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Coconut bulletin

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Editorial

A Package Scheme for Coconut

THE MADRAS GOVERNMENT WHO BROKE NEW GROUND WITH THEIR scheme to settle landless labourers in certain parts of Ramanathapuram District and give them assistance to undertake coconut cultivation have taken another big stride in the direction of developing coconut cultivation in the State with their "package scheme" for improving coconut growing in a 1000-acre block situated in Adirampatnam and adjacent villages of Thanjavur District, the most important coconut growing area of the State.

EARLY IN 1962 THE INDIAN CENTRAL COCONUT COMMITTEE HAD emphasized the importance of intensive development of large blocks of coconut-growing areas comprising 1000 to 2000 acres on the lines of the package programme and had approved of a model scheme for the purpose. Copies of this scheme had been supplied to the various coconut-growing states for implementation with such modifications as may be dictated by local conditions.

THE MADRAS GOVERNMENT'S PACKAGE SCHEME AT ADIRAMPATNAM IS mainly based on the Indian Central Coconut Committee's model scheme. Under it, coconut growers in the selected block will be approached individually, their problems studied and a programme of improvement drawn up for implementation. Arrangements will be made to supply fertilizers, insecticides, fungicides etc. in time in the Block itself and also to see to it that growers promptly got the financial assistance provided for under the scheme for the purchase of manures, pesticides, fungicides etc. It will also be seen to that the facilities provided are made use of to the fullest extent and for the purpose for which they are actually meant and a study undertaken on representative holdings to collect factual data on the improvements made as a result of working the scheme.

(Continued on page 109)

Scientific Management of Coconut Gardens is Definitely Paying

By
M. M. KRISHNA MARAR
Central Coconut Research Station, Kasaragod

Importance of the coconut crop

THE coconut crop is the one and only cash crop of the small land holders of Kerala, the main coconut producing region of India. The economy of the region and well-being of its inhabitants are in no small measure tied up with the vicissitudes of the coconut industry. It has been roughly estimated that one-third of the population of Kerala State is in one way or other dependent upon this crop for their sustenance. Hence for the prosperity of this region as a whole a prosperous coconut industry is indispensable.

Necessity to adopt improved practices

The prevailing prices for coconut and coconut products should be considered as quite favourable from the producers' point of view and every effort should be made to capitalise the favourable conditions to put the coconut industry on a sound footing and to enable it to weather successfully any unfavourable conditions that might arise

in future. The present high prices are due to a combination of factors such as inadequate internal production, restriction of imports, rapidly expanding internal requirements etc. The first factor, considering the large extent of area under coconut in this country is to be attributed to low acre yield, which does not redound to our credit. The second factor is to be considered more as a move to safeguard the interests of the grower than as one calculated to enhance the efficiency of those engaged in the industry. Our inability to meet the expanding requirements of the raw materials of industries based on coconut will stifle the growth of new industries and even incapacitate the existing ones, and the high prices will put those using coconut products in a highly disadvantageous competitive position when compared to those of other countries. All these developments, if allowed to occur, will ultimately recoil on the producers themselves to their utter discomfiture. The only way to ensure the continuance of satisfactory economic conditions is for the growers to pool all their resources and make a supreme effort to increase the production to the maximum possible extent, to reduce the cost of production and thus to make coconuts and coconut products available to all those who require them in sufficient quantities and at a reasonable price. Now is the best and most opportune time for initiating a short range crash programme for increasing production as early as possible by the large scale adoption of improved methods of coconut plantation management by the generality of coconut growers of this country. It will be catastrophic if the growers were to feel complacent over the apparently prosperous condition of the coconut industry at present. Let them remember what happened in the great economic depression which struck the country in the early 1930's, when the coconut industry was quite unprepared to face it with the result that it languished considerably and required years of sustained efforts to raise it to a satisfactory level again. It is prudence to anticipate events and to take precautions in advance rather than to wait till the situation engulfs us before taking any action.

Reasons for low production

Research on coconut plantation management has revealed beyond any shadow of doubt the steps that have to be taken to increase production from the existing area with the exception of situations where adverse conditions of growth do not permit of amelioration in an economic way. Thus plantations raised in areas suffering from continued water stagnation which cannot be easily remedied, in steeply sloping lands subject to severe soil erosion, in highly drained sandy soils with deep watertable and in laterite rocky areas, may not offer scope for economic improvement. In all other situations having average conditions of soil and climate it is definitely possible to step up yields considerably if only growers care to adopt improved methods of plantation management. The relatively poor yield of the coconut plantations in India even where soil and climatic conditions are favourable to the crop is attributed to one or more of the following conditions.

(i) The poor quality of the planting material used.

(ii) Growing the palm in crowed conditions or mixed with other perennial crops.

(iii) Inadequate attention towards regular cultivation and manuring.

(iv) Ravages of pests and diseases.

Of the above the most important factor is the inadequate attention paid to regular cultivation and manuring of the existing coconut plantations. Ravages of pests and diseases are also of some serious concern in certain coconut areas in the country.

Response to better management

From extensive investigations done on the proper management of the coconut plantations, it has been possible to establish almost conclusively that the yield from the existing plantation could be stepped up substantially. The following are the indications obtained.

1. The coconut palm under average conditions of soil and climate respond well to the annual application of balanced fertilizer mixtures consisting of 3 to 4 lb. of ammonium sulphate, 2 to 3 lb. of superphosphate or bonemeal and 2 to 3 lb. of muriate of potash. Application of 50 to 100 lb. of green leaves, farmyard manure or well matured compost is indicated in soils lacking in organic matter content.

2. Regular cultivation of the coconut gardens either by ploughing, digging with mamotty or piling mounds as the case may be is very necessary to obtain maximum benefits out of manuring. Under certain conditions, intercultivation by itself may give spectacular results.

3. Response to manuring may be considerably influenced by the initial bearing capacity of the trees, the inherent fertility status of the soil and the level of management already receiving. Trees which are poor or medium yielders because of neglect or poor soil fertility will show much better response to improved garden management than high yielding trees.

4. Increased yields due to improved procedures will normally be realised only 2 to 3 years after their adoption.

Economics of improved practices

Before taking up improved practices the growers would like to be convinced of the really profitable nature of the practice and this can be done only by giving them facts and figures from actual trials carried out in the field. We are in a position to furnish such proof based on results of a long range experiment laid out at Central Coconut Research Station, Kasaragod, where detailed results extending over a long period of years are available for comparison from two plots, one of which was being managed on scientific lines and the other was under abject neglect. The *increase in yield* obtained per tree per year from the regularly manured and cultivated plot over the completely neglected plot averaged to 42.3 nuts which, on the basis of 60 trees per acre works out to an extra yield of 2538 nuts per acre for an additional expenditure of Rs. 126 only per acre. On the basis of this the estimated additional income from an acre at a range of price levels which have been prevailing in recent years will be as shown below:

Price of nuts (unhusked) (per 1000)	Additional profit per acre from regular cultivation and manuring
Rs.	Rs.
200	381.6
220	432.6
240	483.0
260	534 0
280	575.0
300	636.0

The additional profit due to scientific method of management is really very substantial and should encourage growers to take up improved methods of plantation management. In fact the growers who happened to visit the Research Station and see the plots under discussion are so struck by the difference in performance that no more argument is necessary to convince them about the need for proper plantation management for getting satisfactory yields. The results of this trial should, however, be considered as somewhat on the high side as the control plot is in a very badly neglected condition. The average growers may not be neglecting the gardens to such an extent; of and on they may be receiving some attention by way of an occasional cultivation, manuring and/or raising of intercrops. In such circumstances the difference in yield may not be so great when improved practices are adopted. It may be argued that these results are obtained at a Government Farm and that the same results may not be reproduced under the conditions of the growers. But this argument cannot hold water for the results of a very large number of trials carried out in growers' holdings by Potascheme in the Kerala State did show that improved plantation management is definitely profitable though not to the extent indicated by our results. The growers need have, therefore, no apprehension whatever regarding the monetary benefits that they would get by the adoption of improved management practices by them. The only thing they have to remember at the outset is that increased yields will be realised only 2 to 3 years after the scientific methods were brought into practice and not within a few months as is the case of annual crops.

Survey of Coconut Gardens in North Kanara

By
Dr. V. G. KULKARNI & V. G. BHAT

PART II

KUMTA TALUKA

THE total area of Kumta Taluka is 235 square miles. The river Aghanashini formed by the union of two riverlets at Muttalli in Siddappur taluka flows through Siddapur taluka and enters Kumta taluka from the eastern border. This river flows to the west and joins the Arabian sea at Aghanashini. Uppinapattana, Manaki, Divagi, Mirjan, Hegde, Aghanashini and Tadadi are some of the important villages situated on the banks of this river. A good number of small streams and riverlets join Aghanashini. But they do not form rich deltaic regions as those of the river Sharavati in Honawar Taluka.

A good number of hills and mountains belonging to the Sahyadri Range lie in the northern and eastern parts of this Taluka. The region near the coast, about 8 to 10 miles in width, is plain. The major portion of the population of Kumta Taluka is found near the coast in this region.

Coconut, arecanut and paddy are the main crops of this taluka. Agriculture and gardening are found mainly in

the plain region in the coastal patch. The hilly tract is sparsely populated. We find some arecanut gardens there.

The coconut gardens in this taluka are mainly found on the banks of the river Aghanashini or along the coast. Coconut trees are also found along the boundaries of the paddy fields and round the arecanut gardens.

The climatic conditions are almost the same as in Honawar taluka. The rainfall in the coastal region is about 150". The weather is hot and humid, which is best suited for coconut gardening.

The coconut gardeners of this taluka have not yet adopted scientific methods of cultivation. They are not using good manures. Their gardens are infested with beetles and other parasites. As a result, the gardens are not in good condition and the yield of nuts per tree is comparatively low. The total area under cultivation is 24,846 acres out of which 2,489 acres – approximately one tenth of the cultivated area – are under coconut. The acreage of coconut gardens in villages of Kumta Taluka is given below:

KUMTA TALUKA

1	Aghanashini	64.63
2	Bada	45.43
3	Baggon	40.66
4	Bankikodla	24.96
5	Bavikodla	22.50
6	Bidrigeri	4.78
7	Chatrakurve	8.36
8	Chikkolli	0.25
9	Chitrigi	34 91
10	Devagiri	17.93
11	Divigi	45.39
12	Gokarna	227.6
13	Konalli (A)	1.25
14	Gudeangadi	61.75
15	Hale Hervatta	33.65
16	Halkar	14.22
17	Handigona	19.6
18	Honne Halli	93.58
19	Harinir	11.5
20	Haroli	5.2
21	Harumaskeri	18.72
22	Hegde	143.25
23	Hollanagadda	94.00
24	Holegadde	46.93
25	Horbhag	8.11
26	Hosa Hervatta	34.72
27	Hoskeri	4 45
28	Hubbanageri	25.35
29	Evvadi	3.05
30	Kadekodi	10.13
31	Kadive	0.96
32	Kagal	97.3
33	Kalabhag	92.63
34	Kalkeri	19.53
35	Kodakani	64.15
36	Kumta	146.84
37	Kundaguni	0.25
38	Ukkeri	16.35
39	Manikatti	0.66
40	Manaki	30.5
41	Ma ha	15.91
42	Mirjan	68.3
43	Nadumaskeri	86.26
44	Nagarbeilu	—
45	Nanulapur	—
46	Paduvani	19.36
47	Talagod	14.23
48	Toregajji	5.5
49	Torke	17.46
50	Valagalli	17.64
51	Vannalli	19.32
52	Igalakurve	33.75
53	Bargi	40.48
54	Bargigajni	3.43
55	Bedkuli	14.84
56	Hegale	5.7
57	Hiregutti	36.61

58	Hittalamakki	2.38
59	Karkimakki	17.74
60	Kelginastala	—
61	Keppekurve	—
62	Konali (B)	31.58
63	Kujalli	28.77
64	Madhanageri	2.85
65	Manurkurve	0.05
66	Midlagajji	2.65
67	Vorab	6.75
68	Chattibele	2.38
69	Navalkurve	—
70	Tannir Honda	1.4
71	Urakeri	25.63
72	Ennemidi	3.36
73	Alkod	26.4
74	Alavalli	9.78
75	Antravalli	71.33
76	Bhandival	6.71
77	Kallabbe	42.5
78	Kurigadde	0.72
79	Madkibeilu	0.25
80	Murur	52.75
81	Nilkod	6.18
82	Santur	4.22
83	Toppalagutta	2.91
84	Uppinapattana	31.73
85	Ettinabeil	5.56
86	Anegundi	0.025
87	Harita	2.275
88	Hosad	0.04
89	Kolimanjaguni	0.208
90	Mugvernavadi	1.5
91	Shirgunji	3.88
92	Yashvantimule	—
93	Banolli	0.69
94	Basikeri	0.31
95	Bellangi	0.65
96	Divalli	0.74
97	Haravalli	0.05
98	Hegde Honalli	0.26
99	Hindbeil	0.15
100	Kandavalli	0 69
101	Kavalidi	0.58
102	Kodambale	8.34
103	Malavalli	0.36
104	Nagur	19.97
105	Sandollimattolli	0.53
106	Santeguli	0.1
107	Santagalla	0.22
108	Yadattare	0.18
109	Yalavalli	17.2
110	Abbolli	0.45
111	Alagar	—
112	Bangane	0.68
113	Chimmelli	—
114	Hebbeli	0.25
115	Holavalli	—
116	Honagare	—
117	Kadakod	0.8
118	Kalave	0.13
119	Kanakale	—
120	Medhini	0.45
121	Morke	0.15
122	Mudanalli	0.25
123	Madagi	—
124	Sappinahosalli	0.45
125	Ulluramatha	0.25
126	Yana	7.16

We selected three villages for sample survey. Of these three villages, the coconut gardens in the village Holanagadde are in a very poor condition. The results of the survey are given below : —

1. Divagi

This village is situated on the eastern bank of the river Aghanashini. Coconut, paddy and sugarcane are the main crops of this village. The soil is red and loamy. The total area under coconut is 47.1 acres.

The coconut gardens get rain water for about 5 months i.e. from June to October every year. During the remaining period of the year, the cultivators have to water the coconut trees

regularly. Water is lifted by hand from the wells that are maintained for this purpose in every garden. Nobody has fitted up pumps to pump out water from the well for irrigating the gardens. Nor have they taken to any of the modern scientific methods of gardening. Hence the gardens are not in good condition.

The gardens of this village use Kasakkana (Nux vomica) leaves and stems as manure as they are available in plenty in the nearby forests. Fish guano is used by very few. The spacing is not regular – the average distance between two trees varies from 15 to 20 feet. We find only the tall variety here. The yield of the nuts per tree varies from 30 to 50.

The report of the survey of 15 typical survey numbers is given below :—

Average spacing – 15 to 20 feet
Average yield – 40 nuts per year
Total survey numbers – 94.

DIVAGI

Survey numbers	Acreage under coconut	Trees bearing	Trees non-bearing		
			Below 8 years	Old and diseased	Total
1	1.81	155	25	8	188
3	2.41	203	32	11	246
8	1.93	168	27	5	200
10	2.00	152	35	6	193
11	1 83	141	18	5	164
45	0.47	37	11	—	48
52	0.25	35	2	1	38
82	0.38	27	12	3	42
88	3.6	237	65	18	320
89	1.8	129	22	3	154
90	0.5	41	3	2	46
93	0.53	39	12	3	54
97	0.28	25	3	—	28
99	0.35	29	5	1	35
101	0.56	43	13	2	58

2. *Manaki*

This village is situated on the western bank of river Aghanashini. The soil is red and loamy. Paddy and coconut are the main crops here. We do not find sugarcane or arecanut trees in this place. The total area under coconut is 30 51 acres.

As in Divagi the coconut gardens in this village get rain water for about 5 months during the rainy season. Water is lifted from the wells for irrigating the

gardens during the dry season. The gardeners have not fitted up pumps for lifting water from the well. They are using age old crude methods of cultivation. As in Divagi the gardeners use Kasakkana (Nux vomica) leaves and stems which are found in the nearby forests as manure.

The spacing of coconut trees is not regular. The distance between two trees is so adjusted as to see that the crowns do not touch each other. Thus the distance between two trees varies from 15 to 20 feet. We find only the tall variety here, which starts bearing only after 10 to 12 years. The yield of nuts per tree varies from 40 to 50.

The report of the survey of 15 typical survey numbers is given below:

Average spacing	15 to 20 feet.
Average yield	40 to 50 nuts per year.
Total survey numbers	12

MANAKI

Survey Numbers	Acreage under coconut	Trees Bearing	Trees non-bearing		Total
			Below 8 years	Old & diseased	
2	0.6	47	9	2	58
7	0.39	33	11	...	44
10	0.6	52	8	...	60
12	0.78	61	13	2	77
13	0.66	55	...	5	60
16	0.98	73	15	7	95
125	2.24	167	29	5	211
127	0.25	19	3	...	22
152	1.03	75	8	2	85
153	0.85	51	5	3	59
155	0.55	49	3	...	52
160	0.53	40	11	3	54
163	0.60	51	8	2	61
211	0.88	79	12	4	95
229	1.4	118	25	8	151

3. *Holanagadde*

This village is situated on the sea shore. Formerly all the lands of this village were owned by a few families. Major portion of the population is very backward financially. The land is not so fertile. The cultivators cannot afford to purchase manure. Forest area is comparatively far off and hence there is a dearth of green manure. As a result, the coconut gardens do not get any manure and hence they are not in a good condition. The crowns of the trees in

this village are thin and less dense as compared to those in Manaki and Divagi. Hence the yield in this village is very low–not more than 15 to 20 nuts per tree per year.

The report of the survey of 11 typical survey numbers is given below.

Average spacing: 15 to 20 feet.

Average yield: 15 to 20 nuts per tree

HOLANAGADDE

Survey Numbers	Area under coconut	Trees bearing	Trees non-bearing		Total
			Below 8 years	Old and diseased	
10	0.26	22	2	3	27
11	0.14	15	0	5	20
12	0.26	17	1	2	20
14	0.19	19	5	0	24
15	0.20	10	0	2	12
16	1.05	75	3	10	88
556	0.63	50	5	9	64
567	0.35	30	4	8	42
459	0.24	12	4	5	21
448	0.76	70	8	10	88
441	0.76	65	10	7	82

PART III

BHATKAL PETHA

BHATKAL is classified as a petha and not as a Taluka as its area is comparatively small i.e. 129 square miles — almost half of the area of Honnavar taluka. It forms southern most region of North Kanara district. There is — Kundapur taluka of the south Kanara district to the south, the Shimoga district to the east and Honnavar taluka to the north of this petha. The length of the sea coast is about 20 miles.

Manki hills are situated on the border of Bhatkal and Honnavar taluka. The land is sloping westwards towards

the Arabian sea. The river Venkatapur flows to the west and joins the Arabian sea near Venkatapur. Small riverlet known as "Shirali" riverlet and "Bhatkal" riverlet flow near Shirali and Bhatkal respectively of this petha.

The soil in the eastern parts is laterite. As we go to the west, we find red sandy loams. The land is fertile. Paddy, coconut, arecanut, pepper and cardamum are the main crops. Some 15 years back, the forests and the coastal region of this petha were full of cinnamon trees. They were cut down indiscriminately for extraction of the cinnamon oil and also for use as fuel during the rainy season and hence we do not find even a single cinnamon tree at present.

The climate, natural geography and the culture of the people resemble those of South Kanara.

The coconut gardens are situated in the plain patch of the land, about five miles in width, along the coast and also on the banks of riverlets and streams. Coconut gardening is still conducted according to the primitive methods. The spacing has been irregular. In some gardens, the trees are very close to each other. Nut drop disease is quite common in this taluka. Pests like the beetle are found in the interior and not along the coast. The yield per tree is moderate.

The coconut gardens round about Bhatkal are owned by Navayats—a rich community of Muslims. The gardens in the remaining parts are cultivated by Sherugars, Jains, Namadharis, Mogirs etc.

The total area under coconuts is 1572 acres. The acreage of coconut gardens in various villages of Bhatkal Petha is given below:-

BHATKAL PETHA

Name of the village	Acres
1. Bastigalmigte	10.15
2. Behalli	1.02
3. Belni	31.75
4. Bengre (I)	47.75
A. Bengre (II)	44.30
5. Chavathani	9.39
6. Hadhin	23.22
7. Heble	98.31
8. Jali	64.50
9. Kaikini (i)	139.12
10. Karikal	19.33
11. Mavalli (i)	74.10
12. Mavalli (ii)	127.10
13. Mavinkurve	16.65
14. Madbhatkal	9.30
15. Mundalli	120.00
16. Mutalli	14.40
17. Puruvarg	15.58
18. Shirali (i)	123.23
19. Shirali (ii)	21.90
20. Susgadi	126.90
21. Tagragod	10.40
22. Talgod	37.90
23. Bailur	101.30
24. Belke	55.55
25. Bailalkhand	2.32
26. Hadil	10.55
27. Talan	6.18
28. Venkatpur	14.55
29. Yelawadikovur	7.54
30. Golibelur	2.98
31. Gorte	47.15
32. Herur	2.55
33. Benandur	1.25
34. Beshe	0.80
35. Bilurmane	1.15
36. Hadlur	8.16
37. Kitre	6.40

Name of the village	Acres
38. Konar	11.20
39. Koppa	31.38
40. Kotkhand	15.75
41. Kuntwani	3.60
42. Marukeri	19.16
43. Antravalli	0.35
44. Aravakki	1.43
45. Hadavalli	1.90
46. Hallari	0.10
47. Halyani	2.40
48. Hudil	2.60
49. Kaggundi	0.50
50. Kerehittal	0.54
51. Mugali	0.80
52. Murkodi	0.90
53. Nuz	1.80
54. Vonibagil	0.25
55. Badabag	0.15
56. Kulvadi	0.50
57. Kurandur	0.10

The pattern of coconut gardening in Bhatkal Petha is almost the same everywhere. Murdeshwar, Shiralai, Venkatapur, Mundalli are the main centres of coconut gardening. We selected three villages near Bhatkal namely Chavathani, Purvarg, and Bastigaligte. We selected these villages for survey because the gardens in Chavathani are owned mostly by Navayats, those in-Bastigal-midte mostly by Jains and those in Puruvarg partly by Navayats, and partly by other communities. Thus these three villages, though small in area and size, represent all the shades and techniques of coconut gardening in Bhatkal petha. The results of the survey are given below:-

Chavathani

This village is situated at a distance of two miles from Bhatkal. The sea-shore is about two miles away from this place. Coconut and paddy are the main crops here. The soil is red and loamy. The gardens in this place are owned by the rich Navayats who stay at Bhatkal.

The total area under coconut is 9.45 acres. These gardens get rain water during the rainy season. In dry months, the gardens are irrigated by well water lifted by hand. Mango leaves are commonly used as fertiliser for coconut trees. The gardens are in moderate condition. The average yield per tree is 35 approximately.

The report of the survey of typical 15 survey numbers is given below:-

Average spacing: 15 to 20 feet.
Average yield: 35 nuts per tree.

CHAVATHANI

Survey Nos.	Acreage	Trees Bearing	Trees non-bearing		
			Below 8 years	Old & Diseased	Total
1	1.34	104	25	4	133
7	0.58	45	5	2	52
9	0.38	26	7	2	35
11	0.26	19	5	...	24
12	0.50	35	18	1	54
13	0.61	45	10	2	57

Survey Nos.	Acreage	Trees Bearing	Trees non-bearing		
			Below 8 years	Old & Diseased	Total
17	0.72	55	12	2	69
18	1.19	85	20	6	111
21	0.20	16	4	...	20
23	0.78	65	8	...	73
24	0.51	35	11	2	48
29	0.42	29	15	...	44
35	0.40	35	3	2	40
37	0.30	21	12	1	34
38	0.50	39	8	3	50

Puruvarg

This is a small village with a population of about 700, situated 3 miles away from the seashore. Coconut and paddy are the main crops here. The soil is red sandy loam. Some of the gardens are owned by Navayats and some by people belonging to Kshatriya community.

The total area under coconut cultivation is 15.58 acres. The gardens here are irrigated during the dry season by well water lifted by hand. Leaves of mango and nux vomica are used as fertiliser. The trees are in moderate condition. The average yield per tree is 35 approximately.

The report of the survey of 13 typical survey numbers is given below:–

Average spacing : 15 to 20 feet.
Average yield : 35 nuts per tree.

PURUVARG

Survey Nos.	Acreage	Trees Bearing	Trees non-bearing		
			Below 8 years	Old & diseased	Total
109	0.09	8	3	...	11
112	0.09	9	4	1	14
81	0.79	59	13	3	85
82	0.25	17	4	...	21
83	0.55	35	6	3	44
84	0.61	45	13	2	60
85	0.99	78	18	2	98
95	0.60	45	20	...	65
100	0.63	52	8	2	62
2	0.96	68	25	4	97
12	0.56	39	12	...	51
37	0.47	41	2	...	43
72	0.64	53	8	1	62

Bastigalmigte

This village is about 4 miles from seashore. Most of the gardens of this village are owned by Jains. The soil is red and loamy. The total area under coconut in this village is 10.2 acres. Leaves of mango and nux vomica are used as fertilisers. The average yield is 40 nuts per tree. The gardens are in moderate condition.

The report of the survey of typical 11 survey numbers is given below:-

Average spacing : 15 to 20 feet.

Average yield per year : 40 nuts per tree.

BASTIGALMIGTE

Survey Nos.	Acreage	Trees Bearing	Trees non-bearing		
			Below 8 years	Old & diseased	Total
1	2.15	158	41	9	208
3	1.06	82	12	2	96
4	0.15	9	8	...	17
5	0.75	54	9	4	68
6	1.23	83	15	3	101
7	0.13	10	2	...	12
9	1.54	115	31	5	151
10	0.55	41	13	1	55
12	0.45	36	5	2	43
13	1.55	111	20	6	137
14	0.50	42	8	...	50

Can cocoa be grown as an intercrop of coconut?

(Contributed)

IT has been suggested recently by interests primarily concerned with cocoa that this crop can be interplanted with coconuts in India where there is suitable soil. In doing so, it has been stated that where the palms are widely spaced at 32′ x 32′ the shade provided would prove insufficient and consequently, a closer planting of the coconut trees at 25' or 27' has been recommended. This inter–cropping system, it will be discerned, deems coconut only as a minor crop to provide mainly the shade for the cocoa. It has to be brought home to our farmers that coconut is of much greater significance in the country's agricultural economy than cocoa will or can ever assume. It is important, therefore, for the coconut growers to appreciate fully the implications before taking up cocoa cultivation in their coconut gardens.

Growing of cocoa as an inter–crop is not a new practice. The reports dealing with it, however, very largely concern themselves with its effects on the cocoa crop. There is, by and large, no definite information on the behaviour of the coconut under the influence of cocoa as an associate crop except that close planting of coconut for meeting the shade requirements of the cocoa will have deleterious effect on the production of copra. It is also a subject for determination through actual trial how coconut will fare in its competition with cocoa for soil nutrients and moisture. There is also the more serious aspect of the possibility of accentuating coconut diseases caused by organisms like *Phytophthora* that affect both cocoa and coconut.

There are in addition a host of other questions that arise relating to the entertainment of cocoa in coconut plantations and these have yet to be satisfactorily answered. It has to be stressed also that the peculiarities of cocoa cultivation prescribe the need for planting fairly large populations of its trees in a block to ensure that a sizable quantity of the produce is available for the preparation of a uniform product which alone has a market value. Most of the coconut growers who operate on a small scale will not be able to place in the market a product of that uniform quality which the manufacturers insist upon. On all these grounds and until the various aspects are thoroughly worked out at experimental centres in the country, our farmers will do well not to interplant cocoa in their coconut gardens.

Ways of Climbing the Coconut Palm

By
T. A. DAVIS
Indian Statistical Institute, Calcutta-35

THE problem of scaling the trunks of tall trees is acute both for research workers on palms as well as forest tree-geneticists, and yet, very little progress has been attained in devising suitable gadgets for the purpose. Since most coconut breeders are unable to shin the prodigious stems even to carry out the vital pollination work, these manipulations are usually entrusted to professional climbers who are mostly illiterate, and consequently the data collected through such incompetent and irresponsible agents are of doubtful quality. This situation is perhaps un-avoidable until the breeder apart from being a geneticist obtains some illumination to reach the top. Such an ability is a rare attainment since most scientists are not keen on taking this perilous undertaking. It is heartening that in Ceylon several young and reliable men are being trained to carry out the work of pollination in coconut.

Massive height of coconut, a great handicap

The coconut palm grows to a height of about thirty metres, and the stem in addition to its being smooth and slippery is devoid of ramifications, which makes climbing its heights a most hazardous job. Coconut has two main varieties, the tall and dwarf, and more than 95 per cent of the palms under cultivation are the talls. Though this variety starts flowering by about the eighth year of planting, a palm is usually selected as a parent after it crosses its twentieth year, by which time the stem would have grown to about five metres, a stage when climbing invariably becomes a necessity. The tall variety in particular though monoecious (having both male and female flowers on the same tree), is cross-pollinated in nature, and due to a very long process of cross pollination has become highly heterozygous. Even hundreds of years may elapse before pure parents are obtained for breeding. This complex nature of the palm and the difficulties in climbing it render coconut breeding a challenge to man's ingenuity.

If the growth of the stem is checked and some sort of a 'bonsoi' (midget) coconut palm evolved, climbing may perhaps be avoided. By air–layering or marcotage, i.e., by inducing roots from the stem just below the crown of leaves in a tall palm and severing the crown with the rooted portion and planting as a 'young seedling', the height of the stem will be reduced and thereby the strain of climbing may be minimised for some years.

Common climbing practices

Harvesting coconuts is a costly operation especially in Ceylon, the Philippines and Malaya, and wherever there is acute shortage of climbers the ripe fruits are often allowed to shed and collected periodically. In some regions of these countries harvesting short palms is practised with billhooks attached to bamboo poles by men who are not used to climbing. Though climbing should be within the reach of every able–bodied individual, very few learn this art, probably on account of the great physical strain it involves and the associated grave consequences caused by slips, leaving alone the tremendous practices required. Slips do occur, and may lead to permanent crippling or occasionally it can be fatal. The widow of such a deceased climber in India, according to Professor J. B. S. Haldane would be lucky if she got 500 rupees compensation. However, conditions have improved and at least in Government farms the climbers who are injured are offered medical attention and a compensation which is not too high to induce them to wilful accidents. Nevertheless the employers should subscribe to suitable free insurance policies against the health and life of the climbers.

Climbers in Kerala

Harvesting in India is done by men actually climbing the tree, six to twelve times a year with local variations in the frequency. In addition, effecting plant–protection measures also demands the operator reaching the crown. Perhaps the most efficient climbers are met with in Central Kerala (Fig. 1). It is no exaggeration that some of their vertical ascent is faster than many of us walking on level ground. The following information conveyed to me by an eye witness gives further evidence to the fantastic

capacity of some climbers. The speed will be at its maximum when they climb stealthily for pilfering a few nuts or to have a free drink of toddy ('neera')

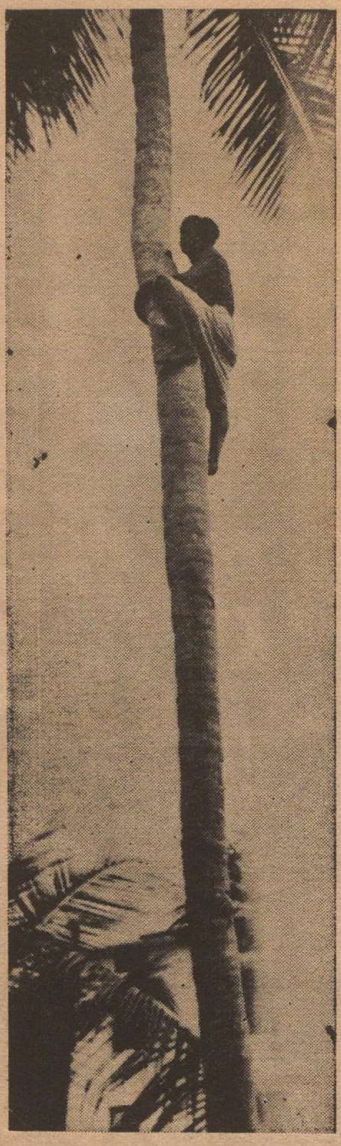


FIG 1

Climber from Kerala climbing without any aid

tapped from the inflorescence. The tapper in order to pick out his palms to be tapped from the others, particularly in dusky mornings when the crown is not clearly visible, leaves a stalk of the coconut leaf resting at the base of the stem. Petty thieves who are familiar with this practice, find no difficulty in locating such palms before the rightful tapper arrives, and will have their fill with the highly nutritious beverage. The tapper in order to baulk and catch the thief shifts the leaf stalk to the base of a short palm devoid of its crown. Misled by the leaf stalk, the thief climbs such a palm and climbs so very fast in his hurry to finish the clandestine job before the tapper arrives that when he reaches the blunt top of the palm his hands while trying to clutch the stem fall on empty space over the crownless stem and the poor wretch goes head over heels in a somersault in mid air, crashlanding on the earth to be received and belaboured by the tapper who keeps a close watch on the working of his trap.

Use of rope-ways and bamboo-ways

More strenuous is the tapping since a tree which is tapped has to be climbed twice or even thrice a day. In India, the coconut, palmyra, wild date and the sago palms are tapped for toddy. Tying of coconut husk on the stem at regular intervals helps the tapper to climb easily. But in Ceylon and the Philippines where large numbers of coconut palms in a block are tapped, rope–ways or bamboo–ways are arranged between trees that stand close to each other and this reduces the labour of climbing to a

FIG. 2

A toddy tapper on rope-way in Ceylon

considerable extent. Fig. 2 depicts a scene from Ceylon (photograph taken by Mr. Hettiarachchi of the C. R. I., Ceylon).

Ankle and waist rings

Use of ankle rings is very common among climbers. The rings made of coconut coir or similar hard fibres varies in diameter to suit the type of the palm, and are used to aid climbing. Such rings are the narrowest for climbing the areca palm and widest for palmyra palm. In some parts of India climbers prefer in addition to an ankle ring a big ring for the waist as well (Fig. 3). This waist ring enables the climber to stand in comfort and safety especially when his hands are engaged in other operations.

This is a necessity while tapping the wild date palms.

The legendary monkey

In some parts of Malaya where the cost of human labour is prohibitive, monkeys are trained to harvest coconuts and arecanuts. This may perhaps be the living realisation of the legendary monkeys which exchanged coconuts to counter the pelting of stones by mischievous urchin. However, in Fig. 4 a trained monkey struggles to harvest coconuts without the stimulus of a pebble-throw. There is no need to doubt that immature nuts would be plucked by the beast because each monkey has a trainer who by experience is able to spot out ripe nuts from below. The monkey is always chained (seen in figure) and through the chain instructions are conveyed. I am indebted to Dr. A. R. McWalter, Assistant Director of Agriculture (Research), Federation of Malaya for the photograph.

FIG. 3

Bengal climber using ankle and waist rings

Improved devices

Bamboo ladders for climbing coconut are also used in some localities. But it is difficult to procure very long ladders to cover the entire stem of tall palms, and even if such a one is made, its operation will be very inconvenient.

At the Coconut Research Institute of Ceylon, an improvised extendable ladder was made which consists of a four-sectioned telescopic assembly, extendable to a height of about 15 metres. The unit is mounted on a chasis on pneumatic wheels which is drawn by a tractor. The design is not satisfactory owing to the strain on the guides due to the weight of the sections when fully extended. However, a new gadget described below can lift or bring down the

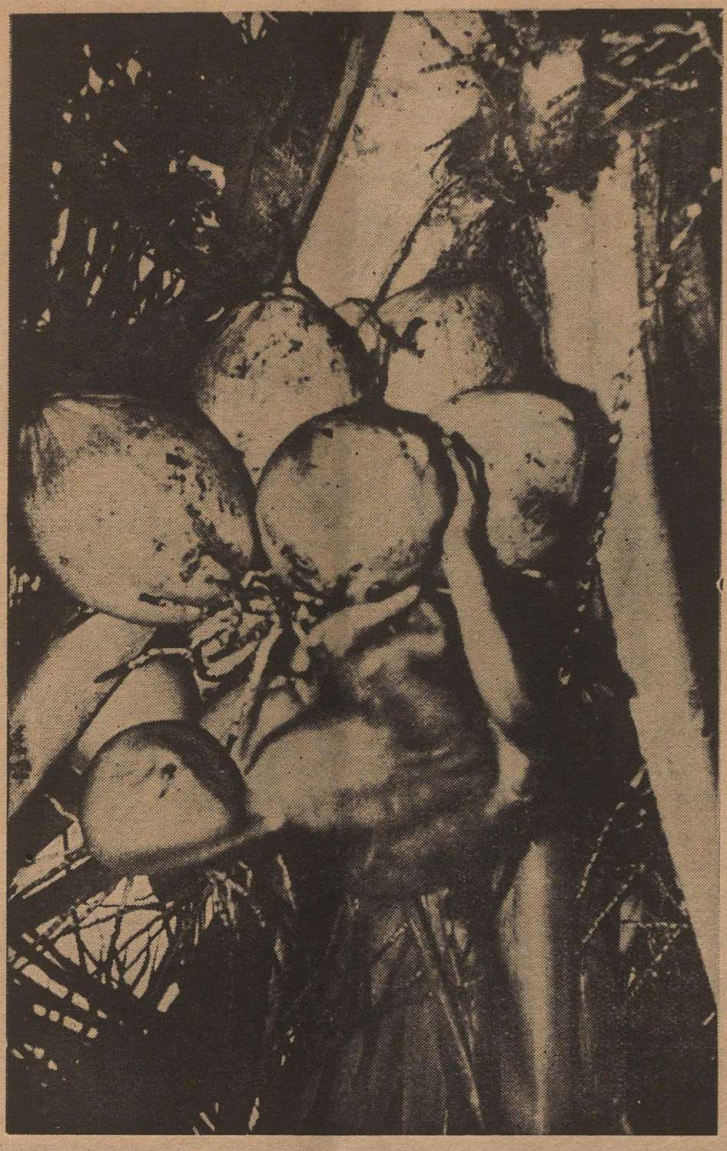


FIG. 4
Harvesting coconut by a trained monkey

climber, who is himself the operator, without any strain. It can also carry more than one person and bring down heavy bunches of nuts or transport any other materials.

The new gadget

In Fig. 5 is seen the author using a new gadget for climbing a coconut. This machine is an improved model over the

FIG. 5

The new gadget in action

one which was successfully demonstrated before distinguished gatherings in Trivandrum (Kerala) and Bombay. The improved model consists primarily of two rollers which are fixed within two triangular frames by means of angle and flat iron bars. One of the rollers is easily detachable and this enables to bring the stem of the palm to be climbed within the rollers and metallic frames of the machine. From the axil of one of the rollers is attached a convenient farme structure for the operator to stand. The weight of the operator helps the rollers grip the stem by a cantilever principle so that the machine and the operator are firmly held at any height of the stem. By a set of gears and pinions the operator is able to rotate one of rollers without much effort, and he (or she) can wind himself (or herself) upwards or downwards as he (or she) likes.

The gadget may as wel be fitted with a motor to avoid the strain on the operator. With an average man, the machine may weigh about 90 kg. and since by a series of reducing gears, the effort required is reduced to one-tenth the resistance, about 9 kg. power may be enough to man the gadget and this can be obtained without using any other driving force. I am giving a photograph (Fig. 6) of an earlier model of gadget for the making of which I received much help from Mr. K. K. Achary and his brothers, Kayangulam.

In order to infuse confidenc into the scientists who are likely to make use of this machine, the following safety devices have been provided. In one model, a

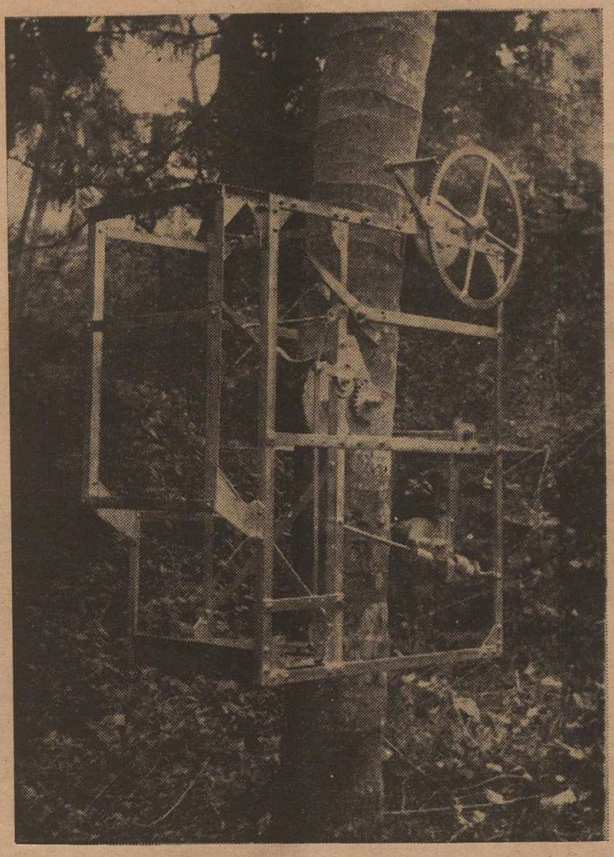


FIG. 6

An earlier model of a palm climbing machine

secure chamber is built for the operator to stand or sit and this will prevent even the chance falling out of the operator. A ratchet wheel is fixed for use particularly if the chain which connects the two rollers gives way. For climbing crooked stems, an additional roller is fitted on the gadget. A deep dentate structure having a trigger mechanism is provided for, which will automatically work into the stem if any of the pinions fail to function.

KERALA

August

Top-dress with manure in loamy, laterite, sandy and also in alluvial soils.

September

Continue top-dressing in loamy, laterite, sandy and also in alluvial soils.

In laterite soil apply common salt if you have not applied any other manure. Also plough up or dig the garden in case you don't irrigate your garden.

MYSORE

August

Apply fertilizers, if they have not been applied so far. Take broad basins round the palms and apply the following manures.

1. Superphosphate or bonemeal	1 kg.	per tree
2. Ammonium sulphate	1⅓ kg.	per year
3. Sulphate or muriate of potash	1 kg.	per year

or

1. Groundnut cake	9 kg.	per tree
2. Ash	11 kg.	per tree
3. Bonemeal	1 kg.	per year

September

Plough in the green manure crops grown in the garden.

ANDHRA PRADESH

August

Apply per tree the following manures.

1. Ammonium sulphate 1 – 1⅓ kg.
2. Muriate of potash 1 – 1⅓ kg.
3. Superphosphate or bonemeal 1 kg.

Apply the mixture in basins after the rains are over.

September

Plough into the soil the green manure crops grown in the garden.

Apply fertilizers if not already applied.

MADRAS

August

With the receipt of soaking showers, give a basal dressing of ash at 9 kg. per tree or cattle manure or compost at 21-42 kg. per tree.

Sow a green manure crop of sunnhemp, *crotalaria striata, calopogonium mucunoides* or *kolinji.*

In sandy soils or in places where such green manure crops cannot be grown, plant quick-growing, green leaf-yielding plants like *Gliricidia maculata* along the borders of the garden.

September

Slash or cut down the green manure and plough it in with an iron plough.

Broadcast ammonium sulphate (or the nitrogenous fertilizer you use); plough in along with the green manure crop, at the first or second round of ploughing. If cattle manure or compost had not been applied as a basal dressing for the green manure crop, apply now, and plough in.

ORISSA

August

Dig up grass and weeds and turn them into the soil. Clean the crowns. Tie up tender bunches. Prepare for sowing winter vegetables. Continue controlling rhinoceros beetle.

September

Apply manure mixtures in basins round the palms. Plough up the garden.

WEST BENGAL

August

Apply a manure mixture having the following composition at the rate of 3½ kg. per adult palm in basins dug round the palm.

Nitrogen	8 per cent.
Phosphoric acid	8 per cent.
Muriate of potash	16 per cent.

It is better to apply this mixture in two doses, viz. one dose of 1¾ kg. just before the monsoon and the other dose just after the monsoon.

Plant quick growing manure crops, viz. gliricidia and sesbania around the coconut palms for incorporation of green matter.

September

Apply the second (post monsoon) dose of manure mixture after clearing the weeds etc.

MAHARASHTRA

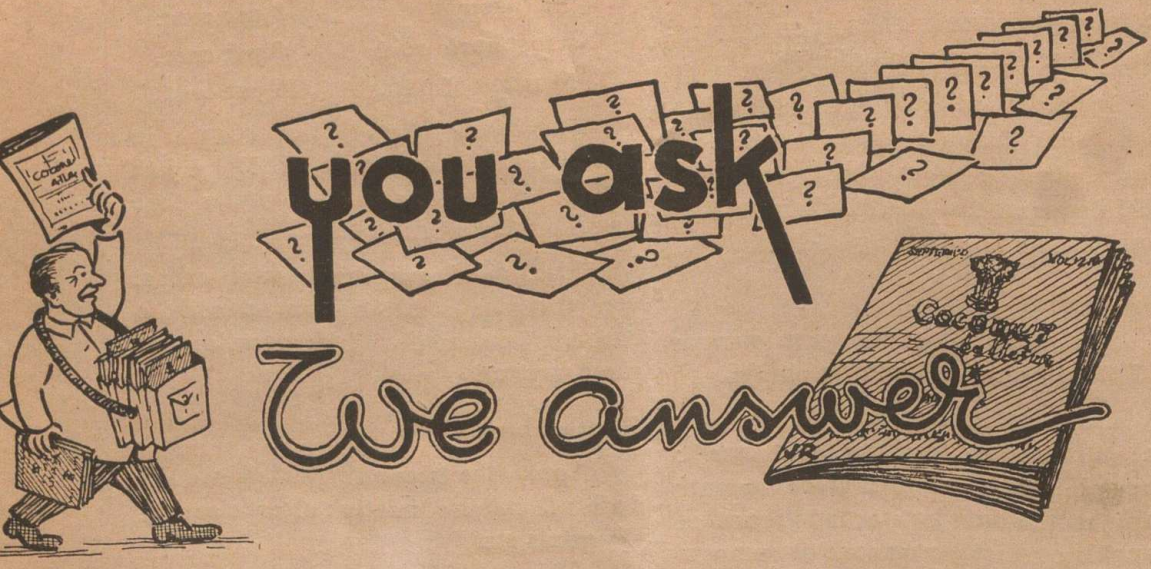
August

Dig up and turn the grass and weeds and also the green manure into the soil. If there are heavy bunches in the palm, tie them up with a rope to the leaf stalks.

Clean the crowns and put a mixture of sand and BHC in the leaf axils. Pull out beetles and fill the holes also with the mixture. Spray all manure heaps or rubbish with 0.1 per cent BHC.

September

Apply a manure mixture in shallow basins dug round the palms, if you are on the west coast. In case you have not raised any green manure crop, apply 23 kg. of green leaf per palm. Give the third spray with Bordeaux mixture and DDT.



Question: In one of my compounds there are 87 coconut trees in an area of 68 cents, besides a few other trees. I feel that the coconut trees are too crowded and therefore do not yield the normal rate of coconuts. I seek your advice for thinning away the trees if necessary.

Answer: Undoubtedly your garden is overcrowded, since according to our calculation you should have only about 50 plants. If the plants have already begun to bear, thinning has to be done based on indication of yielding ability; late bearers and those that exhibit lanky growth may be removed first. If the plants have not yet begun to bear, thinning can be done on the basis of vigour of vegetative growth. Thinning may be done in stages after studying how earlier thinnings have affected the growth of standing palms.

Question: Kindly let me know whom I have to approach to get BHC 0.01% and also what spray I should use on 10 year old palms for controlling rhinoceros beetle. Also I want about ½ dozen hooks to remove the beetles.

Answer: The rhinoceros beetles attacking your coconut palms can be controlled by spraying the breeding places such as cattle dung, compost heaps and other decaying organic matter with 0.01% BHC. You *need not* spray the crowns of palms with BHC for the control of this pest. For treating 10 cubic feet of cowdung 1¼ oz. of BHC 50% wettable powder suspended in water will be sufficient. The quantity of water to

be added with the insecticide for preparing spray mixture depends on the moisture content of the cow-dung to be treated. BHC 50% wettable powder will be available with the Agricultural Extension Officers of your locality.

Beetle hooks can be got made locally by using iron rod 2½ feet long and ¼" thick. They must have a sharp hook at one end.

Question: How deep should be the basin dug round a coconut palm to apply manures? When should the basin be prepared? What manures should be applied in the basin?

Answer: Dig the basin round the palm at the commencement of the South-West monsoon. It is important that the basin should be sufficiently broad. Depth is not such an important factor. The basin should be 4 to 5 ft. wide and 2 ft. away from the base of the palm. It need not be more than a foot deep. If the tender roots appear at a lesser depth the basin should not be deepened further. Heap the dug-out soil round the outer edge of the basin. Spread in the basins 100 lb. of green manure and over that 75 lb. of farmyard manure. Trim the inner side of the basins and cover the manures. In August-September put in each basin 20-40 lb. of ash or 2 lb. of muriate of potash and 1 lb. of superphosphate and cover them with the earth heaped round the basins until they are completely filled.

Question: What are the manurial ingredients contained in different oil cakes? Is coconut oil cake good for manure? Please give its composition in detail and the dose of application.

Answer: Oil cakes are generally applied to soils to supply nitrogenous plant food in organic form. The followiug are the percentages of nitrogen, potash and phosphoric aicd contained in the more common oil cakes which are generally used for manurial purposes.

OIL CAKE	PERCENTAGES		
	Nitrogen	Potash	Phosphoric acid
Groundnut oil cake	7.6	1.2	1.4
Castor ,,	5.3	1.2	1.6
Pungam ,,	4.2	0.7	0.9
Marotti ,,	3.0	1.0	1.0
Punnai ,,	2.7	1.6	1.1

Coconut oilcake contains about 3.5 per cent nitrogen, 1.3 per cent potash and 1.5 per cent phosphoric acid. Since it is in great demand for feeding cattle and poultry it is relatively more costly and is very seldom used as manure. It is advisable, therefore, to feed the coconut cake to cattle and use cattle dung which will be rich in manurial ingredients, for manuring crops.

Coconut oil in Rabbit Feeding

The effects of 0,5,10, and 15 per cent levels of crude coconut oil and 10 and 15 per cent Philcoa–Hiller coconut oil on gain in weight, relative growth rate, and feed conversion efficiency of 18 female and 18 male grade New Zealand rabbits were determined in a feeding trial of 96 days. In a second trial of 84 days, the same criteria were used to determine the feeding value of crude coconut oil only, at the same levels mentioned, with 12 females and 12 males. Females in trial I fed with 10 per cent Philcoa–Hiller coconut oil had a significantly higher gain in weight than the lots fed with 0, 5, and 15 per cent crude coconut oil and 15 per cent Philcoa–Hiller coconut oil. The relative growth rates of the lots of both sexes fed with 10 per cent coconut oil in both trails were slightly higher than the other lots including the control.

In trial 1, the protein content of rabbit meat before and after the feeding period did not differ. As a result of feeding coconut oil, the fat content and the saponification numbers increased while the iodine number decreased. There were no significant differences among the lots. The females gave a very highly significant (P = 0.001) level of cholesterol of 184.0 mg. per 100 ml. serum than the 116.5 mg. for the males. In both sexes, the carotene of blood plasma and liver were very low before and after the feeding period. No significant differences were observed in the vitamin A content of blood plasma among the lots as well as between the sexes. The vitamin A content of the fresh liver was about four to five times more than the blood plasma per unit weight.

Coconut oil increased the digestibility of crude protein, crude fat and nitrogen–free–extract but it decreased

the digestibility of crude fibre. The lots with 10 and 15 per cent oil had significantly higher TDN than either the control or the 5 per cent oil lot. The best feed conversion efficiencies were given by the lots fed with 10 per cent coconut oil in both trials for both sexes.

—*The Philippine Agriculturist*

The Toiling Sex

Practically every third woman in India works on a farm, reveals an International Labour Organisation (ILO) survey of employment and conditions of work for women in agriculture. In Japan and Thailand the percentage of women in agriculture is even higher, – 51.8 and 50.8 per cent, respectively–than in India (32.2 per cent).

"Women's work in the farm is never done," comments the report adding that women are hard toilers, labouring 16 hours a day even in developed countries like France and Sweden. In India and China, the heavy work of ploughing was sometimes done by women, the report revealed. Social customs like purdah influence the percentage of female agricultural labour; in Pakistan and Iran the percentages are as low as six and 4.1 respectively. In Pakistan there is little inclination to allow them to even pick cotton.

In the matter of wages, women in agriculture are in a less favourable position than women in other sectors of work. The survey shows that in India, between 1950–51 and 1956–57, the average daily wages of women in agriculture fell from 68 np to 58 np: while non–agricultural women workers' wages showed a slight increase, wages differently between men and women agricultural workers also widened, except in a few States like Madhya Pradesh, West Bengal, Orissa and Mysore,

The greater part of the farm woman's life was spent in "long hours of toil without rest or relaxation", and her contribution in every nation was of "great importance", while in Africa it was "indispensable", the document said.

An investigation in Japan "revealed that the burden of work carried by the women was greater than that carried by men and that they had less time for leisure and cultural activities", the report said.

—*Indian Farming*

Testing Colour Fastness of Fabric

A simple and inexpensive apparatus for testing the fastness of coloured fabrics to washing has been developed by the Lace Research Association (UK), and is being manufactured commercially by *Shirley Development Ltd.*, Manchester.

The apparatus consists of a revolving bracket holder, driven by an integral electric motor. and having clamps to hold 8 vacuum flasks, each of 1 litre capacity, arranged radially. The unit is enclosed in a cabinet the doors of which are shut during operation, and a warning light is provided to control the testing operations.

Samples of fabric and the test solution, previously heated to the required temperature, are placed in the flasks and then revolved at 40 r. p. m. After the required period, the samples are removed and rinsed, dried and then examined. With this apparatus, several tests can be

onducted at different temperatures simultaneously, with a minimum delay between the leading of the first and last samples. The round bottom of the flasks ensures that samples do not become wedged, and that they are thoroughly agitated throughout the last period.

—*Research & Industry*

WEATHER REVIEW

MAY 1963

	TEMPERATURE				RAINFALL			Sunshine
	Maximum		Minimum		Quantity in m. m.	Departure from normal	No. of rainy days	Total hrs. of bright sunshine
	Highest	Average	Lowest	Average				
Central Coconut Research Station, Kayangulam	35.1°C	33.0°C	22.4°C	25.2°C	326.2	—145.7	12	241.0
Central Coconut Research Station, Kasaragod	35.0°C	33.5°C	22.7°C	24.9°C	204.4	—72.7	13	276.8

JUNE 1963

	TEMPERATURE				RAINFALL			Sunshine
	Maximum		Minimum		Quantity in m. m.	Departure from normal	No. of rainy days	Total hrs. of bright sunshine
	Highest	Average	Lowest	Average				
Central Coconut Research Station, Kayangulam	32.7°C	30.9°C	22.8°C	24.2°C	317.2	—319.4	18	165.4
Central Coconut Research Station, Kasaragod	34.5°C	29.7°C	21.0°C	22.2°C	634.5	—283.7	23	108.2

Market Surveys

Foreign Markets

General Trend

The 'Oil world' Hamburg dated the 24th May, 1963 observes that the upward movement of the prices of edible oils and their raw materials induced by the report of the shortfall of the U. S. soyabean stocks on April 23rd, continued until the middle of May. In the second week of May 1963 all the commodities of this group except olive oil and sesame were able to achieve further advances. In the middle of this month a reactionary trend set in for the leading commodities, chiefly soyabean, soyabean oil and groundnuts, in the course of which, part of the price gains were lost.

Copra and particularly coconut oil too, profited from the price recovery for edible oils during the three weeks ending with the May 14th. On the 15th May, copra promptly joined the reactionary trend which showed its present dependance on the price movements of other edible oils. It is generally known that this was not always so. Until 1959 and again in 1961 copra and coconut oil were able to move more or less independently of the trend for other edible oils. This found its explanation in the fact that copra formerly was the leading commodity in the world trade in oil seeds, oils and fats. Since 1962 copra has finally lost this claim to soyabean, temporarily having been in the second rank during 1959–60. The reduced independence is one of the reasons why the continued drought in the Philippines and Malaya has so far not resulted in a difinite upward trend of prices. After all, a decline in the exports from those countries is now to be expected safely from late summer. On the other hand, the second half year of 1961 and the first half year of 1962 demonstrated that copra probably also for reasons other than those mentioned above is no longer capable of a personally independent development. Whether closer co-operation of the copra exporters will change this situation remains to be seen.

SINGAPORE

Copra

The Singapore copra market during the month of May, 1963, ruled easy as that of the previous month due to the good arrivals of copra in the market. Consequently an easier tone was also developed in the F. O. B. market.

On the 3rd May, 1963, price per picual (133⅓ lb.) F. O. B. copra fair mixed was quoted at M$. 28.50 which slightly improved to M$. 28.75 on the 10th. On the 17th a picul of copra was quoted at M$. 29.00 and remained at the level when the market closed on the 24th May 1963.

Coconut oil

During the month of May, 1963 both bulk and drum oil market displayed a quiet trend. The evidence of buying

interest was seen in the latter half of the month.

The price quoted for a picual (133⅓lb.) of drum oil on the 3rd May was M$ 45.00 which remained at the level till the 10th. On the 17th due to buying interest the price slightly advanced to M$ 45.50 per picul and remained at the same level on the 24th.

Indian Markets

COCHIN

May 16th to June 15th, 1963

When the Cochin coconut oil market opened on the 16th .May 1963, a quintal of ready oil was quoted at Rs. 266.00 The oil market recorded a firm undertone in the next two days but due to lack of demand for ready oil from upcountry markets and the lifting of the 40% power cut imposed on mills from the 23rd May, the prices tended to decline till the 25th May. On the 20th a quintal of oil was priced at Rs. 262.00 which dipped to Rs. 259.50 per quintal on the 24th and the market closed on the 25th at Rs. 260.00.

When the market opened on the 27th a quintal of ready oil was quoted at Rs. 262.50. During the last week of the month the market became strong and the prices advanced on account of the re–imposition of the 40% powercut on the mills due to the shortage of water in the Hydel reservoirs. On the 29th, price valued for a quintal of oil was Rs. 266.00 and the market closed on the 31st May at Rs. 264.00.

The market opened on the 1st June 1963 at Rs. 264.00 per quintal. The market remained closed on the next three days due to Sunday, Muharam and the sad demise of His Holiness Pope John XXIII on the 4th. In the first week of the month for want of demand from upcountry markets, the ready oil market displayed a recessionary trend in prices. On the 5th June price quoted for a quintal of oil was Rs. 262.00 which declined to Rs. 260.00 on the next day. The market closed for the week end on the 8th at Rs. 260.50.

The market opened on the 10th at the previous week's closing level. During the second week of June 1963, the market ruled easy due to the withdrawal of the power cut imposed on the millers and also on account of the lack of demand for oil from North Indian markets. The market remained at Rs. 261 00 per quintal on the 11th and the 12th and closed on the 15th June at Rs. 260.00.

ALLEPPEY

May 16th to June 15th, 1963

The Alleppey coconut oil market opened on the 16th at Rs. 263.00. Though there was not much demand for oil, the market witnessed a steady trend due to the power cut imposed on the millers and the price for a quintal remained at Rs. 263.00 till the 22nd. But when the power cut imposed on millers was lifted on the 23rd, the market ruled easy and the prices displayed a sagging tendency. On the 23rd, price quoted for a quintal of oil was Rs. 261.00, which lowered to Rs. 260.00 on the next day. The market closed for the week end on the 25th at Rs. 261.00.

When the market opened on the 27th a quintal of oil was quoted at Rs. 262.00. During the last week

of the month the undertone of the market became strong and prices advanced till the 29th owing to the re-imposition of the 40% power cut on mills due to shortage of water in the reservoirs. On the 28th and 29th a quintal of ready oil was priced at Rs. 265.00. But since it was reported that the power cut would soon be lifted the prices declined and the market closed on the 31st at Rs. 262 00.

The coconut oil market opened on the 1st June at the previous day's closing level of Rs 262.00 per quintal. The market remained closed on the next three days due to Sunday, Muharam and the demise of His Holiness Pope John XXIII. When the market opened on the 5th a quintal of oil was valued at Rs. 261.00. Restoration of the power cut imposed on the millers improved the supply position of oil but due to lack of demand from outside markets the ready oil business was dull and the market remained more or less steady till the 15th of June. On the 8th a quintal of oil was priced at Rs. 261.00 which remained at the same level till the 12th and the market closed on the 15th June at Rs. 259.00.

TO SUBSCRIBERS

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MARKET REPORTS

I. Cochin, Alleppey & Calicut

The daily prices of coconuts, copra, coconut oil and coconut oil cake at Cochin, Alleppey and Calicut from 16th May 1963 to 15th June 1963 are given below:

Date	Coconuts per thousand without husk			Copra per quintal*			Coconut oil per quintal			Coconut oil cake per quintal		
	Cochin	Alleppey	Calicut	Cochin	Alleppey	Calicut	Cochin	Alleppey	Calicut	Cochin	Alleppey	Calicut
	Rs. nP.	Rs. nP.	Rs. nP.	Rs. nP.	Rs. nP.	Rs. nP.	Rs. nP.	Rs. nP.	Rs. nP.	Rs. nP.	Rs. nP.	Rs. nP.
16 - 5 - 63	250 00	N.R.	235 00	179 87	190 00	180 00	266 00	263 00	271 00	48 50	47 00	50 00
17 - 5 - 63	250 00	N.R.	235 00	179 87	190 00	180 00	266 00	263 00	271 00	48 50	46 50	50 00
18 - 5 - 63	250 00	N.R.	235 00	179 00	190 00	180 00	265 00	263 00	271 00	48 00	47 00	50 00
19 - 5 - 63	S	U	N	D	A	Y	S	U	N	D	A	Y
20 - 5 - 63	250 00	N.R.	227 50	177 68	188 00	181 00	262 50	263 00	270 00	48 50	47 00	48 00
21 - 5 - 63	245 00	N.R.	227 50	178 62	188 00	181 00	264 00	263 00	271 00	48 50	46 50	48 00
22 - 5 - 63	245 00	240 00	230 00	177 37	187 00	181 00	262 00	263 00	271 00	48 50	46 50	48 00
23 - 5 - 63	245 00	N.R.	197 50	176 57	185 00	181 00	261 00	261 00	271 00	48 00	46 50	48 00
24 - 5 - 63	245 00	N.R.	197 50	175 63	185 00	180 00	259 50	260 00	271 00	48 00	46 50	48 00
25 - 5 - 63	245 00	245 00	197 50	175 94	183 00	180 00	260 00	261 00	271 00	48 00	46 50	48 00
26 - 5 - 63	S	U	N	D	A	Y	S	U	N	D	A	Y
27 - 5 - 63	235 00	N.R.	222 50	177 50	180 00	178 50	262 50	262 00	271 00	48 00	46 50	48 00

28 - 5 - 63	240	00	N.R.		222	50	179	25	185	00	178	50	265	00	265	00	271	00	48	50	47	00	48	00
29 - 5 - 63	240	00	240	00	222	50	179	87	183	00	178	50	266	00	265	00	271	00	48	50	47	00	48	00
30 - 5 - 63	240	00	N.R.		222	50	178	62	183	00	178	50	264	00	261	00	271	00	47	50	48	00	48	00
31 - 5 - 63	240	00	N.R.		222	50	178	80	183	00	178	00	264	00	262	00	270	00	49	00	47	50	48	00
1 - 6 - 63	240	00	240	00	222	50	178	80	183	00	180	00	264	00	262	00	271	00	49	00	47	50	41	00
2 - 6 - 63	S		U		N		D		A		Y		S		U		N		D		A		Y	
3 - 6 - 63	Holi		day		185	00	Holi		day		179	50	Holi		day		274	00	Holi		day		48	00
4 - 6 - 63	Holi		day		190	00	Holi		day		179	50	Holi		day		274	00	Holi		day		48	00
5 - 6 - 63	240	00	235	00	190	00	176	12	178	00	179	50	262	00	262	00	274	00	48	50	48	00	48	00
6 - 6 - 63	240	00	N.R.		230	00	176	12	177	00	180	00	260	00	260	00	274	00	48	50	48	00	48	00
7 - 6 - 63	240	00	N.R.		230	00	176	25	N.R.		179	00	261	00	N.R.		274	00	48	50	N.R.		48	00
8 - 6 - 63	240	00	240	00	N.R.		176	50	177	00	N.R.		260	50	261	00	N.R.		48	50	48	00	48	00
9 - 6 - 63	S		U		N		D		A		Y		S		U		N		D		A		Y	
10 - 6 - 63	240	00	N.R.		240	00	176	50	178	00	179	00	260	50	261	00	274	00	48	50	49	00	48	00
11 - 6 - 63	240	00	N.R.		242	50	176	75	180	00	181	50	261	00	261	00	272	00	48	50	49	00	48	00
12 - 6 - 63	240	00	237	50	190	00	176	75	180	00	180	00	261	00	261	00	272	00	48	50	48	00	48	50
13 - 6 - 63	240	00	N.R.		197	50	177	67	182	00	181	00	262	00	260	00	272	00	48	50	48	00	48	50
14 - 6 - 63	240	00	N.R.		240	00	177	67	183	00	180	00	262	00	260	50	272	00	48	50	48	00	48	50
15 - 6 - 63	240	00	240	00	240	00	176	00	183	00	181	00	260	00	259	00	272	00	48	00	48	00	48	00

Source: (1) **Cochin:** Indian Chamber of Commerce, Cochin. (2) **Alleppey:** The Malayala Manorama. (3) **Calicut:** The Mathrubhumi.
N. R. = No report. * Prices quoted for office pass copra at Cochin and Calicut and for Thelivu copra at Alleppey. 1 Quintal = 220 . 462 lb.

II. Malabar

Arrivals and sales of coconuts and copra in the different markets in Malabar during the month of May, 1963

Commodity - Markets	Carry over	Arrivals	Sales	Balance
Coconuts (in thousands)				
Kozhikode	300	3,600	3,725	175
Badagara	690	230	195	725
Ponnani	68	294	267	95
Tellicherry and Dharmadam	20	150	132	38
Tirur	77	248	222	103
Cannanore	6	62	61	7
Copra (in quintals)				
Kozhikode	3,560	13,000	13,500	3,060
Badagara	6,990	8,500	9,300	6,190
Cannanore	44	525	535	34

Weekly prices of coconut and copra in some of the Malabar markets during the month of May, 1963

Commodity - Markets	1st week Rs. nP.	2nd week Rs. nP.	3rd week Rs. nP.	4th week Rs. nP.
Coconuts (husked for 1000)				
Badagara	268.00	265.00	270.00	260.00
Ponnani	215.00	223.00	213.00	225.00
Tellicherry and Dharmadam	213.00	203.00	193.00	175.00
Tirur	232.00	220.00	230.00	220.00
Cannanore	280.00	273.00	278.00	278.00
Copra at Badagara Market (per quintal)				
Office pass	173.00	168.00	173.00	170.00
Edible Copra				
Madras	205.00	198.00	203.00	198.00
Dilpas	181.00	180.00	182.00	183.00
Rajpur	243.00	244.00	240.00	238.00

General **1. Coconut:** Arrivals and despatches have fallen compared to the previous month. Prices remained steady except during the last week, when it showed a downward trend.

2. Copra: Arrivals and despatches continued to be heavy during the month. Prices for all varities declined. Despatches were mainly to Bombay & Mysore.

III. Malaya

SINGAPORE

Weekly prices of copra and coconut oil at Singapore market during the month of May 1963 are given below:-

Date	Copra $	Coconut Oil $
1st week	28.50	45.00
2nd week	28.75	45.00
3rd week	29.00	45.50
4th week	29.00	45.50

PENANG

Average monthly prices of copra and coconut oil at Penang market during the month of April 1963 are given below:-

Month	Copra $	Coconut Oil $
April 1963	29.75	45.50

NOTE : The prices quoted above are per picul F. O. B. Singapore and Penang inclusive of the cost of containers i. e. second hand drums in the case of coconut oil and second hand gunny bags in the case of copra.

One picul = 133⅓ lb. One M$ = Rs. 1.56.

IV. Mysore

Statement showing the wholesale prices of coconut and its products as prevailed at Key markets in the Mysore State during February, March and April 1963

NAME OF THE CENTRE	COCONUT per 1,000 nuts	COPRA per quintal	COCONUT OIL per quintal
For February 1963			
Tiptur			
2-2-1963	246.00 — 283.00	196.00 — 200.00	239.00
9-2-1963	... — ...	... — ...	...
16-2-1963	270.00 — 290.00	203.00 — 211.00	239.00
23-2-1963	260.00 — 270.00	205.00 — 208.00	...
Arsikere			
2-2-1963	222.00 — 306.50	196.00 — 201.00	306.25
9-2-1963	209.50 — 336.00	199.75 — 202.75	306.25
16-2-1963	... — ...	200.00 — 212.50	...
23-2-1963	222.00 — 283.00	200.00 — 210.00	...
Mangalore			
2-2-1963	290.00	110.00 — 210,00	322.00 — 332.00
9-2-1963	330.00 — 360.00	100.00 — 195.00	324.00 — 334.00
16-2-1963	350.00 — 360.00	100.00 — 195.00	322.00 — 332.00
23-2-1963	270.00 — 330.00	100.00 — 192.50	320.00 — 330.00
For March 1963			
Tiptur			
1-3-1963	... — ...	190.00 — 208.00	239.00
8-3-1963	235.00 — 260.00	193.00 — 198.00	239.00
15-3-1963	238.00 — 252.00	184.00 — 195.00	236.26
22-3-1963	226.00 — 255.00	187.00 — 196.00	236.26
29-3-1963	240.00 — 245.00	198.00 — 204.00	236.26
Arsikere			
1-3-1963	195.50 — 288.00	... — ...	300.00
8-3-1963	191.00 — 290.00	185.25 — 205.00	300.00
15-3-1963	186.50 — 282.50	179.75 — 189.00	...
22-3-1963	201.00 — 278.50	180.00 — 194.00	293.75
29-3-1963	190.00 — 281.50	188.25 — 196.75	...

NAME OF THE CENTRE	COCONUT per 1,000 nuts	COPRA per quintal	COCONUT OIL per quintal
Mangalore			
1-3-1963	300.00 — 340.00	80.00 — 185.00	316.00 — 326.00
8-3-1963	330.00 — 340.00	75.00 — 175.00	310.00 — 320.00
15-3-1963	... — ...	... — ...	... — ...
22-3-1963	280.00 — 345.00	75.00 — 175.00	298.00 — 308.00
29-3-1963	300.00 — 350.00	70.00 — 170.00	294.00 — 304.00
For April 1963			
Tiptur			
5-4-1963	225.00 — 248.00	193.00 — 199.00	236.26
12-4-1963	... — ...	191.00 — 206.00	...
19-4-1963	230.00 — 245.00	204.00 — 212.00	...
26-4-1963	225.00 — 248.50	204.00 — 211.00	...
Arsikere			
5-4-1963	170.50 — 264.50	185.00 — 193.00	262.50
12-4-1963	162.50 — 214.50	180.00 — 194.75	...
19-4-1963	198.50 — 274.50	204.00 — 213.75	...
26-4-1963	111.50 — 274.00	200.00 — 206.50	278.10
Mangalore			
5-4-1963	300.00 — 350.00	70.00 — 174.00	292.00 — 302.00
12-4-1963	340.00 — 350.00	75.00 — 176.00	292.00 — 302.00
19-4-1963	330.00 — 350.00	80.00 — 185.00	302.00 — 312.00
26-4-1963	340.00 — 350.00	80.00 — 185.00	302.00 — 312.00

A brief review on the trend in the wholesale prices of coconut and its products as prevailed at key markets in the Mysore state during February, March and April 1963.

February 1963

Coconut

Prices gained by Rs. 16/- at Tiptur during first week, ruled steady during the second week and fell by Rs. 20/- during the last week of the month. Prices came down by Rs. 15/- at Arsikere during the first week, increased by Rs. 30/- during the second week and stood at Rs. 283/- per 1000 nuts during the month end. At Mangalore prices ruled steady during first three weeks but fell by Rs. 30/- during the last week.

Copra

Prices were steady during the first week, gained by Rs. 11/- during the third week and were steady during the last

week at Tiptur. At Arsikere, prices ruled steady during all the other weeks except during the third week, during which they registered an increase of Rs. 10/-. Mangalore market was also steady during the other weeks except during the second week, during which prices declined by Rs. 15/-.

COCONUT OIL

Tiptur market was steady during the month. Prices stepped up by Rs. 6 at Arsikere during first week and were steady during other weeks. Except for an increase of Rs. 8/- in the prices during the last week at Mangalore, prices were steady during the other weeks of the month.

March 1963

COCONUT

Prices declined by Rs. 10/- during the first and the last week of the month and were steady during the other weeks at Tiptur. A steady trend was noticed in the prices at Arsikere during the month. At Mangalore prices increased by Rs. 10/- during the week ending 1st March and the last week and ruled firm during the other weeks of the month.

COPRA

Except for a fall of Rs. 10/- in the prices during the first week, prices during the other weeks were steady at Tiptur. At Arsikere prices came down by Rs. 6/- during the second week, gained by Rs. 5/- during the third week and were steady during the last week. At Mangalore prices dropped by Rs. 8/- during the week ending 1st March by Rs. 10/- during the first week and were steady during the other weeks.

COCONUT OIL

A steady trend was seen in the prices at Tiptur and Arsikere during the month. At Mangalore, prices moved down by Rs. 6/- during first week, by Rs. 12/- during the third week and were steady during the last week of the month.

April 1963

COCONUT

A steady trend was witnessed in the prices at Tiptur. At Arsikere prices declined by Rs. 17/- during the first week by Rs. 50/- during second week, stepped up by Rs. 60/- during the third week and were steady during the last week. Prices displayed a steady trend at Mangalore.

COPRA

Prices fell by Rs. 5/- at Tiptur during the first week, gained by Rs. 6/- during the second and third weeks and were steady during the last week. At Arsikere, prices remained almost steady during first fortnight. They gained by Rs. 19/- during the third week, but declined by Rs. 7/- during the last week. Except for an increase of Rs. 9/- in the prices during the third week, prices remained steady during the other weeks at Mangalore.

COCONUT OIL

A steady trend was observed in the prices at Tiptur and Arsikere during the month. At Mangalore, prices improved by Rs. 10/- during the third week and were steady during the other weeks of the month.

New member of the Indian Central Coconut Committee

The Government of Andhra Pradesh have nominated Shri N. Ramabhadri Raju, Ex M.L.A., Kodurupadu Post, Amalapuram P.O., E. Godavari District as a member of the Indian Central Coconut Committee for the period ending 31–3–1966.

New Director for Central Coconut Research Station, Kayangulam

Dr. S. B. Lal, Virus Pathologist, Central Potato Research Institute, Simla has been appointed as the Director, Central Coconut Research Station, Kayangulam. Dr. Lal assumed charge on 8th July, 1963.

Dr. K. M. Pandalai who was officiating as Director, Central Coconut Research Station, Kayangulam will go back to the Central Coconut Research Station, Kasaragod as "Coconut Specialist" as the post of Joint Director he was holding there has been re-designated as "Coconut Specialist" with effect from the 8th July, 1963.

Coconut mother palm competition

The Director of Agriculture, Andhra Pradesh has reported that coconut mother palm competition for the year ending 30th June 1962 was conducted in the districts of Srikakulam, Visakhapattinam, East Godavari and West Godavari.

Sarvashri T. V. R. Dikshitulu, Bendamurlanka, Amalapuram Taluk, Bikkina Ramakrishna, Tatipaka, Razole Taluk and Bhavanam Seshagiri Rao, Munganda, Kothapeta Taluk who entered the maximum of 23 mother palms per acre won the first prize. The prize amount of Rs. 500/- will be divided equally among them and given to them in the form of national defence certificates at a function that will be arranged by the Coconut Development Officer, Rajamundry.

New paddy strains

An improved paddy strain (T. 141) evolved in the Research Station at Sirsi has been successfully tried in cultivators' fields and has yielded 12 to 15 per cent more.

The average yield was 2,952 lb. per acre. The new strain, selected from "So-ruchinnamali" of Orissa, is meant for the Kharif season.

Another improved paddy strain (AKP. 9) selected from "Bangartheega" of Andhra, has yielded 2,884 lb. per acre on the average. It is also meant for the Kharif season and is suited to the Ghat areas of Kanara District.

Cardamom industry committee

The Government of India have, says a report in the "Indian Farming", decided to set up a committee to advise them on measures for the development of the cardamom industry.

Among other things the Committee will advise on measures for promotion and extension of cardamom plantation; improvement of the quality of cardamom and the productivity of the estates; making arrangements for the supply of fertilisers and ancillary equipment required by the industry; provision of adequate financial assistance in the form of working capital, credit, etc., for measures of improvement; and the marketing of cardamom with a view to ensuring economic and reasonable prices to the grower and augmenting the foreign exchange earnings from exports.

Farm credit societies

The States have been asked to take immediate steps to revitalize the 1,25,000 primary agricultural credit societies in view of the Emergency, says another report in the Indian Farming.

The States have been told that service co-operatives have an important role to play in making the country self-sufficient in food. They must adjust their working so as to provide farm tools to the peasants and undertake distribution of essential consumer goods.

Leaf protein

According to the Indian Farming, a scheme to extract and develop edible proteins from lush vegetation is now being worked out at the Agricultural College and Research Institute with financial aid from the Government of India.

The value of leaf proteins assumes greater significance for India now because such a food will considerably lighten the burden of the soldiers. The protein content of the leaf-preparation is nearly ten times that of wheat or rice.

Distribution of coconut seedlings

The Coconut Extension Officer, Pattukkottai, Madras State has reported that 21,418 coconut seedlings were distributed among coconut growers in the State from the nurseries at Pattukkottai, Tindivanam. Coimbatore, Viswasapuram, Sholavandan, Gudiyatham, Shencottah, Tiruparaithurai, Salem and Moovalur during the month of May 1963.

GROSS

THE ~~GROWERS'~~ EXPENDITURE ON THE SCHEME WHICH IS TO BE WORKED for three years from 1963-64 in the first instance is estimated to be Rs. 5,60,600, of which Rs. 3,37,500 will be to give subsidies to coconut growers and Rs. 2,02,500 to give them loans. Subsidy for the supply of fertilizers, insecticides etc. will be 100 per cent in respect of holdings below one acre and 50 per cent for holdings which have an area of 1 to 5 acres. No subsidy will be given in respect of holdings more than 5 acres in extent. Loans at the rate of Rs. 150 per acre will be granted for the purchase of fertilizers. The facilities under the filter point scheme and well subsidy scheme will also be made available to cultivators. Loans will be recovered in five annual instalments commencing from the fourth year following the year in which the loan is sanctioned.

THE RESEARCH WORK SO FAR DONE AT THE CENTRAL AND REGIONAL coconut research stations has produced a number of results of great practical value. It has been demonstrably proved that proper manuring and cultivation, timely control of pests and diseases, irrigation etc. can help to step up production very considerably. What has perhaps been lacking is the adoption of all the improved methods of cultivation by the generality of cultivators to maximise production. Under the package scheme this will be done and in the light of the lessons learned from it, it will be extended to other areas.

IT IS TO BE HOPED THAT IN THE CONTEXT OF THE PRESENT NATIONAL emergency the other coconut growing states of India will not lag behind Madras in the implementation of their own package schemes for coconut development and that these endeavours will make a significant contribution to the production of coconuts in India.

Publications of the Indian Central Coconut Committee

BOOKS

		Price per copy including cost, postage, registration etc. Rs.	nP.
1.	The Coconut Palm — A Monograph — de luxe edition Sh. 90/ $ 13.00	43	00
2.	The Coconut Palm — A Monograph — cheaper edition	21	00
3.	The First Conference of Coconut Research Workers in India	15	00
4.	Coconut Cultivation — A Hand Book English edition Rs. 2.90, Malayalam edition Rs. 2.00 and Tamil, Telugu, Kannada, Oriya, Assamese and Marathi editions Rs. 1.38 each.		
5.	Reports on the Marketing of Coconut and Coconut Products (Malayalam)	1	38

PERIODICALS

		Annual subscription Rs.	nP.	Price per copy Rs.	nP.
1.	The Indian Coconut Journal — Quarterly English Inland	4	00	1	00
	,, Foreign	4	57	1	15
2.	Coconut Bulletin — Monthly ,, Inland	2	00	0	20
	,, Foreign	3	32	0	30
3.	Nalikera Bulletin — Monthly—Malayalam Inland	1	00	0	10
	,, Foreign	2	32	0	20
4.	Thengina Bulletin — Monthly—Kannada Inland	1	00	0	10
	,, Foreign	2	32	0	20

Note: The cost per back issue of the "Bulletin" will be double the price of single copy.

FREE PAMPHLETS

		English	Malayalam
1.	Plant coconuts on paddy field bunds	,,	,,
2.	Treatment of compost for control of rhinoceros beetle	,,	,,
3.	Green manure crops for coconut plantations	,,	,,
4.	Gliricidia — A green manure bush for coconut gardens	,,	,,
5.	How & why of spraying coconut palms	,,	,,
6.	Grade specifications for coconut oil and standard contract terms for milling copra	,,	,,
7.	Village copra kiln — Kannada	,,	,,
8.	New planting & underplanting of coconuts	,,	,,
9.	Indian Central Coconut Committee — What it is and what it does	,,	,,
10.	Nursery officers' manual	,,	—
11.	Coconut pests & their control	,,	—
12.	Coconut diseases and their control	,,	—
13.	Harvesting of coconuts	,,	—

The cost or subscription as the case may be of the publication required should be remitted in advance by MONEY ORDER.