

Arecanut Research

and

Development in India

By

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Among the various spices, narcotics and drugs that are known to flourish in the South-Eastern Asian countries, arecanut (betelnut) *Areca Catechu Linn* occupies a peculiar position in India. Apart from its forming a chief constituent in the 'Pan Chewing', a habit which is universal in this country, it enjoys a specific status in the social life of the people. Pan (Betel leaf) Supari (Betel nut) and Chunnam (lime) form the three important constituents for chewing which produces the red colour with mastication. To this different grades of tobacco or any other stimulants are mixed by connoisseurs in chewing. It is said that this addiction to chewing if interfered with would lead to other habits light smoking or drinking.

A survey in the habits and manners of chewing may reveal many interesting facts and fancies that prevail among our people. From casual observations it may be said that chewing as a habit is intense in the North East region of our country and as one proceeds Westwards specialisation in chewing is seen and dwind-

les down in the extreme North Western region. Per-capita consumption also appears to vary and no up-to-date record is available. It may range from annas six per adult per day to about half an anna. Very few realise the enormity of the country's trade in this commodity. Over Rs. 30 crores worth of arecanut is consumed annually and one gets further surprised to know that nearly one-third of our total requirements are met by imports from abroad.

The Indian Central Arecanut Committee naturally, from its very inception, has been urging on drawing up a programme of increased production within the country. In addition, the indigeneous industry is given an assured protection by the imposition of heavy import duty on imported arecanuts.

The crop is concentrated in South-Western and North-Eastern region of the country and the area and production of the crop in the principal growing States are given below:—

Name of the State.	Area in acres.	Yield in lakh maunds. (1 Md. = 82.2/7 lbs.)
Kerala ..	1,49,400	10.06
Mysore ..	73,100	7.79
Assam ..	25,500	2.60
West Bengal ..	5,500	0.50
Bombay ..	5,000	0.56
Madras ..	3,000	0.25
Total	2,61,500	21.76

The distribution of area within the States is of considerable interest for planning up any Research and developmental Programme. As regards Bombay the area is mostly confined to Ratnagiri and Colaba Districts which are contiguous to the West Coast Region of Mysore. In Madras the area is concentrated in Mettupalayam of Coimbatore District and parts of Salem. The nature of distribution in states which are primarily important for this crop is depicted in the following centres state wise:—

1. KERALA STATE

Taluk.	Number of Villages under areca	Acreage.
1. Nedumangad	16	3,528
2. Chirayinkil	21	418
3. Neyyattinkara	Not available	
4. Trivandrum	" "	
5. Kottarakara	14	1,075
6. Pathanamthitte	20	2,252
7. Alleppey	11	6,800
8. Punalur	7	2,070
9. Adoor	8	1,285
10. Karunagapally	12	767
11. Kottayam	10	2,900
12. Muvattupuzha.	12	1,550
13. Chenganachery	9	570
14. Thodupuzha	17	10,993
15. Meenachil	13	8,261
16. Peermade	1	500
17. Chowghat	24	1,815
18. Wadakanchery	7	850
19. Pazhayannur	4	60
20. Chittur	3	10
21. Mala	14	3,081
22. Angamali	8	1,750
23. Trichur	56	4,597
24. Mukundapuram	12	2,170
		57,302

Taluk	Number of Villages under areca	Acreage
		57,302
25. Cannanore	17	1,707
26. Taliparamba	27	4,222
27. Kasargod	47	5,687
28. Hosdurg	10	62
29. Kottayam	46	8,820
30. Wynad	11	30
31. Kurumbranad	102	9,658
32. Kozhikode	129	7,841
33. Ernad	64	13,287
34. Tirur	42	15,835
35. Walluvanad	not available	11,283
36. Palghat	52	1,675
37. Ponnani	99	12,209
		149,618

(The district wise figures have not been given since there has recently been reorganisation of districts and formation of new districts).

2. MYSORE STATE

District	No. of Taluks	No. of Villages	Acreage
1. Shimoga	7	804	14,413
2. North Kanara	10	844	16,234
3. South Kanara	6	459	12,804
4. Chickmagalur	4	237	10,071
5. Tumkur	10	634	6,097
6. Hassan	7	293	3,107
7. Chitaldrug	4	66	2,388
8. Mysore	7	56	794
9. Coorg	6	104	546
10. Mandya	3	52	142
			66,596

I. SHIMOGA DISTRICT

Taluk	No. of villages under areca	Acreage
1. Thirthahalli	177	5,241
2. Shikaripur	4	105
3. Sorab	175	1,637
4. Sagar	216	4,264
5. Channagiri	41	635
6. Hosanagar	157	2,065
7. Shimoga	34	466
		14,413

II. NORTH KANARA DISTRICT.

Taluk	No. of villages under areca	Acreage
1. Karwar	30	17
2. Ankola	66	515
3. Kumta	90	671
4. Honavar	88	1,503
5. Bhatkal	57	413
6. Sirsi	177	5,198
7. Siddapur	175	5,644
8. Supa	49	155
9. Yellapur	108	2,098
10. Mundgod	4	19
		<u>16,234</u>

III SOUTH KANARA DISTRICT

1. Mangalore	65	285
2. Karkal	103	2,044
3. Udipi	31	294
4. Coondapur	77	1,304
5. Puthur	130	7,276
6. Belthangady	53	1,601
		<u>12,804</u>

IV. CHICKMAGALUR DISTRICT

1. Tarikara	59	1,079
2. Kadur	17	768
3. Koppa	75	4,665
4. Mudigere	86	3,559
		<u>10,071</u>

V. TUMKUR DISTRICT

1. Tiruvekere	47	511
2. Chickanayakanaballi	59	657
3. Tumkur	134	1,057
4. Pavagada	13	185
5. Sira	83	909
6. Madhugiri	110	597
7. Gubbi	73	1,469
8. Tipur	22	157
9. Amruthur	27	133
10. Koratagere	66	422
		<u>6,097</u>

VI. HASSAN DISTRICT

Taluk.	Number of villages under areca.	Acreage.
1. Arsikere	5	48
2. Holenarasipura	43	117
3. Belur	18	486
4. Alur	21	40
5. Arakalgud	161	2,137
6. Hassan	23	248
7. Channarayapatna	22	31
		<u>3,107</u>

VII. CHITALDRUG DISTRICT

1. Chitaldrug	12	925
2. Holalkere	21	689
3. Jagalur	1	60
4. Hiriyur	32	714
		<u>2,388</u>

VIII. MYSORE DISTRICT

1. Mysore	19	112
2. Nanjangud	5	141
3. H. D. Kote	3	46
4. Periyapatna	5	80
5. Hunsur	6	40
6. T. Narasapur	4	11
7. K. R. Nagar	14	364
		<u>794</u>

IX. COORG.

1. Somwarpet.	6	5
2. Fraserpet.	1	5
3. Mercara.	18	383
4. Napokln.	27	34
5. Virajpet.	13	57
6. Ponnampet.	39	62
		<u>546</u>

X. MANDYA DISTRICT.

1. Maddur	18	76
2. Srirangapatna	29	58
3. Malavalli	5	8
		<u>142</u>

(The data presented above has been collected from a number of sources and while accuracy cannot be assured their constitute a good basis for planning developmental scheme).

3. WEST BENGAL.

District.	Number of Orchards.	Area under Arecanut.
1. Calcutta	...	13.39
2. 24-Parganas	48	593.83
3. Nadia	1	8.87
4. Murshidbad	1	23.10
5. Burdwan	11	10.87
6. Birbhum	...	0.78
7. Bankura	3	0.89
8. Midnapore	33	256.75
9. Hoogly	...	48.89
10. Howrah	11	149.40
11. Jalpaiguri	3,641	1,519.88
12. Darjeeling	11	26.85
13. Malda	...	6.96
14. West Dinajpur	...	13.77
15. Cooch-Behar.	3,395	1,792.59
Total.	7,155	4,466.82

4. ASSAM STATE.

District.	Area under arecanut (acres)
1. Lakhimpur	3,000
2. Sibsagar	5,000
3. Nowgong	600
4. Darrang	530
5. Kamrup	2,260
6. Goalpara	1,880
7. Khasi and Jaintia Hills	10,000
8. Sylhet.	1,968
9. Silchar.	262
Total.	25,500

From the foregoing it may be seen that the crop appears to flourish under localised conditions of more or less similar soil, climatic complex throughout the country. The prevalent situations in each of these regions are briefly discussed below:—

The entire West Coast strip covering the Kerala and Mysore regions abounds in arecanuts either mixed with coconut or as concentrated pure crop. While in the extreme coastal belts it does not thrive, good gardens exist in regions from coastal areas to the sub montane regions where cool moist conditions prevail

and the soil fertility is of a higher order. The Arecanut palm needs a good retentive and heavier type of soil than coconut as could be judged by the distribution of the crop itself. In the Southern and Central Travancore areas arecanut cultivation exists on terraced hill slopes under rainfed conditions mixed with coconut rubber and other subsidiary crops. Concentrated pure blocks of arecanut gardens are seen in Southern Malabar region, where some organised system of cultivation and irrigation can be seen. While the Yellow Leaf disease in Central Travancore has wiped out a considerable number of arecanut gardens, which is causing concern in the minds of the people there, in the Southern Malabar region the usual known disease like Mahali is reported to occur. The arecanut gardens in Kerala region need a close study in as much as problems, on agronomy and pathology exist and they have to be specially investigated and solutions found.

In the Mysore region arecanut is concentrated more in the sub montane regions and dwindles down towards West. More intensive cultivation practices prevail in these regions. In view of the fact that some fundamental researches have been carried out by Dr. L. C. Coleman in 1912, intensive campaigns on Mahali are generally practised in Malnad region of Mysore. Other than this campaign the practices now in vogue are not backed by any results of research. It is said that certain Manurial experiments were conducted at Maruthur Farm in Mysore, but in the absence of any authentic report and due to the fragmentary nature of the programme, the results of such research cannot be utilised for any campaigns on intensive production programme of this committee. Similar problems occur in Kolaba and Ratnagiri Districts of Bombay State. In addition it appears that 'Band' disease seems to be more prevalent in this area.

Mysore Maidan parts have specialised in arecanut cultivation as mixed crop with either coconut or other fruit gardens and they are reported to flourish well. 'Anabe' Roga and 'Hidimundige' Roga are known to prevail in this region. It is likely that the arecanut cultivation as is seen prevalent in Maidan parts of Mysore, could be extended to other similar situations in contiguous parts of Telengana of Andhra Pradesh, provided the required facilities for irrigation which appear to be the main item for the successful raising of gardens in Maidan parts, are easily available.

In Assam region which forms the third major State in the Indian Union as regards area under arecanut one finds immense potentialities for further stepping up of production. It is generally seen that gardens bear heavily in spite of lack of organised cultivation. The gardens do not exist in any extensive manner but widely scattered as backyard gardens in each homesteads. The region has problems like stem breaking, Yellowing disease, mite and scale infestations, stem bleeding and fruit rot.

The arecanut region of West Bengal, where concentrated areas now prevail, are contiguous to that of Assam and variations are noticed in the flowering phases of the palms and bearing, while other problems appear to be common. The other probable regions where arecanut could be developed are in the coastal regions of Orissa and Andhra. It may, therefore, be seen that arecanut gardens could be established under diverse soil climatic factors, but the most essential thing for its successful raising, appear to be provision of cool-moist conditions for its growth, from the very inception namely from seednut germination to the bearing stage. Direct exposure to Sun is most harmful. It needs regular and intensive irrigation during summer months and the garden suffers if bad drainage conditions exist with pathological and physiological disorders.

Major arecanut areas fall in the regions where the rainfall varies from 80-150" annually and due to the heavy leaching, the soils are mostly acidic in nature and any cultivation practices advocated for arecanut will have to be based on the prevalence of acid or otherwise in such soils.

The Indian Central Arecanut Committee decided to establish Regional Arecanut Research Stations in the important regions with a view to tackle prevailing regional problems and they are to be located in Central Travancore Area, Malabar, Maidan parts (Tumkur), North Kanara, Thirthahalli (grant-in-aid), Assam, West Bengal, and Orissa (Grant-in-aid). In addition to establishment of these regional stations a Central Arecanut Research Station has already been functioning at Vittal (South Kanara District, Mysore State) where, in addition to tackling regional problem, fundamental researches on this crop have been planned. In addition to these, the Committee has also provided grants to institutions like Maharashtra Association for Cultivation

of Science, Poona and College of Agriculture, Poona on investigations of Band disease in Ratnagiri and Kolaba areas. The grant in aid scheme sponsored by the Gauhati University is for tackling some botanical aspect of arecanuts.

The schemes for investigation on Anabe Roga and Hidimundige Roga of Arecanut palms, sponsored by the Department of Agriculture, Mysore are grant-in-aid schemes to tackle problems pertaining to those diseases.

SIMPLE MANURIAL TRIALS AT VILLAGE CENTRES.

With a view to formulate proper manurial schedule, the Indian Central Arecanut Committee proposes to conduct 200 experiments in important arecanut tracts in the Indian Union. These 200 experiments will be allotted to different states as follows:—

State.	No. of experiments.
Kerala	100
Mysore	60
Assam	20
West Bengal	20

With the help of statistics of area under arecanut in the Districts and Taluks of the concerned States, it was decided that the following taluks might be selected for conducting manuring experiments.

COASTAL REGION

Kerala State	...	...	Ponnani Taluk
Mysore State	...	...	Honnawar Taluk

SUB-MONTANE REGION

Kerala State	...	...	Nedumangad Pathanamthitta Meenachil Thodupuzha Ernad Tirur
Mysore State	...	...	Siddapur

PLAIN REGION

Mysore State	...	...	Tumkur
Assam State	...	...	Samaguri
West Bengal	...	...	Jalpaiguri

TECHNOLOGICAL RESEARCH

Raw arecanut contains some valuable chemical constituents like alkaloids, tannins and fat. Arecanut bye-products are at present being wasted and any use for the same in industry will enable the grower of arecanut to augment his income. From its very inception, investigations on the uses of chemical constituents present in arecanut and its bye-products like the husk have been engaging the attention of this Committee. In one such investigation conducted at the laboratory of the Presidency College, Madras, the presence of alkaloids in arecanut has been indicated. Schemes at the Gauhati University, Central Leather Research Institute, Madras, Andhra University, Forest Research Institute and Kerala University have been sanctioned by this committee all of which pertain to technological research. Possibilities for the preparation of alkaloids, sterols, tannin, ink, hard and soft boards from arecanut have been indicated in the researches already done at these Universities and Institutes. With so much scope for technological research, the Indian Central Arecanut Committee has decided to take up the work in greater detail at the proposed Technological Research Wing for arecanut to be set up under the Second Five Year Plan at a cost of Rs. 4,71,000 for three years. The wing is to be located for a period of 2½ years at the Central Food Technological Research Institute, Mysore, until some permanent arrangements for its location at Vittal are completed.

ARECANUT DEVELOPMENT

Since the need of the hour is increased production of arecanut, cultivation practices have to be further intensified and organised. In the first instance one has to revitalise the existing gardens by removing diseased and consistently poor bearing palms and replacing them with quality seedlings. The normal bearing palms can be made to bear more by proper application of organic and inorganic manures. Since Mahali or fruit rot is universal, suitable plant protection measures have to be adopted regularly to prevent the incidence of diseases. The gardens are to be regularly irrigated during off monsoon months and good drainage has to be ensured. By providing this single factor the production is not only enhanced by 10-25% but yields could be stabilised as well.

DISTRIBUTION OF QUALITY SEEDLINGS

The programme of production of quality seedlings drawn up by the Indian Central Arecanut Committee

and the State Governments envisages setting up of Regional Arecanut Nurseries as follows:—

State	No. of Nurseries	Target (Seedlings)
Assam	12	12,00,000
Kerala	5	10,00,000
Andhra Pradesh	1	9,00,000
Mysore	3	5,00,000
Orissa	3	2,00,000
West Bengal	3	1,20,000

In addition to the foregoing, a programme for establishment of 200 certified arecanut nurseries at important village centres in the different states will be implemented by the Indian Central Arecanut Committee as per allotments indicated below:—

State	No of certified nurseries	Target (seedlings)
Kerala	100	4,25,000
Mysore	60	2,55,000
Assam	20	85,000
West Bengal	20	85,000

As regards manuring schemes, according to the decision of the Planning Commission, the development plans are to be executed by the State Governments, while the Committee is to confine itself to research. The Assam State Government has a programme of giving a subsidy of Rs. 50/- of the total cost of manure and fertilizers to be issued to the growers in kind. The Kerala Government has a programme of distributing fertilisers to areca growers on loan basis, the loan to be recovered later. The Kerala Government also proposes to subsidise the digging of 150 wells in areca gardens during the coming three years. The West Bengal Government propose to subsidise the construction of the tube wells in areca gardens. The Mysore Government has a plan of effecting the distribution of fertilisers through their co-operative organisation on loan basis. All these plans are appropriate as they all lead in the direction of increasing the production.

MARKETING OF ARECANUTS

The Committee is also concentrating on the organisation of co-operative marketing societies for arecanuts. At present, there are sixteen arecanut marketing societies working in the Indian Union as indicated below:

Name of society.	No. of collecting Depots.	
1 Arakalgud Areca Marketing Co-operative Society.	2	Subsidized by the Committee.
2 Kumaranellur Co-operative Marketing Society.	2	
3 Talapalli Taluk Areca Marketing Co-operative Society.	—	
4 Nedumangad Taluk Areca Marketing Society.	—	
5 Kasaragod Taluk Agriculturists' Co-operative Marketing Society.	—	Proposed to be started shortly.
6 South Kanara Agriculturists' Co-operative Marketing Society.	33	Proposed to be subsidized by the Indian Central Arecanut Committee under the Second Five Year Plan.
7 Malnad Areca Marketing Society.	12	
8 Mettupalayam Co-operative Marketing Society.	—	
9 The Murud Village Vividha Karyakari Sahakari Sangha.	—	
10 The Konshi Multipurpose Co-operative Society.	—	
11 Dapoli Taluk Areca Marketing Society.	—	
12 Sirsi Thotagars' Co-operative Society.	—	
13 Kumta Arecanut Sales Society Ltd. Kumta.	—	Independent Societies.
14 Siddapur Multipurpose Co-operative Society.	—	
15 Kyathasandra Venugopala Swamy Co-operative Society.	—	
16 Jaihind Areca Marketing co-operative Society.	—	

In addition to rendering financial assistance, whenever necessary, the Marketing organisation of the Indian Central Arecanut Committee has been helping all these societies with technical advice to develop their marketing activities besides encouraging the starting of new co-operative societies for processing and marketing of arecanuts.

With the exception of the Kumaranallur Co-operative Marketing Society in Kerala State all the other societies dealing in arecanuts handle the produce only on commission basis. They afford short term credit facility both on the security of standing crops and on the security of cured arecanuts at lower rates of interest. Many of them have opened collecting branches in interior places with a view to help their members living therein and afford them the requisite credit storage and transport facilities. In addition to their normal activities some of them have also undertaken certain ancillary functions such as supplying of spraying chemicals and equipments and other domestic requirements to their members. Besides handling the main product of arecanut many of these societies also handle the subsidiary garden produces such as coconuts, pepper, cardamom, cashewnut on behalf of their members. The Kumaranellur Co-operative Marketing Society makes outright purchase of members' raw arecanuts and converts them into processed nuts and sell them on its own behalf. With a view to develop its activities further, the Indian Central Arecanut Committee has been rendering financial assistance in collaboration with the Kerala State Government. The Government of Mysore has proposed to establish a co-operative federation of the societies now dealing in arecanuts in that State and open out sales branches in Madras and Bombay with financial assistance from this committee. The committee has sanctioned a scheme in collaboration with Madras Government for opening a sales branch at Delhi by the Mettupalayam Co-operative Marketing Society. The Government of Bombay have sponsored a scheme for financial assistance to the Arecanut Marketing Societies functioning within the state for developing their activities. Regulated markets have been established in the important arecanut assembling markets in Malabar in Kerala State, and South Kanara, Sirsi, Shimoga and Tumkur in Mysore State. The urgent need to enforce similar legislation for setting up of regulated markets for arecanut in Kerala State (in the former Travancore-Cochin region) has been impressed on the Kerala Government.

PROPAGANDA AND PUBLICITY

The Committee has already produced a film on "Growing Arecanuts", copies of which have been supplied to the departments of Agriculture of the arecanut producing States for exhibition to areca growers.

Production of language editions of this film which is considered very essential is being considered.

The Committee has produced seven leaflets on different aspect of arecanut cultivation and they are rendered in the different regional languages by a scheme in which the Committee is meeting the entire expenditure. It is proposed to bring out a series of Flip Books (Picture books) with definite recommendations on various phases of cultivation, processing and curing for the benefit of the growers. The first picture book on "How to raise an Arecanut garden" is expected to come

off with language editions in Malayalam and Kannada and other regional languages as well. As more information on results of research and development schemes became available the work on production of such publications will be further intensified. As pictorial representation often conveys more vividly the meaning of various techniques an attempt has been made to issue a series of posters and as a beginning 4 posters will be introduced in 1958. An arecanut Atlas, with about 24 illustrations on research, development, trade and statistics will be issued very soon. A full fledged arecanut museum is being set up.

LIST OF SCHEMES IN OPERATION IN DIFFERENT STATES.

S. No.	Name of the Scheme.	Total cost of the Scheme	Duration
RESEARCH STATIONS.		Rs.	
1.	Research Station at Thirthahalli in Mysore State.	4,96,950	10 years.
2.	Central Arecanut Research Station at Vittal, South Kanara District, Mysore State.	7,84,285	10 "
DISEASE SCHEMES.			
3.	Band Disease of areca palm in Bombay State.	84,378	5 "
4.	Band Disease of areca palm by the Maharashtra Association for the cultivation of science.	8,800	2 "
5.	Hidimundige scheme in Mysore State.	45,700	5 "
6.	Spraying against Yellow Leaf Disease of areca palm in Kerala State.	54,100	5 "
NURSERY SCHEMES.			
7.	Arecanut Nursery at Barbeta in Assam.	31,970	5 "
8.	Arecanut Nursery at Krishna Nagar in West Bengal.	42,957	5 "
9.	Additional Arecanut Nurseries in Cooch-Bihar.	33,470	3 "
10.	Andhra Arecanut Nursery in Srikakulam District in Andhra Pradesh.	1,38,006	5 "
TECHNOLOGICAL SCHEMES.			
11.	Gauhati University Scheme (Assam).	23,075	4 "
12.	Central Leather Research Institute Scheme (Madras).	9,680	1 "
13.	Waltair University Scheme (Andhra).	9,280	2 "
14.	Aligarh University Scheme (U. P.).	4,000	1 "
15.	Forest Research Institute Scheme (U. P.)	19,540	3 "
16.	Kerala University Scheme (Kerala).	15,000	3 "
17.	Technological Laboratory (Mysore).	4,71,000	2½ "
MARKETING SCHEMES.			
18.	Aid to Kumaranellur Co-operative Marketing Society (Kerala)	97,300	5 "
19.	Aid to Pazhanji Co-operative Society (Kerala).	23,700	5 "
20.	Aid to Nedumangad Co-operative Society (Kerala).	23,700	5 "
SCHEMES PROPOSED TO BE STARTED.			
1.	Regional Arecanut Research Station (West Bengal).	2.69 lakhs	5 years
2.	" " in Malabar (Kerala).	2.69 "	5 "
3.	" " in Travancore region (Kerala)	2.69 "	5 "
4.	" " in Tumkur (Mysore).	2.69 "	5 "
5.	" " in north Kanara (Mysore).	2.69 "	5 "
6.	" " in Assam.	2.69 "	5 "
7.	Manuring Schemes.	2.64 "	5 "