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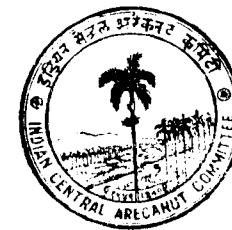
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Arecanut Husking and Cutting.

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Vol. VI.

JANUARY 1956.

No. 10.

REPORT ON THE SURVEY

of Waste Lands suitable for the Development of Arecanut Cultivation
in Assam, Bengal, Bombay, Coorg, Madras and Mysore State.

(Continued)

(P. A. SREENIVASAN, B. Sc. (Agr.))

MYSORE

Mysore has 48,000 acres under arecanut cultivation. Of this the north western districts of Shimoga and Kadur (Chickmagalur) which constitute the Malnads have 32,000 acres. The rest is in the Maidan regions of Tumkur, Hassan, Mysore and Chitaldrug districts. The present survey was sanctioned for the malnad area.

I. *Malnad.* This region in the north of the Mysore plateau is contiguous to North Kanara on the western ghats, with an average elevation of 2000' to 3000' above M. S. L. Naturally it is a region of hills and jungle clad moist evergreen valleys, plantations, rice flats and valleys and scattered and sparsely populated inaccessible villages. The area also receives very heavy rainfall and the weather is also extremely inclement and unhealthy.

Rice and areca are the main crops. As a result of the decline

in population and encroachment of forests, the abandonment of cultivation took place here also in the past. Considerable scope therefore exists to revive the abandoned areas as also increase the extent of cultivation in the Shimoga and Chickmagalur Malnad.

II. *Climatic conditions.* The average maximum temperature rarely exceeds 100° in the hottest month of April, whereas the minimum temperature in the

coldest part of December-January does not fall below 55°. The annual rainfall is as heavy as 200" and more towards the extreme western sections of the malnad nearer the crest of the ghats. The entire malnad is within the influence of the South West Monsoon; the northern and eastern regions experience less rains and the south and south western are the wettest regions and the distribution between the different seasons is given below :—

Name of taluk	Total rainfall.	S. W. monsoon (Jan. Aug.)	(Aug. Oct.)	Hot weather (Nov. Mar.)	Ante-monsoon (April-May).
1. Sorab.	75-85"	68	12	—	6
2. Sagar.	90-100"	75	6	3	6
3. Nagar.	175-190"	138	15	9	18
4. Thirthahalli.	105-120"	101	13	—	4
5. Koppa.	114-122"	107	18	—	6
6. Mudigere.	75-150"	118	19	5	7
7. Sringeri.	156-165"	140	15	5	10
8. N. R. Pura.	71-76"	64	8	4	6
9. Tarikere.	38-40"	23	7	1	9

Towards the east the rainfall dwindles to 35 to 40".

III. *Soils.* The soils of the Mysore Malnad have resulted from the disintegration in situ of the primeval type of shists superimposed upon granite. The general substratum is lateritic, and soils are red loamy in character and fairly deep, 10'-20'. The cultivated valleys are predominantly clayey and the hills are lateritic. The latter are subjected to excessive wash and in many places unweathered clay is readily exposed. These soils are ferruginous in character and are also enriched by heavy mulches of organic matter resulting from the shedding leaves of trees etc. Analysis of a typical red loam gives the following data :—

Nitrogen.	0.04%
Moisture.	3.00%
Insoluble residue.	90.00%
Fe ₂ O ₃ + Al ₂ O ₃	6.50%
P ₂ O ₅	0.02%
CaO	0.12%
MgO	—
K ₂ O	0.15%

They are poor in nitrogen and Phosphoric acid; moderately well supplied with pottash, rich in iron, and alumina, but deficit in respect of lime. While the rice valleys are almost loose and sandy the garden land soils are silty and clayey,

The cultural and manurial practices of the garden tracts of Malnad are so designed as to overcome the inherent defects of these agricultural soils as also to prevent losses in soil erosion.

IV. Availability of lands.

(a) The conditions existing in the malnad tracts of Sagar, Sorab, Hosanagar, Thirthahalli,

Koppa and Sringeri which contribute over 32,000 acres of areca in Mysore State are practically the same as in the upghat areas of North Kanara except for some local variations. The rigors of malnad, and the dwindling population had a telling effect upon the condition of areca industry until the famine of 1877-78 completely snapped the supply of labour to these areas. In the subsequent four years the phenomenal development of the maidan areas of the State cut off the seasonal labour and the malnad is left with South and North Kanara only to supply her labour requirements. With development plans in execution all around, Malnad might be eclipsed more severely unless the country is opened up and made more inhabitable and attractive for labour. The matter has been engaging the attention of the non-official public, and the State and Central Governments to formulate plans for Malnad Development. Over 10,000 acres under areca cultivation have been reported to be abandoned in the past after the famine of 1878 in the malnad tracts. Comparative study of the figures available reveal that cultivation in the malnads has been more or less steady during 1917-53. And that at the same time, cultivation has increased from 5,000 to 15,000 acres (i.e. by about 10,000 acres) in the maidan areas. As the general conditions and agricultural features of the crop are not so rigorous as in the Malnads, it is a matter for close investigation if the Maidan area would really afford any further scope for expansion of cultivation. The Assistant Director of Agriculture,

Chickmagalur, has reported that over 2,250 acres are suitable in Tarikere taluk. It is only on the gateway to the malnad in the low rainfall regions corresponding to maidan tracts and therefore the present conditions and trends in the typical maidans further south-east appear to need some first hand study.

Official estimates from Revenue (Pahani) accounts reveal that 5,600 acres are available for further cultivation as detailed below :—

<i>Shimoga.</i>	
Thirthahalli.	141-27
Hosanagar.	125-09
Sagar.	322-19
Sorab.	13-23
	602.32
<i>Chickmagalur.</i>	
Koppa.	397-27
Narasimharajpur	500-00
Sringeri.	325-30
Mudigere.	1,531-36
Tarikere.	2,250-00
	5,004.23

(b) Official estimates of the scope for expansion in Shimoga is only 600 acres, but the non-officials say that over 5,000 acres should be available in the District from out of the following types of lands :—

- 1) Areas abandoned in the past and absorbed into District forests.
- 2) Areas abandoned and forfeited to Government (Government Bagayat Banjar) or unassessed garden waste.
- 3) Areas abandoned where the standard of cultivation is very nominal and or overrun by scrub jungles - Revenue is being paid (Hiduvali Bagayat Banjar) or Assessed garden waste.

- 4) Lands of the type in (2) and (3) above reassigned or converted into paddy lands.
- 5) Paddy lands suitable for arecanut cultivation, which are being slowly converted into areca gardens.
- 6) Expansion of the existing holdings in the sides of the valleys and Betta lands.

c) Inspection in and around Sagar villages show that the area available over and above the estimates of the Assistant Director of Agriculture is 45 acres in the holdings of 9 people from all classes of lands above. In Marur. Paduvagodu tract 77.5 acres of lands under existing tanks are available for planting areca. Some of these are paddy lands.

In Hosbale, Kagodu, Keladi, Ulvi, Bhadrappusa in the Sagar and Sorab taluks, the scope for expansion seems to be limited. It will be however possible to convert 10-00 of the paddy flats in Kagodu which were in the past abandoned garden sites. And also divert the large areas of existing paddy lands of which 9.50 acres have already been put to areca garden recently in Hosbale and Kagodu villages. The tendency for diversion of paddy lands is on the increase on account of price incentives. As the scope of the present survey is limited to the waste lands in malnad and without detriment to the food crops, the area of 600 acres available in the Pahani accounts indicated by the Assistant Director of Agriculture has to be agreed upon. At Thirthahalli Amildar's office, a group of village officers had assembled for routine work. With the help of the Amildar, some data was ascertained first hand as follows :—

	Areca area abandoned in the past and scope for recovery.	Suitable area now in Dist. forest.	Area of paddy lands already converted to areca in recent years (Not yet assessed).
Cusba-Hobli.	5-18		1-00
Muthur Hobli.	..		3-00
Mandagadde.	2-00	20-00	2-00
Agrahara Hobli.	10-00	50-15	6-00
	17-18	70-15	12-00

The recent trend of diversion of paddy land to areca crop is in evidence in Meligai, Nambla and Kalakkeri groups of villages near Thirthahalli to the extent of 40 acres. It has not been possible to get at detailed and classified information anywhere for the whole area about the total additional area that can be planted with arecanut under all classes above (1-4). But guided by the total decline in cultivation of areca in Malnad, viz. 10,000 acres it may be said that 5,000 acres may be readily found in the Sagar, Sorab, Hosnagar and Thirthahalli taluks of Shimoga District from out of lands of the description above.

(d) *Areas now absorbed into the District forests.* Permission has to be sought from the Revenue and Forest Departments for the assignment of these lands; and the value of timber or trees growing on the valleys has also to be paid. Assignment is not generally made as a matter of routine, for the State is anxious to preserve the forest wealth. The seigniorage value of the timber in the assigned areas varies considerably and works out to Rs 500 per acre on an average.

(e) *Garden lands converted into paddy fields and reconversion and diversion of first class paddy lands.* Owing to the scarcity of labour over 200,000 acres of cultivable land are left fallow in the areca

tracts and the malnad rice follows account for a large portion of this. In fact these areas possess dependable irrigation facilities and do not require any further investment on that scope. The cost of clearance and layout also will be lower. And this area has been tapped by the growers in most parts of Sagar and Sorab taluks for bringing additional area under arecanut. They are however lying idle in most parts and it is therefore for consideration if the present tendency of raising new areca gardens in rice fallows could be enforced and substantial assistance rendered in these venues also. While recommending such a step it has to be emphasised that some areca areas abandoned in the past have since been converted into paddy lands.

(f) *Expansion by side of the existing holdings, i. e. by digging out portions of Bettas.* This is in evidence in the entire intensive tracts of Sorab, Sagar and parts of Hosnagar. As already indicated in the report of North Kanara District, this is a very practical method by which the area under the crop could be substantially increased. The size of the existing holdings also will be increased. In order to encourage this, top priority may be given in respect of issue of Land Improvement loans for such holdings. This cannot be thought of further south for economic reasons.

Due South, Hosnagar, Thirthahalli, Koppa and Sringeri experience the rigors of malnad to a greater extent. And the cultivation is rather more extensive than intensive. Also the soils are more fertile which allow of partaking of fairly good dividends in spite of the poor standard of cultivation. While the average yield of the northern zone (Sagar-Sorab etc.) is about 40—50 maunds, the average yield in Thirthahalli side never goes above 25—30 local maunds and further south in the unirrigated and nominally cultivated tract of Koppa and Sringeri yields are seldom below 15—20 maunds. Abandonment of cultivation has also taken place in Koppa-Sringeri taluks. In the Devon Tea and Coffee Estates, Hosur (Koppa), the rainfed crop with a good mulch and nominal dose of manure yielded at the rate of 500 Lbs.—600 Lbs. per acre. Neglected holdings without any investment also yield 300 Lbs. per acre (Tender processed).

(g) *Moist valleys in the Coffee areas of Chickmagalur Malnad.* The Coffee areas of Koppa, Mudigere and Narasimharajpur taluks possess large tracts of moist vacant valleys. These are too moist for coffee plantation and so betelnuts, cardamom and paddy are the only crops which can thrive in these situations. On account of labour scarcity these areas are at present lying waste. In the Devon Tea and Coffee Estates in Koppa, about 150-200 acres of land of that description with perennial water sheds are to be planted with arecanuts. Nurseries have been raised already and this is a case of firm extension of 150 acres. In the neighbouring

Byirkodigai Coffee Estate of Shri Bettagiri Krishna Bhatta, 14-00 acres have been planted last year in a similar valley and more area exists for expansion. Coffee though a plantation crop, is mostly in the hands of Indian planters and it may be possible to take advantage of the progressive coffee interests to utilise their waste lands for arecanut development. The entire taluk of Koppa, the south western side of Kalasi Hobli in Mudigere taluk and the Narasimharajpur and the Balehonnur Hoblis in Narasimharajpur taluk in the Coffee areas of Chickmagalur District need to be surveyed intensively for gauging the exact scope. The Assistant Director of Agriculture, Chickmagalur was of opinion that the valleys in the coffee areas indicated above are ideally suited and that some coffee interests are also willing to raise areca in view of the stable prices in recent years. Some efforts in contacting them systematically may yield good results in expansion of area.

V. Scope and limitations of bringing these areas in Malnad under cultivation.

(a) *Assignment of lands.* Government lands are assigned only to those who do not possess more than 2 acres of wet lands or 5 acres of dry lands. Naturally these lands can be assigned only to the landless poor who are not able to develop the suitable sites into arecanut plantation for want of finance. Cost of assignment is nominal. The assignment of Khuskis (dry lands for removing leaf) is also subject to the limit prescribed above which has rendered procurment of manure a severe problem in some areas.

(b) *Assessment.* The rate of assessment varies from Rs. 12 to 19 per arce excluding Re. 0-4-0 per rupee towards the different cesses. A system of assessment called the 'Alavae system' was in vogue by which the assessment in the first year is only 1/3rd and is successively increased every year by equal instalments so that from the 7th year onwards the full is realised. This has been abolished now. Intending growers are claiming for a revenue-free period of 15 years in the initial stages as an encouragement. Complete remission of revenue for 15 years will involve an expenditure of Rs. 11.25 lakhs to Rs. 17.75 lakhs over a period of 15 years for the 5,000 acres indicated as suitable.

(c) *Assignment of District Forest Areas.* As some of the old areca areas have been absorbed into the District and State forests it is but reasonable that suitable lands from this class must be assigned more liberally. In the Tumbe Hamlet of Benketavalli village near Sagar, 4 acres of such type was seen adjacent to the holdings of one Shri T. Subba Rao; the Assistant Director of Agriculture, Shimoga said that at Anandapuram one Shri A. R. Venketachala Aiyengar can cultivate at least 12 acres of garden in a similar type of a forest valley if these are readily assigned. In the Garangudigai circle and Dasangudigai circle District Forests near Meligai in Thirthahalli taluk, 18 to 30 acres of ideal valleys can be found. The Government may also find their way to remit the seigniorage value for areas released out of District forests for arecanut plantation. District forest valleys which con-

tain certain reserved species are not assigned for clear felling and cultivation purposes. If some relaxation is made to assign such valleys in respect of arecanut cultivation which does not involve complete denudation, large areas can be commissioned into production. The exact area has to be ascertained.

(d) *'Soppina Betta' or Wooded lands.* The northern regions of Sagar, Sorab and parts of Hosnagar do not experience severe handicaps in respect of procuring 'Soppu' (Green leaves), for manuring purposes. But Thirthahalli, Koppa regions have very great difficulties in this regard. As there is no proprietorship for the growers, they exercise their collective rights of green leaf removal very injudiciously and do not husband the wooded lands carefully, resulting in severe denudation. It is a fit case for negotiation with the Forest Department for individual assignment of wooded lands, so as to make green leaves easily available and ensure effective cultivation in the existing tract and for the new developments.

Renovation of the garden soil has become difficult in certain garden tracts as the neighbouring ground has been denuded or they are reserve forest areas.

(e) *Restoration of tanks.* Out of the total of 689 major tanks and 10,810 minor tanks in the entire malnad, there are nearly 380 major tanks and 6,592 minor tanks in the areca belts of Sorab, Sagar, Nagar, Thirthahalli, Koppa, N. R. Pura, Mudigere

and Tarikere. Most of these need repairs and restoration. The same is taken up under the Food Production Schemes for successive restoration. The tanks are useful for both paddy and areca. At two places, Dombekere near Sagar and Kalikapura near Hosnagar, two major tanks were seen in disuse. If they are restored it will be possible to increase the cultivation by 15 acres and 40 acres respectively. Even the villages Bharatipur and Booklapura, so near as the pupulace township of Thirthahalli, suffer for want of sufficient water in summer and the gardens are not well maintained. At Nilagaramakki near Meligai in Thirthahalli taluk also a tank is in disuse which, if repaired, will render 12 to 30 acres cultivable. The improvement of irrigation facilities is the sole responsibility of the State Government; yet it would be advisable to collect periodical information regarding the achievement of tank restoration schemes and also the area under arecanuts benefitted, in order to be able to localise the requirements in minute details and possibly go to the succour of a deserving spot within limits of the Committee's resources. The restoration of minor tanks whose upkeep is distinctly that of the ryots' has been neglected. An element of compulsion is necessary in this regard and also liberal financial assistance.

(f) The waterspread of the Hirebasagar Dam on the Sharavathi and the proposed Honnamoradu Dam renders some portions of the Sagar taluk and Hosnagar taluk unfit for arecanut

cultivation. The construction of Mur Honse project in the Shikarpur taluk east of Sagar will also wipe out due to its waterspread nearly one third of Anandapuram Hobli of Sagar taluk. On account of these features, considerable area under the crop will be lost and further development of cultivation can be thought of only in the north east of Talguppa Hobli, the entire Sagar Kasba Hobli, North eastern portions of Avinhalli Hobli and that portion of Anandapuram Hobli which will not be submerged by Mur Honse. Hosnagar will be the worst affected when more than three-fourths of the area in Nagar, Hosnagar, Kerinhalli and portions of Humcha Hoblis will get submerged under the waterspread of the dams on the Sharavathi. All the development schemes in respect of these areas are in a fluid state and that deserves to be watched. In the interests of areca cultivation and the displaced men, the exact loss of areca under waterspread has to be determined and help rendered in respect of settling the displaced men on arecanut cultivation elsewhere.

VI. *Position of supply of seedlings.* The entire tract raises its own requirement and the growers themselves have distinct tastes and practices in selecting seednuts and seedlings in each tract. Sentiment and prejudice plays a large part in selecting seedlings from every distant gardens or villages. There is no dearth of seedlings and nursery schemes alone may not go a long way to help expand the cultivation for other well known handicaps.

VII. Finance and Capital.

- (1) Cost of planting up an area to maturity (12 to 15 years) comes to Rs. 6,500 to 7,000
- (2) Cost of maintenance per acre per year. Rs. 1,000
- (3) Average yield - 600 Lbs. (South-zone-poor cultivation) 1,500 Lbs. (North zone)
- (4) Gross profit at Rs 100 per maund for 1,120 Lbs. yield Rs. 1,400
- (5) Net profit. Rs. 400
- (6) Cost of production per maund of 82-2/7 Lbs. Rs. 55 to 60

Income from subsidiary crops not included.

The cost will be less than Rs. 1,000/- in places where the cultivation is not intensive. For reckoning gross profit, an average yield of 1,120 Lbs. for good standard of cultivation has been assumed.

Lack of finance is the chief handicap and it can be met to some extent by availing of the provisions of the Mysore Land Improvement Loans Act. A maximum of Rs. 5,000/- repayable in 10 annual instalments at 6½% interest can be availed. Revisions are required to make the terms and conditions easier and attractive for intending areca planters.

VIII. Specific action necessary.

(a) It is evident that cost of reclamation and levelling takes a major share of planting costs. Of late, some growers have looked up to the Agriculture Department's mechanical cultivation equipment for reclamation purposes. As first preference is to be given for food production efforts, the demands are not fully met. Any two of following suggestions may be considered :—

The Agriculture Department can be financed by the Committee to purchase one or two additional Bull graders or bull dozers so

that they may be solely commissioned to do reclamation work for arecanut crop, or

The State Agriculture Department's equipment may be hired for the reclamation purposes, at concessional rates. And the loss on account of the concessions may be shared between the Committee and the State Government.

(b) Another factor that significantly increases costs and cuts down profits is the timely plucking of tender nuts and their processing. Labour is so scarce that timely harvests of the right type of maturity is not always possible which cuts down quality and hence profits also. As it is widely known that more than 75% of the country's deficit is in respect of sundried whole nuts, it must be profitable to induce the area to change over. The Mysore types are not quite as bold as the South Kanara or 'Shrivardhan' types and therefore they do not command good prices. Growers are aware of this handicap. In addition to this, disabilities are imposed upon tenant growers to deliver tender processed varieties as rent in kind in the terms of lease. And so, they continue to harvest tender ones and process them leaving, of course, inevita-

bly some over-mature crop for the sundried type. Sagar and Sorab types are a little bolder which area resorts to sundried types more systematically. One cannot be also quite sure if the bolder types on the plains due west will fare well in the Mysore plateau. It is no doubt a long term investigation, but an intensive search has to be made to find out if any private individual has resorted to introduction of the neighbouring South Kanara types and with what results. Results of such investigation may prove a rapid and sure guide to give a profitable design in planting the new areas or rehabilitating the neglected or abandoned areas.

(c) Irrigation and manuring and intercultivation take a lion's share of the annual expenditure. Opinion prevails in certain authentic quarters particularly in Koppa and Sringeri that very nominal cultivation and manuring under rainfed conditions yields proportionately better profits than the usual intensive cultivation methods. Obviously the cost of production is very low, although yields are less. It would appear from this statement that the law of diminishing returns begins to operate the moment intensive cultivation is resorted to. As areca is always recognised as a delicate palm requiring nursing for better profits, this is a matter for urgent investigation. Diversity of conditions exists in the malnad gardens particularly south of Thirthahalli taluk. And therefore it may be worthwhile to cause elaborate field investigations on comparative costs as co-operative experiments on private holdings, or cause some ad hoc enquiries and

observations over a large number of reliable samples. If the indications are positive, extensive system of cultivation can be advocated for these waste lands also as it exists in parts of Malabar and Travancore-Cochin State. Otherwise, before opening up more areca gardens, abiding measures have to be devised for rehabilitating this existing areca tract.

It has been estimated that in the State, only 27,500 acres of areca are properly cultivated and the rest are rather neglected which afford a good venue for intensifying production. From the comparative observations of the Mysore Malnad areca tract, which consist of 3 typical belts, viz.,

- (i) the intensive north and north-east comprising of Sagar, Sorab, and parts of Hosnagar;
- (ii) the inherently fertile central belt of Hosnagar, Thirthahalli and Koppa adjoining; and
- (iii) the unirrigated tract of south and south western belt of Koppa and Sringeri and parts of N. R. Pura and Mudigere taluk,

one is inclined to believe that bulk of the area where intensive cultivation of arecanut is not practised lies in the south-western malnad of Chickmagalur in Koppa and Sringeri in over 12,000 acres. Although natural conditions are more favourable, the acute labour scarcity and the other economic disabilities are the main causes for the neglect in the southern sector. Regular supply of labour, financing without the risk of forced sale, and the appropriate technological assistance have always been the empirical recom-

Grading of Sliced and Boiled Arecanuts in Travancore-Cochin State

(Continued)

Arecanut cultivation in this State is distributed throughout, in scattered holdings. Its distribution is, however, more concentrated in the hinterland than in the coastal regions. In the coastal regions, it is more or less grown as a mixed crop along with coconut and other useful trees, such as mango and jack.

The average individual holding in this State being very small, the grower evinces little interest regarding its production and marketing. The grower generally sells the arecanut with or without husk to the itinerant merchants, who undertake their curing. The practice of harvesting ripe nuts

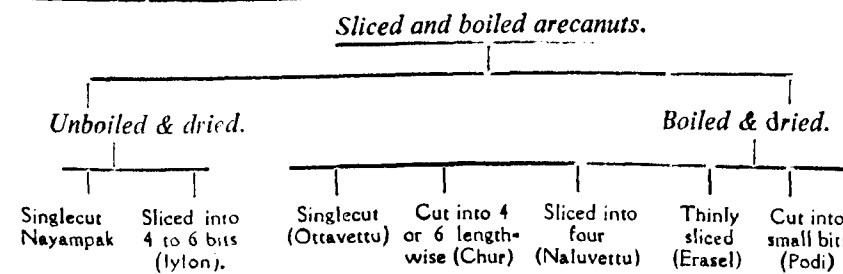
mendations and remedies to cut down the costs of production. As Dr. Coleman put it 4 decades ago, "what a long way we have to go before we have exhausted the possibilities of improvement of this crop", is true even today. Therefore a very intensive and systematic survey of the specific needs to promote intensive cultivation in each of these distinct group of tracts will be only a desideratum for planting any development measures. Along with the other field investigation suggested on private holdings, an intensive agro-economic survey of these typical tracts also, as suggested in the Bombay report, may be considered.

for the preparation of sundried whole nuts (Chali) and of tender nuts for the preparation of sliced and boiled arecanuts are both in vogue in this State. Alleppey is a very important assembling market for the sundried whole nuts, from where they are exported to distant distributing markets like Bombay and Calcutta. The most important markets for sliced, boiled arecanuts are Trichur, Pazhanji, Chalakudi, Muvattupuzha, Palai, Ponkunnam, Nedumangad etc., where tender nuts are cut into small bits of different sizes and shape for the preparation of processed arecanuts. Much attention is bestowed on the curing of arecanuts in this State. Tender arecanuts are processed into a number of varieties, and perhaps nowhere in India do we see so many of them as in this State. Since arecanuts are generally harvested at short intervals, they are not allowed to over-mature on the tree and as such, the proportion of overmatured inferior nuts are much less in the bulk when compared to the nuts produced in Masore and Bombay States. Grading, however, has not developed as a technique as in other important assembling markets.

Marketing has also not developed to any appreciable extent. The grower in the village generally harvests the arecanuts in their tender stage and husks them at home.

The husked nuts are then carried in head loads to the premisses of the nearest curing merchants for sale. As tender nuts are easily perishable, they have to be disposed of as quickly as possible. The curing merchants, who are limited in number in a village exploit the helpless position of the growers who are generally needy and ignorant of the market conditions. The ratio of tender raw nuts to cured nuts is calculated in the proportion of 3:1 and prices are determined on this basis. The

curing merchants, who generally obtain loans from the bigger merchants for purchase of raw nuts at the important assembling centres sell their cured arecanuts to them. These arecanuts will in turn be sold in the distributing markets in Madras and Mysore States. The practice of chewing sliced, boiled nuts is not in vogue in this State. Raw ripe nuts are used for local consumption. The samples of arecanut collected from the different markets in this State can be classified as follows:—



Under each of the main classifications noted above, a large number of grades are prepared. The factors taken into consideration in judging the quality factors of the nuts are generally their stage of maturity, size, shape, colour and moisture content. The stage of maturity, however, plays a dominant role in judging the quality factors under each of the above classifications. The tender nuts always fetch a premium price over the over-matured inferior (Kora or Vettai) nuts. The curer first makes a preliminary grading of raw nuts during the cutting operations on the basis of their maturity and size. He picks out big sized and over-matured nuts from the bulk of tender nuts. The big sized nuts are generally used for the preparation of 'Iylon' and 'Chur' nuts (cut into four to six pieces lengthwise), while the small sized nuts are

used for the preparation of single cut nuts (Ottavettu) whether boiled or unboiled. The over-matured nuts are picket out by hand and cut, boiled and dried separately. There will still be a small proportion of over-matured nuts remaining in the bulk which will be picked out after they are dried finally. Final grading is however, done by the distributing merchant according to his requirements, depending upon the size, colour, shape etc. The over-matured inferior nuts still remaining in the bulk will also be picked out at this stage.

As colour also plays an important role in determining the quality, the boiled nuts are given a thin coating of 'kali' solution before drying them with a view to give attractive colour. There are also certain varieties for which 'kali' colour is given twice (Double kali). They will have a

sparkling lustrous colour and will be heavier in weight than the arecanuts which are treated with 'Kali' only once.

A brief description of the samples of arecanut collected during this tour from the different market in Travancore-Cochin State is given below.

Muvathupuzha. This is an important assembling market in the central region of the Travancore-Cochin State for sliced boiled nuts. The growers from the round about villages bring their raw arecanuts for sale. There are a few curing merchants in this place, who purchase them and process them into different varieties. The cured arecanuts are sold in the Palghat, Trichur and Palai markets. The most popular varieties produced in this market are Iylon and Nayam. With a view to make them look more attractive, sometimes a sulphur fumigation is given to those two unboiled varieties (Nayam and Iylon). No grading is generally done in this market except picking out of the over-matured nuts from the bulk.

'Iylon Sithanam':—They are prepared out of small sized tender nuts which are cut into about 5 to 6 slices breadthwise and dried in sun. When sun drying is not possible owing to monsoon conditions, drying is done on fire also. (The method of fire drying on country chamber has been described already in my previous note). As no grading is done on the basis of their size, the bulk consists of thin sliced dried nuts of different sizes. But, generally in this market only small sized nuts are selected for preparation of 'Iylon Sithanam' nuts. Their size,

however, varies from $\frac{1}{2}$ an inch to $\frac{3}{4}$ an inch in diameter and some of them have a shrivelled appearance owing to their immaturity. These nuts have a good demand in Panruthi market in South Arcot District, where they are graded according to their size and dried again in sun.

'Iylon Vettai':—Over-matured nuts are generally picked out from the heap of raw nuts during cutting operations and they are cut into thin slices as in 'Iylon Sithanam' and dried in sun or on fire as the case may be. Picking out of the over-matured nuts from the bulk of 'Iylon Sithanam' is also done after final drying. Being over-matured, they are bolder in appearance and have a woody taste. The only distinguishing feature between 'Iylon Sithanam' and 'Iylon Vettai' nuts is in their stage of maturity, the latter being more matured (over-grown).

'Erasel with kali':—Tender nuts are cut into very thin slices about 30 to 35 per nut and boiled in water in a copper vessel. After they are boiled to the exact requirements (which is generally known by its softness) they are removed from the copper vessel and allowed to cool. They are then given a coating of kali solution (Kali is a thick concentrated solution got after boiling the tender nuts). They are then dried in sun. Owing to their tenderness and being cut into very thin slices, they have a shrivelled appearance. They become crisp when dried well. They are marketed in Trichur, Coimbatore, Pollachi etc.

'Erasel without Kali':—They are tender nuts cut into thin slices as described above and boiled in water and dried in sun without

being given an application of kali solution. As this has not a good demand in the market, it is not prepared in large quantities. Since kali solution is not added, it has a dull colour and is lighter in weight than Erasel, treated with kali solution.

'Chur Vettai':—They are prepared out of over-grown nuts which are cut into four to six pieces lengthwise. They are then boiled in water and cooled. Kali solution is then mixed and are then dried on fire. When there is bright sun, they are sometimes dried in sun also. Being over-matured nuts, they are somewhat woody in taste. They are sold in Trichur, Vellore, Bangalore and Bowringpet markets.

'Chur pak':—The method of preparation is the same as in 'Chur Vettai' except that only tender nuts are selected for its preparation. They are also cut in the same manner as 'Chur Vettai' and boiled in water. They are then treated with Kali solution and dried on fire or in sun as the case may be. The over-grown nuts still remaining in the bulk are picked out by hand after the final drying. Being prepared out of tender nuts, they are a little shrivelled in appearance unlike 'Chur Vettai' nuts prepared out of over-grown nuts.

'Nayam pak':—Tender nuts are cut into two equal bits breadthwise and dried on fire without being boiled or coloured. They have a dull colour and a slightly shrivelled appearance. They are sent from here to Palai market, from where it is marketed and in Madurai and Virudhunagar markets in Madras State. As no grading is done in this market,

the bulk contains nuts of different sizes and shape.

'Nayam Vettai':—They are over-grown nuts picked out from the bulk of Nayam Pak. The method of preparation is the same as in 'Nayam Pak'. The only distinguishing feature is that Nayam Vettai nuts are prepared out of over-grown nuts. Picking of over-grown nuts is done both during the cutting operations and after the final drying. Being over-grown nuts, they have a bolder appearance than Nayam Pak nuts which are somewhat shrivelled. They have a woody taste.

Packing. 'Erasel' nuts being brittle and get powdered very soon are carefully packed in double palm mats. Chur and Iylon nuts are first packed in a palm mat which is then inserted in a gunny bag. In the case of Nayam Pak, they are packed in single or double gunny bags. The unit of weight of the package prevailing in this market is 104 lbs nett. in the case of all varieties except Nayam Pak. The unit of weight in the case of Nayam Pak is 155. lbs. nett.

Thodupuzha. This place is about twelve miles from Muvathupuzha and the conditions prevailing there are similar to those in Muvathupuzha. Only one variety of arecanut is generally prepared in this market, viz. Nayam Pak. Tender nuts are cut into two equal bits breadthwise and dried on fire in sun without being boiled and coloured. When price for Iylon nuts (tender nuts cut into thin slices and dried) is higher than it is for Nayam pak, Iylon nuts are also sometimes prepared in this market. It is

said that owing to prevalence of yellow leaf disease in this area, vast arecanut gardens are devastated and that rubber is being grown in their place. Vazhakulam which is about six miles from Thodupuzha and was at one time an important growing and curing centre has ceased to be so at present. Many of the curers of arecanut have given up their hereditary occupation and the place is going down in importance in regard to arecanut industry. The following are the two varieties available in this market.

'Nayam Pak':—They are tender nuts cut into two bits breadthwise and dried on fire without being boiled and coloured. Owing to tenderness of the raw nut, they get a shrivelled appearance when they are dried well. They have a dull brownish colour. They are marketed in Palai, from where they are despatched to Madurai and Virudhunagar in Madras State.

'Nayam Pak Kora':—During cutting operation, over-matured nuts are picked out by hand from the heap and cut and dried separately. The over-matured nuts still remaining in the bulk are also picked out after they are dried on fire. Since grading is not done in a perfect manner, there will be a small percentage of over-matured Kora nuts as also nuts of different sizes in the bulk. The Kora or overgrown nuts can easily be distinguished by their rough appearance and woody taste.

Palai Market:—Palai is an important assembling market for arecanut in Travancore-Cochin State. A substantial portion of the sliced and boiled arecanuts

produced in the central Travancore-Cochin State come to this market for sale. They are mostly consigned from here to the markets in the Southern Districts of the Madras State, viz. Madurai, Virudhunagar, Tinneveli, Tanjore etc. Only one variety of nut, viz. tender nuts cut into two equal bits and dried in sun or on fire called Nayampak come to this market for sale. The curers who prepare arecanuts for this market do a preliminary grading on the basis of their maturity as Nayam Pak (tender nuts) and Nayampak Vettai (over-grown nuts). After the arecanuts are purchased by the merchants at Palai, the Nayampak (superior tender nuts) is again graded into Nayampak Sithanam and Nayampak Ududuram on the basis of their size. The inferior Vettai nuts are not generally graded in this market. The nuts that come to this market are not generally well dried, as a result of which they contain plenty of moisture and deteriorate if they are retained for a long time. They are, therefore, given sulphur fumigation to make them look more attractive and to prevent immediate deterioration. The following gives a description of the samples collected in this market.

'Nayam Pak Sithanam'. These are prepared out of a small sized tender nuts, cut into two equal bits and dried in sun. When sun drying is not possible owing to monsoon conditions, they are dried on a country chamber. They are neither boiled nor coloured. The Nayam pak nuts are sieved in 5/8" meshes and what falls to the ground are Nayam pak Sithanam nuts. They

are small in size and owing to their immaturity get a shrivelled shape when fully dried. They can easily be distinguished by their small sizes and shrivelled shape.

'Nayampak Ududuram' The bigger nuts that remain on the mesh while grading the Nayampak nuts are called Nayampak Ududuram nuts. They have a cup-like shape. They are slightly more matured than Sithanam nuts and do not have a shrivelled appearance like them.

'Nayampak Vettai'. They are prepared out of over-grown nuts. Sorting out of over-grown nuts is done both during the cutting operations and after they are finally dried and are ready for the market. They have a bolder appearance than Nayampak nuts and have a woody taste. The method of preparation is the same as described in Nayampak Sithanam. No grading is said to be generally done in regard to Vettai nuts. There will therefore, be nuts of different sizes and shape in the bulk. They are inferior in quality and fetch a lower price than Sithanam and Ududuram nuts.

Packing. The arecanuts are packed in single gunny bags to contain 155 lbs. net. They are also given a sulphur fumigation to give them an attractive colour and to prevent them from deterioration from fungus attack.

Ponkunnam market. This is another market in Kottayam District situated at a distance of about twenty miles from Kottayam. As in Palai and Thodupuzha markets, only one kind of arecanut, viz. Nayampak is marketed here. Tender nuts are

husked and cut into two pieces breadthwise and dried on fire without being boiled and coloured. About 25,000 bags of (156 lbs. each) of this variety arrive in this market annually for sale. The curer who purchases raw arecanuts from the growers cures them into Nayampak as described above and makes only a rough grading of them as Nayampak and Nayampak Vettai by picking out over-grown nuts from the bulk. He deliberately leaves a good percentage of over-grown inferior Vettai nuts in the bulk. The merchants who purchase the nut from the curers in this market, make another grading on the basis of their size as (1) Sithanam (Small), (2) Special (medium) and (3) Ududuram (big) with the help of meshes. The Sithanam nuts will be about 1/2" in size while the Special and Ududuram nuts will be 5/8" and 3/4" respectively. After the nuts are thus graded according to their size, over-grown nuts are picked out by hand and they are called 'Peruvettai' (big sized over-grown nuts) and 'Podivettai' (small sized over-grown nuts). The following give a brief description of the different grades of nuts available in this market.

'Nayampak Sithanam'. They are, as already described, the small sized tender nuts cut into two equal bits breadthwise and dried on fire without being boiled and coloured. Owing to their immaturity, many of the nuts have a shrivelled appearance when they are dried well. Meshes having holes of about 1/2" in diameter are used for sorting them out.

'Nayampak Special'. The nuts are picked out from the bulk of preparation is the same of Nayampak special and Ududuram nuts.

medium sized nuts about 5/8" in diameter. They do not have so much of shrivelled appearance as the small sized Sithanam nuts.

'Nayampak Ududuram' They are still bigger than Nayampak special nuts. When 5/8" mesh is used for sorting, what remain on the mesh are Ududuram nuts. They are about 3/4" in diameter. They are broad and plate-like in appearance.

'Nayampak Peruvettai':—After the superior nuts are sorted out as indicated above on the basis of their size, the over-grown inferior nuts (Vettai) are picked out by hand. The big sized Vettai

'Podi Vettai':—They are Vettai nuts of small size picked out from the bulk of Sithanam nuts. Though small in size being over-grown, they have a bold appearance and possess a woody taste.

Packing. There is no uniformity in regard to the unit of weight of the package. When they arrive in this market, they are packed in single gunny bags to contain 156 lbs. nett. The unit of weight depends upon the quality of the nuts and the markets to which they are consigned. The packing is done in single gunny bags. The following give the unit of weight of the package consigned to different markets.

	Place to which consigned.	Unit of weight.
Nayampak (Superior quality)	Madurai	98 lbs. nett.
Nayampak Vettai (Inferior)	"	138 lbs. "
Nayampak (Superior)	Tuticorin	103 lbs. "
" "	Tinneveli	112 lbs. "
" "	Nagercoil.	109 lbs. "
" "	Munar	100 lbs. "
" "	Rajapalayam	108 lbs. "

Sorting Wages. Rs. 2/8/- is paid to a sorter per day who is expected to sort one bag containing 156 lbs. Arecanuts arrive in this market in a semi-graded and semi-dried form during the season commencing from June to end of November. The local merchants after drying and grading them as indicated above give a sulphur fumigation before despatching them to the outside markets to be sold on their behalf on commission basis.

Punalur Market. Only two varieties of arecanuts are prepared in this market, viz. (1) Chur and (2) Nayampak. The

over-grown nuts in Nayampak are picked out by hand and graded separately called 'Kora' nuts. The growers sell their arecanuts with or without husk to the curing merchants. These merchants cure them and sell them in outside markets like Madurai, Virudhunagar, Shenkottah, Tenkasi etc. The following give a brief description of the samples collected from here.

'Chur'. They are prepared out of tender nuts which are cut into four to six bits lengthwise and boiled in water. After they are boiled to the exact requirement

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they are cooled and given a coating of kali solution. They are then dried on fire. Only tender nuts are generally used for the preparation of this variety. After they are dried, the nuts are sometimes mixed with 'Varakavi' (a kind of red earth) colour to make them look more attractive.

'Nayampak'. They are prepared out of tender nuts which are cut into two equal bits breadthwise after husking and dried on fire without being boiled and coloured with 'kali' solution. When immatured nuts are used in its preparation, the nuts will have a shrivelled appearance after they are dried well. No grading, according to their size, is done in this market and as a result the bulk does not consist of uniform size. The practice of treating the dried nuts with 'kavi' colour (red earth) is also in vogue in this market as in Madurai and Virudhunagar markets with a view to give them an attractive reddish colour.

'Nayampak Kora'. As already described, over-matured nuts are first separated from the bulk of husked raw nuts during cutting operations and they are cut and dried separately. A small percentage of over matured nuts are also picked out by hand from the bulk of Nayampak nuts after they are dried and are ready for the market.

Packing and unit of weight. The dried nuts are packed in single gunny bags and the unit of weight is different for each variety of nuts. The Chur nuts are packed in gunny bags to contain 103 lbs. nett. while the Nayampak and Nayamkora nuts are packed similarly to contain 110 lbs. and 138 lbs. respectively.

Nedumangad market:—Nedumangad is in the Southern region of the Travancore-Cochin State and is a notable market for both Kalipak (tender processed nuts) and Kottapak (ripe sundried whole nuts). It is said that about 4,000 to 5,000 bags of (100 lbs. each) Kalipak and about 20,000 bags of Kottapak come to this market annually for sale. The arrivals to the market begin from the month of July and extend upto the end of December. The nuts come from almost all the villages in the Nedumangad taluk. The growers do not generally come to the market for sale of their nuts. The itinerant merchants visit their garden premises and buy their nuts from them with husk in tact. These merchants in turn sell them to the curing merchants in Nedumangad. Unlike the practice in vogue in other parts, the growers do not even remove the husk of the nuts. The ripe nuts which are intended for the preparation of sundried whole nuts (Kottapak) are sold in numbers while the tender nuts which are intended for the preparation of Kalipak are sold in weight with husk in tact. The husking of tender nuts is done by women labourers who are paid daily wages of Re. 0-12-0. Each woman is expected to husk about 180 lbs. a day. The cured nuts (Kalipak) are sold in Madurai, Virudhunagar and Tinneveli markets on commission basis by the local curing merchants. The following are the different varieties of processed nuts prepared in this market.

'Chur':—These are prepared from tender nuts cut into four or six bits lengthwise and boiled in water. After they are boiled to

the exact requirement, they are taken out from the vessel and cooled for some time. They are then given a coating of 'kali' solution and dried on fire.

'Chur Vettai':—After the nuts are husked and during cutting operations the over-grown nuts are picked out from the bulk and cut and boiled separately. They are also treated with kali solution and dried on fire. They are weightier and harder than Chur nuts and have a woody taste. They are inferior in quality.

'Nayampak'. The preparation of these nuts has already been described. Only tender nuts are selected for its preparation. Owing to the tenderness of the nut, they get a shrivelled appearance when dried well.

'Nayampak Vettai.' They are prepared out of over-matured nuts. The method of preparation is the same as in Nayam Pak. The nuts are very big in size and owing to their overmaturity, they have a bold appearance. They are very hard and have a woody taste. The over-grown big sized nuts are picked out from the bulk of raw nuts during cutting operations.

'Ududuram Vettai'. They are Vettai nuts picked out from the bulk of Nayampak nuts after they are dried. They are not so over-grown and big in size as the nuts selected for the preparation of Nayampak Vettai nuts.

'Chellangai'. They are small bits of nuts picked out from the heap of Nayampak and Nayampak Vettai nuts. During cutting, drying and packing, some nuts are broken into small bits. It also consists of very small sized

immature nuts which are shrivelled beyond recognition. They have no regular shape. They are said to be used in the preparation of scented nuts. It is classified as inferior in quality.

Packing. (i) *Chur and Chur Kottai.* Chur nuts are first packed in palm mats and are then inserted in a gunny bag. The unit of weight is said to be 98 lbs. nett. in the case of Chur and 100 lbs. in the case of Chur Vettai.

(ii) *Nayam.* They are packed in single gunny bags to contain 100 lbs. if they are consigned to Madurai and 108 lbs. if consigned to Virudhunagar markets. The Ududuram Vettai and Chellangai are also packed in single gunny bags and the nett. weight in respect of them is 100 lbs. Nayam Vettai nuts are packed similarly to contain 140 lbs. nett.

Trichur Market:—This is the biggest assembling market in Travancore - Cochin State for sliced and boiled arecanuts. About 60,000 bundles (104 lbs. each) are said to arrive in this market for sale annually, out of which about 2/3 come in the form of Iylon and Chur nuts. Besides arecanuts produced in Trichur District, those grown in the regions of Central Travancore-Cochin State and the neighbouring District of Malabar in Madras State are also assembled here. The arrivals to this market begin from the middle of June and extend upto the end of November. No grading is generally done in this market. But when the sellers desire, the over-grown 'Vettai' nuts are sometimes picked out by hand from the bulk. Grading as a technique has, however, not developed in this market as in Panruthi, Ma-

durai, Virudhunagar, Shimoga, Sirsi etc. This is perhaps the only market in this State, where largest varieties of sliced, boiled arecanuts are available for sale.

'Erasel':—They are prepared out of tender nuts which are cut into very thin slices breadthwise, about 25 to 30 in number. They are then boiled in water. 'Kali' solution is then applied and dried in sun. After they are dried, a second coating of kali solution is given and again dried in sun. Since it is given a double coating of kali solution, it has a fine lustrous chocolate colour. It is very crisp and break into smaller bits when pressed hard.

'Erasel Vettai':—The method of preparation is the same as above described. More matured nuts are selected for its preparation. They are also given a double coating of kali solution. In view of the overgrowth of the raw nuts, the Vettai nuts are not so crisp as Erasel. Picking out of the Vettai nuts is also done from the bulk of Erasel nuts after all the processing operations are over.

'Chalakudimake':—Tender nuts are cut into about 6 to 8 pieces lengthwise and boiled in water. They are then given a thin coating of kali solution and dried on fire. They are again treated with Kali and dried on fire for the second time. Owing to double coating of kali solution, the nuts will have an attractive sparkling colour.

'Kali Chur':—Tender nuts are cut into about four to five bits lengthwise and boiled in water. They are then cooled and kali solution is applied. They are then dried on fire and kali solu-

tion is applied for the second time and dried similarly. Except in the process of cutting (Kali Chur being cut into about four to five pieces only) there is no other difference in the method of preparation between 'Chalakudimake' and 'Kali Chur'.

'Vellavi Chur':—For the preparation of this, tender nuts are cut into about four to six bits lengthwise and boiled in water. They are then cooled and given a thin coating of kali solution and dried on fire. The only difference between Kali Chur and Vellavi Chur is that the former is treated with kali solution twice, while the latter is treated only once. Vellavi Chur will not, therefore, have a sparkling chocolate colour like Kali Chur.

'Vellavi Vettai Chur':—The method of preparation is the same as in Vellavi Chur. Only over-grown nuts are used in its preparation. The over-grown Vettai nuts are also picked out from the bulk of Vellavi Chur after they are dried.

'Iylon Sithanum':—They are prepared from small sized tender nuts which are cut into about six slices breadthwise and dried in sun. When sun drying is not possible owing to monsoon conditions, they are dried on fire. They will be circular in shape having a diameter of about $\frac{1}{4}$ " and less. No boiling and colouring are done in the preparation of these nuts.

'Iylon Viravu':—The method of preparation is the same as described above. But bigger sized tender nuts are selected for its preparation. They will have a diameter varying from $\frac{5}{8}$ " to 1".

'Iylon Vettai'. Only over-matured nuts are used in its preparation. The method of preparation is the same as described in Iylon Sithanam. Picking out of the over-matured nuts is done both during cutting of the raw nuts and also when they are ready for the market from the bulk of Iylon Sithanam and Iylon Viravu nuts. As they are prepared from over-grown nuts, they are broader in shape and have a rougher appearance. They are woody in taste.

'Chellam Poli'. Very tender nuts are generally used in its preparation. They are cut into thin slices lengthwise, about 25 in number and dried in sun without being boiled and coloured. The method of preparation is the same as in Iylon Sithanam nuts. But the nuts are cut into very thin slices lengthwise. Owing to immaturity and thin cutting of the nuts, they have a very shrivelled appearance.

'Nayampak'. The preparation of this variety has already been described. Tender nuts are cut into two equal bits breadthwise and dried on fire. In case immature nuts are used in its preparation, they will have a shrivelled appearance when dried. No grading is done in this market in regard to this variety on the basis of their size. Only over-grown Vettai nuts are sometimes picked out from the bulk.

'Ottavettu or Naduvettu'. They are tender nuts cut into two equal bits breadthwise and boiled in water. After they are cooled, they are given a kali coating and dried on fire or sun as the case may be. They resemble the Deshavaram nuts and possess the same quality

factors. They are cup like in shape and have a good shining chocolate colour.

'Ottavettu Vettai'. The method of preparation is the same as in Ottavettu described above. The over-grown nuts (Vettai) are picked out from the bulk of Ottavettu nuts and are graded separately. They are a little broader in shape and have woody taste.

'Naduvettu'. Tender nuts are cut into four pieces breadthwise and boiled in water. They are then cooled and kali solution is applied and dried in sun or on fire whichever is convenient. Like the Ottavettu nuts, they are treated with kali solution only once. No grading is done in regard to their size.

Packing. Erasel and Iylon nuts are packed in double mats and the unit of weight in regard to them is 104 lbs nett. The Chur and other varieties described above are first packed in a single mat and the package is then inserted in a gunny bag. In the case of Kalipak, i. e. arecanuts which are treated with kali solution twice, the unit of weight is 112 lbs. while in the case of other varieties it is 100 lbs. nett.

Pazhanji Market. Pazhanji is at a distance of about 21 miles from Trichur and is one of the biggest curing centres for arecanut in the whole of Travancore-Cochin State. The curing of arecanut in this place is done more or less on a cottage industry scale. The growers and other petty merchants, who purchase raw arecanuts from the growers visit this market for sale of their husked raw arecanuts. There are many curers-cum-merchants who

purchase them and process them into several varieties of cured nuts. The cutting of raw nuts as required for the preparation of different varieties like Erasel, Iylon, Chur, Ottavettu, Mukkachur, etc. is mostly done by women labour while the boiling and drying are done by men labour. The season commences from the month of June and extends upto the end of November. It is said that about 40,000 bundles of (100 lbs. each) cured nuts are prepared annually in this place and sent to different markets in Madras, Mysore and Travancore cochin States. It is indeed interesting to note that side by side with arecanut cutting, processing and marketing, similar operations in regard to sago palm nuts are also carried on in this place. The following give a description of the samples collected in this market.

'Vellavi Paya Chur No. I Quality'.—They are prepared out of tender nuts cut into about 20 to 24 bits lengthwise. They are then boiled in water and cooled. Kali solution is then applied and dried on fire.

'Vellavi Payachur — II Quality'.—The method of preparation is the same as described above. But there will be a small percentage of over-grown 'Vettai' nuts in the bulk. Owing to the existence of these Vettai nuts, it is considered inferior in quality and fetches a lower price in the market.

'Kali Mukka Chur'.—Tender nuts are cut into about twelve pieces lengthwise and boiled in water. After they are cooled, they are mixed with kali solution and dried in sun. They are big-

ger in size than Vellavi Payachur described above.

'Kali Payachur'.—Tender nuts are cut into about 20 to 24 bits lengthwise as in Vellavi Payachur and boiled in water. After they are cooled, they are given a thin coating of a kali solution. But unlike Vellavi Payachur, Kali Payachur is dried in sun. Owing to sun drying they get a uniform bright colour. It is said that owing to their being dried in sun, the moisture content in them is slightly more than in Vellavi Payachur which is dried on fire.

'Erasel'.—Very tender nuts are generally used in its preparation. Each nut is cut into about 25 to 30 bits breadthwise and boiled in water. They are then allowed to cool. Kali solution is then applied and dried in sun. After they are dried, they are given a second coating of kali solution and again dried in sun. Thus, it has a double coating of kali; which gives a bright sparkling colour. When dried well, it will be very crisp and easily get powdered when pressed hard.

'Iylon'.—Tender nuts are cut into about 6 to 7 thin slices breadthwise and dried on fire or in sun, when bright sun is available.

'Iylon Kora'.—During cutting operations, the over-grown nuts are picked out and sliced and dried separately. The over-grown

nuts are also picked out from the bulk of Iylon nuts after they are fully dried.

'Vellavi Mukkachur'.—Tender nuts are cut into about eight to ten bits lengthwise and boiled in water. After they are cooled, they are smeared with kali solution and dried on fire unlike Kali Mukkachur which are dried in sun. Since they are sundried, they get a sparkling chocolate colour.

'Vellavi Payachur Kora'.—The method of preparation of this is the same of Vellavi Payachur described already. Only over-matured nuts are used in its preparation which are picked out from the heap of husked raw nuts while cutting. The over-matured nuts still remaining in the bulk of Vellavi Payachur are picked out by hand after all the processing operations are over. The over-matured Kora nuts can easily be made out by their rough appearance and woody taste.

'Vellavi Mukka-Chur Kora'.—The method of preparation is the same as described for Vellavi Mukkachur. The nuts used in its preparation are over-grown nuts. As in the preparation of Vellavi Payachur Kora the over-grown nuts are first picked out during cutting operations and processed separately. In case a small percentage of over-grown nuts still remain in the bulk of Vellavi Mukkachur, they are

picked out by hand after all the processing operations are over. They are inferior in quality and fetch a lower price in the market.

'Ottavettu or Naduvettu' (single cut nuts). They are prepared out of tender nuts which are cut into two equal bits and boiled in water. After they are boiled to the exact requirement, they are taken out of the vessel and cooled for some time. The kali solution is then applied and dried on fire or in sun as the case may be. Since good sunlight is rarely available, during the monsoon months, drying on fire is generally resorted to. The quality factors of this variety have already been described.

'Podi'. Tender nuts are cut into about 28 to 32 small pieces both lengthwise and breadthwise and boiled in water. They are then cooled and smeared with kali solution and dried on fire. They will be small in size and triangular in shape and will be crisp when fully dried.

Packing. Erasel nuts are generally packed in wooden boxes covered well with a palm mat. Each package contain 36 lbs. nett. Other varieties are packed in mats which are then inserted in a gunny bag. The net weight of the package is said to be 100 lbs. except in the case of Iylon Kora which weighs 112 lbs. nett.



GUIDE NOTE ON CULTIVATION OF ARECANUTS.

I. RAISING OF SEEDLINGS.

1. *Selection of trees for seed-nuts.* Seednuts should be gathered only from trees usually over 25 years of age. Only healthy, regularly yielding and vigorous trees should be selected for seed purposes. Old and weak trees should be rejected. Judicious selection of parent tree is an important item in the selection of seednuts of areca palm.

2. *Selection of seednuts.* The nuts for seed purposes should be harvested only when they are fully ripe indicated by the falling down of one or two ripe nuts in the bunch. Select nuts of good size and shape from the mid-region of the bunch and dry them in shade for three or four days. Reject cracked and ill-shaped nuts for seed.

3. *Preparation of seed beds and sowing.* Sow the selected seednuts in a well dug and levelled bed at a spacing of nine inches. Irrigate regularly and provide mulch at the top of the bed. The seednuts will germinate in about 45 to 60 days.

II. PLANTING AND AFTER-CARE OF SEEDLINGS.

1. *Transplanting.* The seedlings are generally transplanted when they are two years old. Though the spacing given varies from place to place, ten feet spacing in the square with one seedling at the centre is considered optimum. In any case, an acre of plantation should not have

more than 600 trees. The seedlings are planted in pits of size (3' x 3' x 3').

2. *Time of planting* When there is free drainage in the soil, transplant in the month of June; if waterlogging will result, plant in August-September after the rains are over.

3. *Time of manuring.* Best season for manuring is August-September in the West Coast and just before rains in other places.

4. *Method of application of manures.* Manures may be applied in a trench nine inches deep and two feet away from the base of the plant. After manuring cover the trench and irrigate.

5. *What manures to apply.* The following mixture is recommended per tree. 20 pounds of green leaf, 20 pounds of farm yard manure or compost, 1½ pounds of wood ash and ½ pound of superphosphate.

6. *Inter-cultivation.* Remove weeds and other rank growth periodically. The gardens should be kept clean by hoeing with mammutty fork at intervals. Inter cultivation increases the yield by 10 to 20 per cent. The roots should not be cut too much and that is why mammutty fork is used in preference to mammutty.

7. *Irrigating arecanut gardens.* Irrigate the trees once in six to eight days in non-rainy periods. This had to be modified depending on the soil.

8. *Drainage.* Both surface and sub-soil drainage are important. Drainage channels and trenches should be dug up wherever necessary.

9. *Under-planting.* Do not underplant until the trees are over 30 years of age; otherwise the trees will be affected adversely.

10. *Inter-cropping.* Inter-crops can be raised in arecanut gardens with careful attention. Do not select any subsidiary crop that is harmful to the areca palm. When inter-crops are grown apply manure heavily to arecanut trees. Banana is the most common inter-crop. Pineapple, papaya, pepper, betelvine, etc. can be grown with care. The combination of pepper and betelvine with areca palm can be expected to increase income.

11. *Wind breaks.* Plant tall growing trees as wind breaks along the Western and South-Western side chiefly and in general all round the gardens.

12. *Harvesting* Harvest the nuts at the right stage of maturity. The presence of uniform bright yellowish colour on all the nuts in the bunch will indicate this. Test this by removing one nut and pressing it after dehusking. If nails enter the nut it is ready for harvest. If the nut is hard to press it is over mature.

To have dependable yield adopt a preventive spraying programme against the "Mahali" disease. A pre-monsoon spraying of one per cent bordeaux mixture given during May end in West Coast followed by another spraying during the break of the rains in July is suggested.

Agricultural News Letter.

Vol. I., No. 8.
October 1955

Second Plan Cooperative Targets Fixed.

Fifteen million members are proposed to be enrolled in the Primary Agricultural Credit Societies during the Second Five Year Plan period ending with 1960-61.

A sum of Rs. 150 crore is expected to be utilized in short-term loans to agricultural cooperators in the country during the same period.

These targets were decided upon by a meeting of the State Ministers and Secretaries of Co-operation. Registrars of Co-operative Societies and other leading co-operators held in New Delhi recently by the Union Minister of Food and Agriculture.

At present, there are only 5 million members of Primary Agricultural Credit Societies in

the country and a sum of Rs. 30 crores has been advanced by way of short-term loans to agriculturists in various States.

At present, medium term loans to cooperators total Rs. 10 crores. During the Second Five Year Plan period these are expected to go up to Rs. 50 crore. Similarly a sum of Rs. 25 crore is planned to be utilized for long-term loans during the Second Plan period compared to the present Rs. 3 crore.

All these loans will increase the average loan of Rs. 60 per member as it stands today to Rs. 100 per member by the end of the Second Plan period.

By the end of 1960-61, each State Government will have established a marketing society in every important *mandi* with adequate storage facilities. It is expected that at least 10 per cent of the total produce sold in each *mandi* will then be handled by the State Cooperative Marketing Society.

INDIAN COUNCIL OF AGRICULTURAL RESEARCH.

Farm News Release No. 135.

GROWING PEPPER

Select only Bisexual Plants.

New Delhi :—Few pepper growers know that there is sex in pepper vines. There are vines with male flowers, with female flowers and those in which both the male and female flowers are combined.

Vines with male flowers only do not bear fruit. The vines with female flowers bear fruit only if there are vines with male flowers or flowers with both the sexes growing nearabout and which are flowering at the same time. Pepper vines which grow in the jungle are either males or females. The vines with bisexual flowers are not found in the wild state.

Pepper growers, therefore, should plant only vines with bisexual flowers to get bigger crops. They should take care to see that they get their planting material from very reliable sources or from Government nurseries.

MARKET REPORTS

Average Weekly Prices of Arecanut during the month of DECEMBER 1955.
(Price in rupees per standard maund of 82-2½ lbs.)

I. At SHIMOGA Market in MYSORE STATE.

Name of quality	WEEK ENDING				
	3rd	10th	17th	24th	31st
	Rs.	Rs.	Rs.	Rs.	Rs.
Pheeton	148 15	149 12	150 9	150 9	150 9
Desavaram	150 9	151 0	152 3	151 0	151 0
Rajalu	136 10	137 1	137 7	137 7	137 7
Vanti Bette	109 14	109 14	109 7	108 10	105 12
Gorabalu	60 14	60 14	60 14	60 14	60 14

II. At BOMBAY Market in BOMBAY STATE.

Name of quality	WEEK ENDING				
	3rd	10th	17th	24th	31st
	Rs.	Rs.	Rs.	Rs.	Rs.
Mangalore Navi					
Vachar Best.	115 0	115 0	—	115 0	115 0
Sirsi Toanchi	225 0	225 0	—	275 0	275 0
Sirsi Safed	—	—	—	—	—
Ceylon Nuts	105 0	105 0	—	110 0	110 0
Singapore Nuts	105 0	110 0	—	112 8	107 8

III. At CALCUTTA Market in WEST BENGAL STATE.

Name of quality	WEEK ENDING				
	3rd	10th	17th	24th	31st
	Rs.	Rs.	Rs.	Rs.	Rs.
Sundried (sliced)	100 0	100 0	110 0		
Ceylon nuts	116 0	116 0	120 0		
Singapore nuts	110 0	110 0	111 0		
Penang Nuts	108 0	108 0	112 0		

IV. In TRAVANCORE-COCHIN STATE.

Name of Market	Name of quality	WEEK ENDING				
		3rd	10th	17th	24th	31st
		Rs.	Rs.	Rs.	Rs.	Rs.
Trichur	Erasal.	152 4	152 4	156 6	160 7	—
	Iylon.	134 9	134 9	141 15	146 7	—
	Choor.	134 6	134 6	132 12	133 0	—
Alleppey	Assorted.	55 2	51 6	52 14	88 13	91 13
	Garbled.	58 12	57 5	55 2	102 14	102 14

V. In HINDUPUR Market in ANDHRA STATE.

Name of quality	WEEK ENDING				
	2nd	9th	16th	23rd	30th
	Rs.	Rs.	Rs.	Rs.	Rs.
Billa	140 9	140 9	140 9	138 14	
Churu	123 7	123 7	123 7	121 11	
Podi	58 5	58 5	58 5	58 5	

VI. AVERAGE WEEKLY PRICES OF ARECANUT DURING DECEMBER 1955
IN MADRAS STATE.

Name of market	Name of quality	WEEK ENDING				
		3rd	10th	17th	24th	31st
		Rs.	Rs.	Rs.	Rs.	Rs.
Mangalore	Supari New	101 12	102 2			
	Supari Old	134 1	142 0			
	Koka					

Average weekly price of arecanut during the month of DECEMBER 1955.

(Price in Rupee per Bengal Maund)

VII. In SIRSI Market in BOMBAY STATE.

Name of the quality	WEEK ENDING				
	3rd	10th	17th	24th	31st
	Rs.	Rs.	Rs.	Rs.	Rs.
Betelnut (Rashi)	93 8	92 8	92 8	93 8	
Tatibettle	82 8	83 8	78 8	81 1	
Kempgothi	73 0	73 0	73 0	73 10	
Biligoti	—	—	—	57 8	
Chali	90 8	82 8	84 0	91 8	

Statement showing the quantities of arecanut (betelnut) imported into different ports in India and their value during the month of NOVEMBER 1955.

Ports to which imported	Places from which imported							
	CEYLON.		SINGAPORE.		FEDERATION OF MALAYA.		TOTAL.	
	Quantity (cwts)	Value (Rs.)	Quantity (cwts)	Value (cwts)	Quantity (cwts)	Value (Rs.)	Quantity (cwts)	Value (Rs.)
Bombay	150	10,552	27,625	18,55,643	332	18,384	28,107	18,84,579
Calcutta	2,968	2,45,038	1,600	83,212	5,092	1,96,584	9,660	5,24,834
Madras	—	—	299	19,902	—	—	299	19,902
Saurashtra	—	—	—	—	—	—	—	—
Total	3,118	2,55,590	29,524	19,58,757	5,424	2,14,968	38,066	24,29,315

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SECRETARY,

INDIAN CENTRAL ARECANUT COMMITTEE

P. B. No. 14, KOZHIKODE-1.



ARECANUT CROP IN INDIAN UNION

By Sri. K. Kunhikannan Nambiar, B. Sc. (ag.)

(Secretary, Indian Central Arecanut Committee, Calicut.)

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