Indian Central Arecanut Committee. Kozhikode, Annual Report. V,5. 1953-54

INDIAN CENTRAL ARECANUT COMMITTEE

1953-'54

FIFTH ANNUAL REPORT

OFFICE :

KOZHIKODE (CALICUT) SOUTH INDIA

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INDIAN CENTRAL ARECANUT COMMITTEE.

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From 1st April 1953 to 31st March 1954

CHAPTER I.

1. INTRODUCTION.

This is the Fifth Annual Report of the Indian Central Arecanut Committee. This Committee is one of the eight Central Commodity Committees the Government of India have set up for the development of important commercial crops in India.

Arecanut (Betelnut) is a crop cultivated in heavy rainfall areas in the Indian Union, especially on either side of the Western Ghats and in West Bengal and Assam. Chewing of arecanut with betel leaves and other ingredients is a habit ingrained in the Indian society from time immemorial. It is a simple and harmless luxury article required by every class of people in India for their daily use; but its production in this country is inadequate to meet the country's requirements. Indian Union produces at present about 22 lakhs of maunds of arecanut a year; but this is inadequate to meet the requirements of the country. So, on an average, about 11 lakhs of maunds of arecanut are being imported into India every year since the partition of this country. The chief countries from which arecanut is imported are the Federation of Malaya, the Colony of Singapore and Ceylon. The cultivation of arecanut in those countries does not demand much attention on the part of the growers and as a result, the cost of production is considerably low. But in India, much money has to be spent to raise the crop and to ward off pests and diseases. Consequently the cost of production of arecanut here is comparatively high. Unlike other crops, the cultivation of arecanuts in india is in the hands of small growers, and therefore the Government of India have to afford them all possible assistance.

Shri K. R. Damle, I. C. S., President of the Indian Central Arecanut Committee has, in his welcome address at the Fifth Annual General Meeting of the Committee held at Bangalore on the 28th October 1953, summed up the condition of the arecanut industry, the varied problems facing it and the ways by which they are being tackled by the Committee as follows:—

> "You may be aware that the problems confronting the arecanut industry are varied. Uneconomic holdings, limited financial resources of the growers, absence of scientific researches on the crop and above all the industry

being in the hands of small holders and shortage of production, are all problems facing this industry. In many centres, there are no organised markets for this commodity and the grower runs the risk of being exploited to a large extent. We have therefore to tackle the twin problem of increasing the production and proper marketing Efforts have to be made to make up the shortage of the commodity by increasing production and provide marketing facilities for the growers by organising co-operative marketing.

We have already started scientific studies on the crop in the Regional Arecanut Research Stations that have been established in Travancore-Cochin and Mysore. A research station in Bombay State is also expected to be started shortly. These will tackle problems of local interest. Two research stations for investigating disease of local importance in South Kanara and Bombay have been started and work has commenced. It is hoped that results of far reaching importance will be achieved from the studies now being undertaken. A Central Arecanut Research Station to study problems of a fundamental nature and of all-India importance, has been found a necessity. You may remember that the sub-committee constituted for the selection of a site for the Central Research Station, toured a few important areca growing areas and has recommended that Vittal in South Kanara is the most suitable place for the station. The Government of India feel that local Governments also might be requested for liberal contributions towards the Central Station and their reaction to the proposal is awaited. It is expected that the Government of India would accord the necessary sanction without much delay.

Periodical recurrence of the Mahali or Koleroga takes a heavy toll of the arecanut crop, sometimes even to the extent of 50 per cent. Timely spraying of Bordeaux Mixture has been found to be a successful prophylactic measure. The State Agriculture Departments have been alive to the situation. Systematic propaganda and provision of the required chemicals within the easy reach of the growers go a long way to minimise the havoc wrought by this disease and thereby to increase the production.

As a result of the protective duty and the restriction on imports the local betelnut cultivator has been able to secure better prices for his crop and there is evidence of his taking increasing interest in the cultivation. The steep fall in the price of processed arecanuts from the middle of last year caused some anxiety among the arecanut growers, excessive imports being stated as the reason. So a further protection was given to the industry by enhancing the import duty from 7½ to 9½ annas per lb. as also by restricting the volume of imports. Whether the enhanced duty aud restriction of imports had the desired effect is difficult to say. However, the price of ripe whole dried nuts rose to an unprecedented level, though the processed nuts did not show a similar rise. The price of processed nuts, however, is now at a higher level than early in the year.

Self-sufficiency is our aim Our immediate task should be the concentration of efforts to increase our home production and therefore to support all developmental schemes With the protection given to the industry, the scientific study undertaken on this crop and intensive cultivation with timely remedial measures against Mahali. let us hope that soon it will be possible to increase our production of arecanuts and to reduce imports. By increasing the area under arecanut, without encroaching upon food crops, it should be possible to increase the production to meet our full requirements.

Shri. K. Hanumanthayya. Chief Minister of Mysore, inauguarating the Fifth Annual General Meeting of the I. C. A. C. at Bangalore on 28—10—'53.

The special officer to be appointed shortly will tour all the arecanut growing tracts and submit his report, with recommendations regarding the areas that could be brought under arecanut. Afterwards, a long range scheme will be drawn up by the implementation of which, we hope to make our country self-sufficient regarding this commodity.

The Secretary of the Committee, Mr. Nambiar returned recently from Malaya after a study of the arecanut industry there. His visit to Malaya was sponsored by the Technical Co-operation Scheme of the Colombo Plan. He will soon submit his report."

The following is what the Chief Minister of Mysore Shri K. Hanumanthaiya stated while inauguratieg the Fifth Annual General Meeting of the Indian Central Arecanut Committee at Bangalore on the 28th October 1953, which also gives a glimpse into the state of the industry in Mysore State :—

"Mysore is known for many things; and whatever we produce it is almost the best in quality, whether it is silk, timber or arecanut. Some of you who have personal experience of this will testify to the fact that the quality of Mysore produce is very high. In Mysore, arecanut has been the subject of investigation and protection at the hands of the State Government for nearly half a century. We had an eminent Director of Agriculture, Dr. Coleman who organised the Mysore Agriculture Department so well that it gained an all-India reputation. He was the pioneer, as the Chairman said, who organised protection against the Koleroga disease and did yoemen service in this field. Today the Government of India has come forward to deal with this question on an all-India basis as rightly it ought to be. We have now become one nation with one Government and with one flag. Every question is common to us now. It is therefore natural that we should tackle all these problems on an all-India basis It makes for efficency, economy and progress. I am happy to note that this Committee has also done a good deal of work. It has established research stations in order to make the growth of the crop easy and productive. It has organised co-operative marketing societies. More than all, it has advised the Government of India to give the industry the protection necessary by way of not only restricting the import, but also by way of imposing protective duty. But for the investigation, research and championing the cause of the industry, the results could not be as rosy as it was desired to be. I am particularly glad to hear from your Chairman that the ideal for this Committee is self-sufficiency. Self-sufficiency is the watch word in our economy now. Unless there is self-sufficiency, Swaraj will merely be a shell. Self-sufficiency is the kernel. If you want to enjoy the fruit of Swaraj, there must be what is called the juice of self-sufficiency in it..... Self-sufficiency makes for greater production, whether it is in the field of agriculture or in the field of industry. When you produce more, we have necessarily to employ more people. That solves the unemployment problem which is the biggest problem that we are facing today. When employment is assured and production is sufficient, it automatically makes our standard of living go up. We will become happy and prosperous. I therefore emphasise with all the emphasis at my command that self sufficiency is the watch word which ought to guide us in every field of our activity. I am particularly glad that this Committee has that as its aim.

I now find from your statement that the Government of India have permitted about Rs. 300 lakhs worth of arecanut to be imported into this country. This amount is itself a great drain on the economy of our country. I therefore envisage a time when there will be no necessity at all to import to any extent, leave alone Rs. 300 lakhs worth of arecanuts.

Arecanut is a very valuable article of consumption in this country. We call it here in South India 'Tambulam' and I think in North India, they call it 'Pan Sapari'. Whatever be the name. it has become part and parcel of our culture and tradition. I read in Mahabaratha, that whenever warriors became exhausted and unconscious on account of fighting, they used to get revived by eating 'Pan Supari' mixed with purified camphor. It is called in my language as 'Karpura Veelya'. Reference to this is made in several places in the Mahabaratha, That was the stuff of which this 'Pan Supari' is made of. It is at once a tonic, a medicine and a cosmetic. Three qualities are combined in one. You know, most of us after certain years of age, suffer from deficiency of calcium Most of our diseases are due to it. Now-a-days it is cured by injections. But in olden days our ancestors had found a daily remedy and a good remedy too. 'Tambulam' or 'Pan Supari' is taken along with chunam and that supplies enough calcium needed by the body. Betal leaf as you know, gives health and nourishment. All these taken together are essential for the supply of the tonic and the medicine needed for the body and also the cosmetic effect as it makes the lips red. It had become part of our culture and tradition. Only for the last 10 or 20 years, whenever a guest comes we offer coffee or tea. Before that, and even today in many of our houses. we offer 'Pan Supari' or 'Tambulam'. That is the culture which was in vogue throughout the length and breadth of our country. I hope that our ancient tradition and customs contained in this practice of distributing 'Tambulam' or 'Pan Supari' will again revive and attain its old place of importance and glory. I therefore feel that all of you are engaged in the task of not only giving impetus to this industry in the field of economics, but also that you are doing quite a bit in the revival of our culture and tradition.

I know your Chairman for a pretty long time. He is one of our best officers with a good deal of imagination, energy and initiative and I have every confidence that under his chairmanship this Committee will work so satisfactorily as to attain not only self-sufficiency but also bring back the 'pan supari' and 'tambulam' to its old respected and honoured place.

I forgot to mention one thing. You were speaking about the Central Research Station. I do not know what place this Committee has chosen to locate its Central Research Station. If it is already decided, I do not come in the way. But I may say that I welcome the proposal if it comes to establish this Intitution here in Mysore State. But I am not parochial minded I do not want to grab things for myself. Whether you may have this in Karnataka, Mysore or Andhra or Madras, it is India. It does not matter much where the research station is located. But I merely showed my readiness and willingness to be of some service to the Committee, if perchance, they want to establish the station in Mysore State.'

So far no research work on arecanut has been carried out in any of the arecanut growing countries. As early as 1945, the organisations of areca growers and traders as also other persons interested in the improvement of

arecanut industry, represented to the Government of India to take steps to develop this industry by researches and other means. The industry at that time was on the verge of ruin and hence the Government of India decided to make necessary investigations and appointed an Ad hoc Arecanut Committee. Subsequently, on the recommendations of the Ad hoc Arecanut Committee, the Government of India, as per their Ministry of Agriculture Resolution No. F. 43-11/48-Comm dated 21—5—1949, constituted the Indian Central Arecanut Committee (vide appendix I). The following are the important functions of the Indian Central Arecanut Committee :—

(1) undertaking, assisting or encouraging agricultural, industrial, technological and economic research ;

(2) producing, testing and distributing improved varieties of seed ;

(3) encouraging and assisting the adoption of improved methods in cultivation so as to increase yield and improve quality .

(4) assisting in the control of parasites and insect pests and fungal diseases which affect arecanut in the field, in storage or during transport ;

(5) carrying on such propaganda in the interests of the arecanut industry as may be necessary ;

(6) encouraging the adoption of improved measures for the marketing of arecanut, fixing and adoption of grade standards for arecanut and its products ;

(7) encouraging the purchase. curing, grading and marketing of arecanut and its products through co-operative or other agencies and undertaking enquiries and making recommendation relating to storage, transport facilities etc.,

(8) giving financial and technical assistance to organisations engaged in growing, curing, processing, grading, marketing and manufacture of arecanut and its products ;

(9) maintaining such institutes, farms, stations, curing arrangements, warehouses, conditioning and processing plants, as my be necessary ;

(10) collecting statistics from growers, traders and manufacturers on all relevant matters connected with arecanut and distribution of such statistics and information to the interests concerned, and establish a Market Intelligence Service ;

(11) (a) making advice available on all matters essential to the development of the arecanut industry ;

(b) advising on such matters as fall within the functions of the Committee which are referred to it by Government ;

(12) employing such staff as may be necessary for the proper performance of any or all of these functions ;

(13) recommending the maximum and minimum prices to be fixed for arecanut and the controlled purchase and distribution of imported arecanut and adopting any other measures or performing any other duties which may be required by the Government of India to adopt or perform or which the Committee may consider necessary or advisable in order to carry out the purpose for which it is constituted.

The Committee is to work in collaboration with the State Governments on various problems relating to arecanut. It has also to co-ordinate its activities with the work done by various Committees and State Governments. Growers, manufacturers and traders and the Departments of agriculture of the arecanut growing State are on the Committee. besides the nominees of the Government of India. The President of the Committee is also appointed by the Government of India. The tenure of office of the members of Committee other than those who are appointed by reason of office or appointment that they hold, is three years or such lesser period as may be specified in the notification making the appointment. However the retiring members are eligible for re-nomination or re-appointment.

2. IMPORTANCE OF ARECANUT INDUSTRY.

Arecanut, though a poor man's crop, plays a very important part in the domestic economy of the Indian Union, especially of the West Coast of India and Mysore and like coconut, every part of the palm is made use of in some way or the other. It is estimated that about 3 million people are connected with it. As Sardar Datar Singh stated,

> "in spite of its importance, the nut has been taken too much for granted and adequate attention has not been bestowed on the various problems connected with arecanut industry."

No work regarding the fundamental, breeding or agronomic aspects of arecanut has been done except undertaking certain isolated measures for combating the major disease of the palm, i. e. 'Mahali' or 'Koleroga'. The problems confronting the arecanut are peculiar in that the average holdings are very small, hardly exceeding an acre ; the agricultural practices are very much localised in nature and no research work had been done on the crop. Unlike many of the other articles, arecanut is not an exportable commodity. It is imported in large quantities to meet the local requirements. The important problem therefore is the improvement of cultivation in order to augment its yield. In fact it is a twin problem of increasing the yield and affording proper marketing facilities. The only way therefore to increase the overall production is to adopt scientific methods of agriculture.

Arecanut is essentially a tropical crop and its cultivation is confined to the Eastern countries such as India, Pakistan, Ceylon, Federated States of Malaya, Siam, Borneo, Philippines, Sumatra, Java etc. Information regarding the extent of cultivation in foreign countries is lacking except from Malaya and Ceylon. It is estimated that about 45,000 acres are under arecanut in Malaya and 69,000 acres in Ceylon. As already mentioned, in Indian Union its cultivation is limited to the West Coast of India extending from Bombay to Trivandrum, Mysore and the North Eastern Provinces of Assam and Bengal. The areca palm is grown almost wild in Malaya and Ceylon without any proper cultural and manurial attention being paid to it with the result that its cost of cultivation is lower than that in India. In India, on the other hand, the crop is generally manured and irrigated. But it must be admitted that no scientific researches have anywhere been conducted on this crop.

The production in the country being far too short of the demand, the deficit is met by importing large quantities from foreign countries such as Malaya, Strait Settlements, Ceylon etc. The cost of production of the nut in foreign

countries being much lower than that in India, they have been able to dump large quantities into our country thereby depressing the prices of the local produce. On the representations made by local growers, an import duty of 2½ annas per lb. had been levied in 1945. Gradually it was raised to 9½ annas in February 1953 and to Re. 1/- per lb. in February 1954. Besides this duty, there was a monetary ceiling also. These protective measures reacted well and the price of local arecanut went up, giving an impetus to the farmers to augment the production by giving proper attention to its cultivation.

The acreage under and the production of arecanuts in Indian Union are given below :—

		Area (in acres)	Production (in lakhs of maunds) (maund=82-2/7 lbs)
Madras.	...	1,07,500	7·70
Travancore-Cochin.	...	64,000	4·72
Mysore.	...	37,100	2·78
Assam.	...	25,000	2·61
Bombay.	...	19,400	0·50
West Bengal.	...	5,870	0·50
Coorg.	...	800	0·12
	Total.	2,59,670	21·79

Before the partition, India had 5,25,000 acres under arecanut and with the partition of the country, 2,65,000 acres went to East Pakistan and the rest remained in Indian Union.

There are a number of socio-religious injunctions in our ancient literature about the use of 'Pan Supari' in the daily routine. Those injunctions were presumably made by our forefathers as a result of the beneficial after-effects accrued by chewing 'Pan Supari'. It is common knowledge that betel chewing promotes salivation and thus aid digestion of food. While masticating it also gives the teeth and the muscles connected with them the necessary exercise. The chlorophyl (green matter) of the betel leaves and the tannin of the betelnuts help in keeping the gums in a healthy condition. Recent investigations on the properties of chewing and the analysis of the ingredients of 'Pan Supari' have thrown valuable light on some aspects of chewing 'Pan Supari'.

It has been stated in certain quarters that chewing 'Pan Supari' was the primary cause for cancer of the oral region. The chief argument levelled against the practice being that it irritates the buccal cavity by the retention of the quid for a long time and thereby causes injuries to the mucous membrane of the mouth. It is doubtful whether any experiments have been conducted to find out the harmful effects of the betelnuts and it would therefore be premature to dub 'Pan Supari' chewing as the cause of the cancer of the mouth while all the available literature in Ayurveda considers betel chewing as a very healthy practice. The Director of the Nutrition Research Laboratories, Indian Research Fund Association, Coonoor, states that "the habit of chewing betel leaves coated with slaked lime (calcium hydroxide) which is common throughout India increases the in-take of calcium. At present we have no precise knowledge of the value to the body of calcium consumed in this manner". The analytical data of supari undertaken by him is given below :—

SUPARI.

	Raw arecanut	Processed 'Kalipakku'	(Pan) Betel leaves
Moisture. ...	31·3%	13·8%	85·4%
Protein. ...	4·90%	6·40%	3·10%
Fat. ...	4·40%	8·40%	0·80%
Mineral matter. ...	1·00%	1·80%	2·30%
Fibre. ...	11·20%	11·80%	2·30%
Carbohydrates. ...	47·20%	57·80%	6·10%
Calcium. ...	0·05%	0·13%	0·23%
Phosphorous. ...	0·13%	0·14%	0·04%
Iron. ...	1·50%	11·10%	5·10%
Calorific value per 100 gm	248	332	44
Vitamin A (I. U.) ...	5	...	9635

The above data indicate that arecanut and betel leaves abound in protein, mineral matter, carbohydrates, calcium, phosphorous and iron which are essential requirements for body building and also supplies Vitamin A. The lime that is smeared on the betel leaves gives adequate quantity of calcium also.

It is a well known fact that the normal Indian diet is grossly deficit in calcium. Under the auspices of the Indian Research Fund Association, Shri K. R Basu and others of the Dacca University had conducted certain nutritional experiments with special reference to the practice of chewing. They found that the addition of betel leaves, smeared with lime and adequate quantity of arecanut to the normal Indian diet improved the calcium phosphorous ratio of the diet and aided retention of a large proportion of the calcium present in 'Pan Supari'. The absorption of calcium so present in the food by chewing is limited by the phosphorous present. Calcium and Phosphorous present in a normal Indian diet when followed by 'Pan Supari' aids not only the favourable absorption of calcium into the system but also helps their retention in the system for a long time. It is also said that when adequate quantity of calcium is present in the system the requirement of Vitamin D for body building is low.

3. RESUME OF WORK TAKEN UP BY THE INDIAN CENTRAL ARECANUT COMMITTEE.

As no research work worth mentioning has been done on arecanut anywhere, this Committee had to gather relevant details before any programme of work could be chalked out. But the Ad hoc Arecanut Committee appointed by the Government of India in 1947 had arranged for an all-India Survey of arecanut crop. The report of this survey has indicated various problems facing the industry and also the lines on which they could be tackled. An expert sub-committee consisting of the Directors of Agriculture of the leading arecanut growing States in Indian Union was appointed by the Indian Central Arecanut Committee to examine the suggestions contained in the Survey Report and on the recommendation of that sub-committee, this Committee has started a number of developmental and investigation schemes.

(a) *Arecanut Research.*

(1) *Research Stations.* The Committee had decided to establish four regional research stations for investigating special problems of arecanut in the

States of Madras, Mysore, Travancore-Cochin and Bombay and to establish a Central Research Station. The Research Station in Travancore-Cochin State was established in October 1952 and that in Mysore State in December 1952. A research station for investigation of stem breaking disease was set up in South Kanara in Madras State in August 1952 and a scheme for the investigation of 'Band' disease was started in Bombay State in June 1953. The regional research station sanctioned for North Kanara District in Bombay State has not yet been started on account of the financial stringency experienced by the Government of Bombay. But as it was found necessary to co-ordinate the activities of the various regional and sud-stations and also to investigate fundamental and technological problems of arecanut, the Committee has decided to start a Central Research Station at Vittal in South Kanara District in Madras State.

(2) *Production of arecanut seedlings.* The States of Assam and West Bengal afford good scope for bringing more area under arecanut. Therefore the Committee started one arecanut nursery at Krishnagar in West Bengal in May 1951 and another at Jorhat in Assam in August 1951 When the demand for areca seedlings was found to be great in the Sub-Himalayan regions of West Bengal, two additional nurseries were started in May 1953, one at Maynaguri and the other at Cooch-Behar. Each nursery is expected to raise about 15,000 good seedlings a year for distribution among growers.

(b) *Technological Schemes.*

The areca growers being generally poor, their economic conditions can be improved to a great extent if better uses are found for the bye-products of arecanuts. Certain investigations are therefore being conducted to find out possibilities for better utilisation of arecanut husks and such other materials which are being wasted at present. The first investigation conducted in the laboratory of the Presidency College, Madras during 1951-53, related to alkaloidal contact in arecanuts etc. Further studies for assessing the technological possibilities of arecanut and its bye-products are being conducted at the Gauhati University since December 1952.

(c) *Propaganda & Publicity.*

(1) *Extension Service.* The fruit rot disease of arecanut known as 'Mahali' ('Koleroga') causes heavy loss of tender nuts. The prophylactic measure that has to be adopted against disease is the spraying of Bordeaux Mixture. The Committee appointed an Extension Service Staff between 1950 and 1952 to tour the affected areas and to educate the growers as to the correct method of preparing and spraying Bordeaux mixture. The scheme was terminated on 31-3-1952 and this work was also being done by the Departments of agriculture in the concerned States.

(2) The Committee has been participating in important exhibitions where people interested in arecanut industry are expected to gather. Exhibits have also been sent for the Indian Trade Exhibition to be held at Cairo in Egypt in April 1954. The committee published bulletins in English, Malayalam and Kannada every month and they are being distributed free of cost to areca growers and others interested in the industry.

(d) *Study Tours.*

Areca growers in India are always at a disadvantage to fetch economic price for their produce in the face of foreign nuts imported at low rates. It was understood that despite naglect of cultural and manurial practices, areca palms in other countries especially in the Federation of Malaya and the Colony of Singapore were producing good crops in spite of scant attention, which enabled cheap exports from those countries. Therefore the Committee availaing of the assistance offered under the Technical Co-operation Scheme of the Colombo Plan, deputed Shri K. K. Nambiar, Secretary of the Committee, to visit the above countries and to gather all necessary information. The Secretary undertook the tour during August-September 1953. A report on his tour in Malaya and Singapore has been published by the Committee in the form of book called 'Arecanuts in Malaya'.

In February 1954, the Secretary Shri K. K. Nambiar was deputed to Andaman Islands to investigate the possibilities for raising areca plantations in those islands. He has reported that there is good scope for bringing large areas under arecanut in Andamans.

(e) *Economic & Marketing Activities.*

The Government of India have already realised that the lot of the small areca growers can be improved only if their produce are pooled and marketted on co-operative basis. Detailed enquiries made in this regard in different arecanut assembling centres showed that co-operative efforts are steadily progressing especially in Shimoga, South Kanara and North Kanara Districts. All the societies are rendered technical advice by the Committee.

(1) *Ponnani Taluk Arecanut Processing & Marketing Co-operative Society*. In South Malabar, tender arecanuts are processed by the merchant-cum-curers to meet the demand of certain special markets. As the chances of exploitation of the growers by the curers and middlemen are highest in these regions, a pioneer co-operative organisation was started in July 1946 at Kumaranellur in South Malabar for processing and marketing of arecanut by the growers themselves. In the initial stages, the society sustained a loss of Rs. 44,219—2—0 due to the competition of vested interests; but when this Committee and the Government of Madras extended help by granting an interest-free loan of Rs. 36,000/- and a subsidy of Rs. 25,800/- for three years towards its working expenses, the Society was able to make some progress. The society has already repaid Rs. 18,000/- out of the interest-free loan and with the profit earned up to the end of March 1954 the prior loss has been reduced to Rs. 24,934-1-0.

(2) *Regulated Markets.* The Governments of Madras and Mysore have already established regulated markets in the important arecanut producing disrticts. The question of establishing regulated markets for arecanut in Bombay and Travancore-Cochin State are under consideration.

(3) *Grading* As a result of the recommendations made by the Committee and the Agricultural Marketing Advisor, the Government of India have issued orders bringing sundried whole arecanuts under the Agricultural Produce (Grading and Marking) Act. 1937. The Committee has also adopted a proposal of the Agricultural Marketing Advisor to draw up grade specifications for sliced and boiled arecanuts.

(4) *Adulteration.* Adulteration of arecanut with spurious stuff like sago plam nuts has become widespread and the Committee has been repeatedly representing to the Government of India and the various State Governments to check this menace immediately. When the concerned State Governments expressed their difficulty to make adulteration punishable until arecanut is declared as an article of food the Committee moved the Government of India to include arecanut also within the purview of the Food Adulteration Bill pending before the Parliament of India.

(5) *Import Policy.* In order to protect the Indian areca growers the Committee has been advising the Government of India to fix a ceiling for import of foreign arecanuts in addition to the import duty of 9½ annas per lb. that the Government had already levied. Though the ceiling fixed for import during the first half of 1953 was only 33⅓% of the half of best year's imports from soft currency areas for the second half, 50% of half of the best year's import was allowed. In the 1st half of 1954 this was increased to 60% of the half of best year's imports from soft currency countries. In February 1954, the Government of India decided to enhance the import duty on foreign arecanuts from Rs. 0-9-6 to Re. 1 per lb.

(f) *Statistical Survey of Area & Production.*

As there are no reliable statistics of area and production of arecanuts at present, the Committee has sanctioned pilot schemes for survey of acreage under and yield of arecanut in the States of Madras, Mysore, Bombay and West Bengal. The survey in West Bengal was started on 1st July 1953 and the work was completed at the end of February 1954. The survey in Mysore was started on 1st September 1953 and the work is in progress.

(g) *Improvement of Public Health in Areca Tracts.*

Prior to the setting up of the Arecanut Committee, the Indian Council of Agricultural Research had sanctioned a scheme for control of Malaria in the important arecanut growing tracts of South Kanara at an estimated cost of Rs. 40,000/-. The scheme was worked for one year i. e. from June 1947 to May 1948 by the Malaria Institute of India.

CHAPTER II.

1. *Administration.* Shri K. R Damle, I. C. S,, Vice-President of the Indian Council of Agricultural Research and Additional Secretary to the Government of India continued to be the President of the Indian Central Arecanut Committee throughout the year, but for a short period when he was on leave for one month and twelve days from 18th May 1953, when Shri R. S. Krishnaswamy, I. C S., Joint Secretary to the Government of India in the Ministry of Food & Agriculture, officiated as the President. Shri K. G. Wodeyar, M. P. was the Vice-President of the Committee for the year. Shri K. K. Nambiar continued to be the Secretary of the Committee throughout the year. When he was on deputation to the Colony of Singapore and the Federation of Malaya under the Technical Co-operation Scheme of the Colombo Plan, Shri K. Shamanna, Co-operative Marketing Officer of the Committee, attended to the current duties of the Secretary in addition to his own. A list of the members of the Indian Central Arecanut Committee as on the 31st March 1954 is given in Appendix II and the composition of the various sub-committees for 1953-54 is given in Appendix III.

2. *Meetings of the Committee.* There was only one meeting of the Committee during the year. The sixth ordinary meeting was held along with the Fifth Annual General Meeting on the 28th October 1953 at Bangalore. The Marketing & Economics Sub-Committee held a meeting on the 26th and the Agricultural & Technological Research Sub-Committee and the Finance Sub-Committee met on the 27th October at Bangalore.

A special sub-commitee under the chairmanship of Dr. B. N. Uppal, Agricultural Commissioner with the Government of India toured the main areca-nut growing area in Malabar, South Kanara and Mysore with a view to select a suitable site for a Central Arecanut Research Station and finally held a meeting at Bangalore on the 17th April 1953. The sub-committee recommended a suitable site for the Central Research Station at Kote near the existing research station at Vittal in South Kanara (Madras).

At the meeting of the Indian Central Arecanut Committee held at Bangalore on the 28th October 1953, the Committee considered the recommendations of the various sub-committees. The following were the important among the subjects considered by the Committee :—

(1) Establishment of additional nurseries in Assam ;

(2) Expansion of arecanut cultivation in Assam ;

(3) Control of the menace of squirrels in areca gardens ;

(4) Inclusion of arecanut planting as a major item of Vanamahotsavam ;

(5) Award of prizes for planting 1000 or more areca palms of specified age ;

(6) Propaganda through literature on arecanut ;

(7) Collection of statistics of area under and production of arecanut in Mysore ;

(8) Establishment of an arecanut nursery in North Malabar ;

(9) Investigation of Band disease of areca palm by the Maharashtra Association for the Cultivation of Science, Poona ;

(10) Subsidy for irrigating areca palms ;

(11) Adulteration of arecanuts ;

(12) Removal of restrictions on transport of arecanut ;

(13) Drawing up of grade specifications under Agmark for sliced and boiled arecanuts ;

(14) Reduction in import duty.

The Committee also considered the Annual Report for the year 1952-53, the Revised Estimates for 1953-54 and the Budget Estimates for 1954-55, the progress reports and annual returns of various schemes subsidised by the Committee. Certain amendments to the Rules & Regulations of the Committee and other routine matters also came up for the consideration of the Committee.

CHAPTER III.

A. RESEARCH.

1. REGIONAL RESEARCH STATIONS

(a) *Mysore State.* The Arecanut Research Station in Mysore is jointly financed by the Government of Mysore and the Indian Central Arecanut Committee, at a total cost of Rs. 5,95 950/- for a period of ten years the Committee's share including part of non-recurring charges being Rs. 2,11,950/-. The Research Assistant in charge of the Research Station joined duty on 10-12-1952 and the remaining staff sanctioned for the station were appointed during 1953-54. The land selected for the research station at Yadehalli near Thirthahalli in Shimoga District was acquired by the Government of Mysore on 1st April 1953. The Research Station is in typical Malnad tract noted for arecanut cultivation. Besides implementing the approved programme, the station is also intended to raise quality seedlings for supply to the growers During the period under report, the station being just started, only some preliminary items of work, such as laying out of plots, planting nurse crop, collection of soil samples for analysis, raising of seedlings, germination studies etc. were attended to. Plans and estimates for the construction of office, laboratory etc. are also being prepared.

Programme of work. The main object of the Research Station is to improve yield and quality of arecanuts by raising quality seedlings for supply to the growers, to fix up suitable manurial, cultural and irrigational schedules to suggest and organise control measures against diseases and pests and to investigate any other problem of economic importance,

The staff comprises of the Research Assistant in charge of the Research Station, two Graduate Assistants, one Agricultural Inspector and two fieldmen. The Graduate Assistants were appointed during January 1954.

During the period under report a great deal of preliminary work has been attended to on the Station, to facilitate implementing the technical programme envisaged. Garden lands which was very much neglected was brought under normal conditions. Planting of nurse crop and under-planting of areca was done wherever found necessary. The entire old garden has been divided into convenient blocks of one acre each and trees in each blocks have been marked and grouped according to age.

Representative soils samples have been taken for chemical analysis and the same is in progress. In co-operation with the Agricultural Chemist and the Statistician of the Department of Agriculture, Mysore State, arrangements are under way to lay out manurial experiments. The following experiments have been started and the same is in progress.

1 Influence of harvesting tender and mature nuts on the productivity of areca palms.

2. Germination studies and comparison of seedlings raised from nuts collected from young, middle-aged and old trees.

3. Raising seedlings from nuts collected from selected mother palms and their distribution to areca growers.

4. Collection and study of foreign varieties of areca.

5. Study of inter and associated crops of economic importance. A high yielding variety of Pepper from Sirsi has been introduced and arrangements have been made for introducing different varieties of Banana and Pine-apple.

(b) *Travancore-Cochin State.* The opening of a Regional Arecanut Research Station at the Central Farm of Travancore-Cochin State at Ollukkara near Trichur, was sanctioned by the Committee in March 1952. Out of the total cost estimated at Rs 95.070/- spread over a period of ten years, the Committee has agreed to meet Rs. 46,285/-. The Research Station started functioning from 17—10—1952. During the period under report, the experiments to be done as per the approved technical programme of the scheme were got examined by the Statistician of the Indian Council of Agricultural Research. The technical programme of work is expected to be started as soon as irrigation facilities are completed

Out of the 10.000 seednuts sown during the year 1952-53, 7825 seedlings had come up satisfactorily. The nursery was affected by a sort of fungus disease and the matter was immediately reported to the Government Mycologist, Coimbatore and Plant Pathologist, Kayamkulam. The nursery was given two sprayings with Bordeaux mixture and the disease subsided. The nursery was manured with 125 lbs. of a mixture of groundnut cake bone meal and muriate of potash. After the treatment the disease completely subsided and some of the affected seedlings have recovered. The suggestion of the Government Mycologist was not carried out as the disease had completely subsided by then. There are 7478 healthy seedlings in the 1952-53 nursery. The seedlings will be disposed of according to demands during the planting season.

20,000 seed nuts were selected during the year under report from important arecanut growing areas like Pangamuku, Mattam, Koonamuchi Kodannur etc. places. The sowing was commenced from 23—10—1953 and was completed by 26—11—1953. The seeds were sown on raised beds of 6" height and 6" spacing was given between nuts. 60% of the seednuts sown have completed germination by the end of March. Regular watering, weeding and hoeing were carried out. The nursery was also protected from the hot sun by shading. The condition of the seedlings in general is satisfactory.

(c) *Madras State:—Investigation of stem breaking disease of areca plam in South Kanara.* For the past few years, the arecanut palms in a few places in South Kanara District in Madras State were observed to be breaking in large numbers owing to certain unknown causes. Many gardens were devastated and investigation of this disease became an imperative need. A ten year scheme for the investigation of this disease, drawn up by the Government of Madras, was approved by the Committee in March 1952, at a total cost of Rs. 2,74,544, the Committee's share being Rs. 90,242. An existing garden of 4·75 acres was taken on lease by the Government of Madras for experimental purposes and the scheme started functioning on 1st August 1952.

Technical Programme.

(i) Survey of the arecanut area in the districts of Malabar and South Kanara in Madras, Coorg, Mysore State, Travancore and Cochin and North Kanara in Bombay to make detailed observations of the incidence of the disease

in relation to aspect, situation, nature of the soil, manurial practices, spacing of trees, exposure to sun, drainage, prevalence of koleroga and methods adopted to control it.

(ii) *Etiology.* Isolation of all organisms will be made both from the stem and roots of affected plants and pathogenicity trials with these organisms singly and in combination with each other will be made. If any of them prove pathogenic, detailed study of the morphology and physiology of the organisms will be carried out.

(iii) *The effect of Bordeaux mixture on the incidence of disease.* In order to find out if the application of Bordeaux mixture influences the incidence of the disease, spraying trials with acid, neutral and alkaline Bordeaux mixture will be carried out. The effect of method of application of Bordeaux mixture viz., mist or jet on the incidence of the disease will be observed.

(iv) *The effect of sun scald on the incidence of the disease* Observational studies will be made to find out if the disease is associated with sun scald. The following trials will be made.

I. Protection of the younger portions of the stem by covering the same with leaf sheath ;

II. Painting young portion of the stem with non-corrosive white paints

Results.

Overall appreciation of the position. Surveys of areca gardens in South Kanara, North Malabar and South Malabar were conducted during the year and the incidence of stem breaking was found to be prevalent in several gardens in the whole tract. The incidence of the disease was more in pure areca gardens. than in mixed gardens of areca and coconut. The formation of splits and cracks on the stem was invariably on the western or the southern side of the stem, indicating thereby that the scorching effect of the afternoon sun might have influenced the development of the cracks and splits. A record of the temperature of the surface of the stem on the eastern and western sides during different parts of the day has shown that the maximum temperatures are prevalent between 1 and 5 P. M. on the western side, there being a difference of 8 to 18°F.

Four Basidiomycetous fungi viz., *Lenzites* sp,, *Ganoderma lucidum, Polystictus* sp. and *Polyporus* sp. and *Ceratostomella paradoxa* which had been isolated from the affected portions of the stem, were able to produce positive infection through wounds. But there was no progress when the surface of the stem was free of wounds. A species of *Gloeosporium* was obtained from the fruits. This isolate was found ro cause shedding of immature nuts.

There was no adverse effect on the stems of areca palms which were sprayed with acid, neutral or alkaline Bordeaux mixture. The same trees have again been subjected to this treatment to find out if there is any cumulative effect.

The prophylactic treatments of the affected portions carried out during the previous season have not given any consistent evidence of protection. Further observations are being made.

Application of white paints to the surface or protection of the tender portions of the stem by covering with leaf sheath have shown that these treatments do confer a certain amount of protection from sun scorch.

Foliage sprays with 0·5 per cent solutions of zinc sulphate and magnesium sulphate have led to the recovery of the green colour of palms exhibiting yellowing of leaves. Spraying with 2% solution of copper sulphate on the foliage causes scorching. The raising of green manure and green leaf yielding plants in the garden itself was found to be useful in meeting the supply of the major part of green leaf requirement of the areca garden.

Investigations carried out during 1953-54.

(i) *Survey of areca gardens.* Twenty eight areca gardens in South Kanara, 14 gardens in North Malabar and 13 in South Malabar were surveyed during the year. Incidence of stem breaking was observed in all the gardens and it was reported that this was prevalent even before the use of Borceaux mixture for the control of koleroga. Splits or deep cracks or fissures were observed on the southern or the south western sides of the stem especially in the upper half. In gardens where coconut and arecanut were grown mixed together, the incidence of stem breaking was much lower than in those containing arecanut alone.

(ii) *Etiology.* Several fungi were isolated from the dying tissues of the stem. Among these *Ganoderma lucidum, Lenzites* sp. *Polyporus* sp. *Polysticfus* sp and *Ceratostomella paradoxa* were repeatedly obtained. Inoculation experiments proved that all these are capable of causing rotting of the tissues when inoculated on wounded surfaces of the stem. Isolates of *Pythium* and *Diplodia* obtained from the roots of dead palms did not give indications of being Pathogenic. *Gloeosporium* sp. isolated from the fruits was found to be capable of causing shedding of young nuts.

(iii) *Effect of Bordeaux mixture on the incidence of disease.* In order to find out whether Bordeaux mixture has any adverse effect on the tissues of the stem, the tender portions of ten trees each have been sprayed with acid, neutral and alkaline Bordeaux mixture. No adverse effect was noticed. The same trees have again been sprayed with the respective mixtures this year also.

The comparative efficacy of fungicides for the control of fruit rot was tested. Besides the cause of fungicides, the effect of covering bunches with grass or kotte dipped in Bordeaux mixture or alkathene sheets was also tested. There was no incidence of fruit rot in the garden and hence no conclusions could be drawn. The same treatments have been repeated and the trees are under observation.

(iv) *Experiments to prevent sun scald.* In order to protect the young portions of the stem from the scorching effect of the sun, they were coated with a covering of either zinc white or lime wash. In another set of trees these portions were covered by tying up areca leaf sheath all round the stem. Observations made at the end of the year have shown that in the series protected with lime wash, three trees have been affected by scorch while in the series protected with zinc white or leaf sheath, only one tree has been showing symptoms of scorch in each of the treatments. In the control, 4 trees out of ten are showing evidences of sun scorch.

The relative temperature on the surface of the stem at different periods of the day on the eastern and western sides of the stem were recorded on the palms which were exposed to the afternoon sun during the summer for three months. It was found that wherever the palms were exposed to the sun, the western surface recorded a difference of about 8 to 18°F. in the temperatures over the eastern side especially between 1 and 5 P. M.

(v) *Prophylactic treatment.* Trees affected by sun scorch were selected and the dead tissues scraped out. The exposed surface was washed with either 1% solution of potasium permanganate or 0·1% mercuric chloride solution. Later the treated surfaces were protected by the applicat on of Bordeaux paste, or cement paste or zinc white. Examination of the treated plants at the end of the year showed that in all the treatments there has been extension of the affected area indicating thereby that these treatments are not effective. During the year a new chemical viz., Creosant has been used for the treatment of the affected areas. After the treatment the surface has been protected with zinc white or tying leaf sheath. The trees are under observation.

The cavities in the stem of the trees were filled with a mixture of cement and sand with the object of reinforcing the stem and preventing the collection of water in the cavities during rain. The cement filling carried out in the upper portions developed a number of transverse cracks due to the swaying of the stem in the wind and pieces dropped off. Application of tar as a prophylactic treatment round the tender portions of the stem leads to further scorching of the tissues. Reinforcement of the stem where deep fissures and cavities have developed, by tying pieces of areca stem dipped in Bordeaux mixture has contributed to the prevention of breaking of the trees during the monsoon. Adjacent affected trees kept as control were easily broken by the wind.

(vi) *Foliage spray with different chemicals.* The foliage of some palms exhibited yellowing of the younger leaves. Such palms were given foliage sprays with solutions of magnesium sulphate, zinc sulphate and copper sulphate individually and in combination. The leaves receiving 0·5 per cent magnesium sulphate and zinc sulphate solutions turned greenish, while those receiving 2% copper sulphate solutions were scorched. Further observations are in progress. Urea as 1% solution was sprayed on the foliage on the trees exhibiting initial symptoms of scorching of the stem. Two sprayings were given during the year. Its effect on the development of fissures on the stem is being watched

(vii) *Miscellaneous.* (a) *Manuring.* During the year, all the trees in the garden were manured, applying 20 lb. of green leaf, 20 lb. of farm yard manure, 1½ lb. of wood ash and 1½ lb. of super phosphate per tree. The manures were applied in trenches round the trees and covered over instead of applying on the surface at the base of the trees as is practised locally in many of the gardens.

(b) *Supply of green leaf.* Green leaves are applied as manure for areca. These are usually cut from neighbouring jungles. During the year, leguminous green manure plants e. g., *Crotalaria striata*, *Pueraria phaseoloides*, *Calopogonium mucunoides* and *Centrosoma pubescens* were raised in the garden. Owing to the receipt of favourable summer rains in 1954 all these have come up very well with *P. Phaseoloides* and *C. mucunoides* providing perfect cover and exhibiting quick spreading habit. Green leaf producing plants like *Gliricidia maculata, Indigofera teysmanni* and two species of *Cassia* have been planted in large numbers along the borders and bunds of garden. The object of all these is to make the garden self sufficient in its green leaf requirement.

(d) *Bombay State.—Investigations on Band disease of areca palm in Bombay State.* In Bombay State, in the districts of Ratnagiri and Kolaba, areca gardens have been sustaining severe loss on account of a disease known in the local parlance as 'Band' disease. Stunted growth of the crown is the visible symptom of the disease but in course of time the tree gradually succumbs to the disease. It was said to have been first observed in Janjira State as early as 1890. The question of adopting measures to control this disease had been engaging the attention of the Government of Bombay and the Indian Council of Agricultural Research. After the constitution of the Indian Central Arecanut Committee, a scheme for the investigation of this disease was forwarded by the Government of Bombay and approved by the Committee in January 1951, at a total cost of Rs 84,378 for a period of five years, the Committee's share being Rs. 38,800. The scheme was started on 11—6—1953 and some preliminary work had been done during the year under report by way of local enquiries and field experiments.

Summary of work.

Survey.—A general reconnaissance survey was undertaken in the three districts—North Kanara, Ratnagiri and Kolaba—where areca gardens abound. The total area under areca cultivation in the Bombay State is about 19400 acres, almost equally distributed between three districts. A beginning is made to collect the detailed statistical information regarding the age, number and size of gardens, their distribution in the talukas and villages, and the decree of the incidence of disease. This work is still in progress.

The Band disease is almost absent in North Kanara Disirict. It seems to be restricted to the north of Ratnagiri and south of Kolaba districts. The disease is most virulent in Dapoli and Mandango talukas of Ratnagiri, Shrivardhan and Murud talukas of Kolaba district. In most of the gardens of the villages of these talukas nearly 20-50% of the palms are affected. A high % incidence of disease is prevalent in almost every garden in the low lying plains near the sea coast, while at higher altitudes on the slope of hills most of the gardens seem to be free from the disease Superficial examination of about 30 soils of the gardens showed that the reaction in the diseased gardens varies from 6 to 7.5 while in the healthy gardens it varies from 4.5 to 5.5. More soils are being examined. In general the sea coast soils are sandy loams while higher up in the hill portion they are loams

Enquiries with owners revealed that the gardens in most of the cases are of more than 100-200 years old. The gardens less than 50 years are very few. The disease seems to have been first noticed in Shrivardhan taluka of Janjira State some time in 1890. Since then the % of the affected palms in the gardens has been gradually increasing However, the disease has not spread very much beyond these two districts in the Bombay State. The garden owners opine variedly as to the cause of the disease, water-logging, sulphur or lime deficiency, excess sap etc. are the various causative factors stated. Some of them have tried some remedial measure by providing drainage, applying sulphur or lime without much success. Another curious remedial measure was to bore a hole 1' above the ground half way in the stem of ½" diameter with the idea of draining the excess sap. There was however no effect.

Symptoms. The palms may be attacked by the disease at any age after 2–3 years of growth. The earliest visible symptom of the disease is the appearance of leaves with a darker green colour. At the same time the length of the

new leaf begins to decrease along with the internode between the leaves. With the progress of the disease the terminal bud does not open and the new leaves are not put forth. Further, growth completely stops and within the period of 2 months to 2 years after the onset of the disease the palms completely dry up. In a few cases it was noticed that the trees recovered and put forth fresh leaves. But the diminished internode and the constriction of stem continued to persist as a weak point in the stem of palm. Affected trees gradually stop bearing fruits. An examination of root system of the affected palms revealed that they are more short (1'-1½') and fibrous than the healthy palms whose roots reach to about 3' depth.

Laboratory work. — Soils. As a beginning, soil samples from four gardens were collected. In each garden two samples — one near healthy and one near affected palm were taken. The sesults of analysis are recorded. It will be seen that there are no striking difference in these two soils. In fact one cannot expect much difference between the soils from the same garden. However, the high total and available Manganese content of these soils may be noted. In the similar studies, soils from Sirsi — non-affected area — the figures for manganese were—Exchangeable-390·0, Easily reducible-405 and H.C.1 soluble-915·0.

An experiment was laid out to study the effect of water content and lime additions on the various manganese fractions. Results indicate that the water soluble and exchangeable manganese increase with increasing moisture contents of soils. While easily reducible manganese decreases with the increasing quantities of water there is no change in the total available manganese. Addition of lime lowers all the three manganese factions as well as total available. Results indicate that liming and improvement in drainage will help in reducing the available manganese in the soil. Thus they will behave as an antidote to the toxicity if any, due to soluble manganese in this type of soil.

Plant. Samples of growing point and four leaves below it of healthy and affected palm of more or less the same age were analysed. It is seen that affected leaves and growing point invariably contain more manganese than that in healthy leaves. But copper contents does not show such wide differences. Some affected leaves contain more and some less. It is necessary to collect the above data for a large number of healthy and affected palms, to get conclusive results. When the parts of leaves were separately analysed it was noticed that most of the manganese is concentrated in lamella whose content is very much higher than the mid rib and petiola.

Some work in this field was also being done by the Maharashtra Association for the Cultivation of Science, Poona, who approached the Committee for financial aid and the Indian Central Arecanut Committee, at its meeting held in October 1953, decided to offer a lump sum grant of Rs. 5,000/- to the Association.

(e) *Central Research Station.* In pursuance of a decision taken by the Indian Central Arecanut Committee at its meeting in January 1953, a special sub-committee consisting of the Agricultural Commissioner with the Government of India, the Director of Agriculture, Mysore, Dr. K. C. Naik, Headquarters Deputy Director of Agriculture, Madras, Dr. R. L. Nagpal, Horticulturist to the Government of Bombay and the Secretary of the Committee, toured the important arecanut tracts in Malabar and South Kanara of Madras State and Malnad of Mysore State, to select a suitable site for the Central Research Station. The sub-committee at a meeting held at Bangalore on the

17th April 1953, recommended a site at Kote near the research station for the investigation on stem breaking disease at Vittal in South Kanara District, as the most suitable site for the Central Research Station. The sub-committee has also recommended that the existing research station at Vittal should be merged with the Central Research Station. The Government of Madras have already expressed their willingness to transfer the research station at Vittal to the Committee so as to enable it to conduct the investigations on stem breaking disease as an item of work in the Central Research Station. The Government of Madras have also promised a contribution of Rs. 62,500/- for the establishment of the Central Research Station besides affording other facilities like construction of culverts, roads etc. to facilitate easy access to the Central Research Station. The Government of Assam have also offered a contribution of Rs. 10,000/- towards the cost of establishing the Central Station.

B. DEVELOPMENTAL WORK.

1. *Seed Distribution Schemes* Arecanut is usually cultivated only in localities where climatic conditions are favourable to its growth and such places are localised. Therefore it may be possible to extend arecanut cultivation only in the available waste lands in certain favourable places. But as India has to import about a third of her annual requirements of arecanut from foreign countries, the question of growing more arecanut cannot be postponed. If the country is to be made self sufficient in her requirements of arecanut at least 70,000 acres more should be brought under areca cultivation. There are vast stretches of suitable land in West Bengal and Assam where areca gardens could be raised, provided the growers are assisted with the necessary capital and good seedlings. In order to ensure regular supply of good areca seedlings, the Committee has established three arecanut nurseries in West Bengal and one in Assam.

(a) *Arecanut Nursery in Assam.* Assam is frequently subject to natural calamities like earthquakes and floods; but there is good scope for raising areca plantations. The Committee therefore sanctioned a five year scheme for setting up a nursery at Jorhat capable of distributing at least 60,000 good seedlings among the growers within a period of five years The total cost of the scheme was Rs. 31,970/- but allowing for the receipts from seedlings etc., the net expenditure to this Committee for a period of five years was estimated at Rs. 21.620/- only. The nursery started work on 11-8-1951. Though the entire working expenses of the scheme is met from the funds of the Indian Central Arecanut Committee, its administrative control is vested in the Agriculture Department in Assam. Till the end of the year under report, about 8,200 seedlings were distributed from the nursery. A severe draught during the latter half of the year killed a large number of seedlings. However, there are nearly 19,400 seedlings still available in the nursery for distribution among the growers. Efforts are being made by the Government of Assam to ensure better production and supply of seedlings from this nursery.

(b) *Arecanut Nurseries in West Bengal.* A scheme for the establishment of an arecanut nursery in West Bengal was sanctioned by the Indian Central Arecanut Committee in 1951 at a total cost estimated at Rs 42,957/- for a period of five years. Allowing for the receipts etc the Committee has to meet a net expenditure of about Rs. 34,300/-. The nursery was started in the State Horticultural Research Station at Krishnagar, District Nadia on 18—5—1951. Till the end of the year under report, about 44,600 seedlings were raised in this nursery and out of these about 22,600 have already been distributed.

Experience showed that additional nurseries were required to cater to the needs of the areca planters in the Sub-Himalayan regions of Jalpaiguri and Coochbehar. The Committee therefore sanctioned another scheme for the establishment of two additional nurseries in those regions. The new proposal was sanctioned for a period of three years at a total cost of Rs. 20,970/-. It was agreed that the expenditure incurred thereof should be borne by the Indian Central Arecanut Committee and the State Government on a 50 : 50 basis while the sale proceeds of the seedlings etc. should be shared by both on 40 : 60 basis respectively. The additional nurseries were started one at Maynaguri and the other at Coochbehar in May 1953. In each nursery 20,000 selected seednuts were sown and the germination recorded was good.

(c) *Distribution of seedlings in North Malabar* In North Malabar, where much land has been reclaimed by colonists from Travancore-Cochin State, there is great demand for areca seedlings. Therefore the Committee at its meeting held in January 1953 had accepted a proposal made by Shri N. T. Narayanan Nambiar, a member of the Committee from North Malabar to advance him a loan of Rs. 6 250/- for raising and distributing 50,000 seedlings on a no-profit no-loss basis. But since the Government of India could not find their way to accept the proposal so far as the loan was concerned, the Committee decided to start a nursery under its direct control at a cost of about Rs. 6,250/- for a period of one year.

In the meanwhile, Shri N. T. Narayanan Nambiar was able to collect good seednuts from parent trees selected with the technical advice of the Committee and during the year under report, he distributed about 16,400 seedlings. The demand for seedlings is on the increase in North Malabar.

2. *Collection of selected varities of arecanuts from foreign countries for multiplication of suitable varieties.* According to a decision taken by the Indian Central Arecanut Committee in 1952, efforts have been made to collect different varieties of areca seedlings from foreign countries like Ceylon, Federated Malay States etc. for purposes of multiplication of suitable varieties. Through the good offices of the Indian Council of Agricultural Research and the representatives of the Government of India in the concerned countries, small consignments of different varieties of arecanuts were obtained from Ceylon, Singapore, Federated Malay States, Indonesia, Philippines etc. Up to the end of the year under report, 2340 seednuts representing 24 types from 11 countries were obtained. These were distributed among the research stations of various arecanut growing States in India. Germination records are not quite encouraging ; but the reports show that there are 76 healthy seedlings representing 5 varieties from 4 countries.

3. *Collection of statistics.* The statistics of area under and production of arecanuts in India so far recorded are not quite accurate. Therefore the Committee has approved proposals for collection of accurate statistics of arecanut production in the States of Madras, Bombay, Mysore and West Bengal. The Governments of Madras and Bombay have deferred for the time being launching of the approved scheme.

(a) *West Bengal.* A pilot scheme for collection of statistics of area under and production of arecanut in West Bengal was sanctioned by the Committee in March 1952 for a period of six months at a total cost of Rs. 8,805/- on grant-in-aid basis and the scheme was put through with effect from 1st July 1953.

But when the Government of West Bengal felt that the work could not be completed within the sanctioned period of six months, they sought the Committee's sanction for an extension of the term of the scheme by another two months. This extension involved an additional expenditure of about Rs 1,300/-. The survey has already been completed and the data collected are under scrutiny.

(b) *Mysore* The scheme for the collection of statistics in Mysore State was sanctioned by the Committee in October 1953 at a total cost of Rs. 20,800/- on the usual grant-in-aid basis. But the Government of Mysore started the scheme with effect from 1st September 1953 in anticipation of the Committee's approval. The survey is confined to the Malnad districts of Mysore State which contain over 75% of the area under arecanut in the State. The survey work is still in progress.

4. *Survey of waste lands suited for arecanut cultivation.* In March 1952 the Indian Central Arecanut Committee approved of a proposal for a survey of waste lands suitable for arecanut cultivation as it was uneconomic to plant areca palms in uncongenial tracts and inadvisable to utilise land fit for raising food crops for this crop. An Agricultural Officer was appointed for this purpose for a period of six months. Shri P. A. Srinivasan, Technical Assistant in the office of the Committee was selected for the post of the Survey Officer, who assumed charge on 2nd January 1954 and before the end of March 1954, he completed the survey work in the States of Bombay, West Bengal and Assam. The survey is expected to be completed by the end of June 1954.

C. TECHNOLOGICAL RESEARCH

A scheme for the investigations regarding better utilisation of bye-products of arecanuts drawn up by Dr. H. K. Baruah, Head of the Department of Botany, Gauhati University was sanctioned by the Committee in March 1952 at a cost to the Committee of Rs. 6400/- for a period of two years. The scheme was started on 1st December 1952. The staff employed under the scheme have already conducted a detailed investigation on the morphology of the different types of areca, extent of sterility in inflorescences, anatomy of the husk etc. They have also conducted experiments in regard to pectic constituents of the husk, analysis of tannins of areca etc The present studies if pursued to the fullest extent are expected to yield results of substantial value to areca growers.

Summary of work done.

1. The pectic constituents of the husk tissue of arecanut of different stages of maturity have been determined as calcium pectate. The changes in the pectin and protopectin in the husk with increasing maturity is indicated.

2. There has been slight variation in the hemicellulose content of the husks of different degrees of maturity.

3. An analysis of the cellulose content of the husk of different stages of development shows that cellulose is maximum in the early stages of development as well as when the husk is ripe. The cellulose from the ripe husk can be isolated and its possible utilitarian aspects studied Further investigations are in progress in this line

4. Lignin content increases with maturity of the husk reaching the maximum in the ripe husk.

5. Studies in the physiological anatomy of the husk have shown that bacteria play an important part in the maceration of the husks in water. Nature and extent of bacterial activity in aiding maceration of the husk is investigated, but complete maceration could not be effected even by the use of various hydrolytic reagents. However, maceration of the husks in water forms the first stage in any industrial operation for utilizing the husk.

6. Experiments to effect delignification and bleaching of the fibres are described. By these treatments the fibres have been found to be in a pure form of cellulose.

7. An analysis of the tannins of *Areca* with special reference to the changes in the tannin content of the fruit with increasing maturity is undertaken. Extraction of tannins by different methods has proved that tannin content is highest in the green kernels of *Areca catechu*, a few days prior to ripening. It is possible that high tannin value of Areca can be made use of in any industrial operation.

8. The effect of H-ion concentration on the fixation of tannins is investigated.

9. The changes in the total alkaloid content and arecoline content of the fruits with increasing maturity as well as during the process of fermentation have been investigated.

10. Experiments on the antibacterial actions of different extracts of arecanuts have shown no positive tests for antibiosis, whereas there have been indications of vermifuging action of the different extracts of *Areca*.

In continuation of the above, work undertaken during the period chiefly concerns :—

i. Morphological, statistical and ecological study of arecanut plantations in Assam.

ii. Activity of the pectinolytic bacteria in aiding the decomposition of the husk

iii. Further investigations of the Tannins of *Areca catechu* with special reference to its probable use in the manufacture of writing inks.

CHAPTER IV.

ECONOMIC & MARKETING ACTIVITIES

General. Arecanut is an important commercial crop in India and its marketing requires considerable attention for improvement. Unlike many of the other commercial crops, it is grown on small holdings by growers with limited resources at their command. The growers being generally poor and illiterate, often obtain advances even on their standing crops from local merchants and bind themselves to sell their produce either before or after it is cured. Owing to their inability to own curing and other equipments, many of the growers do not undertake curing of their produce. They sell away their perishable raw nuts to whatever prices they are demanded to the itinerant merchants who undertake their curing. There are a number of intermediaries between the growers and the consumers and a substantial portion of the price paid by the consumer,

therefore, represents the cost of handling and the margin of profit earned by these intermediaries. Though some of them are not superfluous, many of them can be eliminated with a view to increase the returns to the producer and to minimise the cost to the consumer. Considerable economy can be effected through a combination of the producers and co-ordination of the numerous units of production and marketing. Organisation of co-operative marketing societies in the chief producing areas will, therefore, go a long way in increasing the efficiency in the system of marketing of arecanuts.

The following will indicate briefly the progress achieved in that direction during the year under report.

1. *Establishment of Regulated Markets.* Regulated markets are established to enable the producers to obtain a fair price for their produce without being subjected to any customary deductions either in weight or in the price paid to them. They aim at introducing standard grades and weights, regulating market charges and arranging for a market intelligence service for the benefit of producers and traders who visit the markets. Such regulated markets have been established for arecanuts at present in Malabar and South Kanara in Madras State, Shimoga in Mysore State and Sirsi in Bombay State. It was also impressed on the Travancore-Cochin Government the urgent need to pass the requisite legislation in this regard and to bring into force such controlled markets for various commodities produced within the State inclusive of arecanut. It is indeed gratifying to note that the State has now concurred with the proposal and has already prepared a draft Bill for circulation. The Sirsi Regulated Market in Bombay State did not make much progress during the year. The names of the persons to be nominated on the Market Committee had been proposed by the Collector and the same were still pending approval of the Government at the end of the year under report. It is hoped that the Committee will soon begin to function and regulate the arecanut trade in the Sirsi market. The regulated market in Shimoga made good progress and introduced the system of sale of arecanuts by tender system. It is said that this system worked successfully during the course of the year under report without giving room for any complaint. The Malabar Market Committee at Calicut continued to make good progress during the year. It has proposed to open market yards for arecanut at Kuttipuram and Thalakkadathur. The Committee has also prepared a Five Year Plan in the course of which period, it has proposed to open market yards for arecanut at Palghat, Chalassery, Malappuram, Vattamkulam in South Malabar and Perambra, Kambil, Taliparamba and Mattannur in North Malabar. The Committee has organised a market intelligence service by publishing in the local vernacular dailies the quantity of arrivals, despatches, stock and prevailing prices of arecanut for the benefit of the producers and petty traders. Besides, with a view to introduce grading of arecanut, the Committee had also taken up a qualitative analysis of samples and the work was still in progress when the year closed.

The work of the South Kanara Regulated Market Committee at Mangalore was greatly hampered owing to certain legal complications in its constitution. The matter regarding amendment of certain rules under the Madras Commercial Crops Markets Act was still pending consideration of the Government of Madras at the close of the year. The Committee continued to offer godown facilities within its premises for stocking and selling of arecanuts. It is said that a few growers took advantage of these facilities and about 188 cwts. of arecanuts were sold during the year. The Committee also published weekly market prices prevailing both at Mangalore and at other distributing markets such as Bombay and Nagpur through the help of the Marketing Departments of those

States for the benifit of the local producers and traders. Besides the Committee also supplied about 2 tons of Sulphur to the arecanut dealers for fumigation of arecanuts.

2. *Adoption of uniform weights for arecanuts.* Arecanut trade is at present greatly handicapped owing to want of uniformity in weights in different markets. The units of weights vary from one market to another and result in a good deal of confusion among both traders and producers. With a view to afford a fair deal in the commodity markets, it is necessary to bring about a uniformity in the system of weights adopted throughout Indian Union. The Government of India was moved in the matter and the same was still pending their active consideration at the close of the year.

3. *Setting up of grade standards for arecanut.* The absence of standard grades in arecanut based on scientific data is another great handicap in the marketing of arecanuts. Much improvement in the marketing of this produce can be effected by introducing grade standards. If graded produce of standard qualities is sold in the market, the buyer and the seller are certain about its quality and they can strike the bargain without much of a discussion regarding its quality. The buyer can also purchase only those varieties as would suit his immediate requirements instead of purchasing the entire bulk which contain both the wanted and unwanted varieties. This will also go a long way in preventing adulteration of the produce which of late is becoming a great menace. These advantages can be conferred by undertaking grading of the produce in accordance with the Agricultural Produce (Grading and Marking) Act.

An investigation was undertaken during last year to find out possibilities of setting up grade standards for sundried whole arecanuts in Mangalore market. A system of grading based on the existing trade practices was evolved and the Government of India was requested to fix up standard grades in accordance with the same The Government of India had published during last year the draft rules for information of the public and calling for objections or suggestions, if any, from them These draft rules have during this year been finally confirmed by the Government of India in exercise of the powers conferred on them by section 3 of the Agricultural Produce (Grading and Marking) Act, 1937 (I of 1937). As grading of arecanut under the provisions of these Rules is voluntary, the arecanut merchants in Mangalore market were contacted with a view to persuade them to undertake grading of arecanuts in accordance with the specifications prescribed in the Rules A few merchants have, however, expressed their willingness to undertake grading on a voluntary basis in case no extra cost is to be borne by them on that account.

In regard to grading of sliced boiled nuts, the scheme for the collection and analysis of samples of these nuts for drawing up of grade specifications under the Agricultural Produce (Grading and Marking) Act, 1937, which was approved by the Indian Central Arecanut Committee at its meeting held on 21st January 1953 was still pending consideration of the Government of India at the close of the year.

4. *Adulteration of arecanuts.* The practice of using spurious materials like the sago palm nuts for adulteration with arecanuts came to the notice of this Committee in 1951. The concerned State Governments were at once requested to amend the provisions of the Prevention of Food Adulteration Act so as to effectively check this vicious practice of adulteration in arecanuts. The Central Committee on Food Standards constituted under the Ministry of Health,

Government of India, was also requested to lay down standard specifications for arecanut so as to bring the commodity under the Food Laws of the State Governments. But most of the State Governments expressed their inability to invoke the provisions of the Prevention of Food Adulteration Act on the ground that arecanut could not be considered as an article of food. With a view to overcome this legal difficulty the Central and State Governments were requested to declare arecanut as an article of food and help to prevent adulteration. It was also impressed on the State Governments that the cheap adulterants which were mixed with genuine arecanuts and passed off as such, is indeed a fraud on the consumer and immediate steps should, therefore, be taken to prevent it as far as possible. The Central Committee on Food standards under the Ministry of Health has stated that when grade specifications for arecanuts under the Agricultural Produce (Grading and Marking) Act, 1937 are set up by the Directorate of Marketing and Inspection, the matter might be referred to them for consideration from the public health point of view. The progress achieved during the year under report in regard to drawing up of grade specifications under the said Act have already been referred to in this report under grading of arecanuts.

Chemical analysis of the kernels of arecanuts and that of the adulterants (bastard sago palm nut) were undertaken at the Public Health Laboratory, Poona, Bombay State with a view to find out whether any difference existed in the constituents of the two nuts. The results of the chemical analysis have indicated that genuine arecanuts have a larger proportion of fats and protein while these constituents were found in relatively smaller quantities in the adulterants. It was also revealed that there was more of silica in the bastard palm nuts and very little of it in the genuine arecanuts. Further analysis of other samples was still pending at the close of the year. The Government of India have also been requested to include arecanut within the purview of the Food Adulteration Act which was proposed to be brought up for consideration of the Parliament during its next session.

5. *Regulation of quantity and prices of imported arecanuts.* India being a deficit country in regard to production of arecanut, has to import large quantities from outside countries to supplement the local demand. The chief sources of supply are Singapore, Malaya and Ceylon. The cultivation of arecanut in the foreign countries does not call for much attention on the part of the growers and as a result, the cost of production is considerably low. On the other hand, in India, its cultivation involves heavy expenditure as it requires manuring, watering and spraying against 'Mahali' and other diseases. The high cost of skilled labour for harvesting and processing has also added to the cost of its production. As India is the only important market for foreign arecanuts, it was feared that unrestricted imports of cheap arecanuts would have an unhealthy influence on the local nuts and reduce their prices to an uneconomic level. Government of India have, therefore, given protection to the local arecanut industry both by imposing a protective duty on foreign arecanuts and by quantitative restriction.

The Indian Central Arecanut Committee at its meeting held at Bangalore on 28—10—1953 had constituted a sub-committee to examine the effect of the enhanced import duty from 7½ annas to 9½ annas a lb. on the prices of local arecanuts and to submit their recommendations for consideration of the Committee This sub-committee met at Bangalore during the year under report on 29—3—1954 and opined (Shri D. P. Kajaria dissenting) that the enhanced import duty, viz, 9½ annas a lb. did not give sufficient protection to the growers

of arecanut. The sub-committe also welcomed the further enhancement of import duty from 9½ annas to Re. 1 per lb. with effect from 28th February 1954. During the year under report 7,12,335 cwts. of arecanuts valued at Rs. 3·01 crores were imported from foreign countries as against 7.33.554 cwts. valued at 3·45 crores during the previous year. The import policy of the Government of India was liberalised to some extent during the course of the year under report and the quota of licences was increased from 50% during July–December 1953 to 60% of the half of best year's import during January–June 1954. Besides, licences were granted to new comers also.

6. *Railway transport facilities.* Consequent on various representations received from the dealers in arecanut in different markets, Government of India was requested during the year under report to take up the matter with the railway authorities to include arecanut under preferential traffic and to afford special wagon facilities, for movement of this commodity. Government of India, however, promised that in case concrete instances of hold-ups of arecanuts were brought to their notice, the matter would be taken up with the Railway Administration. Government of India had also been requested to delegate powers to the Secretary of the Committee to issue essentiality certificates for transport of seeds etc. at quarter parcel rates. The matter was still pending consideration of the Government at the close of the year.

7. *Prices.* During the year under report, the prices of arecanuts in different markets in India were subject to slight fluctuations. The sundried whole nuts in Mangalore market which was showing a consistent upward trend during the whole of last year reached its highest level in July 1953 and thereafter began to decline. The prices which were quoted at Rs. 121/9 per maund at the beginning of the year under report rose to Rs. 150/6 during the month of July and declined to Rs. 118/1 at the end of the year in March. It is interesting to note that even the enhancement of the import duty on foreign nuts had no favourable reaction on the decline of prices in this market. The prices of sliced boiled nuts in Palghat, Trichur and Shimoga markets which had on the other hand recorded a steady decline during last year recovered to some extent. The prices in Shimoga and Palghat markets which were quoted at Rs. 104/15 and 103/7 per maund for 'Deshavaram' and 'Choor' arecanuts showed a steady rise and reached Rs 145/1 and Rs. 150/11 per maund respectively. The prices of imported arecanuts in Calcutta market showed a steady decline during the year under report. The prices which were quoted at Rs. 122/10 per maund during the beginning of the year in March 1953 declined to Rs. 93/8 at the end of February 1954. After the announcement of the increase in import duty from Re. 0–9–6 to Re. 1/-, per lb. the prices immediately rose to Rs. 113/- per maund during the middle of March 1954.

8. *Co-operative Marketing of Arecanuts.* The co-operative marketing societies dealing in arecanuts in Madras, Mysore and Bombay States continued to make good progress during the year under report.

(i) *Co-operative Marketing of Arecanuts in Madras State.*

(a) *The Ponnani Taluk Arecanut Curing & Marketing Society, Ltd., Kumaranellur* :—The scheme to help this society on a grant-in-aid basis, which was sanctioned at the meeting of the Indian Central Arecanut Committee held in January 1951, was in the third year of its working. According to this scheme, the Committee had agreed to share with the Government of Madras both a grant-in-aid of Rs. 25,800/- for three years and an interest free loan of Rs. 36,000/-

repayable in six annual instalments on a 50 : 50 basis. The society increased its membership from 381 at the commencement of the scheme to 519 at the end of the year under report. The share capital also increased during the same period from Rs. 16,690/- to Rs. 18,400/-. During the year under report, the society purchased 5,278 thulams (1 thulam = 37½ lbs.) of raw arecanuts for Rs. 72,416/-. The total quantity of cured nuts obtained from processing them was 1,643 thulams. The working of the society resulted in the reduction of the loss from Rs. 44.219/- at the beginning of the scheme to Rs. 24,417/- at the end of the year under report. The society was able to repay the third instalment of Rs. 6,000/- of the loan due to this Committee and the Government of Madras. The society was permitted to amend its bye-laws so as to increase the limit of its outright purchase of raw arecanuts to twice its paid up share capital for the year under report, as an experimental measure. The society was able to establish direct contact with the consumer co-operatives at different centres for the disposal of its produce. It is said that about 60% of the stock was sold through sister co-operative societies in different consuming centres. This helped the society to eliminate unnecessary intermediaries to a considerable extent. The society also helped the arecanut growers by hiring out sprayer pumps and by distribution of copper sulphate and other 'Mahali' chemicals for their use.

(b) *South Kanara Agriculturists' Co-operative Marketing Society, Mangalore :*—This is the biggest co-operative marketing society dealing in arecanuts in Madras State. It handles members' produce on commission basis. Its jurisdiction extends over the entire district of South Kanara and all the arecanut growers of the district are qualified to become members of this society. It had a membership of 5,634 out of which 99 were co-operative societies and a paid-up share capital of Rs. 73,095/- at the end of the year under report. Though the main business of the society is to sell arecanuts of the members and issue advances thereon, it also deals in other subsidiary garden produces like pepper, cashewnut, plantains, cardamom, coconut etc. It received 21,365 cwts. of arecanuts from its members and sold 19.572 cwts. valued at Rs. 37·23 lakhs in the Mangalore market which formed 12% of the total marketable produce that came to the Mangalore market during the year under report. With a view to help the small scale growers living in interior parts, the society has opened 48 collection depots as against 28 during the previous year. These depots receive arecanuts from the members of the society and issue advances on their security and arrange for their transport to Mangalore through the lorries owned by the society for the purpose. The society issued Rs. 15·24 lakhs on the security of the members' arecanuts during the year under report as against Rs. 8·21 lakhs during the previous year. It also supplied koleroga materials and other domestic requirements on indent system to its members. It made a net profit of Rs. 49,100 during the year 1953–54.

(ii) *Co-operative Marketing of Arecanuts in Mysore State.*

(a) *The Malnad Areca Marketing Co-operative Society, Shimoga* is the premier co-operative institution dealing in arecanuts in the State. It received 12,542 bags of arecanut (1 bag = 132 lbs.) from its members during the year, out of which it sold 10,067 bags. The membership and share capital of the society went up from 2,388 and Rs 78,711/- during last year to 2,563 and Rs. 82,820/- during the present year respectively. Its jurisdiction extends over the two most important arecanut growing districts of Shimoga and Chikmagalur in Mysore State. It issued Rs. 28,41,631/- as loan on the security of arecanuts to its members. With a view to help the small scale growers to lodge their

arecanuts and to obtain advances on their security, it has opened ten collection depots in chief areca producing centres within its jurisdiction. It has also opened a collection and sales branch at Sagar which is another important arecanut growing and marketing centre in Mysore State for whole boiled arecanuts. In order to help its members during the attack of 'Kole' pest, it undertook the distribution of 'Kole' chemicals and sprayers on credit. It distributed such chemicals and sprayers worth Rs. 57,000/- during the year. The society earned a net profit of Rs. 22,057/- during last year. With a view to extend the benefits of co-operative marketing to the areca growers living in other districts of the State, it has been suggested to extend its jurisdiction over the entire State.

(b) *The Kyathasandra Co-operative Society* is another society in Tumkur district dealing in arecanuts. It has 480 members who have subscribed for a share capital of Rs. 6,129/-. It is reported that the society helps the areca growers of the locality by issuing advances for the cultivation of arecanuts and for digging of wells and installation of pump sets for irrigation of water to the areca gardens during summer months. As the resources of the society are very meagre, for the better working of the society, it is under consideration to give some financial assistance to it and the matter was pending consideration with the State Government at the close of the year.

(iii) *Co-operative Marketing of Arecanuts in Bombay State.*

Arecanut is cultivated in North Kanara, Colaba and Ratnagiri districts in Bombay State About 80% of the total area under arecanut is in the North Kanara District. Co-operative societies for marketing of arecanuts have been successfully working in this district in Sirsi, Yellapur, Siddapur and Kumta with jurisdictions covering the entire arecanut growing tracts within it The Sirsi Thotagars' Co-operative Society which made rapid progress for the past ten years, had a membership and share capital of 1,453 and Rs. 1,29 610/- respectively. It received 27,000 standard maunds (1 maund = 82-2/7 lbs.) of arecanuts during the year under report and sold 22,960 maunds. It issued Rs. 2,19,421/- both on the security of the members' arecanuts and on the security of their standing crops. It has opened six collection depots in interior arecanut growing centres to provide facilities to its members to lodge their arecanuts and to obtain advances thereon. With a view to provide quicker and cheaper means of transport of arecanuts from the interior parts to the Sirsi market, the society owns a lorry. The society earned a net profit of Rs. 30,044 during the year.

Kumta Co-operative Areca Sales Society, Kumta The Kumta Co-operative Arecanut Sales Society in North Kanara district is another important co-operative marketing society dealing in arecanuts. Its jurisdiction extends over the chief areca growing taluks of Kumta, Honnavar and Yellapur. It had a membership of 683 and share capital of Rs. 7,871/- as against 622 and Rs. 6.951/- respectively during the previous year. It received 16,068 standard maunds of arecanuts which formed more than about 50% of the total produce that came to Kumta market and sold the entire produce during the year under report. It issued Rs. 64,020 as loan to the members on the security of arecanut and recovered the entire amount at the close of the year. It earned a net profit of Rs. 12,245/- during the year 1953-54 and was considered by the Bombay Co-operative Department as one of the model co-operative marketing institutions in that State.

Siddapur Multipurpose Co-operative Society in North Kanara District received 3,322 standard maunds of arecanuts during the year from 379 members.

Owing to continued mismanagement, the society has now requested the Registrar of Co-operative Societies to lend the services of a Departmental Inspector to manage the society for some time. The matter was reported to be pending consideration of the Registrar of Co-operative Societies at the close of the year.

Dhapoli taluka Sahakari Supari Vikri Karnari Society Ltd., which was organised recently, enlisted 58 areca growers as members and collected Rs.1,132 towards share capital. The society is still in its infant stage and has not yet developed its activities. A society has also been organised in Murud called the Murud Vibhag Sahakari Sangh for the marketing of arecanuts in Murud in Colaba district. Its progress is being carefully watched and efforts are being made to make it a useful organisation to the areca growers of the locality.

9. *Collection and dissemination of market intelligence.* With a view to assist the areca growers and traders, weekly average prices of both Indian and imported nuts in different markets and the quantity of imports through different Indian ports are being collected and published in the monthly bulletins issued by this office. The prices of imported nuts prevailing both at the Indian markets and at the sources of their production are also published to give a comparative idea of their prices.

CHAPTER V.

PROPAGANDA, PUBLICITY AND OTHER ACTIVITIES.

Monthly Bulletins. The Committee continued the publication of monthly bulletins in three languages, viz., English, Malayalam and Kannada. Copies of the bulletins were distributed among areca growers and others interested in the industry, free of cost. The Committee has at its meeting held in October 1953, decided to improve the get up and quality of the bulletin and make it a priced publication.

Among other publications issued by the Committee during the year, the chief one is the report of the Secretary on 'Arecanuts in Malaya' which gives a brief account of the agricultural condition of the Federation of Malaya and the Colony of Singapore with special reference to arecanut.

Towards the close of the year, the Committee sent specimens of different varieties of processed arecanuts etc. for the Indian Trade Exhibition held at Cairo in april 1954.

During the National Tree Planting Week in July 1953, the Committee made vigorous propaganda among the ryots for planting as many areca palms as possible. About 200 seedlings were distributed free among growers at the commencement of the National Tree Planting Week. Several planters were assisted by the technical staff under the Committee in the matter of procurement of good quality seedlings.

CHAPTER VI.

BUDGET AND FINANCE.

1. *Receipts.* The Government had, in their Ministry of Agriculture, Resolution No. F. 43-11/49-Comm. dated 21-5-1949 constituting the Indian

Central Arecanut Committee, agreed to place at the disposal of the Committee the unspent balance from the grant made to the Indian Council of Agricultural Research in 1946–47, and also to make available to the Committee each year the amount actually spent by the Committee, but not exceeding Rupees five lakhs. The Committee managed its affairs up to the end of 1951–52 with the balance available out of the grant of Rs. 5 lakhs given in 1946–47 to the Indian Council of Agricultural Research. In 1952–53, the Government of India made a grant of Rs. 2,00,000 to this Committee. Including this grant the total amount available for expenditure in 1953–54 was Rs 3,68,818/–. As this amount was inadequate to put through various schemes approved by the Committee, the Government of India offered the Committee a grant of Rs. 1,50,000/– for expenditure during the year under report. The total amount available with the Committee for expenditure during 1953–54 as per the Revised Estimates was Rs. 5,26,330/– including about Rs.7,512/– anticipated as receipts from sale of publications, seedlings and repayment of loan etc.

2. *Expenditure*. According to the Budget Estimates for 1953-54 sanctioned by the Committee, the total expenditure for the year was estimated at Rs. 3,95,850/–. But the Government of India, while sanctioning the Budget Estimates, desired that some items of expenditure should be curtailed. As a result of such reduction the expenditure as per the Revised Estimates for 1953–54 was only Rs. 3,26,880/- leaving a balance of Rs 1,99,450/- for expenditure during 1954-55.

The accounts of the Committee for the year 1953–54 were audited by the staff detailed for the purpose by the Accountant General, Madras, from 13–5–1954 to 19–5–1954. The audit report is given in Appendix IV.

The Committee is maintaining with effect from 22–6–1951 a contributory provident fund for the benefit of its employees. A statement showing the account of the fund for 1953-54 is given in Appendix V.

K. K. NAMBIAR.

APPENDIX I.

GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE.

Resolution.

New Delhi, the 21st May 1949.

No. F. 43-11/48-Comm.- During the summer of 1945 representations were made to the Government of India by individual producers as well as Arecanut Associations in South India regarding the deplorable plight of the Arecanut Industry, of the heavy cost of cultivation and poor returns to them mainly due to the absence of scientific research to improve cultivation and augment production, the ravages wrought by the Mahali disease and the ill-developed method of marketing in vogue. The possibilities of cheap and heavy imports of arecanut from the Strait Settlements, Ceylon etc. and their effect on the local price were also stressed upon them. They demanded some control with a view to regulate the marketing of local and imported nuts.

The Government of India decided that the annual grant to the extent of expenditure, but not exceeding Rs. 5 lakhs required by the Committee, be given to the Indian Council of Agricultural Research for financing measures for improving and developing the production and marketing of arecanut in the country. The Government of India also set up an Ad hoc Committee under the Indian Council of Agricultural Research to consider preliminary measures for effecting improvements in the arecanut industry and formulate a co-ordinated scheme for the purpose. This Ad hoc Committee recommended that a Central Arecanut Committee should be set up and that for the present the secretariat work of the Committee should be entrusted to the secretariat of the Indian Central Coconut Committee. The Government of India have accepted this recommendation in principle and have decided to set up a Central Arecanut Committee which will be a body corporate registered as a Society under the Registration of Societies Act (XXI of 1860) with headquarters at Ernakulam or such other place as the Committee may decide.

2. The functions of the Indian Central Arecanut Committee will be to assist the Government in the improvement and development of the production and marketing of arecanut and arecanut products and all matters incidental thereto by—

(1) undertaking, assisting or encouraging agricultural, industrial, technological and economic research;

(2) producing, testing and distributing improved varieties of seed;

(3) encouraging and assisting the adoption of improved methods in cultivation so as to increase yield and improve quality;

(4) assisting in the control of parasites and insect pests and fungal diseases which affect arecanut in the field, in storage or during transport;

(5) carrying on such propaganda in the interests of the arecanut industry as may be necessary;

(6) encouraging the adoption of improved measures for the marketing of arecanut, fixing and adoption of grade standards for arecanut and its products;

(7) encouraging the purchase, curing, grading and marketing of arecanut and its products through co-operative or other agencies and undertaking enquiries and making recommendation relating to storage, transport facilities etc.

(8) giving the financial and technical assistance to organisations engaged in growing, curing, processing, grading, marketing and manufacture of arecanut and its products;

(9) maintaining such institutes, farms, stations, curing arrangements, warehouses, conditioning and processing plants as may be necessary;

(10) collecting statistics from growers, traders and manufacturers on all relevant matters connected with arecanut and distribution of such statistics and information to the interests concerned, and establish a Market Intelligence Service;

(11) (a) making advice available on all matters essential to the development of the arecanut industry;

(b) advising on such matters as fall within the functions of the Committee which are referred to it by Government;

(12) employing such staff as may be necessary for the proper performance of any or all of these functions;

(13) recommending the maximum and minimum prices to be fixed for arecanut and the controlled purchase and distribution of imported arecanut and adopting any other measure or performing any other duties which may be required by the Government of India to adopt or perform or which the Committee may consider necessary or advisable in order to carry out the purposes for which it is constituted.

3. It is desirable that the growers, manufacturers and traders should be represented on the Committee, subject to a reserve power of nomination by the Government of India so as to permit of appointments to the Committee to meet special requirements, which may vary from time to time.

The Committee will be constituted as follows:—

i. The President of the Committee shall be the person so nominated by the Central Government.

ii. Agricultural Commissioner to the Government of India.

iii. Agricultural Marketing Adviser to the Government of India.

iv A representative of the Ministry of Finance (Rev Div.) to be nominated by the Central Government.

v. A representative of the Ministry of Commerce to be nominated by the Central Government.

vi. Four members will be nominated to represent consumers. These will be selected from among the members of the Dominion Parliament, who are neither growers of nor traders in arecanut.

vii. Eight persons representing the growers of arecanut in India, of whom four shall be nominated by the Government of Madras and one by the Government of Travancore and Cochin and one each by the Government of Bombay and Assam and the Government of the State of Mysore.

viii. Eight persons representing the Department of Agriculture respectively of Madras, Bombay, West Bengal, Assam, Coorg, Mysore, Andhra and Travancore-Cochin (one only) appointed in each case by the Government concerned

ix. Seven persons representing the trade in arecanut, one each being nominated by the Governments of Madras, Mysore and Travancore-Cochin (one only) the All India Supari (Betelnut) Federation, the Federation of the Indian Chambers of Commerce and Industry and the Palghat Chamber of Commerce and the Kanara Chamber of Commerce.

The tenure of appointment of the members of the Committee other than those who are appointed by reason of the office or appointment that they hold, will be three years with effect from the 1st April of the year in which they are appointed, or such lesser period as may be specified in the notification of appointment.

4. The Government of India will appoint a Secretary and a Co-operative Arecanut Marketing Officer to assist the Committee in its work. Until a separate wholetime Secretary is appointed, the Secretary of the Indian Central Coconut Committee will also act as the Secretary of the Arecanut Committee. The expenditure over the pay and allowances of these officers will be met by the Committee from its funds.

5. The Government of India will finance the Committee by placing at its disposal the unspent balance from the grant made to the Indian Council of Agricultural Research in 1946-47 and by making available to the Committee each year the amount actually spent by the Committee but not exceeding Rupees five lakhs.

6. The Committee will submit its budget annually to the Government of India for sanction.

7. The Committee shall continue their present arrangements made, if any, by the Indian Council of Agricultural Research with the various Provincial Governments in respect of lands, sites and buildings for its various laboratories, research stations and the housing of the staff and matters ancillary thereto with such modifications as may be mutually agreed upon. It shall also take over any liabilities and assets which may exist with the Indian Council of Agricultural Research on the date when the Committee starts functioning

8. A meeting of those, who constitue the Committee, will be convened as soon as possible after preliminary arrangements have been made to consider the terms of the Memorandum of Association and the Rules & Regulations which have to be filed with the Registrar of Joint Stock Companies. These Rules and Regulations and any modifications which may be subsequently made therein shall be subject to the approval of the Government of India.

K. L. PUNJABI,
Secretary.

APPENDIX II.

List of members of the Indian Central Arecanut Committee as on 31st March 1954.

Serial No.	Name and Address of the member.	By whom nominated.	Interest represented
1.	Sri K. R. Damle, I. C S., Vice-President, Indian Council of Agri. Research and Addl. Secretary to Govt. of India, Minisrty of food & Agriculture, New Delhi.	Central Government.	Ex-Officio President.
2	Dr. B. N. Uppal, Agricultural Commissioner with the Govt. of India, Indian Council of Agricultural Research, New Delhi.	do.	Central Government
3.	The Agricultural Marketing Adviser to the Govt. of India, Dairectorate of Marketing & Inspection, New Delhi.	do.	do.
4.	The Collector of Customs, Customs House, Madras.	do	Ministry of Finance (Rev. Div.)
5.	Shri E. C. Sanker, Deputy Chief Controller of Imports & Exports, Cochin-3.	do.	Ministry of Commerce.
6.	Shri A. M. Thomas, M. P., Advocate, Ernakulam.	Dominion Parliament.	Consumers.
7.	Shri Basanta Kumar Das, M. P., Post Contai, Midnapore Dt., W. Bengal.	do.	do.
8.	Shri Eacharan Iyyani, M. P, Mangalam. Anjumurthy P. O., Via Palghat, S. Malabar	do.	do.
9.	Shri T. R. Deogirikar, Member, Council of States, Chitrasala Press, Poona-2.	do.	do.
10.	Shri M. N. Chouta, B. A., B. L., Vakil, Attavar, Mangalore.	Government of Madras.	Growers of arecanut.
11.	Shri P. V. Chitran Nambudiripad, M. A., B. T., Pakaravoor, Mookkuthala, Edapal P. O., Ponnani Taluk, South Malabar.	do.	do.
12.	Shri N. Chandappa, B. Sc., M. Sc. (Alfred.) Municipal Councillor, Mettupalayam, Coimbatore District.	do.	do.
13.	Shri N. T. Narayanan Nambiar, Kunnoth, Post Iritty, Via Tellicherry, N. Malabar.	do.	do.

Serial No.	Name and Address of the member.	By whom nominated.	Interest represented
14.	Shri V. R. Krishnan Ezhuthassan, B. A., B L., Avanisseri, Ollur, Travancore-Cochin.	Government of Travancore-Cochin.	Growers of arecanut.
15.	Shri V. R. Hegde, Soolgar, Harepal Village, Sirsi Taluka, P. O. Sirsi, North Kanara District, Bombay State.	Government of Bombay.	do.
16.	Shri Upendra Chandra Das, B. L., Barpeta P. O., District Kamrup, Assam.	Government of Assam.	do.
17.	Shri K G. Wodeyar, M. P.. Near Railway Station Cross, Sagara P. O., Shimoga District, Mysore State.	Government of Mysore.	do.
18.	The Director of Agriculture, P. B. No 412, Chepauk. Madras.	Government of Madras.	Dept. of Agriculture.
19.	The Director of Agriculture, Bombay State, Poona-1.	Government of Bombay	do.
20.	Shri E. A, R. Bannerjee, Joint Director of Agriculture, Writers Buildings, Calcutta.	Government of West Bengal.	do
21.	Shri S. C. Bhattacharya, Horticultural Development Officer, Gauhathi, Assam.	Government of Assam.	do.
22.	Shri C. Thomas, I. A. S., Director of Agriculture, Trivandrum.	Government of Travancore-Cochin.	do.
23.	Shri M. K. Appajappa, I. A. S., Director of Agriculture, Seshadri Road, Bangalore-1.	Government of Mysore.	do.
24.	Shri B. S. Varadarajan, Agricultural Officer, Coorg, Mercara.	Government of Coorg.	do.
25.	Vacant.	Government of Andhra.	do.
26.	Shri M. K. Krishna Chetty, Asoka Betelnut Factory, Jail Road, Coimbatore.	Government of Madras,	Trade in arecanut.
27.	Shri K. T. Shamiah Gowda, Nut Merchant & Commission Agent, Shimoga Town, Shimoga. Mysore State.	Government of Mysore.	do.
28.	Shri C. C. Varki, Cheruparambil, Vazhakulam, Thodupuzha, Travancore-Cochin State.	Government of Travancore-Cochin.	do.
29.	Shri N. Srikantiah, Ex-President, All India Supari Federation, Sagara P. O., Shimoga Dt., Mysore State.	All India Supari (Betelnut) Federation.	do.

Serial No.	Name and Address of the member.	By whom nominated.	Interest represented.
30.	Shri Debi Prasad Kajaria, 32, Armenian Street, Calcutta-1.	Federation of Indian Chambers of Commerce & Industry.	do
31.	Shri K. Ramanunni Mannadiar, Palghat Chamber of Commerce, Palghat. South Malabar.	Palghat Chamber of Commerce.	do.
32.	Shri U. Subraya Mallia, C/o M/s. Ullal Vasudeva Subraya Mallia & Co., Ltd, Exporters, P. B. No. 24, Bunder, Mangalore-1. South Kanara District.	Kanara Chamber of Commerce.	do.
33.	Shri M. T. Joseph, B. A., B. L., B. T., Headmaster, St George's Middle School, Mundur P. O., Trichur District, Travancore-Cochin State.	Government of India under reserve powers.	Growers of arecanut in Travancore-Cochin State.

APPENDIX III

Composition of Sub-Committees during the year ending 31-3-1954.

I. Finance Sub-Committee.

1. Vice-President (Ex-Officio Chairman of the Sub-Committee).
2. Shri N. Srikantiah.
3. „ V. R. Hegde.
4. „ C. Thomas.
5. „ U. Subraya Mallia.
6. „ Eacharan Iyyani.
7. „ T. R. Deogirikar.

II. Agricultural & Technological Research Sub-Committee.

1. Agricultural Commissioner with the Govt. of India (Chairman)
2. Director of Agriculture, Madras.
3. Director of Agriculture, Mysore.
4. Director of Agriculture, Travancore-Cochin.
5. Joint Director of Agriculture, West Bengal.
6. Director of Agriculture, Bombay.
7. Shri B. K. Das.
8. „ M. N. Chouta.
9. „ T. R. Deogirikar.

III. Marketing & Economics Sub-Committee.

1. Vice-President (Chairman)
2. Agricultural Marketing Adviser to the Government of India.
3. Collector of Customs, Madras
4. Shri K. Ramanunni Mannadiar.
5. „ D P. Kajaria.
6. „ N. Srikantiah.
7. „ P. V. Chitran Nambudiripad.

IV. Scientific Appointments Sub-Committee.

1. President (Chairman)
2. Vice-President.
3. Agricultural Commissioner with the Government of India.
4. Shri N. Srikantiah.

APPENDIX IV

Extract from the Audit Report of the Accounts of the Indian Central Arecanut Committee for the year 1953–54.

I. *Introductory.*

(a) The accounts of the Indian Central Arecanut Committee were last audited in June 1953. During the present audit the accounts up to 31-3-1954 since the date of last inspection were generally scrutinised.

(b) Shri K. K. Nambiar continued to be in charge of the post of the Secretary, Indian Central Arecanut Committee during the period covered by audit.

(c) A statement of receipts and expenditure of the Committee for the financial year 1953-54 in the form prescribed in the Bye-laws of the Committee approved by the Government of India is appended to the report.

APPENDIX V.

Receipts and Payments Accounts of the Indian Central Arecanut Committee Provident Fund for the year ended 31st March 1954.

RECEIPTS.				PAYMENTS.			
	Rs.	A.	P.		Rs.	A.	P.
To opening balance as on 1—4—1953. Post Office Savings Bank Account ...	1,327	12	0	By Subscription Account :— Advance to subscribers ...	50	0	0
To Subscription Account. Subscription received ~~1,459~~ 1,419 8 0				By Contribution Account ...	—		
Refund of advance 166 3 0	1,585	11	0	By Investment Account. Post Office National Savings Certificates ...	2,300	0	0
To Contribution Account. Contribution received ...	1,531	4	0	By closing balance in the Post Office Savings Bank ...	2,201	7	0
To Interest Account.— Interest on Post Office Savings Bank Account for the year 1952-53 received during the year Rs. 12 8 0							
Contribution by the Committee 94 4 0	106	12	0				
Total ...	4,551	7	0	Total ...	4,551	7	0

Checked and found correct.
Examiner,
Outside Audit Department.

K. K. NAMBIAR,
Secretary,
Indian Central Arecanut Committee.

INDIAN CENTRAL ARECANUT COMMITTEE, CALICUT.

Receipts and Expenditure Account for the year ended 31st March 1954.

RECEIPTS.

		Rs.	A.	P.
Opening balance	...	3,68,817	15	2
Receipts during the year :—				
(a) Money received from Government of India	...	1,50,000	0	0
(b) Other moneys received by the Society (Committee)	...	9,146	15	1
(c) Interest received from investment of such moneys as aforesaid	...	—		
Grand Total	...	5,27,964	14	3

Closing balance :

		Rs.	A.	P.
Balance in the bank	...	3,68,009	3	1
Cash in hand	...	1	8	0
Permanent advance	...	500	0	0
		3,68,510	11	1

EXPENDITURE.

		Rs.	A.	P.
(a) Administration of the Society (Committee).		53,611	13	2
(b) Measures taken in connection with work on improvement of the cultivation of arecanut	...	90,870	8	0
(c) Measures taken in connection with work on the development and improvement of arecanut and its products in India	...	1,216	0	0
(d) Measures taken in connection with improvement in marketing of arecanuts and its products	...	13,755	14	0
(e) Miscellaneous	...	—		
Total	...	1,59,454	3	2
Closing Balance	...	3,68,510	11	1
Grand Total	...	5,27,964	14	3

Checked and found correct,
Examiner,
Outside Audit Department.

K. K. NAMBIAR,
Secretary,
Indian Central Arecanut Committee.

INDIAN CENTRAL ARECANUT COMMITTEE, CALICUT.

Receipts and Expenditure Account for the year ended 31st March 1939.

RECEIPTS.	Rs.	A.	P.	EXPENDITURE.	Rs.	A.	P.
Opening balance ...	3,65,817	15	2	(a) Administration of the Society (Committee)	33,011	13	2
Receipts during the year—				(b) Measures taken in connection with work on improvement of the cultivation of arecanut ...	90,870	8	0
(a) Money received from Government of India ...	1,50,000	0	0	(c) Measures taken in connection with work on the development and improvement of arecanut and its products in India ...	1,210	0	0
(b) Other moneys received by the Society (Committee) ...	9,146	15	1	(d) Measures taken in connection with improvement in marketing of arecanuts and its products ...	13,755	14	0
(c) Interest received from investment of such moneys as aforesaid ...	—			(e) Miscellaneous ...	—		
				Total ...	1,59,454	3	2
				Closing Balance ...	3,68,319	11	1
Grand Total ...	5,27,964	14	3	Grand Total ...	5,27,964	14	3
Closing balance:							
Balance in the bank ...	3,66,000	3	1				
Cash in hand ...	1	8	0				
Permanent advance ...	500	0	0				
	3,68,510	11	1				

Checked and found correct,

Examiner,

Outside Audit Department.

K. K. NAMBIAR,

Secretary,

Indian Central Arecanut Committee.