARY 1948)

Cochin, Alleppey & Calicut

February proved a very disappointing month from the point of view of the prices for coconuts and ccconut products.

Prices on the 2nd of the month were reported as follows:-

2—2—1948

	Cochin			Alleppey			Calicut		
	RS.	A.	PS.	RS.	AS.	PS.	RS.	AS.	PS.
Coconuts per 1000	123	0	0	--			..		
Copra (per ton)	879	12	0	890	10	0	..		
Coc. Oil (per ton)	1261	11	0	1222	10	0	..		
Coc. Oil Cake (do.)	375	2	0	359	2	0	..		

Oil and copra steadily declined from the above levels through succeessive weeks until on the 27th February when oil at Cochin was quoted at Rs. 1077-6-0 and copra at Rs. 734-10 per ton. Oil had touched lower levels on various other days, the lowest being that on the 19th February when it was quoted at Rs. 1040-12-0 per ton. Copra price was lowest on the 26th February when the quotation was Rs. 703-14-0. Cake price was not so bad. Until the 13th February it remained steady at Rs. 385-5-0 but it dropped to Rs. 381-15-0 on the 14th, rose to Rs. 388-12-0 on the 17th, was Rs. 392-2-0 on the next two days and came down to Rs. 381-15-0 on the 24th. On the 25th there was a landslide, the price going down to Rs. 341-4-0 per ton. The next two days saw the price lower still at Rs. 333-3-0. The fall in the price of coconuts was also steady with only minor fluctuations. From being Rs. 124 on the 2nd February it stood at Rs. 117 only on the 27th. On the 26th it was Rs. 2/- less per thousand.

In the Alleppey market too the fall of prices was serious. On the 28th of the month oil was quoted at Rs. 1001-3-0 and copra at Rs. 711/11/- per ton. Cake had on that date reached Rs. 265-7.

On the 9th, the prices were reported as follows per ton:-

9—2—1948

	Cochin			Alleppey			Calicut		
	RS.	AS.	PS.	RS.	AS.	PS.	RS.	AS.	PS
Coconuts per 1000	123	0	0	--			102	8	0
Copra (per ton)	835	7	0	837	14	0	824	0	0
Coconut oil (per ton)	1197	0	0	1154	0	0	1184	0	0
Coconut oil cake (per ton)	385	5	0	365	15	0	368	0	0

On the 16th they were said to be as below:

16—2—1948

	Cochin			Alleppey			Calicut		
	RS.	AS.	PS.	RS.	AS.	PS	RS.	AS.	PS.
Coconuts per 1000	Not quoted			—			105	0	0
Copra (per ton)				786	10	0	800	0	0
(Coconut oil per ton)				1097	13	0	1152	0	0
Coconut oil cake (per ton)				365	15	0	384	0	0

ARSIKERE and TIPTUR

(Mysore State)

The following report on the conditions of coconut market in Arsikere and Tiptur during the latter half of January and the first half of February 1948 has been received from the Chief Marketing Officer, Mysore:-

During the period under report, both the supply and demand of coconut, copra and coconut oil to the market were rather poor. Booking of copra from Tiptur and Arsikere, to places outside the State remained closed during the first three weeks of the period under report. Booking at Arsikere opened in the last week and in spite of this the supply of goods to the market did not improve. As a result of unsteady rates the merchants were afraid to stick on to a definite rate.

The price position during this period was as follows.

	Tiptur	Arsikere
III WEEK OF JANUARY 1948.		
a) Coconuts per 1,100	Rs. 160 to 200	Rs. Red quality 195, bulk 160, small 110
(b) Copra - one satta of 10 mds. or 315 lbs.	255 to 260	260
(c) Coconut oil per md. of 24 lbs.		
I variety	18-12-0	15
II „	15- 0-0	
III „	13- 4-0	
IV WEEK OF JANUARY 1948		
(a) Coconuts per 1,100	125 to 130	Bulk 125 to 130
(b) Copra one satta of 10 mds. or 315 lbs.	225 to 230	225 to 230
(c) ooconut oil per md. of 24 lbs.		
I variety	20-0-0	14
II „	15-0-0	
III „	14-0-0	
I WEEK OF FEBRUARY 1948		
(a) Coconuts per 1,100	120 to 125	Red qlty.175 to 180, bulk 135 to 140, small 100

On the 24th the price position was as follows:

24-2-1948

	Cochin			Alleppey			Calicut		
	Rs.	As.	Ps.	Rs.	As.	Ps.	Rs.	As.	Ps
Coconuts per 1000	117	0	0	—			95--100		
Copra per ton)	743	6	0	719	4	0	776	0	0
Coconut oil (per ton)	1074	2	0	1036	1	0	1120	0	0
Coconut oil cake (per on)	341	4	0	291	2	0	368	0	0

On the 28th the prices were reported to be thus:

88-2-1948

	Cochin			Alleppey			Calicut		
	Rs.	As.	Ps.	Rs.	As.	Ps.	Rs.	As.	Ps.
Coconuts per 1000	Not quo-			---			104	4	0
Copra (per ton)	ted			711	11	0	768	0	0
Coconut oil (per ton)				1001	15	0	1088	0	0
Coconut oil cake (per ton)				265	7	0	368	0	0

(b)Copra one satta of 10 mds. or 315 lbs.	220 to 225	240
(c) Coconut Oil per md. of 24 lbs.		
I Variety	18-0-0	13 to 14
II „	15-0-0	
III „	13-0-0	

II WEEK OF FEBRUARY 1948

(a) Coconuts per 1,100	130 to 150	Red quality 180 bulk 135 small 100
b) Copra one satta of 10 mds. or 315 lbs.	225	225
(c)Coconut oil per md. of 24 lbs.		
I Variety	16-6-0	13
II „	13-4-0	
III „	12-4-0	

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