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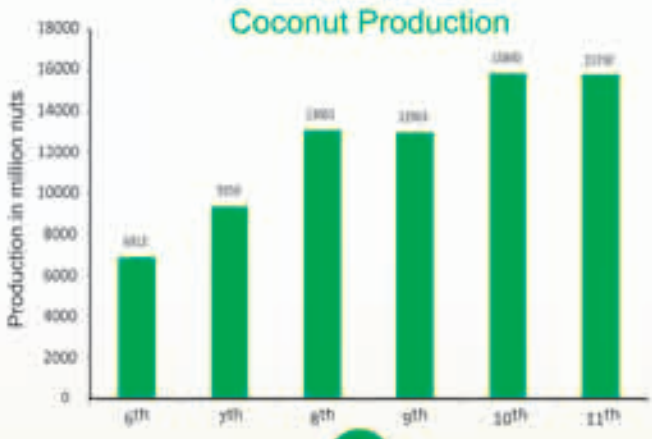
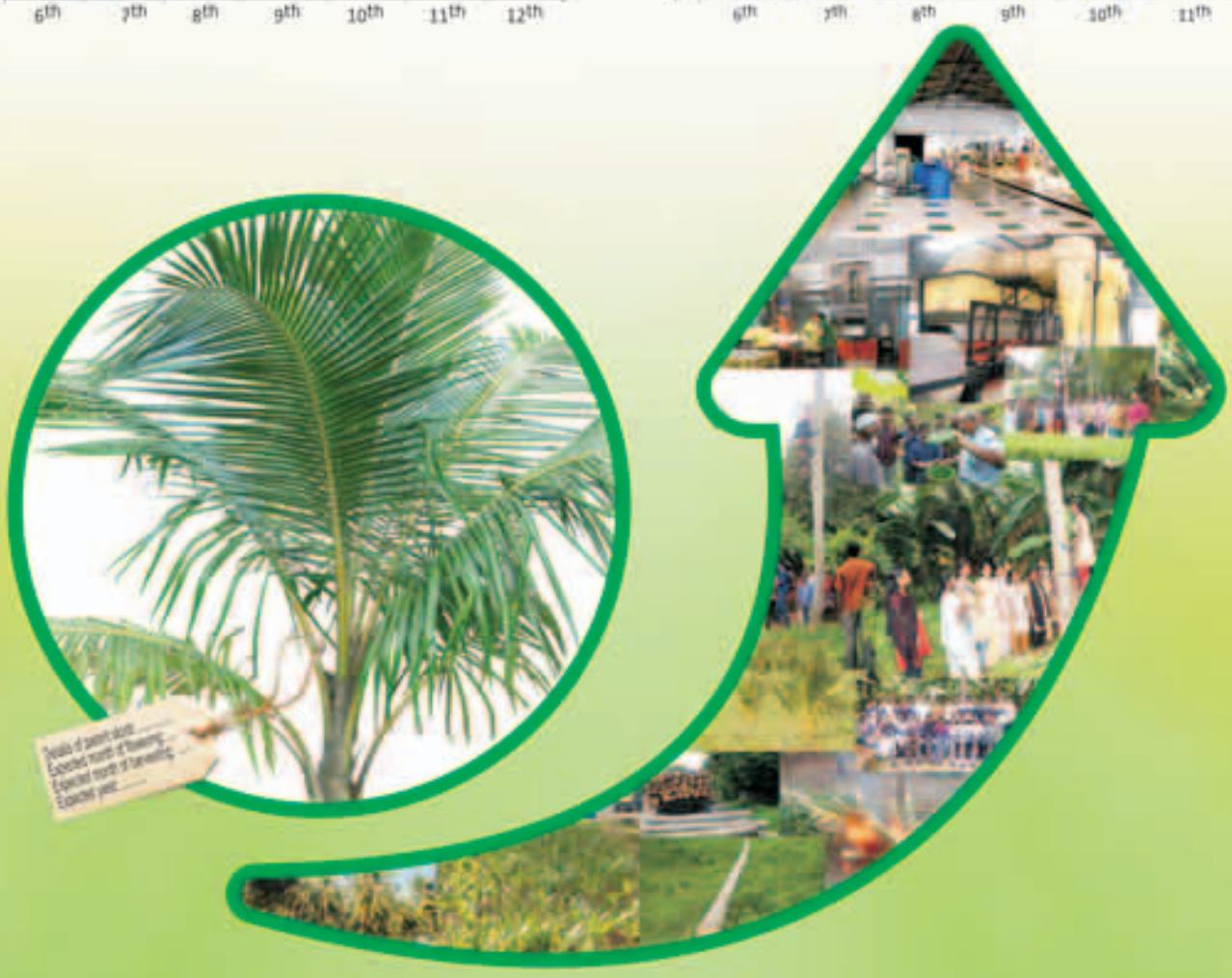




Coconut Development in 12th Five Year Plan

INSIDE

THEME

Coconut Development in 12th Five Year Plan

12th Five Year Plan :
An opportunity to make India the world leader in coconut production, productivity, processing and export

Dear coconut farmers,

Preparations for the 12th Five Year Plan are in the finishing stage. Discussions and consultations were held by the Planning Commission and various Planning Boards of the State Governments for formulating the 12th Five Year Plan. Five Year Plans are effective tools for giving guidance, directions and fueling the development of the country. In this issue we are trying to analyze the opportunities, potential and prospects of coconut cultivation for the betterment of coconut farmers, processors, consumers and exporters in 12th Five Year Plan.

During the 10th Five Year Plan a resource allocation of Rs.145 crores was given to Coconut Development Board and the expenditure was Rs.151.714 crores. The funds allotted to CDB in the 11th Five Year Plan was Rs.395 crores and expenditure upto 31st December 2011 reached Rs.354 crores. Coconut Development Board has submitted a requirement of Rs.2600 crores during the 12th Five Year Plan period for the successful implementation of various programmes for the coconut community. The existing programmes should be continued and necessary upward revision in costing as well as in unit cost are necessary. New planting in additional areas both in traditional and non traditional states are to be taken up during the 12th Five Year Plan. The pilot project of replanting and rejuvenation of coconut gardens in three districts of Kerala and Andaman & Nicobar Islands need to be made a part of our 12th Five Year Plan for covering the remaining portion of Kerala and all coconut growing districts of Tamilnadu, Karnataka, Maharashtra and West Bengal. Many of the cost estimations prepared for area expansion programme, rejuvenation programme, integrated farming programme, establishment of nursery etc need to be revised, taking into account the inflation and hike in the cost of inputs.

The farmers are looking forward for better facilitation, creation of more opportunities for increasing the production, productivity and processing with the assistance of State and Central Government during the 12th Five Year Plan. Even though in productivity India has a premier position among the other coconut growing Asian countries, in production we are lagging behind Indonesia and Philippines. Processing for value addition and export are the area where many other Asian coconut producing countries including Sri Lanka are far ahead of us.

In order to fetch a remunerative and stable price to coconut farmers we have to make a big head way both in domestic and international market. At international level enormous opportunities are awaiting for products like packed tender coconut water, coconut milk, milk powder, virgin coconut oil, desiccated coconut, shell charcoal and activated carbon. During 12th Five Year Plan we have to attract more and more investors to establish processing units to capture the growing opportunities in the domestic and international markets. Extra efforts need to be taken for attracting investors in major coconut growing areas to set up processing units and to develop a supply chain logistics. Collaboration with various State Governments, soliciting more and more private investments, formation of CPSs, their Federations and Producer Companies are the areas where Coconut Development Board is looking forward to have more impact during the next five years.

Effective utilization of science and technological advancements are needed for developing more valued added coconut products. At present the major usage of coconut apart from house hold is only copra and oil making. We have to bring in a structural shift in this by increasing the usage of tender coconut. This 'undiluted, unadulterated and unpolluted' natural soft drink need to be encouraged on a larger scale. International enquiries on tender coconut water are mind blogging and offer excellent potential for higher value realization. Tender coconut should be made

available in all major cities and towns, pilgrims centers and various destinations. Passengers across the Golden Quadrilateral, East-West Corridors and North-South Corridors and major National Highways should be given opportunities to consume tender coconut, the most purest fruit drink of the world.

Formation of farmers collectives under the CPS is an initiative we have taken up during 2011. This is gaining good momentum. As a next logical step these CPSs need to be federated and encouraged and inspired to form the Producer Companies to undertake comprehensive steps for increasing the production, productivity and seedling production.

Out of the 13000 existing coconut processing units in India almost 10000 are copra making and 2000 units are producing coconut oil. There are only 7 tender coconut processing units, 2 coconut milk units, 80 desiccated coconut units, 15 virgin coconut oil units, around 1000 coconut shell units and 16 activated carbon units in the country. The number of tender coconut water processing units need to be scaled up to above 100 and a three digit number of processing units in coconut milk and milk powder, desiccated coconut and virgin coconut oil units can be thought of. The only value added product in which we are the market leader is activated carbon. Slowly through inclusive and focussed efforts we can capture a better market share of other value added products in the international market. In order to achieve this, apart from having more processing units production and productivity need to be improved. We have to think of an inclusive plan for increasing the area in coconut cultivation especially in the non traditional and new areas, rejuvenating and replanting in the existing areas, production and distribution of high quality and high yielding varieties of seedlings, aggregation of products, formation of farmers collectives and establishment of much more processing units under the Technology Mission on Coconut.

The average productivity of coconut in the country is 8303 nuts per hectare ie. 48 nuts per palm per year. The average productivity of Kerala is 7365 per hectare, ie. 42 nuts per palm per year. If we can produce 100 nuts per year from a palm, the average yearly productivity per hectare will be 17500 nuts. If we can get 120 nuts from a tree, the productivity will increase to 21000 nuts. If it can be further increased to 150 nuts, the productivity would reach 26250 nuts. If the productivity can be increased to these extents, the cost of production can be brought down and we can have play a major role in international market. Board is designated as Export Promotion Council of coconut products (other than coir and coir products) since 2009. We must work for intensifying our coconut export to Gulf Countries, Europe and North America.

Interest towards coconut farming is coming up in non traditional and North Eastern states. In Odisha and West Bengal more farmers are turning to coconut cultivation. 'Coconut based integrated farming system' can address the problem of unemployment and also ensure sustainable development in the problem affected districts of Chattisgarh, Jharkhand and Odisha. Cultivating perennial intercrops like cocoa, nutmeg and pepper and seasonal crops like ginger, turmeric, tuber crops, pulses, vegetables, fodder crops and medicinal plants along with animal husbandry would yield the highest per hectare income and employment generation from this crop. Board is also planning to have new Demonstration cum Seed Production Farms in Tamil Nadu, Maharastra and Tripura in 12th Plan period.

A major threat to coconut farming in the country is the prevalence of pests and diseases. Provision should be made in the Plan for the integrated control measures of pests and diseases. The greatest disadvantage of the Board is that it doesn't own a research wing. Board could have addressed the problems of the farmers immediately if it had its own research wing, like Rubber Board or Spices Board.

Let us hope that opportunities in the 12th Five Year Plan through the central assistance and support from the state governments will help us to reach this cherished destination. We have to increase the consumption pattern of coconut to atleast 25% as tender coconut and 25% of the matured coconut for processing and value addition other than copra and coconut oil.

We have to look forward to make India the world leader in coconut - production, productivity, processing for value addition and export through various opportunities thrown open to us during the 12th Five Year Plan Period.

I solicit the whole hearted co-operation and support of all of you for achieving this.

T.K. Jose IAS
Chairman

Potential of Coconut Development in 12th Plan - Sky is the Limit

Remany Gopalakrishnan*

Introduction

Agriculture is the main stay of our country's economy and it plays a strategic role in the development process. Any developmental strategy not strongly oriented towards the improvement of agricultural economy succumbs to stunted growth or utter failure. About 18 % of the country's income is from agriculture sector which provides employment to more than half of the work force in the country. This state of affair points to the need for increasing agricultural production on a faster pace in commensuration with the population growth.

Coconut is a crop of national importance contributing significantly to the country's economy. There are 5 million households spread all over the country and more than 10 million people depend on coconut cultivation, processing, marketing and trade related activities.

The country earns foreign exchange to the tune of more than Rs.15000 million by way of export of coconut products including coir. The crop contributes Rs.83000 million to the country's GDP and 6% to the vegetable oil pool.

In the coastal tracts most of the people depend on coconut for their sustenance and to many people coconut is the sole income source. Since the coconut garden accommodates most of the fruits and vegetable crops besides live stock, the coconut based farming system satisfies the day to day needs of a family in coastal agro ecosystem especially in Kerala. The palm contributes a large quantity of biomass to satisfy the fuel requirements of an average family. It is reported that 30-40 coconut trees would be sufficient to satisfy the fuel requirement of a small family, thus make it an important renewable energy source as well.

The population of our country is expected to touch 1400 M by 2026. Agriculture sector in India is therefore at a cross roads with rising demand for food items. The fact that coconut provides food and nutritional security to malnourished rural poor underscores the need to encourage the coconut farming and to boost the coconut production to feed the growing population.

Coconut in the previous Five Year Plans

Sustained Research and Development efforts carried out in the country for the past six decades have paid dividend in terms of increased production and productivity of coconut. Coconut production which was as low as 5280 M nuts in 1950 from 0.63 M ha which attained a level of 5942 M nuts from 1.08 M ha. in 1981 has reached the level of 15730 M nuts from 1.9 M ha. Productivity increase was from the level of 5485 nuts per ha in 1981 to 8303 nuts per ha in 2008-09. The price of coconut oil was increased in 2011 by 544% over the past 30 years. In May 2011, the price attained a maximum of Rs. 10148 in Kerala. These significant achievments were made possible with the importance the crop was getting in previous Plan periods. An overview of the programmes implemented in the country during various Plan periods is given below.

First Five Year Plan (1951-52 to 1955-56)

During the first five-year plan no separate allotment of funds was made for coconut development as coconut crop was not brought within

the purview of this Plan. The Indian Central Coconut Committee (ICCC) which formed in 1945, however, was carrying out its normal development functions. Some of the notable achievements during this plan period were the establishment of large number of coconut nurseries in different coconut growing states and establishment of biological control laboratory units for the multiplication of parasites against coconut pests. The publicity and extension activities were also given priority for popularizing the scientific coconut cultivation by introducing plant protection through several publications and other media. The production level from 3282 M nuts (1950-51) was reached to 4224 M nuts (1955-56) and area from 0.63 M hectares to 0.65 M ha.

Second Five Year Plan (1956-57 to 1960-61)

Coconut research and development was brought within the purview of the Second Plan which was commenced from 1956-57. Major thrusts were given on the production and distribution of quality seedlings, laying out demonstration plots, adoption of plant protection measures, improvement of marketing facilities including establishment of regulated markets, fixation of grade specifications for coconut oil, etc during this period. The Committee did meritorious service in the field of Agricultural Extension including publicity through its regular and adhoc publications. At the research station at Kayamkulam, besides the investigation on root-wilt, and control of pests and diseases, studies on soil microflora, virological aspect of root-wilt, role of nutrition in health and disease etc. were newly undertaken. At Kasaragod detailed soil survey, microbiology and studies on weather conditions, storages of copra / oil cake, statistical work etc. were taken up in addition to the disciplines of botany, agronomy, cyto-anatomy and chemistry.

Sample surveys for the correct estimation of area and yield of coconut and cost of cultivation were taken up in Assam, Kerala, Tamil Nadu, Mysore, Maharashtra and Andhra Pradesh and in Orissa. Parasite breeding stations for biological control of nephantis were first started during the second plan. The Committee set up special sub-committee for organizing technological research through the existing technological institutes in the country. Schemes for the solvent extraction of oil from coconut oil cake and preparation of charcoal from coconut shell were sanctioned to be taken up at the Regional Research Laboratory at Hyderabad while preparation of vinegar from coconut neera and processing of de-oiled coconut cake so as to render it suitable for human consumption were sanctioned to be taken up at the Central Food Technological Research Institute, Mysore. The development activities undertaken during the period could bring about beneficial impact on coconut production, which reached the level of 4639 million nuts in 1960-61.

Third Five Year Plan (1961-62 to 1965-66)

During the Third Plan period more emphasis was given to production oriented programmes in traditional coconut growing belts. The developmental activities of the second five year plan period were expanded and continued during the Third Plan. In addition, short-term production and productivity improvement measures like application of fertilizers and manures and adoption of irrigation facilities were also introduced.

A steady increase in coconut production was observed during this plan period. By the end of the Plan period the production reached to 5035 million nuts. During the mid Plan Period a study on coconut in India was undertaken under the aegis of the Committee on Natural Resources under the Chairmanship of Dr. M.S.Randhawa, Adviser (Resources) Planning Commission. The objective of the study was to analyse developmental measures taken till the period on production front, how far they could succeed and how far they had failed to achieve the set objectives.

The outcome of the study posed potential for further expansion of coconut cultivation in Tamil Nadu, Orissa, Gujarat and the Islands of Andaman, Nicobar, Lakshadweep and Minicoy.

The scope for coconut cultivation along the banks of canals, bunds as well as in saline waste lands in the coastal belts as well as the potential for expanding the nursery programme was indicated in the study. The study also indicated an immediate need for survey of potential areas for coconut cultivation.

Other observations which had a bearing on the coconut development in future were, package programme, compulsory grading of coconut oil for edible purpose, study on the demand and supply for

the next 20 years and also to exploring the possibility of cultivation of African Oil Palm in suitable areas in the context that palm oil, is a good substitute for coconut oil in soap making.

The third plan period was followed by a plan break for three consecutive financial years ie. 1966-67, 1967-68 and 1968-69. During these years the programmes implemented previously were continued. New schemes viz. TxD seedlings production programme, establishment of Elite Seed Farm in Karnataka and subsidised supply of quality coconut seedlings in Gujarat were additionally sanctioned as Centrally Sponsored Schemes. During this period the production level reached 5546 million nuts and the area 0.99 million hectares.

Fourth Five Year Plan (1969-70 to 1973-74)

A large number of short term and long term production programmes were taken up for implementation. The objective was to achieve an additional production of 1000 million nuts over a base level production of 5546 million nuts. However, some of the important short-term programmes like Package Scheme could not be taken up from the beginning. Nevertheless, it was in the Fourth Plan that some of the strategic long term production programmes.

Under the long term programmes production and distribution of hybrid planting material in the state of Kerala, Karnataka, Tamilnadu and Andhra Pradesh, establishment of elite seed farm for TxT progenies in Karnataka and subsidised supply of quality planting material in Gujarat were implemented as Centrally Sponsored Schemes. In the state sector, expansions of area under coconut and nursery programmes were taken up as long term measures. By the end of the fourth plan period the area under coconut increased to 1.102 million ha and production 5851 million nuts.

Fifth Five Year Plan (1974-75 to 1979-80)

During the Fifth Plan, besides continuing the long term programmes initiated during the Fourth Plan, short-term productivity oriented programmes namely package scheme, laying out demonstration plots, production and distribution of TxD and DxT hybrid combinations, maintenance of elite farms, etc. were continued. In addition, surveys on cost of cultivation, coconut production and processing aspects also were undertaken during this plan period. Plant protection measures were given adequate thrust by adopting comprehensive spraying programmes, multiplication of parasites etc. A rejuvenation programme in the diseased coconut plantations in Kerala was also introduced during the plan.The production level touched 5662 million nuts.

Sixth Five Year Plan (1980-81 to 1984-85)

The Centrally Sponsored programmes like package scheme, production and distribution of TxD seedlings, laying out demonstration plots, maintenance of elite farms etc. were continued. There was a major shift in the coconut development strategy during the Plan period. The Coconut Development Board came into existence during this period. The Directorate of Coconut Development monitored the implementation of the programmes implemented by the state governments till the formation of the Coconut Development Board in 1981. The Directorate of Coconut Development (DCD) ceased to exist with the formation of the Coconut Development Board.

The major functions of the Board inter alia include adopting measures for the development of coconut industry, recommending measures for improving marketing of coconut and coconut products, regulating import and export of coconut and its products, adopting measures for assisting coconut growers to get incentive prices for coconut and its products, providing financial and other assistance for cultivation, processing and marketing aspects of coconut, fixing of grade specification and standard of coconut and its products etc.

The Board commenced implementing development programmes from 1982-83 which was the third year of the Sixth Five Year Plan Period. The development progorammes on coconut were given new direction by the Board by identifying key areas where efforts were to be concentrated. Programmes were formulated with the objective of creating permanent production potential, stepping up productivity, developing appropriate technologies for product diversification and improved marketing of the crop. Expansion of area under coconut, production and distribution of quality planting material, technology development, surveys, extension and publicity activities etc. were the major programmes implemented during the period. The Board started one Regional Office at Bangalore during this period

to co-ordinate and monitor the development programmes in Karnataka, Goa and Maharashtra. A Demonstration Cum Seed Production Farm for coconut was also established at Mandya, Karnataka during this period. By the end of the Sixth Plan Period the area under coconut was 1.183 million ha and the production 6913 million nuts.

Seventh Five Year Plan (1985-86 to 1989-90)

The development programmes of the Board received further impetus during this period. A beginning was made on the technology development of coconut during the Sixth Plan Period widened during the seventh plan period by starting a technology development centre for coconut, attached to the headquarters of the Board. Studies on product diversification giving emphasis on developing new products like coconut cream, bottling of coconut water, coir pith briquetting, timber utilisation, etc. were initiated under sponsored research programmes through the research organisations like RRL, CFTRI, DFRL and MERADO. Since the importance of scientific management practices in coconut was felt essential, establishment of demonstration cum seed production farms in different locations both traditional as well as non traditional belts was taken up as a major activity in the development programmes of the Board. Establishment of seed production farms was initiated during this plan period in Madhya Pradesh, Assam, Tripura and Bihar with the objective of demonstrating scientific coconut cultivation in these non-traditional belts and developing reliable sources of planting materials besides being a source of income to the Coconut Development Board in the future. Hybrid coconuts of different parental combinations suitable for different agro-climatic situations are being evolved through these farms, thus fulfilling one of the prime objectives.

Coconut cultivation in Kerala was under destruction owing to the aggravating situation of the root wilt disease. Cutting and removal of disease affected palms by giving compensation to the farmers in addition to introduction of other improved management practices was a priority area during the Plan period with the objective to improve the productivity of coconut. This programme was a follow up of the research recommendation that eradication of root(wilt) disease advanced palms and replanting with quality seedlings would improve the productivity.

During this period the Board could expand its extension network, through establishing field offices in various locations in the country besides the demonstration cum seed production farms established in various states. Second regional office of the Board was established in Patna, Bihar during 1985 to coordinate and monitor the development activities in the north and north eastern regions like Madhya Pradesh, Bihar, Tripura, Assam, Orissa, Manipur, West Bengal and U.T. of Andaman and Nicobar Islands. For close liaison with the state Agri/Hort. Department and direct implementation of some of the developmental activities, State Centres were also established in the States under the jurisdiction of the Regional Office, Patna. Concerted efforts of these State Centres and Regional Offices could bring about notable improvement in the overall area, production and productivity level in the country and could boost the image of the Coconut Development Board in the national level especially in the north and north eastern states. The area under coconut reached the level of 1.47 million ha and production 9359 million nuts by the end of VII Plan Period touching the targeted production level of a Plan for the first time in the history of coconut development.

The information network of the Coconut Development Board was expanded with the initiation of a computerized coconut information centre at the headquarters, with the main objective of exchanging up-to-date information on all aspects of coconut industry among the major coconut growing countries in the world. This arrangement was made under the Integrated Coconut Information Service Programme initiated by the Asian Pacific Coconut Community.

It was during this Plan period that an apex body in co-operative sector was registered in the year 1987 viz. KERAFED to implement an integrated coconut production, procurement, processing and marketing project. The primary objective of KERAFED was to organise coconut growers by bringing them under the co-operative umbrella and to provide them with supplies and services to augment their income base by increased productivity and value additions. This was proposed to be achieved through an integrated system of production, procurement, storage, processing, product diversification and marketing of

coconut and coconut products, at prices remunerative to producers and acceptable to consumers on a sustained basis. For taking up these activities about 900 Primary Agricultural Credit Societies (PACS) were brought under the purview of Kerafed. Financial assistance from NCDC was also made available to Kerafed, which carries out extension activities to educate the farmers, providing share capital assistance to member societies to improve their base for copra procurement, imparting training to personnel of the PACS etc. A full-fledged copra processing plant was established by the Kerafed at Karunagapally in Kollam District with the potential capacity of processing 60,000 tonns per annum. Two more units will be commissioned shortly in Kozhikode and Ernakulam. Programmes are also envisaged to diversify the end use of coconut and its products through necessary research and development activities. KERAFED was registered in the year 1987 as an apex body in co-operative sector.

A full-fledged copra processing plant was established by the Kerafed at Karunagapally in Kollam District with the potential capacity of processing 60,000 tonns per annum. Two more units have subsequently commissioned in Kozhikode and Ernakulam. Programmes were also envisaged to diversify coconut and its products through necessary research and development activities. Value added coconut oil marketed by Kerafed in consumer pack with the brand name 'Kera" is well accepted by the consumers and could fetch a good market potential.

The seventh plan period was followed by two plan holidays in 1990-91 and 1991-92. During these periods, programmes implemented during the Plan period were continued. A major policy decision was taken during 1991 declaring coconut as an oilseed crop of tree origin by Government of India for giving more thrust for coconut development. One State Centre Office was started in Andhra Pradesh during 1990-91 in order to implement and monitor developmental activities in close liaison with the State Horticulture Department.

Eighth Five Year Plan (1992-93 to 1996-97)

The developmental programmes on coconut received further boost during this Plan period with an enhanced budget outlay. The major thrusts given during this plan period were on the production and distribution of planting material, expansion of area under coconut, technology development as well as productivity oriented programmes like integrated farming in coconut holdings, integrated control of major pests and diseases, etc. Extension and publicity activities were also strengthened during the period. A number of publications were brought out on various aspects of coconut. There was a quantum jump in the budget outlay for Coconut Development Board to the tune of Rs.79.29 crores from the outlay of Rs.10 crores allotted during the VII Plan period.

Production and productivity oriented programmes were given focused attention by allotting 74% of the budget. It was satisfying to note that allocation earmarked under the programmes was fully utilized. integrated farming in coconut holdings for productivity improvement was implemented in 1.32 lakh ha by extending subsidy @ Rs.200 per palm for removal of diseased / senile palms, Rs.5/- per seedlings for replanting, Rs.8/- per palm for fertilizer application and plant protection and Rs.200/- per ha for adopting inter/mixed cropping.

The programme for biological control of leaf eating caterpillar (*Nephantis serinopa*) in the states of Kerala, Karnataka, Tamil Nadu, Andhra Pradesh and Orissa was also chalked out for multiplication and liberation of parasites in the pest prone areas. Integrated measures like surveillance, chemical spraying, creating awareness among the farmers etc. are also other measures undertaken through the programme. During the period 30 million parasites were produced and released to the pest prone areas in these states.

Five Demonstration cum Seed Production (DSP) Farms established during the previous plan period were maintained even though the activities of the D.S.P. Farm Belbari, Tripura was disrupted during the period due to terrorist activity. Two more farms of 20 ha each were started in Kerala at Neriamangalam, Ernakulam and Vellanikkara, Thrissur districts. Another 40 ha was alienated to Coconut Development Board by the Government of Andhra Pradesh for starting a farm at Vegiwada, Eluru. Preliminary works like surveying, fencing, land development, development of irrigation system, etc. were initiated during the period. More than 27 lakhs seedlings of hybrids and other cultivars were

produced and distributed under the nursery programme. Another activity taken up during the period was the procurement of seednuts from root(wilt) tolerant mother palms in the diseased tracts of Kerala and raising seedlings for distribution in diseased tracts. About 6000 seedlings were raised in the nursery attached to DSP farm, Neriamangalam and distributed during 1994-1996 period. Besides 28 lakhs seednuts were procured and supplied to various agencies. Under the Area Expansion programme 46000 ha were brought under new planting. The production level touched 9359 million nuts.

Under the Technology Development a Pilot Testing Plant was initiated in an area of one acre in Ernakulam Dist. Five research projects viz., development of coconut based consumer products, effect of consumption of coconut oil on the serum lipid profile and thrombosis, preservation and packing of tender coconut water, utilisation of coir pith for bio-gas production and standardization of dairy food incorporating coconut were sponsored through different research organizations. Besides 29 handicrafts units and 39 tender coconut parlors were given financial assistance, 30 co-operative societies and 295 coconut processors were given grant-in-aid for development of processing infrastructure. Under the Publicity and Extension activities the Board brought out several books/booklets, produced video films, extended awards to master craftsmen, organized 67 district level and 2 state level seminars and 9 subsidy distribution functions and participated in 150 national and state/district level exhibitions. A database was maintained for the integrated coconut information programme sponsored by APCC. A V-SAT was installed at headquarters and attained NICNET connectivity with other NIC centres.

Ninth Five Year Plan (1997-98 to 2001-2002)

The Ninth Plan programmes of the Coconut Development Board were cleared by Government of India only in 2000-2001, which was the 4th year of the Plan year. During the first three years the development programmes implemented during the Eighth Plan were continued. During this period most of the ongoing programmes were continued with a few additions in component programmes and minor modifications in quantum of assistance. Introduction of private participation in programme implementation was a new initiative.

Establishment of the farm in Vegivada (Andhra Pradesh) was completed and preliminary works for starting one more farm at Pitapilly, Orissa were commenced during this period. Nearly 23 lakh quality planting materials were produced and distributed through the regional coconut nurseries, state department farms and DSP farms of the Board. An area of 27660 ha was newly covered under new planting programme and productivity improvement programme continued in 86,400 ha through removal of diseased, senile and unproductive palms and adoption of improved management practices including encouragement of multi-species cropping system in coconut holdings. The maintenance of 7 parasite breeding laboratories for multiplication and release of parasites to control the leaf eating caterpillar was also continued.

During this period a major cyclone hit the state of Andhra Pradesh, one of the major coconut growing states. Coupled with this unprecedented havoc, the fag end of the Plan witnessed the outbreak of eriophyid mite in Kerala and its fast spread to other states. The Board extended special financial assistance of Rs.12.225 crores to the Government of Andhra Pradesh for rehabilitation of coconut gardens. An amount of Rs.838.825 lakhs was also provided for control of mite infestation in Kerala, Karnataka and Tamil Nadu.

On account of these factors, the national production slipped from 13061 million nuts to 12962 million nuts by the end of the plan period. The area recorded a growth from 1.89 m. ha to 1.932 m. ha bringing an additional area of 42000 ha area under coconut cultivation.

The sponsored research study on "Coconut oil and incidence of coronary artery disease in Kerala" through Sree Chitra Tirunal Institute for Medical Sciences and Technology aroused great interest and curiosity among the public during this period. Research projects such as 'Improvements in the quality and packaging of tender coconut water', 'Development of suitable packaging system for desiccated coconut and copra', 'Development of snow-ball tender coconut machinery' were sponsored during this Plan through DFRL and CPCRI. India was the host country for organizing the 37th Cocotech meeting of APCC which provided a platform for projecting our positive attributes.

Tenth Five Year Plan (2002-03 to 2006-07)

During this Plan all the on-going programs of IX FYP were allowed to continue. The outlay provided was Rs.175 crores with a production target of 15,000 million nuts from a projected area of 1.90 million hectares. Against this funds received was Rs. 145 crores and expenditure incurred was Rs. 151.72 crores

The salient achievements during the Plan period included the commencement of implementation of the laying out of demonstration plots directly by the Board in a contiguous area for better visibility and impact. Although the approach was experimented only on a very small scale, the contiguous area approach has helped to create greater awareness and also serve the purpose of demonstration. A total extent of 9988 ha was brought under productivity improvement. The organic manure units scheme under which 50% financial assistance is provided subject to a ceiling of 20,000 per unit has helped to set up 2620 units with production capacity of 78600 tones of organic manure. The scheme was in great demand by coconut farmers in all the States. As the application of fertilizer in coconut holdings is very negligible, the promotion of organic manure units helps in enriching the soil and helps to increase productivity in a cost effective manner. The huge bio-mass available in coconut gardens also helps in the rapid production of organic manure.

The Area Expansion programme of the Board had slowed down significantly. As against 46,000 hectares in the 8th Plan and 27,660 hectares in the 9th Plan, only 9055 hectares was additionally brought under coconut. The farm at Belbari in Tripura was handed back to the Government of Tripura and the farm at Vellanikkara to the Kerala Agricultural University. Seven demonstration cum Seed Production Farms continued to function with the objective of demonstrating scientific coconut farming and serving as local source of quality planting material. During this plan period, 3.34 lakh seedlings were produced and distributed to farmers and inter cropping was intensified in all the farms.

Under the scheme of providing assistance to private nurseries 15 seed gardens and 66 small nurseries were established at a cost of Rs.257.045 lakhs during the first 4 years of the X Plan. This scheme supplements the efforts of the Departmental nurseries to meet the demand for quality planting materials. The scheme also provides direct employment to a large number of workers particularly women, who are engaged in the daily operations in the nursery / seed gardens. The scheme for establishment of the Regional Coconut nurseries has helped to produce 14.155 seedlings.

Hybrids and improved cultivars reduce the long pre-bearing period of coconut and ensure early returns to the coconut farmer. Inadequate availability of high yielding varieties/ cultivars/ hybrids continues to be a limiting factor for adoption. Therefore, Board provided financial assistance to various State Governments to produce TxD and as well as other hybrid seedlings. The Board assisted the States of Kerala, Tamil Nadu, Andhra Pradesh and Orissa for the production of 90.81 lakh hybrid seedlings which helped to extend the area under high yielding hybrids.

Technology Mission on Coconut which was launched towards the end of the 9th Plan received a big boost during the 10th Plan. 24 Integrated Processing Units with a capacity to process 94.6 million nuts per annum were established during the period. The efforts made to promote Tender Nut Water consumption have shown tangible results. Consumption of nuts for Tender Nut water had increased from 10% of the total production in 9th Plan to 15% in 10th Plan. Four new Tender coconut packaging units have been set up in different parts of the country. Exports of tender nut water to the Gulf and the United Kingdom have commenced on a limited scale. Quality improvement was received a boost with the setting up of 1758 modern copra driers with an infrastructure for processing 285 million nuts/ 41000 metric tones. A Quality Testing Laboratory which will serve as a referral lab for coconut and coconut products was established at the Technology Demonstration Centre, Vazhakulam.

The new initiatives in the field of product diversification and its promotion had helped to provide some cushion to the farmers from the fluctuations in the market price. The commercial introduction of various coconut products and by-products in the domestic market and their aggressive market promotion has had a definite influence on the purchasing behavior. The Indian coconut market experienced a gradual shift from coconut oil centered

market to diversified products market. A relatively stable domestic coconut market in the country during this period has resulted in the better management of gardens.

Eleventh Five Year Plan (2007-08 to 2011-12)

This FYP witnessed a higher allocation for CDB programmes. Many new programmes were launched and initiated in coconut sector. From the budget allocation of 145 crores in the previous plan the allocation of funds shot up to Rs. 395 crores. A Pilot project for Replanting and Rejuvenation in the districts of Thiruvananthapuram, Kollam and Thrissur districts of Kerala and A&N Islands was launched during the Plan period. Coconut Development Board was notified as the Export Promotion Council for all coconut products other than those made out of husk and coir. Other new programmes initiated on pilot basis were Coconut Palm Insurance scheme and Welfare scheme for Coconut Tree Climbers, There was a major shift in strategy in the approach of the Board in scheme implementation. From the pattern of implementing schemes through state departments, Board took a deviation by implementing directly so that more and direct access with the farming community could be established. Farmer participatory approach of the Board was lauded and applauded by all stakeholders.

Area expansion in non traditional belts started receiving attention. Under the scheme of the Board, additional area of 1.5 lakh ha was brought under new planting. Nearly 10 lakhs senile and root wilt affected disease advanced palms were removed by providing compensation under the Rejuvenation programme. More than 1.2 lakh ha was brought under improved scientific practices by reimbursing the cost of inputs. During the plan period nearly 80 crores would be the outflow of funds to the project areas.

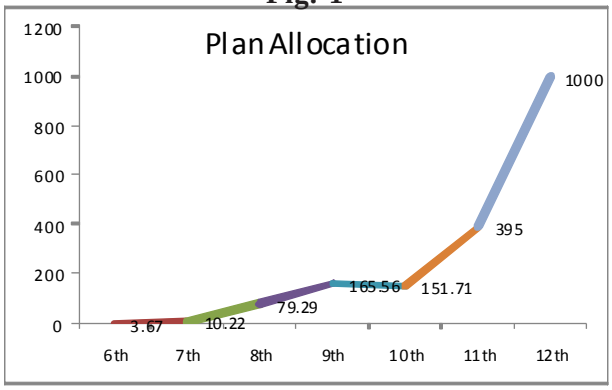
Demonstration plots were laid out in 42700 ha in farmer's field and 3553 organic manure units with annual total production capacity of more than 98010 tonnes established. Financial assistance was provided for production of 38.22 lakh quality planting materials through the departmental nurseries of various States. Nurseries attached to the farms produced 7.46 lakh seedlings including 44020 DxT hybrids. 24 Seed Gardens and 80Coconut Nurseries were established in private sector. Under Technology Mission 115 nos of new processing units were sanctioned with a capacity to process 32.762 lakhs nuts per day. Actions are on for establishing new DSP farms in Tamil Nadu, Tripura and Maharastra. If the concerned state governments alienate suitable land free of cost and the Government of India approves required staff for the purpose the desire would be fulfilled.

Formation of Coconut Producers Societies (CPS) with the objective of realizing the strength in uniting the scattered small and marginal coconut farmers and training programme on coconut tree climbing and other operations under the banner 'Friends of Coconut Tree' also were the new initiative of the Board in Eleventh Plan which were a revolutionary breakthrough in coconut sector. CPS and the next stages of Federations and Companies are expected to bring about forward and backward linkages which would result in better price realization to farmers, establishment of coconut based industrial units, boost in export, etc which altogether help in repositioning Indian coconut Industry in a more prestigious status in the world scenario.

Outflow of funds and significant milestones under the Board

The budget allocation for the Board for the last 3 years of the Sixth Five Year Plan was Rs.3.6 crores which had a 3 time increase in the Seventh Five Year Plan and a quantum jump in the Eighth and Ninth Plan Periods (**Fig.-1**). In coconut area and production too, corresponding growth was visible. The area under

Fig.-1



coconut has increased from 1.18 M ha to 1.89 M ha and the production from 6913M nuts to 15730 M nuts by the end of the 11th plan as could be seen in **Fig.-2 & 3**.

The price of coconut oil has increased by 544% over the past 30 years i.e., from Rs.1392 per MT in 1985 to Rs.9170 per MT in 2011. (**Fig.-4**).

Fig.-2

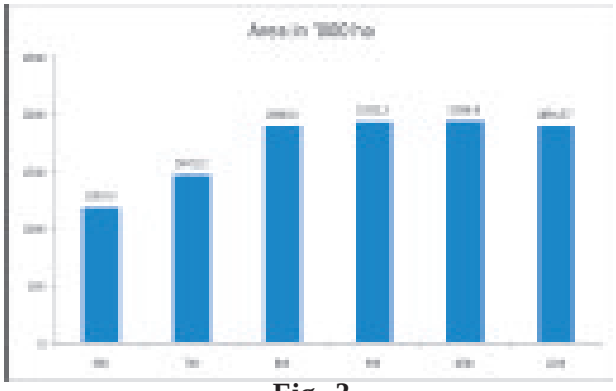


Fig.-3

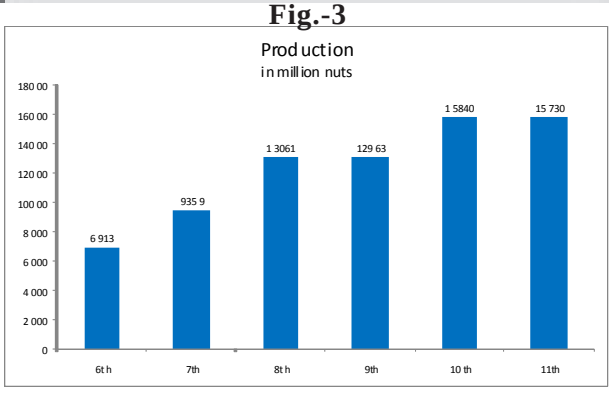
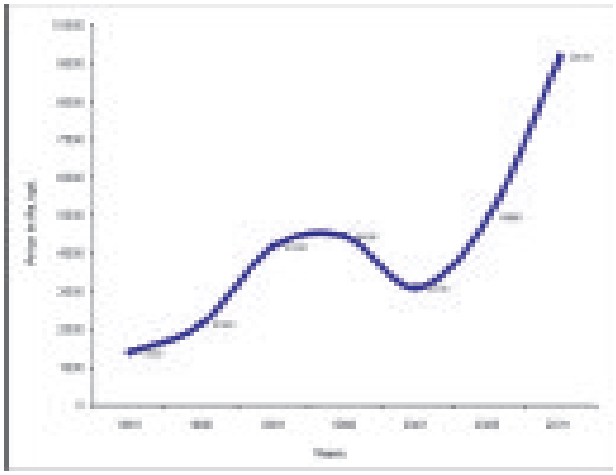


Fig. 4. Yearly average price of Coconut oil in Kerala



Additional area brought under coconut under Area Expansion Programme of the Board was 1.50 lakh ha. Coconut crop expanded from the traditional coastal belts to the non-traditional areas of the country. 232 coconut nurseries and 56 seed gardens were financed in private sector. Nearly 65 lakh quality seedlings were produced and distributed and 40,000 ha was brought under good genetic resource. Nearly 2 lakh ha. covered under productivity improvement programme. Replanting and rejuvenation programme implemented in 1.35 lakh ha. covering three districts in Kerala and Union Territory of Andaman and Nicobar Islands. Under Technology Mission on Coconut 354 projects under different categories were assisted and Rs.82 crores was released as subsidy. Coconut Development Board is notified as Export Promotion Council on 1-4-2009. So far 562 exporters of coconut and coconut products have registered with the Board. Several value added products like processed and packaged tendernut coconut water, spray dried coconut milk powder, virgin coconut oil, defatted coconut powder, coconut water based vinegar, coconut water and milk based beverages like pinacolada, coconut water based fruit juice, coconut honey from mature coconut, coconut whey proteins, automobile lubricant from coconut oil have been developed. Transfer of technology was accelerated. This was resulted in establishment of 136 Coconut Processing Units. Infrastructure facilities worth Rs.127.5 crores were developed with capacity of processing 900 million nuts per year. 12 activated carbon units with a capacity to produce 25800 MT per year have been established. 541Coconut Producers Societies (CPS) are formed. 3600 youths are trained under Friends of Coconut Trees (FoCT). Besides, immense additional employment opportunities were generated in rural areas. No doubt coconut industry is now in the path of revival.

Perceptive for XII Plan

Many consider coconut farming as a losing proposition. Low levels of productivity greatly affect the income level of farmers. Therefore new approaches are imperative to increase the productivity to a highest level. This is more important in the event of shrinking land, water and other resources. There is considerable variation in productivity of various states across and within the states.

Extension efforts are vital as the gap between research trials and farmers performance is substantial. Inadequate extension mechanism and bleak adoption of technologies continue to retard the potential productivity gains that could be achieved. The thrust areas are aiming at the inclusive growth of coconut industry through the integrated development. Considering the past and present scenario of coconut industry a holistic approach is needed for a better future. The broader areas of focus during the 12th Plan period are:

- Expansion of coconut cultivation in north, north-east and disturbed areas,
- Increasing production through productivity improvement, replanting /rejuvenation of old uneconomic plantations with high yielding varieties / hybrids and adoption of improved technologies.
- Extending Replanting and Rejuvenation scheme to other districts of Kerala and other states
- More emphasis on farmer participatory approach in the implementation of development programmes
- Sponsoring collaborative research for production of hybrid and other high yielding seedlings in association with Academic Institutions.
- Promoting tender coconut as a health drink in domestic and international markets.
- Encouraging export of edible and non-edible products
- Attaining international quality standards and cost competitiveness
- Promoting farmer oriented research programmes
- Establishing sound Market Intelligence Centres.
- Promoting Coconut product diversification and value addition
- Developing cost-effective technologies and innovative value added products
- Creating adequate expertise to unemployed youths in coconut tree climbing and management practices.
- Attaining international quality standards for coconut products and cost competitiveness.
- Initiating research on coconut in specific areas and establishment of an international coconut research centre under the Board.
- Formation of coconut producers societies which will lead to Federations and Companies.
- Making available more trained man power under 'Friends of Coconut Tree' thereby finding solution to the dearth of coconut harvestors.
- Promoting production of Neera.
- Encouraging organic farming in coconut

The areas of focus in the 12th Plan are explained and narrated in the next article and hence it is not attempted here.

Conclusion

Indian coconut industry poses a very bright future despite a few bottlenecks and issues confronting the industry. With increasing population, demand for coconut and coconut products will be on the increase and there is tremendous scope for export of coconut products. Tender coconut water is emerging as the health drink of the world posing great export potential. Availability of technology for packing the drink is an added advantage to cash in. More investment in coconut industry with the technical and financial support is needed to attract more entrepreneurs. Area expansion offers limited scope in most of the traditional belts; but vast potential exists in North-east and disturbed areas which will be tapped for the betterment of tribals. Lands in such areas, which are otherwise left vacant, will be new planted, intercropped and better faming system models developed, which in turn, will ensure better standard of living to the tribals and thereby ensure fair income to them. This will pave way for the overall improvement of the disturbed areas.

There is need to concentrate on rejuvenation and replanting of coconut gardens with high yielding planting material. Production of high yielding planting material is not adequate to cater to the need of the farmers. Therefore high yielding hybrid seedling production is envisaged in collaboration with academic Institutions having capability. It is felt imperative to address the low farm yields, unresolved disease conditions, and inefficient marketing system. Programmes to tackle these issues will be considered on top priority with modifications and refinement wherever necessary.

Product diversification requires focused attention to de link the copra-coconut oil nexus. This is needed to protect the farmers from vagaries of price fluctuation and frequent price decline. In the current era of growing awareness on organically produced products special attention emulated in the recent past has to be encouraged and strengthened. Farmer oriented research priorities have to be identified in all levels of crop production and management. Mechanization in cultivation and pre and post harvest technologies warrant special attention. Thus a comprehensive and holistic approach in the coconut development strategy for the 12th Plan will definitely help position our country as the world leader in production, processing, marketing and export. There is no boundary for the immense potential in coconut - sky is the limit.

*Deputy Director, CDB, Kochi-11

What's in store for coconut in 12th Plan

Deepthi Nair S*

Coconut is a horticultural crop with immense potential and a varied variety of uses. It is a crop of importance to the tradition, culture and heritage of the country and is depicted as a symbol of prosperity. Coconut provides food and livelihood security and employment opportunity to a major segment of the rural population in India. The crop has been a traditional small growers crop and hence development of the sector demands concerted efforts. It is in this context that the Government of India established the Board under the Coconut Development Board Act of Parliament, 1979. The Coconut Development Board thus came into existence in January 1981 under the administrative control of the Ministry of Agriculture, Government of India. The Board has been conceptualizing and implementing projects and schemes for the sustained development of the coconut sector and industry over the past thirty years, primarily concentrating on increasing production and productivity, value addition and product diversification. Thrusts were also given on technology development through sponsored research programmes, which has resulted in decreasing the dependence on copra and coconut oil and now the country is having many value added coconut products like desiccated coconut, coconut milk, coconut milk powder, coconut chips, virgin coconut oil, packed tender coconut water, shell charcoal, activated carbon etc.

The approach of the Government in 12th Plan is to focus on agricultural development through inclusive growth. The Board has also formulated programmes for implementation in the 12th Plan period with this concept in mind. The efforts of the Board is to dovetail its future activities in such a way that the over dependence on copra coconut oil nexus is minimized and more value added products including packaged tender coconut water is popularized in the domestic and international markets. Attempts will also be made to make available quality high yielding and early bearing variety of coconut seedlings to the farming community. Replanting and rejuvenation of old, senile and unproductive coconut gardens will be a priority area since the land for expanding the area under coconut has come to saturation, especially in traditional states. The focus on expanding the crop in the traditional belts will be shifted to non traditional and disturbed areas of the country. The major programmes conceptualized are enumerated below.

Productivity enhancement programmes:

Coconut Development Board plans to intensify its efforts for increasing production and productivity during 12th Plan period. The productivity of coconut varies diversely across the states. For instance the average productivity per palm is only around 42 nuts in the state of Kerala which has the highest area and production. The major problems for low productivity are increased number of senile and diseased palms, shortage of labour, poor management of gardens, wide fluctuations in price of coconut, copra and coconut oil etc. In this context, the Board will continue its efforts for increasing the productivity through the following programmes:

- Rejuvenation and replanting - This programme of the Board will be extended to other areas wherein cutting and removal of the senile and disease advanced palms will be undertaken followed by replanting with high yielding varieties. The adoption of proper crop production operations will also be facilitated through provision of inputs.
- Laying out of demonstration plots – Organisation of farmers into clusters and facilitating and enhancing the adoption of scientific practices among the cluster farmers will be extended to other areas which will indirectly contribute to

increase in productivity due to better management.

- Improving the genetic potential of coconut will help in improving productivity. The production of quality/ hybrid seedlings will be undertaken in the Demonstration cum Seed Production Farms as well as in the Farmers' Field linking with the Coconut Producers Society registered with the Board which will help to cater to the increasing demand for hybrid seedlings. It is also planned to supply coconut seedlings to farmers with the details of the parent stock , expected month of flowering, expected month of first harvest and expected average yield in order to ensure future productivity.

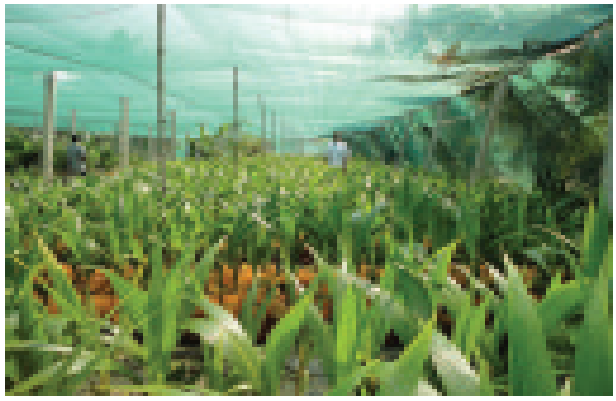
Expanding coconut cultivation to newer areas in the non traditional belts:

- Coconut is a crop which is cultivated mostly in the southern and coastal regions of India. The consumption of coconut occurs in the non coconut growing areas to a large extent. Keeping this in view, the Board is planning to extend its efforts to introduce coconut cultivation in non traditional belts and also in areas where climate is conducive for the cultivation of coconut. The potential identified areas are particularly in the disturbed areas of Chattisgarh, Jharkhand, Orissa, West Bengal and North-Eastern states like Assam, Tripura as well as in the coastal parts of Maharashtra and Gujarat. Additional areas can also be brought under coconut in the traditional states like Tamil Nadu, Karnataka, Andhra Pradesh except Kerala.
- Expansion of area under coconut with high quality hybrid/ dwarf seedlings is also the need of the hour. Promoting the cultivation of dwarf varieties will indirectly result in increased production of tender coconut which is also an important motto promoted by the Board.

Establishment of grass root level farmer organizations – Coconut Producers Societies - Moving together towards prosperity:

- The Board has been advocating the formation of Coconut Producer Societies by associating 40-100 coconut growers as members in a contiguous area with a consolidated minimum of 4000-5000 yielding trees under its operation area. The benefits of the farmers by formation of CPS may help to practice scientific technologies in production, plant protection, processing and marketing as well as to reduce the cost of cultivation through group activities and to ensure quality inputs at reasonable price and in time. The socio economic upliftment of the farmers is possible through productivity improvement, cost reduction, efficient collective marketing and processing and product diversification of coconuts. The Board has already initiated for formation of CPS in Kerala and this will be extended to other major Coconut growing states of the Country. It is planned to form 10000 CPS in the 12th Plan period. The CPS have to be provided with physical infrastructure for providing opportunities for value addition. CPS based planning of production and marketing will be undertaken by the farmers themselves which will result in moulding leaders among farmers to tackle their problems on their own
- 15-20 CPS will be integrated to form a Federation and the Federations will be integrated to form 20-25 Producer Companies over a period of 5 years. Federations of CPS can undertake small scale

Nursery of the DSP Farm, Mandya



A private nursery assisted by Board

Replanting and Rejuvenation Programme

processing of coconut whereas, the processing activities can be integrated at the level of the Producer Companies resulting in production of branded value added products from coconut. This model will help in accomplishing establishment of efficient forward and backward linkages. A coconut palm will have 8 harvests in a year. If the farmer can contribute an equity contribution of value of one coconut per harvest for a year, that amount pooled in by 20-25 producer companies will itself be sufficient to establish integrated coconut processing units. An equal contribution from the State/Central Governments will increase the capacity of the Producer Companies to take up more ventures. A farmer owned company catering to the demands of the global market and positioning their product in the world market will take the product directly from farm to the dining table.

Promotion of Innovative Value added Coconut Products:

The value addition of coconut will be promoted and more innovative value added products including packaged tender coconut water, desiccated coconut, coconut chips, coconut milk / milk powder, shell charcoal, activated carbon etc will be popularized in the domestic and international markets. Diversification of coconut byproducts and residual products are to be taken up during this Plan period under the Technology Mission on Coconut. Units will be provided support for initiation, adoption of technology and market promotion.

Development of New Innovative Technology on Coconut:

The Board will continue its efforts in developing technologies for management of pests and diseases, product diversification and value addition of coconut and mechanization of coconut farming. The Board proposes to develop new commercial and viable technologies on coconut through sponsored programmes with the CFTRI, CSIR and other research and educational institutes having the required infrastructure and capabilities.

Enhancement of Export of Coconut Products and bye-products:

The export of coconut and coconut products is increasing every year and has much prospects in the export market. The Board, being the Export Promotion Council for coconut and its products will continue its efforts to promote the export of the same

Value added Coconut products

and will undertake activities for enabling the exporters avail incentives/ assistance as per DGFT norms and will provide avenues for participating in the national and international exhibitions. Buyer seller meets will be organized to identify niche markets and suitably

FoCT training programme

place the products from coconut in the export market.

Friends of coconut tree (FOCT):

The Board will continue its efforts and intensify the training programme for the FOCT. This task force group will not only provide timely assistance in crop culture but will also aid in increasing the production through the scientific management of the gardens. Board also proposes to intensify the development of machineries in coconut farming in association with Government aided and self financing institutes in order to ease the labour involved in cultivation, plant protection and pre and post harvest operations.

Promotion of Neera production by CPS:

The Board will continue its efforts to take up with the concerned governments to review the policy of inclusion of unfermented juice/ inflorescence sap of coconut under the Abkari act. This will enable the farmers to realize maximum income from their produce and to make available a healthy non–alcoholic product to the public as well as development of much downstream value added products. The DFRL & CFTRI, Mysore have already developed the technology that can preserve Neera for a period of 3 days to six months. The low fat Neera can be utilized to make honey, powdered sweet toddy, sweets and ice creams. The respective state Government has to take suitable Akbari policy for establishing more such units in the country for generating more employment and income in the coconut sector. Once appropriate policy decisions are materialized, the Board plans to undertake production of Neera under the auspices of CPS.

Utilization of coconut wood:

Utilisation of coconut wood will be undertaken on a priority basis, especially in conjunction with the replanting and rejuvenation programmes. For the proper commercial utilization of these removed wood, processing industries need to be encouraged with financial support from the Board as well as from the concerned state Government. Hence the Board proposes to give more importance for the better utilization of coconut wood during the plan period in the country.

Establishment of kiosks for tender coconut:

With a view to popularize the consumption of tender coconut and highlight the nutritional attributes of tender coconut, Board has already ventured into establishing Kiosks for tender coconut which will be intensified in the 12th Plan. The kiosks will provide a hygienic atmosphere which will attract the consumers. The Board also plans to promote the sale of products like shakes, ice creams etc from coconut to attract the younger generation. The Board has plans to cover all the national and state highways with tender coconut parlours thereby providing the society with a natural healthy drink at the door step.

Exposure visits of farmers within and outside the country:

Adoption of technology is faster when the results are directly felt. This principle of Seeing is Believing forms the base for the Plan of the Board to arrange for exposure visits of progressive farmers to other states and countries where coconut is cultivated. The technology thus conceived by a coconut farmer will be easily disseminated among the fellow farmers owing to the mutual feel.

Propaganda for the health attributes of coconut:

The progressive world that denounced coconut oil has now come back the reverse way to speak

Intercropped coconut gardens

volumes in favour of coconut oil that it is good for anything from Alzheimer, dementia etc to normal viral diseases. The Board has always taken efforts to promote the goodness of coconut be it tender coconut water or virgin coconut oil or coconut ready to eat convenience foods. The products from coconut are not only nutritionally superior to other snack items in the market but also do not contain additives. The Board will continue its intensive campaign to promote coconut products and widen its consumer base.

Coconut is termed the Tree of Abundance. Neglect of the crop during recent years and substitution effects with newer entrants in the field has resulted in the crop being sidelined. The 12th Plan will bring back the abundance that the crop lost in recent times. It will witness a resurgence in the coconut sector with increased production and productivity, increased cultivation of hybrid/dwarf varieties, carbonated soft drinks being replaced by tender coconut water, a strengthened market position for Neera, post graduates from IIMs vying for getting placement in the Producer Companies of the CPS, highways of the country with tender coconut parlours, branded coconut products of farmer companies ruling the export and domestic market and many more to follow thus putting back coconut in its throne as the undeniable "Kalpavriksha".

Marketing Officer, CDB, Kochi - 11

Coconut oil touted as alzheimer's remedy

An estimated 5.4 million people in the U.S. have been diagnosed with Alzheimer's disease and that number is expected to increase exponentially as baby boomer generation enters their golden years. But for some people, coconut oil has proven to slow the progression of Alzheimer's and may even prevent it. Steve Newport's Alzheimer's has slowed considerably. Some of his symptoms have even reversed, thanks to the unlikely treatment prescribed by his wife, Dr. Mary Newport, a physician who runs a neonatology ward at a Tampa, Fla., hospital. Dr. Newport became determined to help her husband after neurology tests showed her husband was entering the severe stages of Alzheimer's disease.

Alzheimer's doesn't just happen overnight. It's a long, slow process that takes at least 10 or 20 years to develop before symptoms start to show. Recent research has revealed that Alzheimer's is a form of diabetes caused by insulin resistance in the brain. It is now referred to as type 3 diabetes. Insulin resistance prevents brain cells from accepting glucose, their primary fuel. Without it, the brain cells eventually die. But there is an alternative fuel - ketones, which brain cells easily accept. Ketones are metabolized in the liver after eating medium chain triglycerides, found in coconut oil. Dr. Newport added coconut oil to Steve's diet. He showed almost immediate improvement. Over the course of a year Steve Newport has gone from being on the verge of severe Alzheimer's to now being diagnosed as a mild case and has regained much of the cognitive skills and memory he had once lost.

Some people are afraid to eat coconut oil because they think it's bad for the heart. "But it's actually very healthy," says Dr. Beverly Teter, a lipid biochemist researcher at the University of Maryland and an expert in dietary fat. "Years ago, coconut oil was criticized for raising cholesterol. But scientists have since learned there are two kinds of cholesterol - LDL, the bad kind, and HDL, which is very good for you. HDL, the good cholesterol, is the kind that coconut oil raises. So they put out the message that it increased serum cholesterol," Teter explains. "But the truth of the matter is, it was helping the profile of the serum cholesterol. That never has been corrected in the public press, and I think that's the reason people have misconceptions about it."

Teter said the way it helps the brains of Alzheimer's patients can even be extended to people with Parkinson's disease, ALS, epilepsy, dementia, even schizophrenia and autism. "Coconut oil also kills bacteria, making it a natural antibiotic without the negative side effects," Teter says. "Because of that, it also helps defend against viruses like HIV and herpes. The coconut oil tends to keep the bacteria down so that if you're assaulted with a virus, your immune system can concentrate on the virus. It doesn't have to concentrate on 27 other bacteria that day."

Courtesy: CBN News

Approaches for 12th plan for reviving coconut cultivation in Kerala

R Jnanadevan*

Kerala is the leading coconut producer in the country with an annual production of 5803 million nuts from an area of 7.79 lakh hectare. Though coconut production in the country has increased from 12,678 million nuts during the year 2005-06 to15370 million nuts in 2008-09, with 3.5% compound growth rate, there is a declining trend in area and production of coconut in Kerala. The share of Kerala in the production of copra is also in a declining trend. About 15 years ago 90% of the copra produced in the country was from Kerala, but now it has declined to 46%. The area under coconut is also shrinking continuously. The area under coconut in Kerala in 2005 -06 was 8.98 lakh hectare, which has declined to 7.79 lakh hectare in 2009-10.Similarly production in the state has come down to 5667 million nuts in 2009-10 from 6326 million nuts in 2005-06 with a negative growth rate of -2.6%. There is an urgent need to adopt new approaches for increasing the production and productivity of coconut on sustainable basis to meet the increasing demand of the country.

Area, production and growth rate of coconut in Kerala

Year	Area ('000'ha)	Production (million nuts)
2005-2006	898	6326
2006-2007	873	6054
2007-2008	819	5641
2008-2009	788	5802
2009-2010	779	5667
Average growth rate	-3.5%	-2.6%

Constraints in increasing the production and productivity of coconut in Kerala

Homestead nature of cultivation and small size of the holdings is the major constraint for development of coconut in the state. More than 95 percent of holdings are less than one hectare in size and there is no homestead devoid of coconut palm. High density of planting and large number of crops in the small holdings with coconut contribute to the low productivity of palms. Low nutrient status of soil, competition for resources including sunlight, nutrients and water is a common situation in most of the garden due to continuous cultivation of this crop.

Another major constraint is the shortage of labour and high labour wages. Hence majority of farmers are not adopting scientific management practices. The potential of coconut farm to provide some yield without any management inputs enable the farmers to cultivate the farm under neglected conditions. Though organic manure application is practiced by majority of farmers, the application of inorganic fertilizers to the recommended level is practiced only by a small group of farmers. Coconut is predominantly a rainfed crop, and a prolonged drought during summer months especially in the northern districts adversely affect the productivity of palms.

Root wilt disease prevalent continuously in 8 districts and sporadically in other districts of Kerala is a debilitating disease affecting the productivity of farms. Red Palm weevil, eriophyid mite and some other are pests which are wide spread throughout the State causing decline in productivity of palms. To achieve a sustainable high production in coconut gardens of Kerala, adoption of integrated nutrient management, integrated pest and disease management, soil and water conservation and cropping farming system are the keys to be followed. Besides fall in price prevailed in the last few years, shortage of labour and high wages had also affected the crop management in the sector.

Therefore changes in approach and strategies would be needed to meet theses threats and provide better future for coconut farmers. The demand for coconut for household and industrial purposes is expected to increase. The consumption of coconut oil is also increasing for edible and toiletry purpose. Consumption of tender coconut for drinking is also on the increase due to the awareness created among public by the Board through aggressive publicity on coconut as a healthy food and drink. Several coconut

processing units have been set up in private and co operative sector for production of filtered branded coconut oil, VCO. The demand for coconut at the end of XII plan will be increasing. Besides, coconut is attaining attention in export sectors also. To maintain the present level of export, the existing production is not sufficient. So the production projection for 12th Plan should take into account processing capacity of units set up in Kerala, exportable surplus and surpluses for internal consumption. Therefore revival of coconut farming in Kerala is needed to overcome the above constraints and to increase the production and productivity of coconut in Kerala. The new approaches suggested for 12th Plan for revival of coconut farming are:

Replanting and Rejuvenation of Coconut Gardens

The massive programme for rejuvenation and replanting of coconut gardens sanctioned by the Government of India on a pilot scale in 3 districts of Kerala should be continued in root wilt affected southern districts of the state. Due to the debilitating

Kalpasree

Malayan Green Dwarf

nature of the disease, absence of plant protection measurers, removal of disease advanced uneconomic palms and planting good planting material viz. Kalparaksha (MGD), Kalpasankara (CGDxWCT), Kalpasaree recommended by CPCRI for root wilt affected area are important for the management of the disease. Due to close planting by farmers in coconut household the number of root wilt disease advanced palms to be removed per ha. will vary from garden to garden. Hence in order to motivate the farmers to remove all the disease advanced palms from the project area, to reduce the source of inoculation to maximum extent possible and to prevent the intensity of the spread of root wilt disease, the compensation for cutting and removal of disease advanced palms should be provided to all palms removed from unit holding irrespective of size of holdings in the XII plan.

Production and distribution of high yielding hybrids and selected ecotypes

In order to promote replanting/ under planting with

Coconut Nursery

quality seedlings, the nursery programmes in both private and public sector may be linked with the replanting and fresh planting programmes in XII Plan to motivate the farmers for planting with quality seedlings. The nursery programme should be targeted to produce and supply only high yielding hybrids or selected ecotypes which are suitable for cultivation under different agro climatic conditions. Planting of dwarf varieties in new locations as well as existing gardens wherever space is available should be encouraged for ensuring regular supply of tender nuts. Several exotic varieties viz., Malayan Green Dwarf, Philippine Ordinary, Jawa Tall and Fiji Tall are found best planting materials suitable for cultivation in our country. Commercial production of planting materials of these varieties is limited due to the non availability of sufficient mother palms. Hence the import of seedlings from abroad may be introduced.

Adoption of organic farming

The low availability of organic manure like farm yard manure and its bulky nature limit the use of this viable source of nutrient. This calls for the use of other organic manures like vermicompost, compost, coirpith compost etc. Recycling of organic residues available in coconut garden not only from coconut and intercrops but also from nitrogen fixing legumes which could be grown in basins help to increase the soil nutrient status, especially the nitrogen and phosphorus availability in the soil. The utilization of effective bio inoculants of beneficial microbes along with organic manures help to improve the availability of nutrients and biological control of soil borne pests and diseases. Coir pith and tender coconut waste which is accumulated as a problematic waste can be converted in to organic manures using the technology developed by Coir Board. Good Agricultural Practices (GAP) for coconut is to be promoted. There is a need to encourage farmers to adopt GAP in coconut which sustains economically viable productivity and better price for their produce.

Coconut based cropping/farming system

Since the land holdings of coconut farmers are very small, the only way for enhancing on farm income is by promoting small scale coconut based enterprises. Mushroom cultivation using coconut waste, copra making, coconut based homemade products, group marketing of tender coconut and coconut based food products are some of the potential enterprises. Another way for enhancing on-farm income is to integrate coconut rejuvenation progamme with other income and employment generating activities. Inter/ mixture cropping with high value crops like cocoa, nut mug, pepper, tuber crops and vegetables. Livestock raring, homestead fisheries, floricultural crops, pollination support through bee keeping etc. are to be promoted. Financial assistance extended under NHM can be made available to the farmers through the Board on project basis.

Coconut intercropping with nutmeg

Cost reduction measurers

The cost of production has increased considerably in coconut cultivation due to the scarcity of skilled labourers and rise in the cost of fertilizers. The rapid and constant rise in the land value has reduced the return on investment per acre from its use in agriculture.

Manures and fertilizers alone are the important input which accounts for 20-30% of the total cost of

production. Fertilizer application should be based on soil/foliar analysis and applied at the right time during the end or the beginning of heavy rains. Due to the high labour cost involved in this operation, this can be reduced to once in a year. The CPCRI has recommended standard NPK+Mg and other micro nutrients like Boron, taking into account the different agro climatic conditions. Labour intensive method of application by opening circular basins around the tree in every year may be replaced with equally effective method of application of the fertilizer in a circle about 1.75 meter radius around the palm, lightly digging in and mulching with husk, coconut leaves and fertilizer application associated with weeding will reduce the cost and green matter will be available as a mulch. Carrying out the management practices in farmer groups also help to reduce the cost of production.

Labour scarcity in coconut cultivation sector

In Kerala, resident labour is reducing day by day. Initiatives taken by the Board in conducting massive training programme in the last year of XI plan called "Friends of Coconut tree "is found successful to meet the demand of skilled labour to a certain extent. This programme should be continued in the XII plan also. However, the strenuous nature of the job and the social stigma prevent the educated young generation entering into labour market. Under Kerala's social system, this paid manual labour is considered as a socially inferior occupation. Hence there is every chance to discontinue this occupation by the trainees when they get another job with better social status. Now most of works are handled by labourers from other states like Orissa, Tamil Nadu, and West Bengal. These labourers from the other states also may be included in the programmes so that they will stick on to this better paid occupation.

FoCT Training Programme

Promotion of integrated disease management

Leaf rot is a major disease affecting the coconut garden in Kerala especially in root wilt affected areas. Massive plant protection campaign in cluster basis need to be taken up at the severe stages of its inference at least twice in a year to check the disease and enhance the productivity of root wilt affected palms. Bud rot is another lethal disease affecting the coconut garden in hilly tracts. Timely adoption of plant protection measures at the peak stage of its infestation in endemic area is essential to protect palms. Crop surveillance and timely forecast of disease incidence should be carried out by the research development agencies in endemic areas.

Introduction of contract farming

The main critical component noticed in promoting coconut production is guaranteed procurement and remunerative price for coconut. The growth of production must be supplemented with guaranteed procurement and remunerative price for the farmers produce. It is also quite evident that seasonal variation in prices of coconut occurs. It is suggested that introduction of contract farming system in coconut with active involvement of processing industries like Marico, KPL, Vital Agro, etc may be adopted. The industries may sign an MOU with farmers/ coconut/ Coconut Producers Societies and they should procure coconut / copra from them directly at the market rate/ minimum support price.

Conclusion

Increasing productivity of coconut in Kerala, is one of the main strategies for XII Plan for enhancing coconut production in the country to meet the increasing demand. The technologies developed by research viz; new cultivars, production systems, integrated pest and disease management require wider adoption in the field. There is a need to disseminate the technologies to help the coconut farmers in terms of realization of higher returns. Further, large tracts of old, senile and root (wilt) disease advanced palms need to be replaced. Increasing the productivity of coconut in Kerala will have strong impact in the coconut development of the country.

** Asst. Director (on deputation), CDB, Kochi-11*

The success story of a technocrat turned entrepreneur

Mr. Keshava Ram (29) is the Managing Director of Cocoguru Coconut India Pvt Ltd. having its registered office at Srirama Building, Yelmudi, Puttur, Dakshina Kannada. He is a BE holder in Computer Science and MBA holder in Marketing, having 4 years of experience in software industry. He runs a modern coconut oil milling unit with a capacity to produce 40 MT oil per day. He talks to Coconut Development Board team on his new fully automated coconut oil manufacturing unit.

The first question comes in to mind is being a technocrat, what attracted you to this coconut based industry?

After taking MBA in 2009, I was free for 3 months before joining my new job. Meanwhile I thought of applying my learned skills in MBA to improve our family owned Coconut Oil Business (M/s Sri Rama Industries, Puttur) started by my father. I went to Bangalore to explore the market potential and sell coconut oil. I came to know about the initiatives taken by the Coconut Development Board for encouraging coconut based industry. I was inspired by the fact that a government department is so cooperative and works sincerely for the development of the coconut sector. I wanted to have my own business. But that day I realised that it was a great opportunity to stick on to my family business and develop it to make various coconut based products.

How did you get started?

I did a market research in Bangalore and local market at Puttur. I talked to various consumers, retailers and wholesalers to know their requirements and view points. It was an exploratory research than a data and statistics collection. It was really helpful in understanding the requirements, as I was new to this industry. Based on the gathered information, I went about developing the business.

Branding was the first thing to do i.e. enabling consumers to prefer our products and differentiate it against others. It was very clear from the beginning

that the business is going to be in Ccoconut industry. So we named our brand as Cocoguru™ as we wanted to be experts in coconut processing. For that we applied for Trademark registration, acquired domain name cocoguru.com, got facebook and twitter accounts.

The second thing was packaging. The products were packed in small consumer packs and sold with the brand name Cocoguru™. An automatic packaging system was setup to pack the coconut oil in pouches, bottles and tins. An oil vending machine was installed at the retail counter for dispensing loose oil to consumers. Under Technology Mission on Coconut (TMOC) programme of Coconut Development Board, back ended subsidy assistance was availed for modernising Srirama Industries.

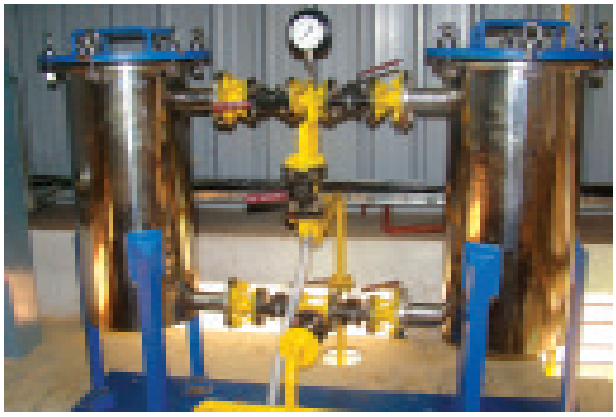
The project helped in spreading the brand awareness and increased demand for our products. In order to cater to the increasing demand we decided to setup a new coconut oil mill.

Your new company got incorporated on 2nd September, on the World Coconut Day. Was it planned or was it a coincidence?

The earlier firm was a proprietorship concern with my father Mr. Shivashankar Bhat as proprietor. In order to grow big, we had to register a company and the company Cocoguru Coconut Industries Private Limited was incorporated on 2nd September 2010, on the World Coconut Day. For a company focusing on developing coconut-based products, this is a a very important day.

Can you brief on your new project

The project is to setup a new unit for manufacturing pure edible coconut oil. Since it was a new unit, I had



a choice to adapt the most efficient process, install advanced machineries, follow the prevailing industrial standards and take the industry further. The unit has an installed capacity of 15 tons of copra crushing per day, expandable to 40 tons per day. It is setup as per the ISO 22000 standards for Food Safety and Hygiene. Entire operation is mechanized/automated. Copra is roasted/cooked before crushing. IBR approved steam boiler is installed for cooking copra. Oil is packed in small consumer packs using an automated packaging system. Products are marketed as edible oil with brand Cocoguru™ targeting the coastal Karnataka consumers.

Have you faced any problems while establishing the unit?

For starting this unit, we had to obtain about 25 licenses. Getting each license was a stressful task as it involved corruption, harassment and red-tapism from most of the departments. Information about each license is also not easily available.

Failure rate is high in the edible oil industry in India because of the inconsistent availability of raw materials and rapid fluctuations in prices. Consumers are highly price sensitive about oil purchase too. Hence the industry is mostly fragmented, unorganized, resort to adulteration and tax evasion. So, most banks have blacklisted edible oil sector when it comes to financing. Still Karnataka Bank financed our project considering our track record and promoters' background though at a high interest rate after a long delay.

Oil milling sector unlike solvent extraction and refinery doesn't have many skilled consultants or technologists who understand the end to end process. The machine manufacturers who offer turn-key projects are too expensive for any entrepreneur. So, I studied the theory of various unit operations, visited other oil mills in Kerala and Kangeyam to study the process, and met machinery suppliers from Coimbatore, Mumbai and Ludhiana to find out the latest machines. As a first timer, I took a few wrong decisions and few vendors supplied defective products.

What are your innovations in the manufacturing process?

We dry small copra pieces instead of full copra, because small pieces expose more surface area for heat absorption and moisture escape during drying. Copra is roasted/cooked on a steam-jacketed vessel. This helps in faster recovery of oil during crushing, better filtering, removes moisture thus increasing the shelf life and gives a better taste and aroma to the final product. We use a Vibro-Separator to separate out heavier sediments and reduce the load on further filtering stages. We use a leaf filter that is superior to traditional filter press. For final filtering, oil is passed through a polish filter to give out clear oil. Oil is pumped using Gear Pump and Screw pump that are more suitable to pump viscous liquids at high pressure compared to traditionally used Plunger Pumps and Centrifugal pumps. Like advanced industries, we have installed a control panel for controlling all the drives at one place, run the cables on a cable tray for easy connection and maintenance, used variable speed drives for controlling process speed and saving power.

Your present crushing capacity is 15 tons of copra per day, How much more can it accommodate?

It can have a capacity of up to 40 tons of copra crushing per day. For that we just need to install two more expellers and add a drier. Rest of the setup is already done by planning for higher capacity. Planning is essential in the initial stage itself considering the future needs. We have taken this decision because we like to think big and be optimistic about the future.

What is your plan for maintaining quality standards for your product as well as for the unit?

We have setup our unit as per the ISO 22000: HACCP Food Safety Management System guidelines. We are now working on getting the certificate. ISO standards are applicable for the whole process and supply chain while ISI and AGMARK standards are only for the final product. We are using ISO not just as a brand differentiator but when sincerely implemented as an important management tool for organizing and improving the process. ISO 22000 also incorporates many principles of ISO 9000 for Quality Management and ISO 14000 for Environment Management.

How do you prepare to position your product, as an edible oil or toiletry/ cosmetic category?

We market Cocoguru™ Coconut Oil as premium edible oil, though it can very well be used as hair oil. We believe the value of coconut is best realised when consumed as food than when applied externally. Marketing coconut oil as edible oil is quite a challenge because the majority of consumers believe in the myth that coconut oil is not good for their heart. Edible oils are extremely price sensitive and brands are forced to keep the prices competitive. The market is also quite small and restricted to only coastal Karnataka, Kerala and few parts of Tamil Nadu. Pouches below 200 grams though used for edible purpose are taxed at 14% as though it is meant for cosmetic use.

How do you plan to market and distribute the products?

Cocoguru™ Coconut Oil is marketed as edible oil to coastal Karnataka households in small consumer packs like pouches and pet bottles. In nearby towns we distribute it by our own vehicle and with our own salesman to each retailer and wholesaler directly. Every day we cover a different place along a route/ line, the same is repeated every week. We have appointed distributors at far off places. Excess oil will be sold to bulk buyers in tankers. Oil cake is distributed locally in smaller quantities to farmers as cattle feed. Larger quantities are sold in bulk to solvent extractors and animal feed manufacturers.

Do you have any plans for Exports?

Yes, we have plans for exports. We got the import/ export license. Importers demand higher quality and hygienically prepared food. So, we have setup the plant as per the ISO 22000 specifications. We are present online with our website and a member of various online B2B trade directories likes indiamart.com, tradeindia.com and alibaba.com, so that importers can easily find us. The demand for virgin coconut oil exports is increasing and we will introduce it in a year's time.

According to your observations what are the major uses of coconut oil at present apart from its edible use in Kerala and coastal Karnataka?

Most Ayurvedic preparations use coconut oil as its base mainly because skin adsorbs it quickly. Premium category toilet soaps are made out of industrial grade coconut oil. Value added and perfumed hair oils use coconut oil because of its hair nourishment properties. Oil pulling is an excellent practice for improving oral health. Hindus use coconut oil for lighting lamps to God.

Coconut Oil demand has been threatened by imports of cheaper substitute oils and negative propaganda linking it with cholesterol and health hazards. Any comments?

Indian Government has allowed imports of edible oils like palm oil, soybean oil and sun flower oil without import duty. This was done in order to increase the supply of edible oil in the country and reduce the price that a household pays for this essential item. But at the same time the state taxes have been imposed and increased, putting the domestic edible oil industry under disadvantage in a highly price sensitive sector. Consumers demand unadulterated, branded products of better quality, conveniently packed and easily available. Palm oil may be a substitute for coconut oil for edible use but there are no easy substitutes for other uses of coconut oil and hence the demand will remain.

Those countries that have created the negative propaganda on coconut oil are the ones who have

realized the benefits and are demanding it. People from same countries are suffering from high level of obesity and health problems. Virgin coconut oil is now considered as the healthiest oil of all.

Whether the opening of the domestic market for global players and subsequent integration of the domestic market have any impact on coconut oil market?

Yes, there will be short-term impact on coconut oil market because of currency rate fluctuations, production levels of oil in India and other countries, change in petroleum prices and transportation costs, imposition of duties and taxes. But coconut and coconut oil is an economic resource that is of limited supply and has its own use and the demand is growing. So it will continue to have better prices. Opening up of the domestic market will increase competition, which is good, as it will keep the domestic industries on the toes, improve efficiency and quality. The inefficient ones will be eliminated from the market and will move the whole industry forward. Better choices would be available for the consumers.

Have you approached any organization/ government agencies for any assistance?

Yes, I had approached Ministry of Food Processing Industries, Small Farmers Agri-Business Consortium, Ministry of Horticulture and Karnataka's District Industries Centre apart from Coconut Development Board.

Manpower is always a problem in such industries. What solutions do you have for this?

Getting skilled manpower is always a problem. We address these problems by getting people fresh out of college and train them on the job. They are moulded into the company culture and deliver good results later. For machine operation, we bring operators from oil mill centres like Challakere and Kangeyam for a short period. They train our operators and they learn on the job. We simplify our business processes, use computers and technology extensively, automate the manufacturing process and lesser people are sufficient for a given volume of business. Once the candidate joins the job, he is respected, we give him good facilities, working environment, freedom and opportunity to learn new skills, so that he stick on to us.

How about the raw material availability in your area?

Coastal Karnataka just like Kerala is under the coconut belt where coconut trees grow naturally. Though majority of farmers grow cash crops like arecanut and rubber, coconut is still a part of their cultivation. For consumption there aren't many processing units and hence copra is traded to other districts and states. Copra is mostly available during drier months from December to May and less during rainy seasons. Tiptur is a big copra centre and is just about 200 kilometers from Puttur. Kangayam, which is the biggest copra centre which has peak season during our lean season. Suppliers are always willing to supply to you if you pay them promptly, buy from them regularly and maintain good relations.

As a young technocrat turned entrepreneur how do you visualize your growth trajectory in the next 5-10 years?

My immediate goal is to stabilize the operations of this newly setup unit and get ISO 22000 certification. In the coming years, as part of the vision to 'spread the benefits of coconut to people', I plan to introduce other value added products from coconut like virgin coconut oil, desiccated coconut, coconut milk, cinegar and so on. My idea is to establish an integrated coconut processing industry where all the parts of the coconut are used. At the same time we look to work closely with the farmers to enabling them to get maximum value for their produce. As a technocrat, technology will be used extensively.

How do you assess the services of Coconut Development Board?

I thank and admire the Coconut Development Board for the various initiatives they take for the development of coconut sector in the country. They have encouraged the coconut farmers and industries with financial assistance, technology know-how. brought the grass-root innovations to the market, enlightened people about the health benefits of coconut and the benefits of coconut farming. I would like to say again that Coconut Development Board has inspired me to get into this industry and grow further.

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Interviewed by Dr. K Muralidharan, Director & Smt. Jayashree.A, Senior Technical Officer, CDB, Kochi-11

A man with exquisite skills in coconut shell carving

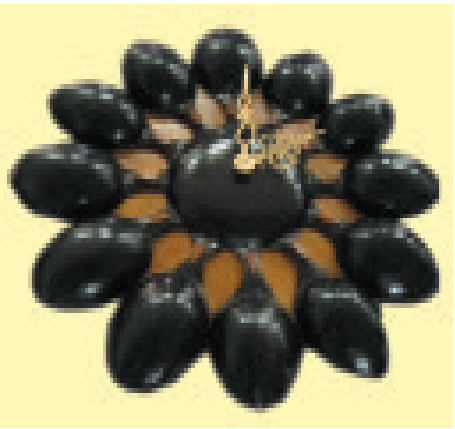
Mini Mathew*

Prof. Madhusudhanan with his molecular model on Co_2 carved on coconut shell.

Prof.Madhusudhananan, a retired teacher and Head, Department of Chemistry, Maliankara College, Ernakulam gives equal importance to two professions in his career-teaching and craftsmanship. Now he is working as head of the Department of Chemistry in Jawaharlal College of Engineering Technology, Ottappalam, Palakkad. Out of his sheer interest in the field he is into the art of carving and engraving on coconut shell/wood to convert into unimaginable artistic designs. The display of handicraft exhibition exclusively based on his work, which was organized at Sacred Heart College, Thevara, Kochi, Kerala on 13th January 2012 conveys a particular message to the viewers. All those creative works are not usual curios like spoons,forks, cups, etc; but are items of peculiar shape.

He develop all his artifacts with a mysticism, vision and passion. According to him it is simple to start the craftwork with hacksaw blade. At the moment of heating process, the shell starts to stretch based on the tensile strength and using this process he develops items of different shapes viz, giraffe, snakes, mirror with stand, flower pot with flower, husk based crafts viz lion's face, jackal's face, bird's nest etc. He knows the particular temperature at which the shell gets stretched to give various shapes. "Now he is planning to take patent for the process".

He has developed certain curios too. 'Natarajavigraham', on 'Sahasrarapadmam' as per hindu mythology, 'baptism of Jesus Christ' depicting happiest moment in Jesus' life', 'alarm clock' made out of shell, 'India Today'- depicting gap between new generation and real Gandhism, scientific models on carbon monoxide & carbon dioxide and symmetric and asymmetric characteristics in chemistry wonderfully carved on coconut shells are some of the showpeices items developed by him. A hidden scientific truth lies behind the item 'measurement scale' made out of coconut shell. He says, "ordinary scales never show exact measurement because of the scientific fact that when temperature varies, the linear expansion of plastic scales also varies. In the case of coconut shell based scale the linear expansion is zero and it shows exact measurement".



According to him 'Nataraja-vigraham', on 'Sahasrarapadmam' is the best show piece among his crafts. He took more than four and a half years to fulfil his dream which explains the method of attaining utmost knowledge/ Nirvana that ends up with the blessed moment of entering into the heavenly body. Natarajavigraham stands on 'Sahasrarapadmam' which consists of one corolla of lotus having 1000 numbers of petals. All these petals have been made out of coconut shell. At the moment of blooming, that much knowledge (thousand numbers) also blooms from the brain of Maharshis. The spikelet of flower is considered as spinal cord of human body which originates from the bottom abdominal portion (word- 'kundalini' as per hindu mythology)

The theme of his creatives during last year was "Mother and Child" as inspired from the emblem of Amrita TV. Based on it he carved models of mother and child of human being, giraffe, camel, dolphins etc. He also did some works using midrib of coconut leaves. The name board of his wife, Dr. Hemalatha is artistically woven using midrib and shell.

He is a special award winner of the Coconut Development Board (1996) for the Best craftsman. He initiated his works in 1990 when he made an agarbathi cum candle stand in the pooja room with a tray for his wife Dr. Hemalatha. He was inspired to this spectacular field when an American couple approached him for toys of bio-degradable and eco-friendly nature. Now he own hundreds of such pieces and wishes to showcase the same in good platforms. He is also planning to start a training centre with the financial and technical support of government institutions like Coconut Development Board.

For more details contact: Prof. Madhusudhanan, Devakisadanam, Club Lane, Ottapalam, Email: anudurgavmh@gmail.com, Mob: 9495486324.

** Publicity Officer, CDB, Kochi - 11.*

Sacred war against a sturdy beetle

G.S.Unnikrishnan Nair*

The Rhinoceros beetle, *Oryctes rhinoceros*, has emerged as a serious pest of coconut and oil palm. Credited as the strongest creature on earth in proportion to its body weight, control of this beetle is not an easy affair. But through integrated pest management a coastal panchayath in Kerala has succeeded in the sacred war against this pest without the use of chemical pesticides.

Edava is a coastal panchayath in Varkala Block area of Thiruvananthapuram District in Kerala.Majority of farmers have coconut plantations. Earlier farmers used to adopt organic farming practices. According to Rasheeda, 74 year farm woman, clay collected from nearby back water, cow dung, fish waste and prawn waste were used to manure the palms twice a year. Prior to summer months, sand, coir pith and salt were also applied.

The palm used to give good yield and the size of nut and oil content was excellent. But later on, the usage of chemical fertilizers reduced the use of organic manures. An increase in yield was noticed initially, but later on the soil became less fertile. Palms lost their sustainability in yield and the pest and disease incidence became common. Rhinoceros beetle became a major threat.

Being a coastal area near to ocean and backwaters, phytosanitation was a problem here. This gave ample chance for the rhinoceros beetle to breed and multiply in large numbers. Rhinoceros beetle, in its adult stage, bores into un-opened fronds and spathes of coconut. The attacked frond when fully opened shows characteristic triangular cuts. Infestation on spathe often destroys the inflorescence, and thus prevents production of nuts. The beetle breeds on decaying organic debris, farmyard manure, dead coconut stumps, logs and compost. Rhinoceros beetle has a lifespan of about 90 days and it attacks all stage of the palm right from seedling stage to adult palm, causing heavy loss to farmers. Attack in young seedlings results in stunted growth and delayed flowering. Body of the beetle is covered by thick exoskeleton making the control further difficult.

"Farmers used to apply a mixture of sand, salt and charcoal on tree axils to control rhinoceros beetle. Another method was hooking and killing the beetles using metal hooks. Both these measures were not effective in bringing down the beetle population. Due to shortage of skilled labourers for even harvesting coconut, this kind of control became impractical also. Other prophylactic measures too became unpractical. So the villagers thought of an integrated less labor intensive option." –says Thejasi Bhai, Agricultural Officer, Edava.

Thus, with the technical support of CPCRI-Kayamkulam; KrishiBhavan Edava organized farmers for the sacred war. A three dimensional strategy was used for controlling the beetle.Oruveran (*Clerodendron infortunatum*) is a weed that grows in coconut gardens. This has larvicidal properties. Krishbhavan officials advised the farmers to apply this plant in Rhinoceros beetle breeding sites. This measure helped to control grubs up to a little extent only. As a second measure, Pheromone traps were erected in coconut gardens, but adoption was poor.

Then they thought of biological control of Rhinoceros beetle. This has been successfully done in South Pacific countries. Scientists at CPCRI found that successful control of Rhinoceros beetle in larger areas has been achieved using a viral pathogen baculovirus of Oryctes (OBV) and a fungal pathogen *Metarhizium anisopliae*.

An OBV infected grub of rhinoceros beetle is selected, and its midgut is removed after dissecting its body. The infected midgut is transferred to a mortar, and after adding 3 to 5 ml of sterile water, it is ground to form a fine suspension using a pestle. This viral suspension is carefully mouth-fed to the healthy grubs using a syringe. About one ml of inoculums is used for each healthy grub, and one midgut suspension can be used to inoculate 5 to 6 healthy grubs. The inoculated grubs are then put in a plastic box of 15 cm diameter and 15 cm height, containing about 200 g of sterilized cow dung or coir dust moistened sufficiently with sterile water. Care should be taken to ventilate the box by making holes in the lid. Then the grubs should be regularly examined

for OBV infection, and the procedure is to be repeated for maintenance of the viral culture. The cadavers or virus triturate can be stored at 4°C indefinitely.

For releasing the OBV in the field, about 10 to 15 healthy adult rhinoceros beetles should be allowed to crawl into a baculovirus infected midgut suspension kept in a shallow glass trough for 30 minutes. Then the beetles should be transferred to plastic boxes and starved for 12 to 24 hours. They are then released in the field, preferably at evening. Then the field should be monitored for the beetles' movements once in every six months.

The second option was the green muscardine fungus-pathogen *Metarhizium anisopliae*, multiplication of which seemed easier. For this a women group consisting of 20 members were formed. They were given training in multiplication of green muscardine fungus using half cooked rice as medium. Mother culture was supplied by CPCRI. About 2000 packets of fungi culture produced by them was supplied to farmers of the panchayath. The group also gave advice to the farmers regarding the method of application of the fungi culture in breeding sites. The adoption was very high and population of Rhinoceros beetle was drastically reduced. According to Dr.Anitha Kumari of the Extension Division of CPCRI, this proved to be a cost effective, less labor intensive and effective method.

All the farmers who have used these control measures are satisfied with the result. A packet of fungi culture is supplied by the women group for only Rs.15. They are getting Rs.7.50 as profit by selling one packet.

"It is a good self employment venture for us. Now more and more people are approaching us for fungi culture. Further, we trained a women group at Kasargodu District on the methodology of multiplying the fungus and its application. Inspired by our success Cherunniyur, another panchayath in Thiruvananthapuram District has also initated a similar project" says Ambika,a group leader.

Krishibhavan, Edava has also started a new project for multiplication of the antagonistic fungi *Trichoderma viride* through the women group. The main Symptom of stem bleeding is exudation of reddish brown liquid through cracks developing on the stem. This result in decaying of tissues at bleeding point and the palm looses its viguor and yield. Development of big holes inside the trunk is also noticed. Application of 5kg neem cake containing Trichoderma culture along with 50kg organic manure to the basin during September is a very effective control measure against stem bleeding.

By promoting application of organic manures that give resistance, health and vigor to the palms and by utilizing less expensive and easy to do integrated pest management measures we can regain the past glory of coconut in our state.

For further details contact: Agriculture Officer, Edava Krishi Bhavan-9895213783, Dr.Anitha Kumari,CPCRI-9387160570.

ITK For Rhinocerous Beetle Control

Many indigenous practices have been used since old days to control Rhinoceros beetle. In Tamilnadu, earthen pots are placed in small pits in coconut gardens and half of the pot is filled with water and castor cake. After three days due to the smell, rhinoceros beetles get attracted, fall in to the pot and die. Pouring neem cake extract on the growing tip and adjoining fronds to control rhinoceros beetle is practiced. Application of neem oil mixed with honey on palm heads and placing *Kolinji* (*Tephrasia purpurea*) plants on leaf axils is also done by Tamil Nadu farmers. Farmers in Dinahalli area of Karnataka apply a mixture of Ganja and Ficus latex to kill the beetles. In Junagad area of Gujarat, farmers apply melted jaggery in holes produced by beetles. In Assam women apply hair balls in leaf axils. Rhinoceros beetles get strangled in the hair and dies. Dead frogs are placed in leaf axils to repel the beetle. Assamese also use dried fish mixed with cow dung and toddy to attract the beetles at night and to kill them.

In Columbia farmers place cylindrical containers filled with pineapple pieces to attract the beetles. Beetles will be unable to climb through the smooth inside of these cylinders. In Nicobar Island, a festival known as Kin-to Lang is celebrated. During the festival heaps fire is made in coconut gardens. Rhinoceros beetles gets attracted by the fire and dies in it.

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Scaling new heights

Sasikumar. C*

The first batch of the Lakshadweep trainees at the training centre at Green Army, Thrissur

'I never thought that I will get a job and can make a decent living. Now I am earning around Rs. 500, thanks to the Friends of Coconut Tree training programme of the Coconut Development Board. I am so happy that I got this chance when many youths, even the graduates here are unemployed', comments a trainee from Lakshadweep who has attended the FoCT programme of the Board conducted at Green Army, Aravoor, Mundathicode, Thrissur.

Shri. Hasan of Amini Island is so excited to talk on the training. He never had a permanent job before. Now he is getting plenty of calls for coconut harvesting and his worry is that he is not getting enough time to attend to all the clients. He climbs around 30 trees in the morning and another 30 in the evening. The machine is making the climbing easier and his average daily income is between Rs. 800 and Rs. 1000. Some of his friends who have attended the FoCT training of the Board are employed by the Panchayaths in the Island for rat eradication. They are given a fixed remuneration of Rs. 275 per day.

Shri. Pookunhi (38) was basically a driver. When he came to know of the FoCT training of the Board, he attended the training just for a change. He never thought that the training would change his life. Pookunhi is so happy and confident now that the training has assured him a good social status and a decent means for living. He was a trainee of the third batch of the training held at Green Army, Thrissur from 17th to 22nd October 2011. Since then there was not a single day in his life with out work. He is getting plenty of calls daily and is earning Rs.600- 800. He is sure that he will have enough work in future also as coconut continues to be the major crop of the Island. The trainees are in the process of registering a society too.

The major economic activity of the people of the Lakshadweep islands is coconut cultivation. Every year the production of coconut is rising here. The agricultural department is taking care to increase the coconut production in order to meet the outside demands. Shortage of labour is a general

The trainees of FoCT, Shri. Fathulla, tapping the neera and Shri. Pookunhi in coconut harvesting in Lakshadweep

phenomenon in agriculture sector but it is all the more severe in coconut which requires skilled labour for crown cleaning, plant protection application harvesting and hybridization. The issue is severe in Lakshadweep Island where coconut continues to be the principal crop and is a major contributor to the economy.

Soon on hearing about the FoCT programme of the Board, Dr. P Pukinhi Koya , former MP and Shri. Siraj Koya, Director, All India Coconut Growers Federation came to the Head Quarter of the Board at Kochi and held discussion with Shri. T K Jose IAS, Chairman. On getting his green signal the first batch came for the training conducted by the Board at Green Army, Thrissur from 26th September to 1st October 2011. Four more batches attended the training and till date Board have trained 102 people from Lakshadweep. As per the programme, training and machines are given free. Apart from training in harvesting, the trainees are also taught scientific management and plant protection operations.

Coconut continues to be the principal crop of the territory and a major contributor to the economy of Lakshadweep. The crop is cultivated in 2700 hectare in the Island and the productivity of this crop is 19630 nuts per hectare in Lakshadweep. The FoCT programme of the Board was a reply to the much awaited issue of the dearth of coconut climbers of the island. Now more than 90% of the trained persons are doing harvesting, plant protection operations and other activities.In Kiltan Island, 20 trainees are absorbed by the Panchayath and they are working under the department of agriculture. They are mainly into harvesting and neera tapping.

In Amini Island 2 batches of the trained FoCTs are in the process of registering a society. They are planning to undertake harvesting and other plant protection operations on a group basis. The Department of Agriculture, Lakshadweep Administration has already purchased 20 palm climbing machines and is planning to conduct the palm climbing training in the Island itself. The training programme is expected to inaugurate on the Republic day.

For more details of the training programme and the list of the trainees visit http://coconutboard.nic.in/foc-district-lak.pdf

** Technical Officer, CDB, Kochi-11*

Pappanchalla Coconut Producer's Society

Coconut Producer's Society (CPS), is a Coconut Development Board initiative for integrating several small and unorganized coconut farmers. CPS will help the farmers to practice scientific technologies in production, plant protection, processing and marketing. The cost of cultivation can be reduced through group activities and supply of quality inputs would be made at a reasonable price. **The Board has already initiated the formation of CPS in Kerala and this will be extended to other major coconut growing states of the country. Indian Coconut Journal is serializing on the best Coconut Producers Society from this issue onwards. The first one is on Pappanchalla Coconut Producers Society.**

Pappanchalla is a small hamlet in Muthalamada divided over three wards of Muthalamada Panchayath in Palakkad district in Kerala. Sequel to the scarcity of labour and the high cost of cultivation coupled with low income generation they have switched over to coconut and mango. Almost all the people are depending on agriculture except a few microscopic minorities who are otherwise employed in other profession.

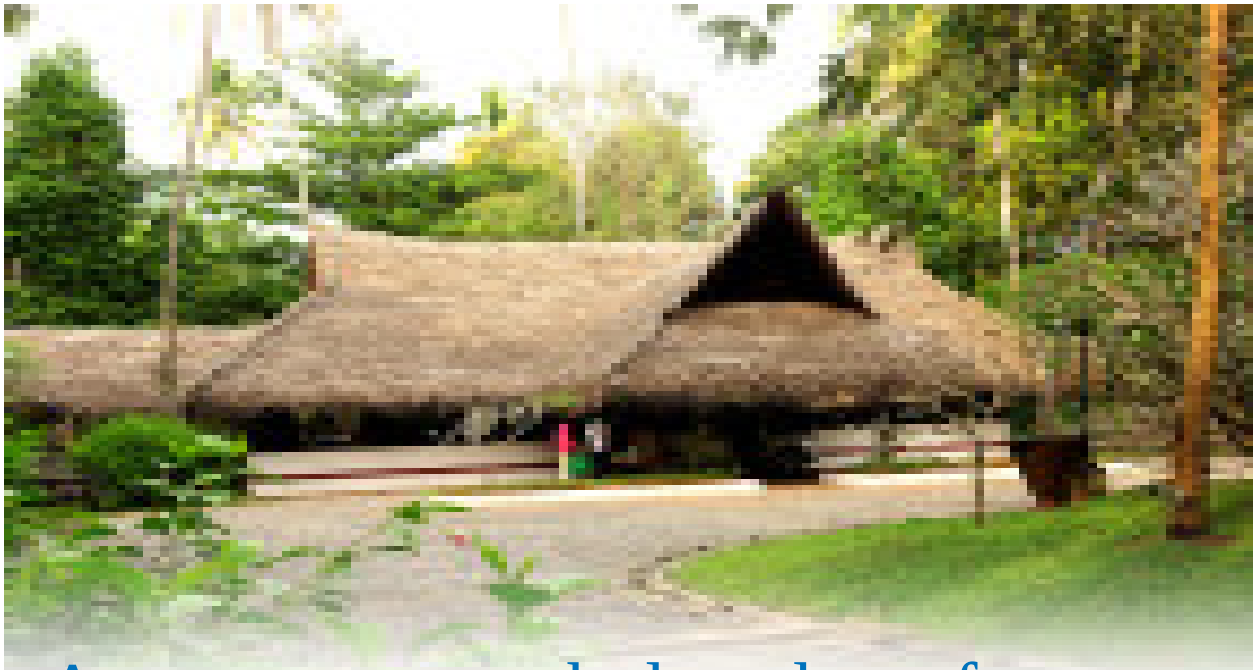
Though per tree production of coconut in this area is more than the state's average production, they are not getting reasonable price for their produce due to heavy exploitation by the trading community. Most of the plantations are not done scientifically. Initially they plant trees in mud walls of their paddy fields then subsequently fill the gap. None of the farmers have conducted any soil testing and necessary dose of manure is given considering the requirement of the soil. In majority of the farms irrigation is done as per their availability of water. All of them sell their produce to local traders at the price fixed by the traders. Farmers have no say in fixation of price.

The state of affairs prevailing in the locality forced the villagers to think of earning better price for their commodities. They were unaware of the scope of product diversification in the national and international markets. Their knowledge was limited to coconut and copra only. What eludes is the knowledge of innovation of new products and how they can come forward with similar diversified products available in the market thereby increasing production and reducing the cost of cultivation. It was at this juncture that they came to know about the initiatives of Coconut Development Board and the role played by Maithri in promoting the formation of CPS. Under the initiative of Maithri a meeting of the farmers of the area was organised on 30th of October 2011 and it was decided to form a society for this purpose known as Pappanchalla Coconut Producers Society under the Presidentship of Shri. N.V.Rajasekharan, a law graduate with more than 35 years of experience as an officer in a well known commercial bank in various capacities. A Vice President and 5 other Committee Members were also elected for the purpose. The Society was registered under the Provisions of Act 21 of 1860 with the District Registrar Palakkad.

After the registration of the society, the President of the society attended a 3 day training programme organised by Maithri. The training gave an insight as to how the society should function, which are areas to have focused attentions etc. A number of meetings were conducted under auspice of the society and the immediate goals of the society were formulated. In the meantime the society submitted the application for registration with CDB. Society has decided to start procurement of tender coconuts from the members from January onwards; to request for assistance from Board for setting up a copra dryer; to start nurseries for supplying quality seedlings and to conduct soil testing of all coconut gardens of the members before 31st March 2012.

For achieving these goals a detailed survey of the land holding, irrigation pattern, harvesting pattern, application of manures etc of the members of the society is already conducted. It is assumed that 750 tender coconuts can be supplied daily. Locations for the tender coconut sales have to be identified and the service of the Friends of Coconut Tree of the Board can be utilized for harvesting. The Society is planning to install the copra dryer and start operation by August 2012. Initially soil testing will be conducted in selected plots only and later on in all the plots after gaining experience on collecting the samples. Starting the nurseries will also go hand in hand. Once the things come true and becomes a reality the members will be getting best remunerative price to their produce, they will be relieved from the clutches of the middle men. The cost of cultivation too can be reduced by adopting scientific methods of fertilization and irrigation.

For more details contact: President, Pappanchalla Cooperative Society, Pappanchalla, Govindapuram, Muthalamada, Palakkad - 678507.



A resort to restore the lost glory of coconut

T.S. Viswan* and Dr. Tina Antony**

Coconut tree has been the pride and joy of Kerala. Just when the coconut mite, the rhinoceros beetle, the red palm weevil, the coconut leaf eating caterpillar and a host of pests and diseases have tolled the death knell of this wonder palm there springs to life a resort that restores the famed coconut tree its lost glory, the Marari Beach Resort.

The village of Mararikulam lies on a shore, midway up the Malabar Coast. Several years back when the villagers of Mararikulam in Alapuzha district in Kerala heard about the upcoming resort they feared that the coconut groves would give way to concrete skyscrapers. However a decade and a half later the simple coastal villagers are gratified, that there are no concrete jungles but hundreds of thatched roof cottages modeled on the fishermen's dwellings of Mararikulam dotted the landscape.

Marari Beach sprawls across 26 acres of land of coconut groves. A windbreak of palms runs the length of the property. This is a veritable biological park with combination of bio-diversity. Marari Beach is a chemical-free zone where only natural oils and local remedies are used for pest control. Last year Marari resort won three state awards from the government of Kerala.

The resort has thousands of healthy fruiting coconut trees. Diseased coconut palms in the property were felled and replanted with high yielding varieties. Under the Bio-hedging Village program of the Coconut Development Board undertaken in the North Mararikulam Panchayath more than a hundred new coconut saplings were planted. The management of the resort was enthusiastic in implementing inter-cropping and protection of the coastal belt which was the another scheme envisaged in this program. The suggestions of Shri. M. Thomas Mathew, Chief Coconut Development Officer of the Board were implemented by the resort. According to the Public Relations Officer Shri. K.P. Isaac, by setting up pheromone traps with the help of the Board, the resort could control the red palm weevil attack.

The guests at the resort are received with tender coconut plucked from the resort's groves. The village folks too supply tender coconut to the resort.This CGH (Clean Healthy Green) resort does its best to be one with nature. The cottages at Marari is palm thatched and is swooping low over a raised verandah. The front office desk, dinning rooms and the auditorium are palm thatched. The resort requires 70,000 palm fronds to be plaited to make the thatched roofs and this takes over a year's labour. The old



thatched roofs are converted into manure in the vermi-compost which goes into the organic farm. The resort is marinating a 100% organic farm.

To protect the coconut trees during summer months coconut husks are placed in the basins around the tree in a circular manner with the fibrous portion facing down. This is an effective way to conserve soil moisture.

The organic farm is spread over 4 acres and attracts not just tourists but also the villagers and students of horticulture. Marari Beach resort has innumerable varieties of trees and shrubs. There are more than a dozen varieties of banana, pineapple, papaya, passion fruit, and all varieties of local vegetables and even vegetables that grow in cooler climates like cauliflower, cabbage, tomato and carrot. The farm abounds in snake gourd, bitter gourd, brinjal, capsicum, beans, ladies finger, ridged gourd, spinach, pumpkin and ash gourd.

Noted agriculturist Shri. Subhash Palekar whose concept of zero budget farming which has captured the attention of the farming community worldwide paid a visit to the resort and the management has decided to adopt his revolutionary measures to make the farm cost effective. As a beginning two local cows have become part of the organic farm and "jeevaamrutham" and "beejamrutham" are prepared according to Palekar's instruction. These will be the biofertilizer and bio-insecticide that will be used for the coconut groves and the organic farm. The resort endeavors to create an integrated farm that is one with the environment and flourishes in tune with nature.

Chinta, Kareekkad P.O., Thanneermukkam, Cherthala, Mob: 9496884318
***Kunnumkal,Sreekandamangalam, Cherthala*

A Wonderful Coconut Story

Elizabeth Wangari Gachiri is working at an orphanage in Kenya. She is having a wonderful story to tell about coconut oil. She attended a weeklong camp meeting with about 150 other people. One of the teachers was a lady named Miriam a social worker at the orphanage. Miriam is HIV positive and has been very sick for a number of years. She was wasting away and had lost so much weight that she was literally just skin and bones. Her friends and family expected her to die any day. Suddenly, for seemingly no reason, she started to regain weight and got better. Over the following weeks and months her health continued to improve. No one knew why.

Her health had improved to such an extent that she was able to participate as one of the instructors at the camp meeting. Here she revealed her secret. During the time she was sick, the orphanage received a donation of hundreds of books from Australia. One of the books was *The Coconut Oil Miracle* by Dr. Bruce Fife. Intrigued by the title, she began reading it. She was particularly fascinated by the section on the antimicrobial properties of coconut oil and its successful use by those with HIV. By this time, her illness had reduced her to a mere 26 kg (57 pounds). Encouraged by the book, Miriam started taking coconut oil and milk daily. As her health improved, her weight returned to its normal 70 kg (154 pounds). When the doctors saw her remarkable improvement they began asking questions.

At the meeting she was bursting with enthusiasm for what coconut had done for her and was anxious to share her newfound knowledge. One mother brought her four-year-old son. His hands, face, and head were covered with some kind of infection. A coconut porridge was made and applied to the boy's sores. By the end of the week he was recovering remarkably well.

Source: Healthy Ways News Letter, Volume No. 9, Number1

Minimum Support Price (MSP) declared for copra for the season 2012

The Government of India has declared the Minimum Support Price (MSP) for copra for the season 2012. Keeping in view the demand-supply situation, market prices and increase in cost of production, the MSP of milling and ball copra are fixed at: Milling Copra Rs.5100/- (per quintal) and Ball copra Rs.5350/- (per quintal).

The MSP declared is the highest offered so far taking into consideration the upward movement in the prices of different items of input on the basis of wholesale price indices and updated wage rates. The MSP for milling copra is 12.71% higher than that of season 2011(Rs.4525/-) and that of ball copra is 12.04% higher than the MSP of 2012 (Rs.4775/). National Agricultural Cooperative Marketing Federation of India Limited (NAFED) is the central Nodal Agency to undertake the price support operations of copra in 2012 season.

Delegates from Republic of Trinidad and Tobago visited the Board

A view of the meeting with the delegates

Mr. Nadeer Baksh, Director, Agricultural Services and Nigel A. Grimes, Programme Co-ordinator and Advisor, Ministry of Food Production, Land and Marine Affairs, Republic of Trinidad and Tobago visited CDB, Kochi on 10th January 2012. The objective of the delegation was to explore the possibility of getting technical expertise from the Board in coconut cultivation and processing sector. They sought the technical expertise of developing coconut plantation for improving the yield and for undertaking value addition through coconut processing. The team visited coconut clusters, co-operative societies and coconut processing units to get an overall view of the coconut industry. They visited the DSP Farm of the Board at Neriamangalam and had discussion with officials of the Board on various cultivation practices, hybridization techniques and different coconut varieties. The team held discussion with the Chairman, Director and senior officials of the Board on possible areas of cooperation between the Government of Trinidad and Tobago and Ministry of Agriculture, Government of India. The main areas on which expertise was sought by the Government of Trinidad and Tobago was on the mitigation of red palm mite affected coconut gardens in the country through biological, chemical and mechanical measures, replanting the coconut garden with disease tolerant coconut varieties, transfer of good genetic material/ germ plasm of high yielding varieties of coconut, tender coconut varieties, training on coconut palm climbing and specific consultancy services for the overall development of coconut industry. They requested the Board to send a technical team to visit their country. The Chairman, CDB assured to share all technical services available with the Board for the benefit of the coconut industry in Trinidad and Tobago.

Coconut Development Board observed foundation day

Inaugural address by Shri. T.K.Jose IAS

Shri. Mani C. Kappan releasing Coconut Guide 2012. Adv. Varkala B. Ravikumar receiving the first copy

Coconut Development Board observed 32nd foundation day on 12th January 2012. Shri.T.K. Jose IAS inaugurated the programme and called upon the employees of the Board to rededicate themselves for the betterment of the coconut industry. Increasing the productivity of the crop is the need of the hour. We must work for spreading the goodness of coconut worldwide. The country must hold the number one position in coconut production and export front. Shri. Mani C Kappan, Vice Chairman of the Board released Coconut Guide-2012. Adv. Varkala B Ravikumar, Member, Coconut Development Board received the first copy. Shri.V.P. Sasindran, Chairman, Kerafed and Dr.K.Muralidharan, Director, CDB spoke on the occasion. Dr.Remany Gopalakrishnan, Deputy Director, CDB delivered the welcome address and Smt. Mini Mathew, Publicity Officer, CDB proposed a vote of thanks.

National Krishi Mela - 2011

The Coconut Development Board, Regional Office, Bangalore participated in National Krishi mela - 2011 held from 16th to 20th November 2011 at GKVK Campus, UAS, Bangalore. Shri. D.B. Chandre Gowda, M.P inaugurated the programme. Shri. Krishnabire Gowda, MLA and Dr.K. Narayana Gowda, Vice-Chancellor, UAS, Bangalore were present on the occasion. Shri. S.A. Ravindranatha, Minister of Horticulture, Government of Karnataka visited the Coconut Development Board's stall and appreciated the role of the Coconut Development Board in promoting different coconut products. Krishi Mela was organized by University of Agricultural Sciences, Bangalore.

Board's stall in National Krishi Mela 2011

Coconut Development Board, Regional Office, Bangalore showcased different varieties of coconut bunches, seedlings and value added products like ball copra, branded coconut oil in different packages, virgin coconut oil, packed tender coconut water in cans and pouches, different brands of desiccated coconut powder, coconut milk powder, coconut based vinegar, coconut water concentrates, shell and wood based handicrafts and publications of the Board. Nearly 5 lakh farmers from various districts visited the Board's stall.

Expert consultation on planting material production held

The expert consultation on planting material production in coconut for root (wilt) disease prevalent tract – issues and strategies was held at CPCRI, Regional Station, Kayangulam on 15th December 2011. Dr. H P Singh, DDG (Horticulture) inaugurated the programme. In his keynote address he emphasized the need for producing quality planting material in coconut which is free from root (wilt) disease. He complimented the scientists who were involved in developing two root (wilt) resistant coconut varieties Kalparaksha and Kalpasree and the first hybrid Kalpa Sankara tolerant to the disease. Dr. George V Thomas, Director, CPCRI spoke on the strategy for planting material production in coconut for root(wilt) disease prevalent tracts. Dr. R V Nair, Head, Division on Crop Improvement, highlighted the yield potential of Kalparaksha, Kalpasree and Kalpa Sankara. Dr. P C Balakrishnan, Mission Director (Coconut) KAU informed that Kerala Agriculture University is initiating various programmes to enhance the seedling production to about 1.5 lakh. Dr. R Manimekalai, Senior Scientist, Dr. Reji J Thomas, Senior Scientist(Hort), Dr. N Srinivasan, Principal Scientist (Plant Pathology) and Dr. M K Rajesh, Senior Scientist(Bio technology) spoke on the occasion. Dr. P M Jacob, Head, Regional Station CPCRI, Kayangulam delivered the welcome address and Dr. V Krishnakumar, Senior Scientist (Agronomy) proposed a vote of thanks.

Dr. H.P. Singh inaugurating the meeting

Sanjivani-2012

Coconut Development Board participated in Sanjivani-2012 from 12th to 16th January 2012, held at Shivaji Maidan, Thane Maharashtra. Sanjivani-2012 focused on Ayurveda, Homeopathy, Unani, Acupressure, Healthy Food drinks, Yoga. Energy Healing, etc. Coconut Development Board arranged display cum sale of various value added coconut products like packed tender coconut water, coconut oil, coconut milk powder, virgin coconut oil, handicrafts etc. The fair was organized by Axion Events and Promotions.

A view of the Board's stall in Sanjivani 2012

Friends of Coconut Tree Crossed 500 in Kozhikode

501 'Friends of Coconut Trees' in 25 batches have successfully completed the training programme of the Board in Kozhikode district. The training programme was conducted in association with the KVK at Peruvannamuzhi, Krishi Bhawan Kattipara, Block Panchayat Koduvally and M/s Akshaya Grameen Vikas Kendra Poonoor. Out of 501 trainees, 48 are ladies who have already started earning more than Rs.400 per day. The trainees who have completed the training have a different experience and feeling proud to be self employed. The women trainees are proud on their new self-identity. They are getting calls from different parts of the district. They are climbing nearly 30 palms per day.

Wealth from Waste

We often find portions of the perianth and stalk of coconuts lying on the ground after a good harvest. It is often burnt while tidying the field. But who thought that a beautiful bouquet could come out of this waste.

As a part of the Friends of Coconut tree training, the trainees were assigned with small activities to do in the premises of KVK Peruvannamuzhi. Two of the trainees namely Shri Kannadas and Shri. P.M.Binu resident of Mudukkad of 25th batch of FOCT made a bouquet and flower pot made of dry perianth of coconut using some other products of coconut like coconut shell, broom stick etc. The creations of the trainees are exceptional and appreciable. Once again, the tree of heaven the coconut proved indeed a kalpavriksha.

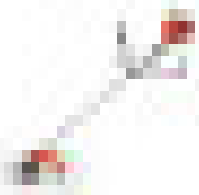
Shri. Kannadas and Shri.P.M.Binu with the bouquet and flower pot made of dry perianth of coconut

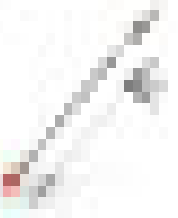
FOCT training started in Maharashtra

Friends of Coconut Tree, the training programme of the Board to address the dearth of coconut climbers is extending to other states too. The first training outside Kerala was started at Ratnagiri district, Thane Maharastra on 9th January 2012. Shri. V.V.Limaye, Board Member, CDB inaugurated the training programme. Board is organizing the training programme in association with the Regional Coconut Research Station Bhatye, Dist. Ratnagiri. Dr. H.K. Patil, Director of Extension, Shri. G.R. Singh, Deputy Director, CDB, and Dr. D.D. Nagvekar, Agronomist, RCRS Bhatye were present during the inaugural function. The training programme was held from 9th to 14th January 2012 and 20 trainees attended the training.

The valedictory function was held on 14th January 2012. Dr. Shrirang Kedrekar, Ex-Vice Chancellor, Dr. Balasaheb Sawant, Agriculture University Dapoli, the Chief guest of the function distributed prizes and coconut palm climbing machines to the trainees. Dr. H.K. Patil, Director, Extension, Dr. Balasaheb Sawant Konkan Agriculture University, Dapoli presided over. Shri. V.V.Limaye, Board Member CDB, Dr. Vijay Joshi, Principal Fisheries College, Shirgaon, Dr. H.K. Patil, Director of Extension, Shri. Sharad S. Aglawe, Field Officer, CDB, Dr. D.D. Nagvekar, Agronomist, RCRS Bhatye and Shri. and Smt. Lee, master trainers were present during the occasion.

The first FoCT batch of Maharashtra





Complete

Farming Solutions

under one roof

Monthly operations in coconut gardens

February

Andaman & Nicobar Islands: Cut down the dead trees and remove the debris from the garden. Keep the garden clean by weeding. Irrigate the nursery. Continue irrigation of palms. Collect seednuts from the selected mother palms which are regular bearers and have an annual yield of not less than hundred nuts.

Andhra Pradesh: Irrigate the garden. If the attack of black headed caterpillar is noticed, cut the heavily infested outermost 2-3 leaves and burn. Spray the lower surface of remaining leaves fronds with quinalphos 0.05%. Follow up by liberating specific parasites on palms according to the stage of the pest. Release parasites only after three weeks of spraying chemicals. Release *Goniozus nephantidis* for 3rd instar larval stage, *Elasmus nephantidis* for prepupal stage and *Xanthopimpla punctata* (Ichneumonid) for pupal stage. Contact the nearest Parasite Breeding Laboratory for getting parasites.

Assam: Irrigate the garden. Continue collection of seednuts from the selected mother palms and store them by adopting suitable storage methods to prevent the drying up of nut water. Dig pits of 1m x 1m x 1m size at a spacing of 8m x 8m in square system to transplant seedlings. Fill the pits with a mixture of top soil, 500 g rock phosphate, 50 kg dry cowdung / compost manure upto a level of 60 cm height by keeping 40 cm pit empty. Apply 100 g 10 per cent chlorpyriphos to prevent the attack of termites. Search for diseases like bud rot, stem bleeding and pests like rhinoceros beetle and red palm weevil. Clean the crowns of the palms and spray 1 per cent bordeaux mixture as a preventive measure against diseases, if not done earlier. If stem bleeding is noticed remove the affected tissues of the stem and apply 5 percent calixin on the wound. When this is dry apply warm coaltar. Root feed the affected palm with 5 ml calixin in 100 ml water per palm at quarterly intervals. Apply 5 kg neem cake per palm per year along with the second dose of fertilizers. Provide proper drainage during rains and irrigate the palms during dry spells.

Bihar/Jharkhand: Continue irrigation. Spray blitox @ 5 g/litre of water or Dithane M 45 @ 2 g/ litre of water on the crown and bunches to avoid secondary infections due to cold injury. In low lying areas apply 500 g urea, 1000 g single superphosphate and 1000 g muriate of potash per adult palm in the basins and mix with soil. Surface planting of seedlings can be done in areas where water table is high. To provide shade, plant banana saplings at a distance of 2 m away from the newly planted seedlings.

Chhattisgarh: Irrigate the garden. Apply the 3rd dose of fertilizers to coconut palms. Adopt plant protection measures against pests and diseases. Mulch the basins and practice intercultural operations in the garden.

Karnataka: Irrigate the garden. Give 60-65 litres of water per palm per day under drip irrigation. Check the attack of rhinoceros beetle. Clean the crowns of the palms and fill the top 3 leaf axils of the palms with a mixture of sevidol 8G (25g) + fine sand (200 g) per palm or fill the leaf axils with 10.5 g naphthalene balls, 3-4 balls per crown covered with

fine sand at 45 days interval. Treat manure pits and other possible breeding sites with 0.1 per cent carbaryl which is to be repeated in every three months. Spray 1 per cent bordeaux mixture against leaf spot disease. Adopt integrated control measures against the attack of leaf eating caterpillar. Release parasitoids immediately after noticing the infestation and subsequently three times at fortnightly intervals. In case of severe infestation, cut and burn the severely damaged lower leaves and spray the under surface of the remaining leaves with Dichlorvas 0.02 per cent or Malathion 0.05 per cent. Do not harvest coconuts immediately after spraying or root feeding with insecticides. A safe waiting period of 45 days is to be maintained for harvesting the nuts

from the root feeded palms. If the attack of mite is noticed, spray neem oil formulation containing 0.1 per cent Azadirachtin / Neemazal@ 4 ml/ litre of water. The spray droplets are to be directed towards the second to fifth mature bunches. To manage the infestation of red palm weevil, field sanitation is very important. Cut and burn the fully infested and dead trees. If infestation is noticed, inject 1 per cent solution of carbaryl (50%) @ 1 litre per palm. Inject the insecticide solution using a funnel. All the holes on the affected stem should be plugged after injecting the insecticide. Trapping of weevils using pheromone traps @1 trap/ha can also be undertaken.

Kerala/Lakshadweep: Continue irrigation. Adult palm should be irrigated with 200-250 litres of water once in four days in basin irrigation. Apply 60-65 litres of water in drip irrigation. If irrigation facility does not exist adopt moisture conservation measures like shading, mulching and pitcher irrigation to young seedlings. Clean the crowns of the palms by removing all the old spathes, stipules etc. that come off easily. Adopt integrated control measures if the attack of leaf eating caterpillar is severe. If the attack of mite is noticed, spray neem oil formulation containing 0.1 per cent Azadirachtin / Neemazal @ 4 ml/ litre of water. The spray droplets are to be directed towards the second to fifth mature bunches. Start collection of nuts for seed purpose. Apply one fourth of the recommended dose of fertilizers in the irrigated gardens.

Maharashtra/Goa/Gujarat: Cut down and destroy trees infected with anaberoga disease. Dig isolation trenches around the affected palms. Apply 5 kg neem cake per palm. Drench the basins with 40 litres of 1 per cent Bordeaux mixture. Check for the incidence of stem bleeding in adult palms. Treat the affected palms. After removing the affected tissues on the stem, apply 5 per cent calixin on the wound. When this is dry apply warm coal tar. Apply 5kg neem cake per palm per year along with the second dose of fertilizers to the affected palms. Continue the irrigation of palms. Prepare pits at a spacing of 7.5 m for new planting of coconut. If the proposed land is sloppy, take contour bunds or terracing.

Odisha: Remove stray shrubs and grasses. Prepare the field and sow/ plant intercrops like tubers, ginger, turmeric etc. Apply the second dose of fertilizers to coconut. Irrigate the garden. Mulch coconut basins with coir pith/ husk etc. If the attack of mite is noticed, spray neem oil formulation containing 0.1 per cent Azadirachtin / Neemazal@ 4 ml/ litre of water. The spray droplets are to be directed towards the second to fifth mature bunches. Clean the crowns and continue other maintenance operations. If the attack of leaf eating caterpillar is observed, spray the under surface of the affected leaf fronds with quinalphos 0.05% . In places where winter is experienced severely, measures may be taken to control secondary infection of diseases such as bud rot. In such cases remove all affected tissues of the crown and apply Bordeaux paste on cut end and provide a protective covering till normal shoot emerges.

Tamil Nadu/Puducherry:

Continue summer irrigation once in 4 to 7 days depending upon the soil type. Under irrigated condition apply one-fourth of the recommended dose of fertilizers i.e. 250 g urea, 500 g single superphosphate and 500 g muriate of potash. Search for rhinoceros beetle on the crowns of the palms with a beetle hook and kill the beetles. Fill the top four leaf axils of the palm with a mixture of Sevidol 8G (25 g) plus fine sand (200 g). Filling leaf axils with 12 g naphthalene balls (approximately 3 balls) covered with fine sand at 45 days interval is also effective. If the attack of mite is noticed, spray neem oil formulation containing 0.1 per cent Azadirachtin / Neemazal@ 4 ml/ litre of water. The spray droplets are to be directed towards the second to fifth mature bunches.

Tripura: Continue irrigation. Protect the palms especially the young palms from the attack of white ants. Drenching of nursery with 0.05 per cent chlorpyriphos twice at 20- 25 days interval is recommended. Mulching with old and dried leaves can be done during the month. Prophylactic measures may be taken up if not done in January for combating the diseases and pests.

West Bengal: Irrigate the garden and nursery. Provide shade to the newly planted young seedlings. Collect seednuts for sowing.

Market Review December 2011

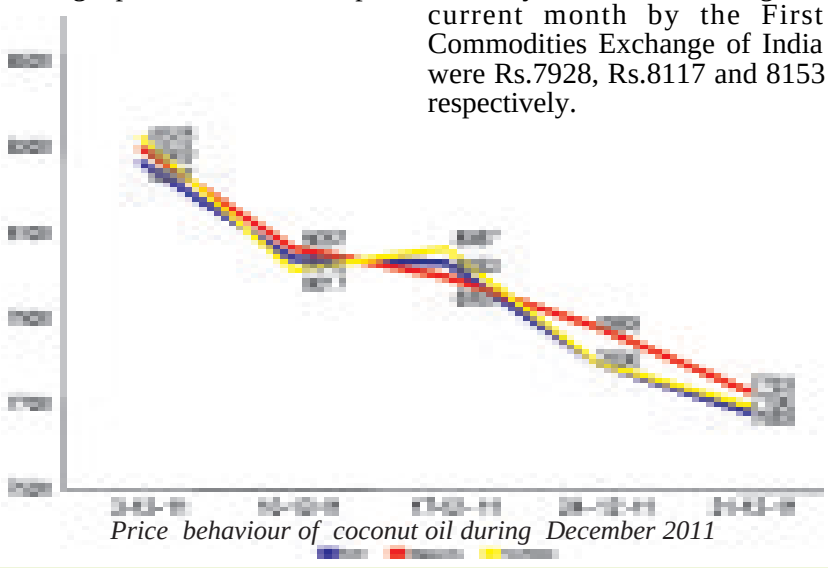
Highlights

- The price of milling copra, ball copra and coconut oil expressed a downward trend at all the major markets during the month under report.
- The international price of coconut oil expressed a downward trend during the month under report. The domestic price of coconut oil at Kochi market was about 13 percent higher than that of the international price.

COCONUT OIL

The price of coconut oil quoted at all the major marketing centres in the country expressed a downward trend during the month under review. The weekly average prices at Kochi market varied between Rs.7683 and Rs.8267 per quintal. The monthly average price of Rs.7965 per quintal was marginally lower than the price of November 2011 and was marginally lower when compared with the price of December 2010. The price of coconut oil at Alappuzha market also moved in tune with the price behavior of Kochi market. The weekly average prices ranged from Rs.7733 to Rs.8300 per quintal. The weekly average prices of coconut oil at Kozhikode market, varied between Rs.7700 and Rs.8325 per quintal. The monthly average price of Rs.7982 per quintal was marginally lower than the price of November 2011 and about 4 percent lower than that of the corresponding month last year. Price of coconut oil is expected to fall from the present level in the next three months as the harvesting season begins in Kerala and Tamil Nadu. Demand for copra and coconut oil will also fall as the festive season will be over in January. The monthly average price of coconut oil at Kochi market projected by the First Commodities Exchange of India Ltd. for the month of December 2011, during September, October and November 2011 were Rs.8553, Rs.8073 and Rs.8304 respectively, while the average spot price ruled at Kochi was Rs.7965 per quintal.

The Futures Prices quoted for the next three months of January February and March during the current month by the First Commodities Exchange of India were Rs.7928, Rs.8117 and 8153 respectively.



Price behaviour of coconut oil during December 2011

MILLING COPRA

The weekly average prices of FAQ copra at Kochi market ranged from Rs.5267 to Rs.5608 per quintal. The monthly average price of Rs.5437 per quintal was marginally lower than that of the previous month and marginally lower than that of the corresponding month last year. The weekly average prices of Rasi copra at Alappuzha market varied between Rs.5271 and Rs.5650 per quintal. The monthly average price of Rs.5357 for Office Pass copra at Kozhikode market was marginally lower when compared with the price of November 2011 and also lower when compared with the price of December 2010. The weekly average prices of milling copra at Ambajipeta market in Andhra Predesh ranged from Rs.4500 to Rs.4600 per quintal.

EDIBLE COPRA

The weekly average prices of Rajapur copra at Kozhikode market varied between Rs.7467 and Rs.8017 per quintal. The monthly average price of Rs.7678 per quintal was lower by 6 percent compared to the price of the previous month and about 21 percent lower than that of the corresponding month last year.

The weekly average prices of ball copra at Kozhikode market varied between Rs.6808 and Rs.7050 per quintal. The weekly prices of ball copra at APMC market Tiptur, in Karnataka varied between 6253 and 6501 per quintal. The monthly average price of Rs.6537 per quintal in November 2011 slid to Rs.6347 in December 2011. The weekly average prices of Rs.6320 per quintal for ball copra at Bangalore market ruled steady till the end of the month. The weekly average price of Ball copra at Arsikere APMC market, varied between Rs.6258 and 6383 per quintal.

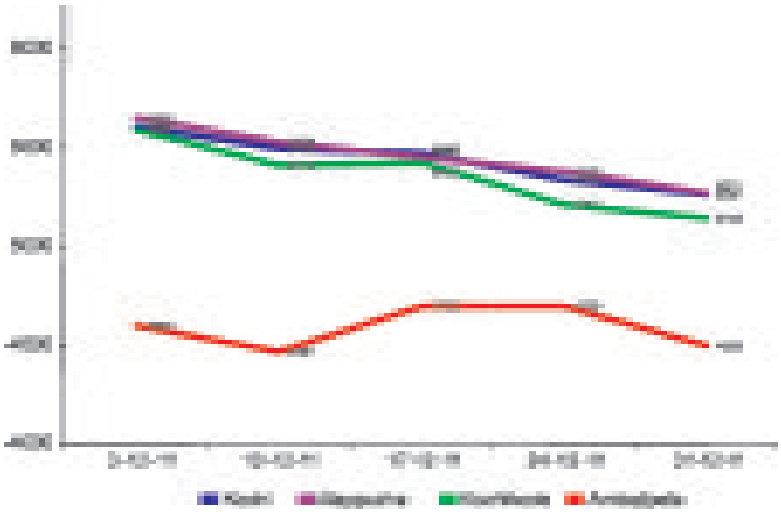
DRY COCONUT

The monthly average price of Rs.6433 per thousand nuts for dry coconut at Kozhikode market was about 13 percent lower than that of the previous month and about 12 percent lower than that of the corresponding month last year.

COCONUT

The monthly average price of Rs.7400 per thousand nuts for dehusked coconut at Nedumangad market was about 6 percent higher than that of the previous month and about 18 percent lower than that of the corresponding month last year. The monthly average price of partially dehusked coconut at Arsikere APMC market in December 2011 slid to Rs.6267 per thousand nuts from Rs.6927 of November 2011.

The weekly average prices of partially dehusked coconut at Bangalore APMC market ranged from Rs.6667 to Rs.7000 per thousand nuts. The monthly average price of partially dehusked coconut Grade-1 quality at Mangalore APMC market in December 2011 improved to Rs.10133 from Rs.10000 in November 2011. The weekly average prices ranged from Rs.9967 to Rs.10650 per thousand nuts.



Price behaviour of milling copra - December 2011

TENDER COCONUT

The weekly average prices of tender coconut at Kochi market ranged from Rs.18 to Rs.20 per nut.

INTERNATIONAL PRICE

The monthly average price of US $1350 per MT for coconut oil in Europe (C.I.F. Rotterdam) for the month of December 2011 was lower by about 4 percent when compared with the price of the previous month and lower by about 27 percent compared to that of the corresponding month last year. The monthly average price of US$ 875 per MT for copra was about 4 percent lower than that of the previous month and about 32 percent lower than that of the corresponding month last year. The domestic price of US$1520 for coconut oil at Kochi market was about 13 percent higher than that of the international price.

The domestic price of coconut oil during the month of December, in Philippines was US$1295 per MT and in Indonesia the price was US$1180 per MT. The international price of Palm oil, Palm kernel oil and Soybean oil were US$1000, US$1300 and US$910 per MT respectively, while the price of coconut oil in international market was US$1350 per MT and the domestic price in India was US$1520 per MT.

Market Price

Date	Coconut Oil			Milling Copra				Edible Copra	Ball Copra				Dry coconut	Coconut	Partially dehusked coconut		
	Rs./Qtl.												Rs./1000 nuts				
	Kochi	Alappuzha	Kozhikode	Kochi (FAQ)	Alappuzha (Rasi Copra)	Kozhikode	Karkala	Kozhikode	Kozhikode	Tiptur	Bangalore	Arsikere	Kozhikode	Nedumangad	Arsikere	Bangalore	Mangalore (Grade -1)
3-12-11	8267	8300	8325	5608	5650	5592	4600	7767	7000	6344	6320	6383	6267	7000	5500	6667	9967
10-12-11	8042	8067	8017	5496	5529	5413	4467	7517	6683	6253	6320	6267	6133	7000	6083	7000	10583
17-12-11	8033	8000	8067	5475	5450	5425	4700	8017	7050	6501	6320	6367	6767	7000	6750	6917	9758
24-12-11	7800	7883	7800	5338	5379	5213	4700	7625	6808	6302	6320	6317	6500	8000	6500	7000	10650
31-12-11	7683	7733	7700	5267	5271	5145	4500	7467	6850	6333	6320	6258	6500	8000	6500	6750	9708
Average	7965	7997	7982	5437	5456	5357	4593	7678	6878	6347	6320	6318	6433	7400	6267	6867	10133

Source: **Kochi:** Cochin Oil Merchants Association and Chamber of Commerce, Kochi - 2, **Kozhikode:** The *Mathrubhumi* daily **Alapuzha:** The *Malayala Manorama* daily, **Arsikere :** APMC, Arsikere

Price quoted for *office pass* copra at Kozhikode and *Rasi* copra at Alappuzha markets. NT : No transaction

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