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## Strengthening farmer collectives for ensuring price stability and favourable policy decisions

Dear Coconut Farmers,

Agriculture has all along been a crucial sector of Indian economy. Agriculture and allied activities form the single largest contributor to the Gross Domestic Product of the country, ensuring livelihood security to a major share of our population and hence form an integral part of the budgets and schemes of the central and state governments. Agriculture sector is passing through crucial changes since 1995. Impact of liberalization and globalization is sturdily affecting the agriculture sector. In spite of steep increase in the production cost, the price of the produces are stagnating. In case of agricultural products like coconut, farmers are getting a price which was prevailing 15 years ago, while the cost of production has increased manifold.

Farmers, especially traditional coconut and oil seed farmers are worst hit by the World Trade Agreement and Regional Trade Agreements executed between member countries. Small and marginal farmers are totally unaware of such developments. Instead of strengthening the national agricultural value chain, agricultural products are imported on a large scale on zero duty. No doubt, we have acute shortage of edible oils. Next to crude oil, edible oil forms the largest import to India. Unlike crude oil, edible oils can be produced in the country if we ensure a stable, fair and remunerative price for the oil seed crops. Unrestricted import of edible oils with zero import duty is a big blow to all oil seed farmers especially to coconut growers. At this juncture, we cannot blame the farmers if they move away from this sector to other greener pastures. Indian edible oil sector is in a vicious circle of low productivity- low production- more import - price fall - low production - further import. In order to arrest this precarious situation, we should be more cautious while formulating export import policies in agriculture sector.

Import of crude oil and edible oil is badly affecting the economy of our country. It would be fair to make a comparison of the import duty and tax structure of these products. In order to ensure the availability of edible oils, its import is allowed with low or no import duty. Crude palm oil which is imported with zero duty is refined and excise duty charged thereon is also zero. Value added tax for edible oils varies between 0- 4 from state to state. This provides a free access to the large scale oil palm farmers of Malaysia and Indonesia to the huge Indian market. The import duty for crude

oil is Rs. 50 per metric tonne. When it is refined to Petrol Rs.9,200 +3% surcharge per kilo litre is charged as excise duty. For diesel, Rs.3,460+3% per kilo litre is charged whereas for LPG 8% basic duty+3% surcharge is charged as excise duty. For petrol, the sales tax levied is 25.23% +1% cess in Kerala. It is 19.8%+1% cess for diesel. VAT prevailing for LPG for commercial purpose is 13.5% and that for domestic consumption is 5%.

Periodical price increase for petrol, diesel and LPG are allowed by Government. Oil companies are powerful enough to canvass for price hike. The price of coconut, copra and coconut oil is decreasing when the price of all other products are on the increase. One of the major reasons attributed for the price fall of coconut oil is the market surplus of coconut oil and copra. In order to arrest this trend we must either increase the domestic utilization of coconut oil or encourage and promote export of coconut oil. Unfortunately these are not happening. The yearly production of coconut oil in India is only 5-6 lakh MT where as the country has already imported 91.57 lakh MT of edible oil during this year (upto 30<sup>th</sup> September 2012).

In order to intensify the domestic usage of coconut oil, it may be distributed through Public Distribution System. The advantages of consuming coconut and its products need to be highlighted for enhancing domestic consumption. But unorganized sector like coconut farmers, doesn't have a strong platform to raise their concerns. Other organized sectors of agriculture are ensuring a fair and reasonable price for their produce. Imported edible oils are given additional 25% subsidy to be distributed to the consumers through the Public Distribution System. Why don't this subsidy be allowed to coconut oil too?

Coconut and coconut oil are helpful in ensuring food and nutrition security. Along with food grains, other food items such as pulses, edible oils, milk, egg and meat are also essential for food and nutritional security. We cannot guarantee the availability of these items through import alone. In a country like India with a population of 120 crore, we have to initiate long term strategies for increasing production and productivity of edible oil and oil seeds. Bulk import of palm oil is allowed on account of shortage of edible oils. The price of coconut oil crashes as there is market surplus within the country. Export of coconut oil is not allowed even when there is domestic surplus of coconut oil which is

dampening the price of coconut oil, copra and coconut. Coconut oil is used as edible oil mainly in Kerala, few districts of Tamil Nadu and Karnataka. Outside these consumption areas, it is used for non edible purposes. Hence there is no rationale in disallowing the export of coconut oil from Tamil Nadu, Karnataka and Andhra Pradesh. Right now export is allowed from Kochi Port only. These unfavorable situations warrant the farmers to stay united and raise their concern before the authorities. People's representatives may be apprised by farmer collectives to take up the problems of the coconut farmers on a top priority. Voice of Indian farmers need to be heeded for favourable policy changes in agriculture trade and import export front.

It is high time to trigger up product diversification, by product utilization and value addition in coconut. Coconut Producers' Societies (CPS) must be strengthened for processing tender coconut water, virgin coconut oil, desiccated coconut, coconut milk, milk powder and coconut milk cream. Neera is another product from coconut which has high potential for value addition, employment generation and remunerative price to coconut farmers. Farmer's collectives must be permitted to produce value added products like palm jaggery and palm sugar out of Neera. Coconut Development Board has addressed the state governments of Kerala, Tamil Nadu, Puducherry, Andhra Pradesh, Karnataka, Maharashtra, Goa and Odisha to amend the Akbari policy for allowing farmer collectives to tap Neera.

The normal market behaviour of a higher price to a product when the production is low, is not happening in oil crops and edible oil sector. During low production period import of the product is triggered with zero import duty which block the chances of farmers getting a reasonable price and to improve production and productivity. Our farmers are at a loss when this trend is continued even when the production increases. How long can oil seed farmers sustain their cultivation when low price is prevailing during both the times of plenty and scarcity?

The only possible way out is, the oil seed farmers to get united to make a paradigm shift in this scenario. Our farmers need to wake up when we are going through the tough times. It is high time to work in unison by wading away their narrow disputes. The transition from CPS to Federations and Producer Companies require further vigour and momentum. 1629 CPSs and 28 Federations are already registered with the Board. Board is targeting to form 10,000 CPSs, 500 Federations and 250 Producer Companies across the country over the next three years for ensuring a steady fair and reasonable price to coconut, copra and coconut oil. Our farmers must work unitedly with focused goal of

ensuring fair, reasonable and steady price. They should have a say on products, its price and market and also in the policy formulations.

In the wake of severe price fall, there are few supporting gestures needed from state governments too. As a short term measure, for encouraging consumption, coconut oil may be included in Public Distribution System, Mid Day Meal programme of schools and supplementary nutrition programme under ICDS. MSP procurement of copra may be enhanced by invigorating the state level procurement agencies, by providing additional support price of at least Rs. 500 per quintal of copra etc are few supporting steps. Government of Karnataka is already giving Rs.700 per quintal extra price and Government of Kerala has announced Rs.500 per quintal extra under MSP procurement. Promoting value added products of coconut by giving 25% capital subsidy may be considered by the respective state governments over and above the 25% capital subsidy provided by CDB under TMOG.

Encouraging more entrepreneurs in coconut sector by establishing 'Coconut Parks' by state governments would be an idea which can kick start organised processing for value addition outside the copra- coconut oil stream. To begin with Coconut Parks may be set up in districts with area more than 20,000 ha. under coconut cultivation.

During the tough times, it is seen that more creative and innovative ideas are emerging. Viewing tender coconut as "undiluted, unpolluted unpoisoned" natural health drink will surely a better step to ensure steady price to farmers. It offers unlimited opportunities for value addition. Already there is a steady market for this. Global and national markets are growing in a big way in this segment. Export enquires are piling up, but our existing production capacity is the limiting factor. Organised efforts to tap this sector is the need of the hour. A welcome change initiated by coconut farmers in Pollachi area of Tamil Nadu in the form of Tender Coconut Growers Association (TCGA) is worth replicating in other states of India. It needs further scaling up in Tamil Nadu. Our hearty congratulations and best wishes to member farmers of TCGA, Pollachi as they are showing a role model which needs further support.

Hope that such creative interventions by farmers will come out in more numbers in the coming days.

With best wishes,

T K Jose



Chairman

# Making the Impossible Possible

Remany Gopalakrishnan

challenge to bring India the world leader in area where the country is lagging behind. It is a herculean task, of course. But nothing is impossible when the handholding of millions of coconut farmers and the stakeholders, comes true. The efforts of the Board are therefore now dovetailed to make the impossible possible through innovative ideas, novel development strategies, linkage and diverse integration with various departments and aggregation of farming community.

## World leader in Production and Productivity

For placing India in the forefront in production and productivity, programmes which give thrust to these areas should be taken up with different dimension. The area expansion programme implemented by the Board was concentrating mainly in traditional belts. A shift in strategy has felt imperative since the scope for further expansion in the traditional areas have become bleak. Introducing the crop in non traditional and potential regions in the traditional states and nontraditional states in north east and disturbed areas will therefore be given focus during this plan period. Odisha, Maharashtra, Gujarat, Assam, Tripura,

Chattisgarh and Jharkhand etc come under this category.

Shrinking land resources and increasing cost of cultivation underline the need to improve productivity, which in turn, is the short term strategy for improving production. Greater thrust will be given on productivity oriented programmes going on in the country. The major scheme under implementation is the pilot project for Replanting and Rejuvenation in Kerala and Andaman & Nicobar Islands. This scheme, implemented in 3 districts in Kerala and in the Union Territory from 2009-10, is being evaluated for extending to other districts of Kerala and to other traditional states in the country. A three fold increase in productivity is aimed to get over the present stagnation in productivity.

Quality planting material is a prerequisite for improving productivity. Considering the fact that hybrid seedlings give 2-3 fold increase in production, it is envisaged to scale up the production capacity of the Demonstration cum Seed Production (DSP) Farms of the Board during the plan period. Simultaneously a new collaborative research strategy has been initiated to scale up hybrid seedling production, in association with academic institution and NGOs.

The Board encourages the

India is number two in production; number one in productivity and number three in area under coconut among the coconut growing countries. In processing and value addition, India is not even reflected among the first 10 countries and in export not among the first 20 countries.

Is India a country to remain with such a low profile? Certainly not. Bestowed with most congenial agro climatic conditions, diverse soil types, abundant water resources, skilled technical man power, the country has every potential to become the leader in production, productivity, value addition and export. Coconut Development Board (CDB) is taking the

initiative by providing both technical and financial resource. Institutions can survey and document sufficient number of dwarf mother palms which would form the female parent in the DXT hybrid production. Male pollen parents also will have to be identified and marked in advance. Sufficient manpower is provided for identification of mother palms, emasculation, pollination, collection of nuts, raising nursery etc. Artificial pollination is carried out in identified dwarf palms after emasculation. Hybridized nuts on reaching maturity are harvested and sown in nursery with proper documentation. Sale of seedlings will be approved after stringent selection criteria and at reasonable price as per the agreement executed prior to the initiation.

The funding will be under the Technology Mission on Coconut at 50% of the total cost or Rs. 35 lakhs whichever is less. The project envisages production of 40,000-50,000 hybrid seedlings from the 3<sup>rd</sup> year of the project.

### Small Farmers to Stay United

Forming farmers collectives are



*Farmer collectives*



### Fat free, sugar free, gluten free and cholesterol free Ice cream

Ice cream derived from coconut milk or soft kernel of tender coconut will be the answer for a fat free, sugar free, gluten free and cholesterol free ice cream. Coyo, an Australian company is reaping success from coconut ice cream made from coconut milk.

the permanent answer to the widely scattered nature of small coconut holdings and highly unorganized farming community. Formation of Coconut Producer's Society (CPS)

of 40-100 farmer members in contiguous areas made a kick start in 2011. By completing the formation of 1629 CPSs and 28 Coconut Producers Federations (CPF's), the Board continues its efforts with confidence in bringing a landslide victory in scientific management of gardens, farm level processing, aggregation of produces and export of value added products. Federations will transform into Coconut Producer Companies (CPC's). In this plan period 10,000 CPSs, 500 CPF's and 250 CPC's are targeted. CPSs and Federations can take up programmes like coconut nurseries, coconut cluster programmes and small processing activities like manufacturing coconut chips, vinegar etc. To make available sufficient tendernuts CPS/CPF's should plant minimum 5 lakh tender nut variety seedlings. They should not sit idle due to the present price crash.

Producer Companies could take up mega projects like packing of tender coconut water, coconut milk powder, coconut milk, coconut milk cream, coconut ice cream, desiccated coconut, shell powder and activated carbon units.

## Significant milestones of the Board

The area under 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 11<sup>th</sup> plan. 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.

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 was

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 462 projects under different categories were assisted and Rs.83 crores was released as subsidy. Coconut Development Board is notified as Export Promotion Council on 1.4.2009. So far 800 exporters of coconut and coconut products have registered with the Board. Several value added products like processed and packaged tender 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 212 Coconut Processing Units. Infrastructure facilities worth Rs.207 crores were developed with capacity of processing 1961.14 million nuts per year. 12 activated carbon units with a capacity to produce 25,800 MT per year have been established. 1629 Coconut Producers Societies (CPS) are formed. 7,722 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.

### Think Beyond Copra and Coconut Oil

A strong realization that coconut tree will no more be a copra producing tree, or oil producing tree will help bring perceptible improvement in utilization pattern. Coconut shall be positioned as a perennial source of raw material for a variety of value added products and bye products. Value addition can be water based, kernel based, shell based and husk based. Starting from tender nuts the variety of products that can fetch good domestic and international markets are many like packaged tender nut water, water based soft drinks, ice cream, tender nut pudding etc. Kernel based products cover coconut milk, milk powder, coconut cream, desiccated coconut and

### Virgin Coconut Oil- a Panacea for chronic ailments?

Yes, for Alzheimers, Dementia, Autism, Hypothyroidism, HIV, and finally for tooth decay virgin Coconut oil is a Panacea – says many. Take advantage of the findings. Use Coconut oil as cure for ailments.

virgin coconut oil – all have export demand if marketed in attractive packings with prescribed quality assurance. Shell charcoal, shell powder and activated carbon are the value added shell based products with growing international demand.



### 100 Tender nut water packaging units – the Dream Target

Tender coconut is emerging as world's number one health drink. Demand for tender nut is increasing globally.

Many foreign companies like Vita coco, Zico and One drink flourish well in packaged tender nut water industry. We have a few brands viz., Tendo, Cocolal, and Tender coco which have already made entry into international markets. But we should not be complacent in this state of affairs. A minimum 100



*Friends of Coconut Tree Training*

tender nut water packaging units is aimed for bringing a perceptible improvement. Technology developed by the Board for packaging tender coconut water is the best among all available technologies and many countries evinced interest to acquire the technology. We have to attract more entrepreneurs with enthusiasm and commitment to this field.

### **Integration with various departments**

Board is planning to have multilevel collaboration and integration with other departments rather than functioning independently. Collaboration with organizations like National Horticultural Mission, Small Farmers Agri-Business Consortium, RKVY, MNREGA, NRLM and the three tiers Local Self Government Departments will bring maximum financial support, integration of variety of enterprises, speedy execution, and multilevel monitoring.

### **Neera - Change Government policy in favour of farmers**

Unfermented fresh juice tapped from coconut inflorescence is neera which is sweet, nutritious and is good even for diabetic patients because of its low glycemic index. Its down stream products like jaggery and coconut palm sugar have growing demand in export markets. The hue and cry of

### **Do we starve and die or live?**

When population worldwide is on the increase and availability of food products is on the reverse, **which one do we promote? Coconut, the crop which provides food and beverage or other cash crops which bring in temporary profit?** Think it over.

farmers to tap neera falls on the deaf ears, as the prevailing Abkari Policy do not permit neera tapping. Board is taking all efforts for an enabled policy. Countries like Indonesia, Thailand and Philippines earn considerable export earnings from neera and its down stream products. India can do better if a change in policy is expedited.

### **Leadership Programme for Training Capacity building**

Coconut Producers' Societies or Farmer collectives will transform to Federations and then to Coconut Producer Companies. This journey will not be an easy walk over but involve strenuous efforts. Organising leadership training for capacity building and resource management has taken as a pre requisite by the Board for fulfilling its commitment. This mentoring would enable the leaders in identifying problems and tackling cardinal issues and conscientise them on the need for being united. Board depends on good management institutions and NGO's having capacity for conducting leadership training.

Many more issues left out are to be tackled. Board's Friends of Coconut Tree training programme for addressing the issue of shortage of coconut climbers has received accolades and appreciation. These efforts will be continued with more refinement. Above all farmer oriented research priorities in all areas of crop production and management including mechanization in cultivation and pre and post harvest technologies will get priority in this plan period. A comprehensive and holistic approach in the development strategy through aggregation of small and marginal farmers and integration with other departments will definitely help India to become the World leader in production, productivity, processing and export. Let our dreams come true.

*Deputy Director, CDB, Kochi-11*

## Coconut Development Programmes for the benefit of farming community

T. I. Mathewkutty

Coconut, *Cocos nucifera* is an important versatile horticultural crop which provides all required amenities for human life. It is a crop for food, oil, beverage, fibre, timber and fuel. It also provides a variety of raw materials for production of an array of products of commercial importance. Coconut is a small holder crop, which is widely grown in 18 states and three Union Territories in the country. Role of coconut is quite significant in the national economy in view of poverty alleviation and generation of income and employment especially to the poor. The crop contributes about Rs. 8300 crores to the country's GDP and 6% to the vegetable oil pool. The country also earns foreign exchange to the tune of Rs.1700

crores by way of export of coconut products including coir. It is estimated that about 10 million people in the country depends on coconut culture and industry for their livelihood.

Coconut Development Board under the Ministry of Agriculture was established in 1981 for the development of coconut cultivation and allied industries. The Board commenced implementing developmental programmes from 1982-83 which was the third year of the Sixth Five Year Plan Period. During this period, Board has implemented schemes viz., Expansion of area under coconut and Production and Distribution of planting material. The budget

allocation during the period was 3.67 crores which had a three time increase in the seventh Five Year Plan to the tune of 10.22 crores. During the 11<sup>th</sup> Five Year Plan the allocation was 395 crores and the Board has proposed schemes worth Rs. 1000 crores for implementation during 12<sup>th</sup> Five Year Plan.

Coconut Development Board has been implementing various long term and short term schemes for the benefit of the coconut farming community. These schemes were implemented in various states directly by the Board and with assistance of state agricultural/horticulture departments. Programmes triggering the production, processing and export



were effectively implemented through schemes viz; Production and Distribution of Planting Material, Expansion of area, Integrated Farming for Productivity Improvement, Technology Demonstration, Market Promotion & Statistics, Information and Information Technology, Technology Mission on Coconut, Coconut Palm Insurance Scheme, and Replanting & Rejuvenation of Coconut gardens. Among these schemes Production & Distribution of planting material holds utmost importance. Realizing the same the Board has implemented various programmes including Production & Distribution of Hybrids and other improved varieties through State departments, Establishment of Regional Coconut Nurseries - and Assistance for establishment of Nucleus seed gardens/ nurseries. Considering the importance of identifying suitable varieties and enhancing the production of seedlings Demonstration cum Seed Production farms were established in different agro climatic region of the country. At present the Board is having 7 DSP farms covering an area of 240 ha in the states of Karnataka (Mandya), Kerala (Neriamangalam), Andhra Pradesh (Vegiwada), Chattisgarh (Kondagaon), Bihar (Madhepura), Odisha (Pitapally) and Assam (Abhayapuri).

### **Demand for seedlings:**

Coconut is a perennial crop with an economic life span of more than sixty years and has got a gestation period of four to seven years. The full bearing capacity of the palm is known only after eight to twelve years of planting. If the planting material happened to be inferior in



quality, the garden will turn to be highly uneconomical and a continuous loss to the grower. Since coconut culture involves substantial pre-bearing investment, greater



emphasis must be given to the selection of good quality planting materials of the desired variety. In coconut the mode of propagation available is only through seedlings raised from seednuts. Though efforts are progressing at various levels for tissue culture propagation, we are yet to succeed in the same. Presently plumule culture

technology is being developed under which 6 to 8 seedlings could be produced from one seed nut (plumule).

The growth rate in area under coconut in the country during the past decade was 0.8%. In the coming years also trend would continue and there are possibilities for expanding area under coconut in Maharashtra, Chattisgarh, Meghalaya, Assam, and other North Eastern states. The present area under coconut is 1.89 million ha. Taking into consideration an average growth rate of 1% an additional area of about 18900 ha is to be brought under new planting. Considering the planting density of 175 palms per ha the annual requirement of planting material is around 3.3 million seedlings. The ongoing pilot project for Replanting and Rejuvenation of Coconut Gardens in three districts of Kerala viz. Thiruvananthapuram, Kollam, Thrissur and Andaman and Nicobar Islands is proposed for extending to other districts of Kerala and the traditional coconut growing states of Karnataka, Tamilnadu etc. during

the XII plan period. The requirements of seedlings for replanting in such areas are more. The estimated requirement for under planting and rejuvenation is to the tune of about 2% of the present area which is about 37800 ha. The seedlings requirement for this will work out to about 6.6 million per annum. Thus the annual requirement of seedlings in the country is estimated at around 10 million. For the production of 10 million seedlings about 15 million seednuts are to be collected and sown in the nursery.

#### Seedling production scenario:

High yielding varieties and hybrids of different parental combinations of Dwarf x Tall (DxT) and Tall x Dwarf (TxD) has the potential to yield at least 25-40% more than the locally cultivated Tall. Though many hybrid combinations of DxT have been released and its performance is much superior to local cultivars its availability is limited. DxT seedlings have also got a high acceptance among the cultivators, due to its early bearing character, semi tall nature and high yield. The non availability of dwarf mother palms is one of the major constraints in the production of DxT hybrids. Presently there are very limited numbers of coconut gardens where dwarf palms are available. There is a need to restructure the palm population ratio of Tall: Dwarf: Hybrids in the country at 60:20:20. For reaching this target more dwarf seedlings are to be planted. Besides dwarf nuts are more preferred for tender nut purpose and it fetches higher price.

The source of seedlings is from the seven Coconut Development

Board's Demonstration cum Seed Production (DSP) Farms, the nurseries of State Agricultural/ Horticulture Departments, State Agricultural University (SAU), Central Plantation Crops Research Institute (CPCRI) and from private nurseries. Some of the progressive farmers also produce seedlings for their requirement from good mother palms selected from their own gardens. The State Agricultural/ Horticulture departments also get assistance from the Board under the ongoing programme for the (a) production of hybrids and other improved varieties and for establishing (b) Regional Coconut

expenditure involved is shared equally on 50:50 basis by the Board and the State Governments. The receipts realized from the sale of seedlings are also shared on 50:50 basis. The details of seedling produced in implementing states during 2001-02 to 2011-12 is given in table 1. Accordingly 28.35 lakh seedlings were produced and distributed in the states of Kerala, Tamilnadu, Karnataka, Odisha, and Andhra Pradesh.

#### b. Establishment of Regional Coconut Nurseries:

The objective of the scheme is to supplement the nursery

**Table.1. State wise achievement under TxD (in lakhs) other released varieties**

Year	Kerala	Karnataka	Tamil Nadu	Odisha	Andhra Pradesh	Total
2001-02	1.5		1.25	0.5		3.25
2002-03	0.9		0.9	0.4		2.2
2003-04	0.75		1		0.02	1.77
2004-05	0.75		1			1.75
2005-06	0.75		0.991	0.26		2.001
2006-07	0.75	0.25	0.75			1.75
2007-08	0.75	0.25	0.75	0.25		2
2008-09	1.05	0.25	1	0.25		2.55
2009-10	1.5	0.25	1.2	0.25		3.2
2010-11	1.9	0.125	1.6	0.25		3.875
2011-12	1.9	0.25	1.6	0.25		4
<b>Total</b>	<b>12.5</b>	<b>1.375</b>	<b>12.041</b>	<b>2.41</b>	<b>0.02</b>	<b>28.346</b>

Nurseries. The Board also provides assistance for the establishment of coconut Nucleus Seed Gardens and private nurseries.

#### a. Production of TxD hybrids/ other released varieties:

A scheme for the 'production and distribution of hybrids and other released varieties has been under implementation since VIII plan period in various states and is continued to assist the state departments to produce hybrid and other released varieties. The

programmes of the state governments. The assistance provided is at the tune of Rs.12.5 per seedling produced. The scheme is implemented on 50:50 basis with the state department. From 2001-02 onwards about 59.825 lakh seedlings were produced under this programme in the states of Kerala, Tamilnadu, Andhra Pradesh, Odisha, Gujarat, Assam, Tripura, Nagaland, Arunachal Pradesh and West Bengal. The year wise production of seedlings under the scheme is given in the table 2.

**Table 2. State wise production of seedlings under RCN (in lakhs)**

Year	Kerala	West Bengal	Tamil Nadu	Andhra Pradesh	Odisha	Gujarat	Assam	Tripura	Nagaland	Arunachal Pradesh	Total
2001-02		0.94			1.5		0.25	0.25	0.25	0.3	3.49
2002-03		0.31			1.24		0.21		0.21	0.105	2.075
2003-04					1			0.15		0.1	1.25
2004-05	0		3	0	0	0	0	0	0.1	0.05	3.15
2005-06	2.58		0		3	2			0.05	0.05	7.68
2006-07	2.9		2.5		2			0.2	0.2	0.1	7.9
2007-08	2.5		2		1.5			0.2	0.2	0.2	6.6
2008-09	0.5		2		2			0.35			4.85
2009-10	2.6		2.3	0.15	2			0.1			7.15
2010-11	4.6		2.3		2	0.5	0.3	0.1	0.1	0.1	10
2011-12	2.13		3		0.45	0.15		0.05	0.05		5.83
<b>Total</b>	<b>17.81</b>	<b>1.25</b>	<b>17.1</b>	<b>0.15</b>	<b>16.69</b>	<b>2.65</b>	<b>0.76</b>	<b>1.4</b>	<b>1.16</b>	<b>1.005</b>	<b>59.825</b>

**c. Nucleus Seed Garden:**

The objective is to establish coconut seed gardens of known parentage for the production of seedlings of promising hybrid combinations/cultivars under private sector. Under this programme for establishing a seed garden in 4 ha area Rs. 6 lakhs is provided as Boards assistance for planting a minimum of 600 coconut seedlings during 3 year period. During the first year Rs. 3.00 lakhs is provided after completion of planting and creation of necessary infrastructure limiting to 25% of the cost incurred. Rs.1.5 lakh each in the subsequent two years is released from the Board based on the performance after field verification. In states like Kerala where land availability is low proportionate assistance is provided for 2 ha area. Under this scheme so far 49 seed gardens were established in the states of Kerala, Karnataka, Tamil Nadu, Andhra Pradesh and Nagaland.

**b. Registered / approved private nurseries:**

For encouraging production of quality seedlings through private nurseries Board is implementing a

programme under which assistance to the tune of Rs.2 lakhs is provided. Nurseries producing 25,000 seedlings per annum are provided Rs.1 lakh each in the first two years. Small nurseries producing 6250 seedlings are also entitled to avail proportionate assistance ie Rs.25,000/- each in two annual instalments. The scheme which has started during 2001-02 has assisted 253 nurseries in different states of the country.

**Coconut nurseries attached to DSP Farms :**

Board has established seven Demonstration cum Seed Production (DSP) farms in different agro climatic condition in the country with the objective of producing quality coconut seedlings of Tall, Dwarf and Hybrids of different parental combinations. The objective of these DSP farms

include transfer of technologies in the areas of production protection and processing besides serving as reliable sources of quality planting materials. In all the farms sufficient tall and dwarfs are planted to produce hybrids through artificial pollination. Production of hybrid seedlings has already started at the DSP farms of Mandya, Karnataka, Neryamangalam, Kerala and Abhayapuri, Assam. In the remaining four farms hybridization will be started during the current year.

The plant populations of different variety cultivars of the seven DSP farms are given table 3. These farms have got a total population of 20,576 palms.

The seedlings produced and distributed from the different DSP farms during 2005-06 to 2011-12

**Table 3. Details of variety wise yielding palms**

Variety	Mandya	Abhayapuri	Konda gaon	Madhepura	Pitalally	Vegiwada	Neriya mangalam	Total
Tall	1320	1333	2542	2423	1612	2030	462	11722
Dwarf	1500	888	568	200	1086	1235	729	6206
Hybrid	275	491	380	297	129	27	12	1611
Exotic	105	316	132	86	87	188	123	1037
<b>Total</b>	<b>3200</b>	<b>3028</b>	<b>3622</b>	<b>3006</b>	<b>2914</b>	<b>3480</b>	<b>1326</b>	<b>20576</b>

are given in Table 4. These seedlings could create a great impact among the coconut growers in those states.

Considering the high demand for quality seedlings the production target has enhanced during 2011-12 to 11 lakh seedlings. For

sowing is expected to be completed soon.

#### Mother palm identification:

In order to meet the demand for 10 million quality seedlings the efforts of CDB and other various state departments and other

**Table 4. Seedling Production:**

Year	Mandya	Abhayapuri	Kondagaon	Madhepura	Pitapally	Vegiwada	Neriamangalam	Total
2005-06	32428	8557	0	0	0	0	3054	44039
2006-07	62476	12973	3777	0	16319	27620	8246	131411
2007-08	83551	19624	9465	8825	5674	33284	10553	170976
2008-09	79209	15415	15023	746	8656	32112	22783	173944
2009-10	91057	19184	14268	2250	8894	16562	15194	167409
2010-11	132001	21078	13988	5178	14235	42867	16202	245549

achieving this target 19,28,923 seednuts were sown in the nurseries (Table 5). So far 10,77,860 seednuts are germinated and distribution of seedlings has already started from these farms. During the year 2013 it is proposed to produce 13.2 lakh

government agencies will not be sufficient. Involvement of progressive coconut farmers, Coconut Producers Societies (CPS) and coconut growers association are essential for this. For meeting the quality seednut

**Table 5. Seed nuts sown in the Coconut Nurseries attached to DSP Farms (nuts in numbers)**

DSP Farm	Hybrids	Tall	Dwarf	Exotic	Total
Mandya	79871	183430	97779	0	361080
Abhayapuri		319466	17075	3515	340056
Madhepura		168625	0	0	168625
Kondagaon		170013	2808	0	172821
Neriamangalam	7066	31196	120239	2325	160826
Vegiwada		226600	128680	0	355280
Pitapally		343635	26600	0	370235
<b>Total</b>	<b>86937</b>	<b>1442965</b>	<b>393181</b>	<b>5840</b>	<b>1928923</b>

seedlings which is a further enhancement of 20% production of 2012. For this about 21 lakh seednuts is procured and is sown in these 7 DSP farms. Activities have been already started for the procurement of seednuts and the

requirement, good mother palm gardens and mother palms are to be identified. It is envisaged to identify about 1.5 lakh mother palms in different coconut growing areas. (Table 6)



From the selected mother palms a minimum of 40 seednuts could be collected annually. Thus about 60

**Table 6. Details of mother palms identified**

State	Mother palms	No. of seed nuts (in lakhs)	Expected Seedlings (in lakhs)
Kerala	20000	8.00	4.8
Karnataka	30000	12.00	7.2
Tamil Nadu	30000	12.00	7.2
Andhra Pradesh	20000	8.00	4.8
Odisha	12000	4.8	2.88
Maharashtra	10000	4.00	2.4
West Bengal	10000	4.00	2.4
Assam	10000	4.00	2.4
A&N Islands	2000	0.8	0.48
Lakshadweep	2000	0.8	0.48
Goa	3000	1.2	0.72
Others	1000	0.4	0.24
<b>Total</b>	<b>150000</b>	<b>60</b>	<b>36</b>

lakhs seednuts of different varieties/cultivars need be procured in different coconut growing areas. This could produce about 3.6 million seedlings. Thus the present gap for good quality seedlings could be fulfilled to a great extent.

*Director, CDB, Kochi-11*

# Collaborative Research - a commitment to bridge the demand - supply gap of coconut hybrids

Remany Gopalakrishnan

## Introduction

Increasing productivity in coconut is the “mantra” now everybody advocates. This is in the backdrop of the diminishing land size and rocketing cost of cultivation. Realizing maximum returns from unit area is therefore the option before all. For generating higher income, increasing productivity is one way out. Productivity increase, in turn, could be achieved only through quality planting material of high yielding varieties or hybrid combinations.

Coconut hybrids are evolved through artificial pollination by combining cultivars possessing desired characteristics. Among the hybrids, there are recommended combinations for specific localities. In India hybrid vigor in coconut was first exploited for crop improvement in 1932. The idea was conceived by Dr. J.S.Patel, an eminent scientist, who during 1932-34 made three intravarietal and one intervarietal crosses, utilizing the tall and dwarf cultivars. It was observed that hybridization induced sufficient variability in the progenies and the expression of hybrid vigour became manifest in a general increase in the production of female flowers. Hybrid vigour has subsequently been utilized in hybridization technique for combining desired characteristics of selected cultivars.

The first hybrid combination evolved from the crosses made by Dr. J.S. Patel was Tall x Dwarf. However large scale production of this hybrid was not possible because of practical hurdles involved in the pollination of tall mother palms. Consequently, production of reciprocal hybrids of Dwarf x Tall was favoured thereafter. DxT hybrids are found to be superior to TXD hybrids in all respects. This combination is more vigorous in growth, and more regular in bearing. For mass production of such hybrids, establishment of seed gardens in various parts of the country was resorted to for carrying out artificial pollination.



*Chandrasankara*



*Kalpasankara*

## Genesis of Collaborative Research Project

Coconut plantations in our country are mostly old and senile. Experts who looked into the reasons for low productivity in Kerala attributed it to the predominance of large number of old, senile and unproductive palms. It was estimated that nearly 1/3<sup>rd</sup> of the population needed replanting with high yielding varieties.

Central Plantation Crops Research Institute (CPCRI) and State Agricultural Universities of Kerala and Tamil Nadu have evolved many hybrid combinations of TxD and DxT. From the yield performance of these two hybrids over the past 6-7 decades, DxT has



*Kalpasamruthi*

been found to perform better than TxD under field conditions and hence preferred by the farmers. In the beginning there was no system of producing these two hybrids on a commercial scale to meet the needs of the farming community. Therefore the Coconut Development Board (CDB) has taken the initiative of furthering production of hybrid seedlings through collaborative research in association with academic institutions and NGOs. This

supplements the efforts of the Board for producing hybrids in its Demonstration cum Seed Production Farms established in various parts of the country.

Two common DxT hybrids recommended for planting are Kalpasankara and Chandra Sankara. Kalpa Sankara is a DXT hybrid of Chowghat Green Dwarf and West Coast Tall. This hybrid has been recommended and released by CPCRI in 2009 as the suitable type for planting in the root



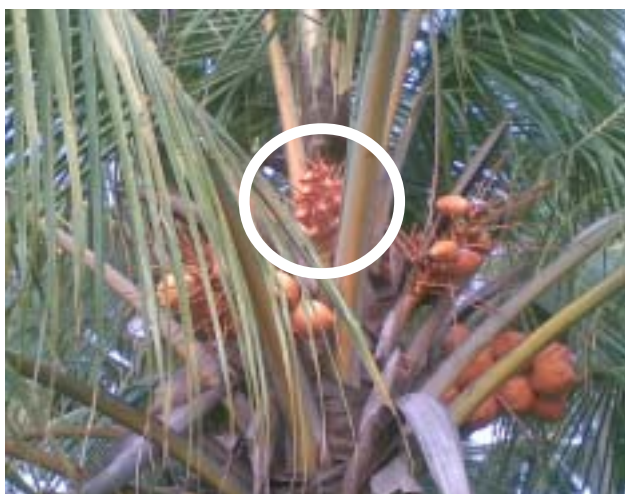
*Mother palms identified for pollination by Maithri*

wilt affected tracts in Kerala, as it has been found to have better tolerance to the disease. Other DxT hybrids recommended and released are Chandra Sankara (COD x WCT) and Kalpa Samrudhi (MYD x WCT). The first one was released as early in 1985 and the latter type in 2009. The yield of these hybrids is superior to that of its male parent WCT and is in the order of 116,117 & 84 nuts per palm per year respectively, in the case of Chandra Sankara, Kalpa Samrudhi and Kalpa Sankara. Copra yield per ha is in the order of 4.4 tonne, 4.5 tonne and 2.6 tonne.

### **Collaborative Research – Why and What?**

The demand for coconut hybrids in the country has been on the increase ever since different combinations were evolved. However, the hybrids produced and supplied in the country accounted for only less than 4 percent of the total production of coconut seedlings.

For improving productivity of coconut in the traditional coconut growing areas, a Replanting and Rejuvenation programme was launched by Government of India. The replanting envisaged was preferably with hybrids and dwarf, in view of their better yielding nature, short stature and increasing demand for high yielding cum tender nut variety. The Board, as a development agency was facing difficulty in meeting the demand for these cultivars either through Government nurseries or through nurseries in private sector. Considering the fact that paucity of planting material cannot be solved



*Inflorescence pollinated by Mythri in farmers garden*

through the ongoing programmes for seedling production, the Board initiated a collaborative research strategy through reputed academic institutions possessing facilities at the post graduate level in the disciplines of Botany, Zoology or Biotechnology. Reputed NGOs having sufficient infrastructure are also permitted to take up the project.

### **The Programme**

The technical content of the programme is identification of suitable mother palms of Chowghat Orange Dwarf, Chowghat Green Dwarf or Malayan dwarf cultivars and marking and documenting them before the commencement of the programme.

Simultaneously, good pollen parents of Tall also can be identified for pollen collection. Artificial pollination is thereafter resorted to for production of DxT hybrids through skilled pollinators. Seednuts so produced can be collected, sorted and raised in nursery beds. The institutions have to observe all protocols laid out in the hybridization technique and nursery production programme.

Each institution shall have to produce 40000-50000 hybrid seedlings from 3<sup>rd</sup> year of the project. The sale of seedlings shall be at a reasonable price agreeable to the Board. An MoU is executed between the Board and the participating institutions for the smooth execution enlisting the terms and conditions.

### **Support from Board**

The project will get the funding support from Technology Mission on Coconut. Fifty percent of the project cost or Rs.35 lakhs which ever is low is the grant eligible. Remaining 50 percent is the share of concerned institutions. The institution can avail grant under the items viz; lease amount to farmers for hiring mother palms, training cost to pollinators, wages/ TA to Project Assistants, skilled pollinators/ workers, cost of nursery raising including lease amount, laboratory equipments for pollen preservation, nursery infrastructure like green house, sprinkler irrigation system etc.

The Board extends technical support for the preparation of the project report and financial support for surveying and documentation of the mother palms as a prelude to the main project.

In Kerala four colleges and 2 NGO's have so far come forward to take up the project. Among the NGOs, Mythri from Palaghat has progressed much and started hybridization in few palms. More projects are expected from Tamil Nadu and Karnataka.

### **Benefit**

The project is intended to bridge the gap in the demand and supply of hybrid coconut seedlings. If 10 institutions with facilities come forward, 5 lakh hybrid seedlings could be produced annually which would reduce the gap in the demand supply of high yielding hybrid seedlings in the country. Five lakh seedlings per year would help cover an area of 3000 ha. This would enable to add 75 million coconuts to the total production in the country.

*Deputy Director, CDB, Kochi-11*

# Technology Mission on Coconut - enabling competitiveness in coconut

Jayashree. A

The implementation of Technology Mission on Coconut programme by the Coconut Development Board has helped to solve production constraints to a great extent besides developing many technologies for product diversifications and by-product utilization and their commercial adoption. The programme is being implemented by the Board since 2001-02 as a part of the ongoing programmes for integrated development of coconut industry in India and to address serious problems faced by the coconut industry in a strategic manner for making the coconut cultivation and industry globally competitive and to ensure reasonable returns to the stakeholders.

Coconut Development Board has been involved in a wide range of programmes for increasing production, productivity and product diversification & market promotion of coconut for the upliftment of the coconut farming community. Among these programmes Technology Mission on Coconut plays an important role. The Mission was initiated to address the problems faced by the coconut growers like severe incidence of pest and diseases, fluctuations in price of coconut, to provide maximum output in relation to the investment and to ensure respectable life to millions of people who depend on it.

The Technology Mission on Coconut aims to establish a convergence and synergy among ongoing programmes to bring about vertical and horizontal integration so as to ensure adequate, appropriate, timely and concurrent attention to all the links in production, processing, product diversification and marketing in the consumption chain. The mission also tries to maximize economic, ecological and social benefit from the existing investment and infrastructure and disseminating technologies using participatory approach through demonstration and promotion, thereby trying to address the gaps in a mission mode. The Technology Mission broadly focuses on the areas like research & development, infrastructure development, integrated management, capacity building, participatory planning and implementation, quality, quantity &

productivity improvement, ecologically sustainable schemes, sustained natural resource management, post harvest processing, product diversification, value addition and promotion of agri-business in coconut.

Efforts made with focused attention on awareness creation and market promotion increased the demand and consumption of coconut and value added products. During the initial periods thrust was mainly on pests and disease management due to the sudden outbreak of various pests and diseases and resultant problems. At present there is a paradigm shift to product diversification and establishment of coconut based processing units. Since the coconut by products have attained high demand recently, the scope for establishment of units for coconut products viz. desiccated coconut,



*Unit assisted by Board under TMOC*



virgin coconut oil, spray dried milk powder, preserved and packed tender coconut water as well as shell charcoal and activated carbon have increased considerably.

The Mission aims to provide Technology inputs at all level of coconut economy covering areas like cultivation, protection against pest and plant diseases, diversification, value addition, storage and marketing facilities in order to cope up with the present era of change and to make coconut industry competitive. In this regard, strategic approach is undertaken in mission mode for the development, adoption and promotion of technologies not only for coconut cultivation but also for processing, value addition and marketing of coconut and coconut products. Hence issues like development of new technologies and their promotion and adoption especially in respect of control of insect pests and disease management, product diversification, market research and promotion have been identified for addressing in a strategic manner.

Technologies have been developed by the Board in



*A ball copra unit assisted by Board under TMOC*

collaboration with various research institutions for Virgin Coconut Oil, Defatted Coconut Powder, Spray Dried Milk Powder and packing of Tender Coconut Water through institutions like CFTRI & DFRL, Mysore.

Board has established a full fledged Quality Testing Laboratory (QTL) at Technology Demonstration cum training center, Aluva, Kerala for chemical and

Technology Transfer of Products	Technology Transfer Fee (Service Tax @ 12.36% extra) (Rs)
Packing and Preservation of Tender Coconut Water	3,50,000/-
Spray Dried Coconut Milk Powder	5,00,000/-
Virgin Coconut Oil	50,000/-
Coconut oil blends with other edible oils	50,000/-
Vinegar (Quick process)	10,000/-
Vinegar (slow process)	1,000/-

microbial analysis of coconut based products. The laboratory is equipped with advanced analytical instruments and modern facilities as per NABL requirements to carry out chemical/microbiological tests of coconut based products. The QTL has obtained NABL (National Board for accreditation of testing

and calibration laboratories) accreditation. QTL is equipped to undertake analysis of food products, oils, beverages, squashes, jam, pickles, organic manure, water etc. for chemical and microbiological parameters including heavy metals, pesticide residues, minerals etc. The lab is under the process of being recognized as a notified lab by Bureau of Indian Standards. Periodical training on coconut products are extended by the training centre.

The TMOC programme is implemented on project basis and consists of the following sub components:

- (i) Management of insect pests and disease affected coconut gardens.
- (ii) Processing and product diversification
- (iii) Market Research and promotion
- (iv) Technical support, external evaluation and emergent requirements – on need basis.

For the projects involving development of technologies and demonstration of proven technologies, institutions such as ICAR, CSIR, ICMR, SAU's, other Universities, NGO's or any other organizations having the capacity to do research can avail the assistance under Technology Mission. For availing assistance for adoption of technologies, farmers, cooperatives, group of farmers, entrepreneurs etc. are eligible. For assistance under Market Research and Promotions, Govt. agencies, NGO's Cooperative Societies, Individuals, entrepreneurs or any institutes or organizations having the capability are eligible to apply.

## Pattern of Assistance

### I. Management of insect pest and disease affected coconut gardens

For projects under this category, Financial assistance @ 100% of the project cost upto maximum of Rs.50 Lakhs for Govt./ Public Institutions and 50% of the project cost not exceeding 25 Lakhs for NGO's and other Private Organizations will be extended by the Board. Similarly for technology demonstration through public / Govt. institutions, assistance extended is at the rate of 100% of the cost not exceeding 25 Lakhs and 50% of the cost not exceeding 10 Lakhs to NGO's and Individuals. In the case of adoption of technology, assistance extended is 25% of the project cost.

### II. Processing and product diversification.

The pattern of assistance provided under this component for research projects is 100% of the cost is limited to Rs.75 Lakhs for Govt./ Public Institutes and 50% of the project cost limited to Rs.35 Lakhs for other institutions and organizations. The assistance extended for adoption of technology by the industry is by the way of credit linked back-ended capital subsidy limited to 25% of the cost not exceeding Rs.50 Lakhs. The promoter should avail a minimum 40% of the project cost as term loan for availing the assistance. Support is also provided for technology acquisition, demonstration and training limited to 50% of the cost for private entrepreneurs/ organizations and 100% to public institutions.

### Products developed by the Board in collaboration with other research institutions

- Virgin coconut oil (CFTRI, Mysore)
- Defatted coconut powder (CFTRI, Mysore)
- Coconut water based Vinegar (CFTRI, Mysore)
- Coconut water and milk based beverages like Pinacolada (Nadukkara Agro Processing Co., Kerala)
- Convenience based foods – nata-de-coco, jelly, chips (TNAU, Tamil Nadu)
- Snow ball tender coconut (CPCRI, Kerala)
- Minimally processed tender coconut (KAU, Kerala)
- Coconut rice mix, coconut cubes, filling mix, chutney powder (CFTRI)
- Blended oil (CFTRI)
- Machinery for ball copra making (RRL, Trivandrum)
- Refinement of packaging for snow ball, chips, minimally processed coconut, edible copra, handicrafts. (IIP, Mumbai)
- Tender coconut punching & shaping machine. (Veepees Industries Pvt. Ltd. Kerala)
- Utilization of tender coconut husk for making compost and hardboard. (CCRI, Kerala)
- Coconut honey form matured coconut water (CFTRI, Mysore)
- Coconut spread from matured coconut water (CFTRI, Mysore)
- Coconut lessi for tender coconut (CFTRI, Mysore)
- Coconut souffle (CFTRI, Mysore)
- Whey-protein powder (CFTRI, Mysore)
- Wet chutney powder (CFTRI, Mysore)

### Promising products on anvil

- Development of Low Fat (<4%) Nutritionally Rich Delicious Fresh Tender Coconut Cream (SCMS)
- Development of a nutraceutical preparation using nut water (AIMS)
- Development of Processes and Herbal formulations based on Virgin Coconut Oil (AVTAR)
- Development of a litholytic formulation, incorporating the medicinal principles of coconut water and core of pseudo stem of banana (CARE-Keralam Ltd)
- Immunostimulation with Virgin Coconut Oil to treat recurrent infections of the upper respiratory tract of Children (CARE-Keralam Ltd)
- Development of an Anti Diarrhoeal formulation, incorporating the medicinal principles of coconut water and heart wood of Caesalpinia sappan (CARE-Keralam Ltd.)

### III. Market Research and Promotion

The pattern of assistance extended for market research projects by Govt./ public sector institutions is 100% of the cost limited to Rs.25 Lakhs and for similar projects from Co-operatives and other institutions, it is 50% of the cost limited to Rs.12.5 Lakhs.

For market promotion, the assistance extended is 100% of the cost limited to Rs 25 Lakhs to public organizations and 50% of the cost limited to Rs.10 Lakhs to NGO's/ Private institutions.

### IV. Technical support, External Evaluation and emergent requirements

Technical support for

scrutinizing the project proposals, hiring experts from various fields as per the requirements, concurrent external evaluation and mid term corrections where ever necessary are being carried out by engaging experts/committees under this component programme. Besides, provision is made for secretarial assistance, personnel to monitor the implementation of the programme. The extent of assistance will be as decided by the Project Approval committee and Chairman PAC based on the needs, priorities and provisions.

Under Technology Mission on Coconut, Board has extended assistance for 462 projects of Rs.485 crores. Board has extended support for establishment of 212 Integrated Coconut Processing Units with infrastructure facilities worth Rs.207.81 crores and with a capacity to process 1961.14 million nuts per year by extending financial assistance to the tune of Rs.36.43 crores for value addition and by-product utilization. Under Technology Mission on Coconut (TMOC), component- adoption of technologies, the Coconut Development Board is providing assistance for setting up of coconut based industry other than husk.

### **Conditions for extending financial assistance for setting up coconut processing units**

Opportunities in coconut industry can be realised by focusing attention on the non-traditional products from coconut. Research undertaken and recent technological developments brought out viable technologies in the processing sector and there by preference for processed and convenience oriented products opened the global market for value added coconut products. Back-

ended credit capital subsidy shall be provided to projects under TMOC, which are found to be technically and financially viable. The subsidy shall be limited to 25% of the project cost but not exceeding Rs.50 lakhs for infrastructure development, establishment or modernization and up gradation of coconut based processing units under the scheme. Registered societies, NGO's, entrepreneurs, individuals and any other institutions having capacity to adopt technology are eligible for this assistance. All the proven technologies in processing and product diversification are included as components under this. A promoter can avail assistance for a second unit for the same product or a different product subject to the condition that wherever subsidy is claimed for the second project or subsequent project, it would be essential that the previous project must be complete, successfully being operational and repayment to the bank / financial institution are prompt and unit has been submitting monthly return to CDB. New project should be altogether a complete project with separate term loan and viability worked out separately by the bank.

A detailed project report along with application and all the relevant documents has to be submitted for availing the financial assistance from the Board under the scheme. Kerala Govt. has also announced a subsidy of 25% for setting up of coconut processing units. The promoter can avail subsidy from the concerned State Government agencies also but the total subsidy availed should be below 50% of the project cost altogether.

The scheme will cover the activities like setting up/expansion/

modernization of coconut processing units, adopting technologies leading to value addition and shelf life enhancement for coconut products viz. preserved and packed tender coconut water, virgin coconut oil, spray dried milk powder, desiccated coconut as well as shell powder, charcoal and activated carbon. Refinement of traditional processing methods including quality certification, micro-filtering and branding could be considered as value addition in the case of coconut oil and virgin coconut oil and considered for assistance under the scheme. In general only those works, which were undertaken, and machinery/equipments purchased after the date of submission of project to the Board shall be considered for financial assistance. All machinery/equipments procured for the project should preferably satisfy ISI standards. However, in the cases of fabricated machinery the materials used for such fabrication shall be of ISI specification/standard. Applications submitted to CDB one year after commencement of commercial production will not be considered for financial assistance under the scheme.

The promoter has to avail at least 40% of the project cost as term loan from a bank/Financial Institutions of his choice. The cost of land development, construction of building, electrification, machinery, its installation, know-how fee, etc. shall be considered normally for arriving at eligible subsidy. However civil works like guest house, staff quarters, canteen etc. shall be excluded while computing the eligible subsidy. The cost of building shall be restricted to the minimum requirement of the processing unit

proposed to be established as per the ceilings worked out for each product by the Board which normally is restricted to 40% of the total project cost. Eligible plant & machinery will not include office equipments, computers, air conditioners etc. The items, contingent expenditure, cost of vehicles, working Capital margin etc. shall not be considered for working out eligible subsidy.

The promoter shall display a permanent board in the premises of the unit stating that the project was established with the financial assistance from the Coconut Development Board under the scheme "Technology Mission on Coconut". All the beneficiaries of the scheme should submit annual statement of accounts to the Board on a regular basis duly certified by a Chartered Accountant.

The unit shall not be entitled to any subsidy in case the project is abandoned midway or the term loan availed from the bank is closed within 3 years from availing the same. In such cases, the subsidy available in the subsidy reserve fund shall be returned to the Board by the Bank/FI fully or as directed by the Board. All the projects having a capital investment of 100 lakhs and above shall engage qualified technical experts to ensure professional/management and technical supervision of the units. In case any foreign technology is acquired and adopted in the project, Indian Embassy/Consulate in that nation shall vouch such acquisition/transfer of technology.

The food processing units should obtain certification from FSSAI for their products and bigger units should have GMP and HACCP/

ISO certification. The products should be tested periodically at Board's Quality Control Lab at Vazhakulam, Aluva.

### **Terms and conditions for Release of subsidy**

Subsidy under the scheme shall be sanctioned by Project Approval Committee (PAC) which shall be released by way of cheque/DD favouring the subsidy reserve fund of the of the promoter with their bank/financial institution.

Release of first installment of subsidy shall be subjected to the fulfillment of the conditions in the tripartite MOU executed between the Board, Financial Institution and the Promoter. The release shall be time specific and in accordance with the successful completion of different stages of approved project, limited to 50% of the eligible subsidy or first year requirement of the programme, which ever is less. Fifty percent of the loan should be availed by the promoter before granting the first installment.

Upon completion of the project, the financial institution concerned shall inform CDB that the project has been completed as per the guidelines of CDB. A joint inspection of the unit by the Bank and CDB shall be undertaken in the presence of the promoter. For release of second installment the promoter has to avail full loan sanctioned by the Bank. The promoter shall submit an asset accrued statement as per the MoU duly certified by the Bank/ CA along with list of machineries and cost, building completion report by the engineer etc for availing second installment of subsidy.

Final payment of subsidy shall be released to the Financial

Institution concerned on receipt of a satisfactory completion report and on stabilizing the production as per the MoU. Month wise production details for three months has to be submitted by the promoter before availing the final installment of subsidy.

The subsidy released by the Board shall be kept in "Subsidy Reserve Fund" account with the bank from which term loan has been availed by the unit and shall be in the joint name of the Unit and Coconut Development Board, Kochi. The bank shall ensure the repayment of the loan strictly in accordance with the mutually agreed loan repayment schedule. Even if the entire loan is repaid prematurely, bank should retain the lien on the assets offered by the promoter as security for a period of not less than 5 years from the date from which loan is availed. Before adjusting the subsidy to the loan account of the promoter from the subsidy reserve fund, the bank should seek the permission of the Coconut Development Board. Production status has to be furnished by the promoter periodically and also the annual audited statement to the Board.

The processing units on reaching commercial production can also avail market promotional assistance from the Board for brand promotion, participation in fairs/ exhibitions, advertisement through electronic and print media etc. The maximum eligibility for such assistance would be Rs. 10 lakhs on reimbursement basis.

Further information can be had from [www.coconutboard.gov.in](http://www.coconutboard.gov.in). - Technology Mission on coconut.

*Senior Technical Officer, CDB,  
Kochi-II*

# Skill development and Business oriented training programmes in Coconut processing

Sreekumar Poduval

Over the last decade, coconut processing is becoming an important area for rural development, improved food security and small enterprise development by international donors, national government agencies and NGOs. Beneficiaries are either farmers, householders or existing/aspiring small-scale entrepreneurs and in many programmes there is a focus on women, who are said to find coconut processing an easily accessible option for improving household income or food security.

It is recognized that many people know how to process traditional foods for consumption in home or for immediate sale to neighbours. However, in small enterprise development, the concept of producing a packaged product for distant sale and consumption by unknown people is new to many intended beneficiaries. Therefore training programmes are required to introduce unfamiliar ideas such as standardized production and packaging, marketing, production monitoring and control of finances.

## **Training programs undertaken by Coconut Development Board for Self Help Groups/Farmer groups/Coconut Producer Societies**

Coconut Development Board at its Technology Development Centre at Vazakulam, Alwaye, Kerala is imparting training to women's Group, NGOs and other voluntary agencies for upgrading

entrepreneurship development skills for optimum utilization of resources, adopting the right processing techniques, usage of cost effective packaging systems and quality assurance. The objective of the training programme is to focus attention on the huge potential for coconut convenience foods and range of product recipes, to impart training skills, entrepreneurship development, leadership qualities and providing marketing tips.

India is endowed with excellent resources for promoting coconut based industries especially in farm level processing. The potential in this sector has not been tapped to the fullest extent. Post harvest losses due to quality deterioration in storage, poor handling techniques and inefficient processing, lack of attention to quality and hygiene and poor packaging techniques are some of the factors hindering the development of coconut based industries.

To address these issues, the Board imparts hand on training to women/self help groups, NGOs, Coconut Producer Societies and entrepreneurs for upgrading their entrepreneurship development skills for optimum utilization of resources, adopting efficient processing techniques, usage of cost effective packaging systems, application of food safety management systems and maintaining desired product quality standards. The broader objectives of the training program are to impart leadership qualities and provide marketing tips, familiarize

the participants on quality control and quality management systems being followed in food processing industries.

The training programmes are broadly classified into three types –one day training on coconut convenience foods and minimally processed tender coconut, two day training on coconut vinegar and four day trainers training program for entrepreneurs and leaders from self help groups/farmer groups/societies. The main products covered under the training program are coconut chips, coconut biscuits, coconut burfi, coconut laddoo, coconut pickle, coconut jam, coconut chocolate, coconut lemonade, coconut chutney powder, minimally processed tender coconut and coconut vinegar. Training centre under the Coconut Development Board have so far undertaken training for 140 batches comprising a total of 1500 members from various districts of Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Assam and West Bengal.

To be successful and impart sustainable benefits to participants, training courses should carefully identify their training needs and then design courses and facilities that are appropriate to meet those needs. The farmers need to develop business acumen to reap the benefits of the business oriented training programmes facilities being offered in the coconut processing sector.

*Processing Engineer, CDB, Kochi-11*

## Akshaya, the biodiversity hotspot

Vijayakumar Hallikeri

Akshaya is a distinctive organic farm owned by K.M. Basavaradya, a Professor in Chemistry who has taken agriculture as his profession. This 20 acre farm cum nursery established 60 years back is situated in Kengeri, in Bangalore south taluk. Basavaradya's son, Guruprasad a lawyer by profession too has chosen his father's path, and is actively involved in the development of the horticulture crops in the garden. A large variety of plants like coconut, arecanut, mango, sapota, lime, sour orange, jack, amla, bael, curry leaf, coffee, black pepper, bettle leaf, vanilla, and also teak, silver oak and seege are grown in this farm. Some of the coconut trees in his farm are 80-125 years old.

Basavaradya is having 650 yielding coconut trees in different age groups ranging from 15 to 125



*Coconut farm intercropped with various other crops*

years. However even the trees which are more than 80 -100 years old are performing well and giving good yield. Due to the good management practices followed in the farm, he gets an average yield of 120-150 nuts per palm per year.

High density multistoried

cropping system with areca as the major inter crop is adopted in the garden. The farm is having nearly 6000- 7000 arecanut plants.

In addition to the inter crops, the farmer has raised a nursery of coconut, arecanut, mango, papaya, rose, ornamental and forest trees. Coconut Development Board has extended financial assistance under its scheme Aid to Private Nurseries to Akshaya for the production of 12,000 coconut seedlings during 2007-08. He is a regular supplier of seedlings to the farmers and households and is registered under Nurserymen Co-operative Society, Lalbagh, Bangalore.

The Farm has to its credit a number of medicinal and aromatic herbs and shrubs. The horticultural plants are grown with utmost care



*A good yielding palm*



*Fodder crop grown as intercrop*

and attention. They have turned into a very good piece of lush green vegetation. These plants are rich horticultural wealth for large scale propagation. Thousands of farmers in the vicinity have been supplied with quality planting material produced in the farm, which in turn has led to the creation of vast horticultural plantations in the surrounding areas.

The farmer rear three cows and supplies milk to local dairies. He also grows fodder crops for his own

cows and is supplying to the local farmers. Sericulture, apiculture and vermin composting form part of the farm. The farm is a regular supplier of indoor and outdoor plants. Seedlings of medicinal, aromatic and fruit yielding plants are regularly supplied from here. The garden is serving as a habitat for local wild flora and fauna like peacocks, hornbills, woodpecker and several species of other rare birds, rodents, frogs, snakes, reptiles and small mammals.

Akshaya is a well managed organic garden. The entire garden is mulched with the biomass available in the garden. The garden has an open well and due to rain and water conservation measures, the ground recharge capacity is very good and the water table is just 80-150 ft below. There are three bore wells in each plot with pump set, pump house, farm house etc. The farmer has adopted the latest technologies like micronisers, drip system and sprinklers in the entire garden. Leaf shredder and weed cutter are also maintained in the garden.

The efforts of father and son are well rewarded. He is the recipient of Krishi pandith award (2010-11), ATMA best farmer award (2008-09), Zilla progressive farmer award (2010) instituted by UAS, Bangalore and the best organic farmer award of Art of Living (2011-12). He has applied for Dr. Marigowda award for best horticulturist and crop award of Corporation Bank for 2012-13.

#### Area and production of horticultural crops

Name of crop	Variety	Area (in acres)	Production (Per acre)	Total Revenue (Rs.)	Expenditure (Rs.)	Net Revenue (Rs.)
Coconut	Tiptur tall Arsikere tall	20 20	6000-7000 nuts	480000	74000	406000
Arecanut	Local variety	12	3.5-4 tons	480000	125000	355000
Mango	Mallika, badami, raspuri, tothapuri	8	16-20 tons	100000	25000	75000
Sapota	Calcutta round	4	4 tons	16000	6000	10000
Tamarind	local	6	20 tons	20000	3000	17000
Jackfruit	Chandra and local	Border plantation in 12 acres	2000 nos	24000	2000	22000
Black pepper	Paniyur	3	100kg	25000	5000	20000
Betel vine	Ambaadi	0.5	20000 nos	20000	3000	17000
Banana	Yellakki and G-9	5	6000 kgs	30000	8000	22000
Butter fruit				8000	1000	7000

The rich horticulture plant wealth in this farm is not only an asset to the owner but an invaluable wealth for the sustenance of mother earth. The garden is important for the sustenance of local biodiversity, their utility and exploration. Akshaya farm is unique in a city like Bangalore which is expanding and developing at an exceedingly rapid rate and is endangering the natural resources. Akshaya is indeed a biodiversity hotspot worthy of preservation for future generations for maintaining the balance of nature.

*Deputy Director, CDB, RO, Bangalore*

## Where there is a will there is a way

K R Kuttikrishnan, Pramod P. Kurian and G. Ragothaman

Jakka Vekatram Reddy, a software engineer turned farmer is an ardent believer of the saying of Albert Einstein that “The world we have created is a product of our thinking; it cannot be changed without changing our thinking.” It was his passion for coconut cultivation that prompted Reddy to approach the State Center of the Board in Hyderabad in July 2008 with his decision to establish a Nucleus Seed Garden exclusively with Gangabondam, a dwarf coconut variety belonging to Andhra Pradesh. Being aware of the potential of this dwarf variety, Reddy was determined to establish the largest Gangabondam garden in India.

Gangabondam is a dwarf cultivar originated in the Godavari belts of Andhra Pradesh. It is an excellent dwarf type suitable for tender coconuts and also for producing promising DxT hybrids.

Reddy owns 35 acres of land at Singur Village in Medak District in Andhra Pradesh which is well connected by road. The farm is situated on the banks of Manjeera river which has sufficient water through out the year. Initially Reddy purchased about 2000 seedlings but while checking the phenotypic characters of the seedlings, it was found that the majority of the seedlings were not of Gangabondam variety. Hence he again purchased 2000 Gangabondam seedlings from a reliable source and planted the seedlings in 30 acres of his land. From the DSP Farm of the Board he purchased 200 Ganga bondam seedlings and gap filled the garden. The garden gets plenty of water for irrigation as the land is situated on the banks of Manjeera River. Reddy had to face a whole lot of other problems like low fertility of the soil and the attack of various pests and diseases. But Reddy didn't lose



*Panoramic view of the garden*

heart. He maintained the seedlings well by following all scientific techniques viz. drip irrigation, fertilizer and manure application as per the soil test result.

Due to the constant monitoring and sincere efforts taken by the farmer, the seedlings got established. Proper INM and IPM practices made the seedlings to pass the



*Three year old plam with inflorescence*

set back in growth observed during the first year of planting. In order to provide organic manure, Reddy initially purchased 2 Ponganoor breed cows (smallest cows in the world) and later 50 buffalo calves. He is planning to convert his garden into an organic farm. After two and a half years of planting he got the first flowering during the month of December 2010.

Mr. Reddy's decision to go exclusively for dwarf varieties in a considerably large area is now being proved to be a wise decision since the tender coconut have higher demand and fetches higher price than mature coconut. The success of Reddy's seed garden down toed the concept that coconut cannot grow in the black cotton soil of Medek District in Andhra Pradesh. Board has extended financial assistance of Rs. 6 lakhs to Reddy's nucleus seed garden. Board is supporting many Nucleus Seed Gardens and Nurseries across Andhra Pradesh.

Even though, the farmer is a software engineer, his passion for coconut cultivation and dedication is bringing him success and proved the age old saying where there is a will there is a way. He keeps on collecting all available information on coconut through constant touch with the State Centre of the Board, frequently visits government coconut farms, Research Institutes and Private Farms to update his practical knowledge in coconut cultivation.

*1.Dy. Director, 2. Technical Officer, 3. Technical Officer (on study leave) CDB, State Centre, Hyderabad*



# An Innovative Farmer Demonstrates Successful Model of Coconut Based Intensive Integrated Agriculture

P.K.Thampan

## Introduction:

In coconut farming increase in the productivity of coconut alone will not improve the living standards of small and marginal farmers who constitute the majority in the sector. To stabilize the coconut-based economy of these farmers it is essential to make use of the land under coconut for generating additional income sources. Among the major cultivated tree crops coconut palm is regarded as the most congenial for introducing different cropping and/or farming models underneath. Diverse practices such as intercropping, mixed cropping, multistoreyed cropping and mixed farming are compatible with coconut palm and could be developed as components of coconut-based intensive integrated agriculture.

Coconut-based integrated agriculture is a land management system in which diverse but compatible groups of trees, shrubs, herbaceous plants and livestock are integrated as components in the same operational holding. The system promotes functional diversity and maximum positive interaction between components. In the presence of crop and livestock components, which are appropriate to the local edaphic and climatic features, the holding under coconut develops into a coconut-based agroecosystem. An agroecosystem involving species multiplicity and functional diversity supports useful

ecosystem services including carbon sequestration and storage in plants and soils, protection of soil and water from erosion and surface runoff, improvement in soil structure and microbial activity, amelioration of microclimate and generation of multiple sources of food, income and employment.

Mr.C.M.Mohamed, Vettom, Tirur-676102, Malappuram, Kerala, an innovative farmer, has successfully developed a coconut-based agroecosystem model in his 4 ha coconut garden. His farming technologies have received wider acceptance and recognition. He is the recipient of the prestigious awards “Kera Sree” and “Karshakothama” instituted by Malayala Manorama and Kerala

Government respectively. In all activities on the farm Mr.Mohamed receives full support from his wife Mrs. Shakkila Mohamed, who herself is a farmer with innovative ideas. In recognition of her contributions as a progressive farmer and as a social worker for the welfare of the local women, Kerala Government has honoured her by bestowing the prestigious “Mahila Thilak” award.

## Crop and Livestock Components:

The major crops grown in the 4 ha farm comprise 600 coconut palms, 200 arecanut palms, 150 nutmeg, 4,000 banana and different vegetables and root and tuber crops. The population of 150 coconut



Receiving Karshaka Sree Award from Dr.M.S.Swaminathan



*Automatic Drip Irrigation System*

palms per ha could accommodate all other crops in the inter-and intra-row spaces without causing mutual competition for growth resources. The system accommodates one dairy unit with 25 Holstein breed cows and one poultry unit with over 2,000 broiler birds. The poultry unit also contains 200 duck, 6 emu, 25 turkey and a few ostriches. An area of over 0.5ha land has been set apart for growing fodder.

#### **Soil Fertility Management:**

Other than lime no externally procured manures or fertilizers are used in the farm. The farm is managed organically and the system depends on the primary production capacity of the soil and the positive biotic interactions between the crop-livestock components involved. The technologies introduced for sustaining the production of different crop combinations include efficient recycling of organic wastes generated on the farm for use as manure, proper mulching for soil and water conservation and regulation of soil temperature, prudent use of water for irrigation,

controlled weeding and regulated use of on-farm generated microbial cultures. A method for the recycling of the cattle manure and urine has been introduced which involves the pumping of the mixture at regular intervals to reach each crop on a phased manner and also to feed one bio-gas unit, the slurry from which is directed to selected plants. Vermiculture on a large scale has also been introduced and the compost is being applied to different crops particularly vegetables and root and tuber crops. Likewise, plant growth hormones and microbial cultures are also produced and used to boost the health and immunity of different crops to resist pest and disease infestation.

In the farm there is an abundant supply of fresh organic matter on the soil surface and in its presence the natural diversity of the soil life is stimulated. This condition is favourable for the earth worms to multiply and the enhanced activities of this group of soil fauna will improve the physical and chemical properties of the soil. In the presence of livestock components

maximum efficiency is achieved in the recycling of organic wastes and their conversion into valuable manure. Enriched organic matter status of the soil improves soil structure, activates soil life, causes favourable changes in soil reaction, minimizes leaching losses of plant nutrients and sustains higher production of all components in the system. The use of all available biomass from coconut palm particularly husk for recycling further contributes to the improvement in soil fertility. The biological preparation known as 'Panchagavya' formulated by using all major products of cow is regularly used in the farm as a spray as well as soil application which improves the health and vitality of all plants.

#### **Cultural Management:**

In this integrated farm weeds are not eliminated but only suppressed for deriving maximum agronomic benefits. When weeds overgrow they are cut and used as mulch. Mulching the area of two metre radius from the bole of coconut palm with coconut husk and other organic material has been practiced with diligence on the farm. This practice helps conserve soil moisture and facilitates a natural process of dissolution and synthesis in the soil. The accumulated plant litter in the vicinity of the tree components has formed a spongy organic mulch offering a cushioning effect against the impact of rainfall on soil particles. In the presence of partially decomposed leaf litter and products of organic decomposition excessive surface runoff is checked facilitating increased infiltration capacity and infiltration rate of water leading to better water balance in the system.



*Mr. and Mrs. Mohamed preparing organic formulations*



*Panchagavya Preparations*

With organic mulching in tree basins the water holding capacity of the soil is improved and surface evaporation is minimized. As a consequence, it became possible to economize on the use of irrigation water in the farm. The method adopted is drip irrigation with adjustments to regulate the water flow automatically. For facilitating efficient irrigation the farm is divided into 12 sections with each section receiving irrigation at intervals of 20 minutes. By introducing innovative irrigation method and following minimum or no tillage practice along with mulching the basins of coconut palm, a saving of irrigation water by 50 % could be achieved without any reduction on the level of productivity of the crops involved.

#### **Pest and Disease Management:**

No chemicals are used in the farm to control pests and diseases. Occasionally, organic formulations and microbial cultures are used to prevent the incidence which is comparatively very low. In the presence of diverse crop species and animal components there are abundant supplies of organic

residues in the farm for the soil organisms to act upon. As the soil life is enhanced the soil borne pathogens are usually outnumbered by their antagonists making natural control of disease causing organisms possible. Likewise, many organic compounds as well as antibiotic substances also appear as intermediate products which on absorption increase the resistance of plants to some pests and diseases. These may be the factors contributing to the low incidence of pests and diseases in the farm.

#### **Product Output:**

Among the livestock components milk is the major product obtained. Out of 25 cows 18 will be in regular lactation with milk yield averaging 15 litres a day per animal. The annual output of around 97,000 litres of milk after sharing for household consumption is marketed locally. The annual output of dung is about 90 tonnes which is recycled in the farm. Each batch of around 2,000 broiler birds is sold after 40 days of rearing. From other poultry components only around 50 eggs are obtained daily.

Among the crop components the

major income sources are coconut and banana. The average productivity of coconut is 150 nuts per palm per year. The coconuts are not sold as such but utilized for oil extraction. From the total annual output of 90,000 nuts around 75,000 nuts are converted into copra for extraction of oil in the mill set up in the farm. Around 10,000 nuts are utilized for direct oil extraction under heat treatment. The remaining nuts go for household uses and social needs. The recovery of copra from 75,000 nuts is 11.54 tonnes and of oil is 7.6 tonnes. The recovery of heat treated virgin coconut oil from 10,000 nuts is 500 kg. The coconut cake is used in the farm itself for feeding cattle and poultry.

Banana is another major income generating crop in the farm. Around 3,000 bunches, each weighing an average of 15kg are harvested annually. Information on the output of other crops in the system is presently not available. The nutmeg plants are of only 6-7 years and production has only started. Arecanut and vegetables including root and tuber crops are also available among the marketable produce.

### Socio-economic and Ecological Benefits:

Mr. Mohamed and Mrs. Shakkila Mohamed have successfully demonstrated the economic viability of coconut-based integrated agriculture. As against a monocrop of coconut, multiple sources of food, income and employment are generated from the integrated system. Besides coconut, the food sources created in the farm are milk and milk products, eggs and meat, banana and many protective foods. The annual income from coconut is around Rs.418,000 from the sale of ordinary oil and Rs. 200,000 from that of virgin oil, totalling Rs.618,000. The total expenditure on the production and processing of coconut and marketing of coconut oil is around Rs.150,000. This leaves a net income of Rs.468,000.

From banana 3,000 bunches fetch Rs.750,000 against an expenditure of Rs.300,000, leaving a net income of Rs.450,000. From nutmeg, which has just started production, and other crops like arecanut, vegetables, root and tuber crops etc. the total income is around

Rs.225,000 against an expenditure of Rs.75,000 leaving a net income of Rs.150,000.

In the livestock component 97,000 litres of milk fetch an average income of Rs.2,400,000. The maintenance cost of the animals is around Rs.2,000,000. This leaves a net income of Rs.400,000. From the poultry the annual income from broiler birds and egg is around Rs.180,000 against an expenditure of Rs.120,000 leaving a net income of Rs.60,000.

To sum up, from the 4ha coconut-based integrated agriculture the gross income generated is Rs. 41,73,000. The total expenditure incurred is Rs.26,45,000, which leaves a net income of Rs.15,28,000 or Rs.3,82,000 per ha. This is many times more than the potential income from a monocropped coconut holding under intensive management.

Apart from the generation of food and additional income, enhanced employment opportunities could also be created in the farm. Although activities like milking,

irrigation, recycling of cattle wastes etc. have been modernized by introducing labour saving appliances, about six workers get regular employment on the farm. This is in addition to the direct involvement of Mr. and Mrs. Mohamed in diverse activities and occasional engagement of casual workers. The overall employment opportunities created is much higher than that of a coconut garden under monocropping system where the labour requirement is not more than 150 man days per ha.

The system has developed in to an agroecosystem model involving organisms and species and benefited from positive interactions between different components involved. The system can support key ecosystem services including climate change mitigation and adaptation. Mr. and Mrs. Mohamed deserve appreciation and recognition for having developed a replicable model of coconut-based agroecosystem.

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## Coconut oil could combat tooth decay

Coconut oil attacks the bacteria behind tooth decay and could be used in dental care products, according to research. Scientists found that coconut oil which had been treated with enzymes stopped the growth of Streptococcus bacteria - a major cause of tooth decay.

Speaking at the Society for General Microbiology's

conference, the Irish researchers say that coconut oil also attacks the yeast which causes thrush.

The research team from the Athlone Institute of Technology in Ireland tested the impact of coconut oil, vegetable oil and olive oil in their natural states and when treated with enzymes, in a process similar to digestion.

The oils were then tested against

Streptococcus bacteria which are common inhabitants of the mouth.

Only the enzyme-modified coconut oil showed an ability to inhibit the growth of most strains of the bacteria.

It is important that we turn our attention to new ways to combat microbial infection”

(Source: <http://www.bbc.co.uk>)

## CDB Programmes become accessible to farming community

Nisha. G.

Coconut Development Board is implementing various programmes across the country for the integrated development of coconut cultivation and industry. The pilot project on Replanting and Rejuvenation of coconut gardens is implemented in association with the Department of Agriculture in the root wilt affected districts of Thiruvananthapuram, Kollam and Thrissur in Kerala and A&N Islands. The programme is implemented in a farmer participatory mode in contiguous areas within Panchayaths in the identified districts since 2009.

In Thiruvananthapuram district, the project in its first phase was implemented in 23 Panchayaths in 3 blocks and in the second phase in 43 panchayaths in 6 block. By the third phase of the implementation in 23 panchayaths in 3 blocks, the project has covered almost the entire district. Board has extended a financial assistance of Rs. 16.16 crores for cutting and removing 3,67,108 palms in 33,500 ha. Assistance was also extended for 31,550 seedlings.

Replanting and Rejuvenation programme was implemented in Pazhayakunninmel Panchayth in Pulimath block during the second phase. According to Shri. Reghunathan, President, Pazhayakunninmel Panchayth the project is distinct as it is a massive programme for arresting the spread of rootwilt disease. The project was beneficial to lot of farmers. In Pazhayakunninmel panchayath

alone 8327 palms were cut and removed and Rs. 41.3 lakhs distributed as financial assistance. 2300 seedlings were supplied for replanting and inputs for rejuvenating existing 30,950 palms were provided.

Reghunathan opines that various workshops and awareness programmes conducted at the initial period could help in creating awareness among the farmers about the programme. Krishna Bhavan, cluster convenors and



horticulture assistant actively worked for making the programme a success. Regunathan is aware of the advantages of being united. Coconut Producer's Societies are formed in 17 wards now. The example of Pazhayakunnel in implementing the Replanting and Rejuvenation programme is a model worthy to be followed. The programme was successfully implemented with in a short span of time. Regunathan acknowledges the meritorious services of late Deepak R Akwilla, Agriculture Officer who had worked hard for the project implementation during the initial period.



Seednuts sown in Gopalakrishnan's nursery

Board is implementing various other programmes in the district like, Friends of coconut Tree, formation of Coconut Producer's Society and Aid to Private Nurseries. Board has trained around 750 FoCTs in the district to solve the dearth of coconut climbers and also for making employment generation. 92 Coconut Producers Societies are registered with the Board and 3 Coconut Producers Federations are formed in the district.

Shri. K Gopalakrishnan from Poovachal Panchayath has availed the financial assistance of Rs. 1 lakhs under the scheme aid to private nurseries. Gopalakrishnan who is running now coconut nursery since 21 years is a regular supplier of quality seedlings in Kerala, Andhra Pradesh, West Bengal and Maharashtra.

Board is extending its outreach to farmers across the country. The farmers must harness the full potential of the various schemes of the Board. It is for us to seize the opportunity and exploit it to our advantage.

Technical Officer, CDB

## Replanting and Rejuvenation programme- An effort to revive coconut sector

R. Jayanath

In order to improve the productivity of coconut, Coconut Development Board in association with the Department of Agriculture and Local self government institutions is implementing the Replanting and Rejuvenation programme for cutting and removing the old, senile, unproductive and disease advanced palms, replanting with quality seedlings and rejuvenation of the existing gardens through integrated package of practices of the gardens.

Replanting and Rejuvenation programme is implemented in 78 panchayaths in 13 blocks in Kollam district. The programme was most adeptly implemented in Kallada Panchayat in Kollam district. Shri. Thrideep Kumar, President, Kallada panchayath reiterates his experiences in project implementation. Rs.1.15 crores was sanctioned for the programme in the Panchayath. Out of this Rs.60



lakhs was earmarked for the cutting and removal of 16,900 old and senile

palms and the balance spent for integrated management of the existing garden. 3223 farmers from 14 wards were benefited from the project. Rs.50.89 lakhs was distributed for cutting and removing 16,000 disease advanced palms. Coconut Development Board,



Department of Agriculture and the Panchayath are working in unison for the successful implementation of the project. Thrideep Kumar is happy that the farmers are taking proper care of the seedlings planted. There is still demand for seedlings, especially for dwarfs and hybrids.

But due to the prevailing low prices of coconut and its products, farmers have lost interest in coconut farming. The dearth of coconut climbers was also a reason,

says Thrideep Kumar. But, that problem is solved now with the availability of Friends of Coconut Tree. More than 40 persons are trained in palm climbing from the area.

20 Coconut Producers' Societies and a Coconut Producers' Federation is formed in the area. Farmers are in the process of starting copra procurement and related ventures. CPSs are also planning to set up tender coconut parlours.

He is hopeful that most of the problems of the coconut farmers can be solved with the formation of Coconut Producers Federation. Through the Federations, the farmers are aiming to develop West Kallada a coconut processing centre. The farmers are also determined to fully utilize the facility of a copra dryer if the Federation is allotted one, concludes Thrideep Kumar.

West Kallada was once known as the rice bowl of Kollam district. Rice and coconut were the main crops grown there. Since the paddy fields are almost diminished, the farmers are looking upon coconut as their alternate means for livelihood. They are hopeful that with Coconut Producers' Societies, Coconut Producers' Federation they would definitely reap triumph.

*Technical Officer, CDB, Kochi-11*

## Board's schemes make farmers awake

Sasikumar. C.

Coconut Development Board is instrumental in creating awareness among the farmers in Thrissur district on the various schemes implemented by the Board and other government agencies for the betterment of the farmers.

Thrissur the cultural capital of Kerala is the fourth largest coconut growing district in Kerala having



75,364 ha under coconut producing 4,930 lakh nut. The productivity per ha is 6542 nuts which is less than the state average. Various other agricultural crops like rice, banana, tuber crops, vegetables, spices and plantation crops are also grown widely here.

Board is implementing various schemes in the district viz. Expansion of Area under Coconut, Laying out of Demonstration Plot, Aid to private nurseries, Organic Manure Unit, the pilot project for

Replanting and Rejuvenation Programme, Friends of Coconut Tree, formation of Coconut Producers' Society and its Federation etc.

Replanting and Rejuvenation of Coconut Gardens is a massive programme aiming at the removal of old, senile and disease affected palms, replanting with quality

planting material as well as rejuvenation of garden by adopting proper scientific management practices. The scheme is implemented in three phases since 2009-10. During the first phase, the programme was implemented in 20 panchayaths in 3 blocks, in the second phase in 30 panchayaths in 6 blocks and in the third phase in 55 panchayaths in 8 blocks. Board has extended financial assistance of Rs. 21.87 crores for the cutting and removal of 4,91,343 palms from

62,075.5 ha benefiting 97,088 farmers. 1,02,274 seedlings are replanted in the area and Board has extended Rs.20.94 crores for the rejuvenation of the existing palms.

Perinjanam, 'Periya Njanamullavarude Nadu' (people with better knowledge) one of the smallest villages in Kerala bordered by Canoli Canal in the east is mostly dependent on coconut farming for its livelihood. Replanting and Rejuvenation programme was implemented in Perinjanam panchayath during the second phase. The per palm productivity of Perinjanam is 85 nuts per year. Around 200 dwarf palms are available in the panchayat and the rest are tall variety. An amount of Rs.102.38 lakhs was approved to cover 1094 ha benefiting 2803 farmers under R & R Programme. 7564 palms are cut and removed and a subsidy of Rs.37.34 lakhs released benefiting 1095 farmers. After undertaking the cutting and removal activities, the healthy palms are scientifically managed. Board has spent Rs.35.41 lakhs for supplying 220.85 MT of Coconut Mixture, 32.6 MT of MgSO<sub>4</sub>, 6.505 MT of Cow Pea and 64.23 MT of Lime. Krishi Bhavan has supplied 2,772 WCT seedlings to the farmers. In addition to Board's programme, the Krishi Bhavan is providing 50% subsidy for organic

(Continue on page 32)

## Coconut Palm Insurance Scheme: an Empirical Evaluation

Prof. (Dr.) D. Rajasenan\* and Rajeev B\*\*

Coconut Palm Insurance Scheme (CPIS) is a mechanism devised to endow effective risk management aid to those coconut growers, who are likely to be impacted by non-preventable natural factors like storm, lightning, fire, as well as pests and diseases. The scheme was implemented on pilot basis by Coconut Development Board (CDB) in Andhra Pradesh, Goa, Karnataka, Kerala, Maharashtra, Orissa and Tamil Nadu. The growers having at least 10 healthy nut bearing palms are eligible to join the scheme. The insurance company pays for the loss of palms or for the perils incurred leading to death of the insured palm and when they become unproductive. Premium varies according to age of the palm. For palms between 4 and 15 years, the premium is Rs.4.69 per palm and for 16 to 60 years old palms premium is Rs.6.35 per palm. One of the major advantages of CPIS is the premium subsidy. 50 percent of the premium will be paid by CDB, 25 percent by the concerned state Government and the balance 25 percent will be paid by the farmer/grower. In case, the State Government is not willing to bear 25 percent share of the premium, farmers/growers will have to pay 50 percent of the premium.

Literature scan gives immense

illustration illuminating the inter-linkage between risk aversion via agriculture insurance and the resultant financial inclusion. Some studies focus primarily on insurance as a means of protecting losses due to risk and uncertainty; others typically link to productivity, average yield and financial inclusion of the marginalized. A study was undertaken with 528 samples encompassing Kerala, Karnataka, Tamil Nadu, Goa and Maharashtra states were taken using multi-stage proportionate random sampling technique. The five states were further classified into three regions for ironing out inter regional differences as well as total consequences in perception about the new pilot scheme with a view to developing a recurrent scheme to be of assistance for the coconut growers. Factor analysis is used, both regionally and collectively, to identify the significant factors reinforcing the growers' perception about the success and sustainability of the scheme.

The analysis is focused on acceptance of CPIS, loss of palms and reasons thereof, claim settlement and adequacy of compensation. There exists disparity in the land holding pattern and the concomitant palms per grower across regions. Holding

pattern in Kerala region, by and large is small in comparison to the other two regions, and hence the coconut cultivators in Kerala region on the whole are small farmers.

Most of respondents in Karnataka-Tamil Nadu and Kerala regions (73.3 percent and 82 percent respectively) have lost palms after insuring, whereas in Goa-Maharashtra region, only 49.3 percent have lost palms. Major reasons for loss of palm identified were storm, lightning, heavy rains, various kinds of pests and diseases, etc. In Goa-Maharashtra region, the major reasons for the loss were pests and diseases together with storm and rain. However, in Kerala region, respondents recorded accidental fire (including forest fire) also as one of the reasons for loss of palms. Goa-Maharashtra region shows the lowest claim rate of 24 percent. 72 percent of the respondents have made claims in Karnataka-Tamil Nadu region and 49.7 percent in Kerala region.

Time taken to settle the claim is one of the important factors determining the success of the scheme. More time for settlement or non-settlement of claims will adversely affect the implementation of the scheme as growers may show disinterest to continue because their claims were not settled on time or not settled at all.



Longer waiting time/non-settlement of claims will affect replanting of the palms adversely. The scheme intends to equip the farmers to replant and make up the loss incurred in due course and hence any delay or non-payment of compensation is against the very objective of the scheme.

Coconut palm insurance scheme has emerged as an important agricultural policy measure in the Eleventh Five Year Plan with the objective of equipping and assisting coconut growers to minimize the loss in the event of natural calamities and diseases. Analyses and inferences point out that growers across the regions reckon that the scheme is necessary for a crop like coconut and to a certain extent; the scheme

seems to have achieved its goal. Premium subsidy or premium sharing is an important feature of the scheme. Agriculture/horticulture offices are the agency which is directly dealing with the growers regarding CPIS and hence they play a pivotal role for the success of the scheme. Prompt and fast settlement of claims will help the scheme to go a long way. In Kerala, rate of settlement as well as period of settlement is very high, whereas in the other two regions in general and Goa-Maharashtra region in particular, cases of denial of compensation/non-settlement are high. Both late settlement and non-settlement of claims by the authorities scuttle the success as well as the very objective of the scheme. Adequacy of

compensation is very low in Goa-Maharashtra region mainly due to higher yield per palm. Income loss incurred to the farmer as a result of the loss of palm is not considered while calculating compensation amount. This needs to be redressed by incorporating average returns of the grower from the lost palms for calculating claim amount so as to provide subsidy to the new palm, which will in turn ensure a better replanting rate.

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*(Continuation from page 30)*

manure, vegetable seeds distribution etc.

Smt. Vrindha Premdas, President, Perinjanam Panchayat, herself a beneficiary of the scheme was instrumental in the successful implementation of the Replanting and Rejuvenation programme. She has cut and removed 4 diseased trees from her own compound. She opines that the scheme is very useful and acknowledges the timely implementation to arrest the spread of root wilt disease as well as to remove old, senile and unproductive palms and replant with quality seedlings.

Smt. Vrindha Premdas was personally involved in the formation of Coconut Producer's Society in

her Panchayath. 15 CPSs are formed and registered with Board. Perinjanam was the Panchayath from Thrissur district to register the first Coconut Producer's Federation with the Coconut Development Board. The Federation is having 47,842 palms under its operational area. Shri. Sadanandhan V. K, President of the Federation is planning to install a modern copra drier and also to set up a tender coconut parlour unit in the national high way.

Perinjanam panchayath is ready to extend maximum help for promoting Coconut Producers Federation. Smt. Vrindha Premdas is also ready to provide land of the Panchayath for setting up tender

coconut parlour on lease agreement.

She expresses her gratitude to Chairman, Coconut Development Board on his initiatives on Friends of Coconut Trees to curtail the labour shortage in the country. She is planning to motivate the Kudumbasree unit in her panchayat to start a coconut chips manufacturing unit by availing subsidy from the government side.

The Boards efforts would make a tremendous change in the coconut farming and coconut industry. Board calls upon the farmers to come forward to associate with its ventures for making India the world leader in coconut production and productivity and export.

*(Technical Officer, CDB, Kochi-11)*



*Trained to excel, Cicily Baby*

## FoCTs excel in work and life

Friends of Coconut Tree, a Coconut Development Board initiative to create a work force for solving the dearth of coconut climbers is soaring to greater heights. As envisaged by the Board in 2011-12, a task force of 5661 persons including 390 ladies was developed to carry out all activities related to coconut cultivation in a technically perfect manner along with an assured job status. The FoCTs who have successfully completed training and those who have taken it as a serious profession are earning a decent income and leading a happy life. Cicily, Suresh, Suvidhan and Thyagarajan are only a few among them inspiring many others to enter this field.

Cicily Baby, 45, a home maker from Cherthala in Ernakulam district is actively pursuing her new career as a Friend of Coconut Tree. Her hard work and dedication rewarded well. She was honored as the best FoCT by Kanjikuzhi Panchayath on the Farmer's Day last year for her unstinted and sincere efforts.

Cicily had a fascination for climbing trees from her childhood itself. Even though she could climb on top of many trees, she couldn't succeed in



climbing coconut trees. She didn't lose heart as she was so determined and confident that one day she would be able to do so. Immediately on hearing about the FoCT training programme of Coconut Development Board, she attended the training during February 2012 at Socio Economic Unit Foundation, Sarvodayapuram, Alappuzha. From the next day onwards she started climbing coconut trees for crown cleaning, spraying of chemicals and harvesting.

People were skeptical initially as she was the first lady climber from her area. Later on after seeing the way she does her job, all the farmers of her area started availing her service regularly. She is

charging Rs. 25-30 for harvesting and Rs. 50 for crown cleaning and spraying of chemicals. She climbs nearly 30 trees a day and her average income is Rs. 500 per day out of which she is saving Rs.100. She affirms that no other job will get her such an income and she is determined to continue in the field as long as her health permits.

Cicily is proud on her new social status. From a house wife she has grown to a full time coconut consultant who is earning Rs. 10,000 per month. She is self-assured now that with her palm climbing machine and by taking one or two tender coconuts a day she can scale new heights. Cicily can be contacted at 9287980551.



Suresh, another FoCT from Alappuzha has got a special story to say. It was while

working as a security guard in December 2011 that he read in a local news paper about the FoCT programme. He changed his duty time and attended the training from the very next day onwards at KVK Kayamkulam. Now Suresh with his previous job is climbing 30-35 trees per day. He is charging Rs.25-30 based on the height of the palm.

Suresh maintains a record of his customer farmers and he regularly reminds them of the harvest date. Suresh is so proud that he earns around Rs. 15,000 per month from this new profession. He strictly

follows the lessons he learned from managerial sessions on communication, leadership development, positive thinking, savings management, banking and insurance at the time of the harvest date. He is spending his earnings very wisely, for the education of his children. The balance is kept as his personal savings while the income from his previous job is spent for other routine requirements. Suresh is determined to continue in this job due to the flexible working hours and the decent income he is getting. Suresh is available on 8891249341.

Savidhan, another trainee from Alappuzha is a government employee. He had the experience of climbing coconut trees in the traditional way and harvesting nuts from his compound. It was out of mere curiosity and for getting a palm climbing machine free of cost, Savidhan attended this training programme in January 2012. But after the training, he realised the prospects of this job. This



employee of KSRTC is a regular coconut consultant now. Initially Savidhan did it for his neighbours only. Now he goes to far off places as a FoCT. He is charging only Rs.25 per tree and is earning around Rs.8,000 per month. This additional income is helping Savidhan to lead a cheerful life with his family. Savidhan can be contacted at 9744919402.

Thyagarajan is a traditional climber who was in the field since the last 19 years. He used to climb upto 85



trees in a day using the traditional method. But later on due to health problems he could not continue this job. He tried several other jobs, but could never earn the income he could make from palm climbing. On hearing about the training programme of the Board in mechanical palm climbing, Thyagarajan decided to try his luck once again. He attended the training conducted by Coconut Development Board at Socio Economic Unit Foundation, Sarvodayapuram, Alappuzha. With the ease in using palm climbing machine he is now climbing upto 60 trees a day. Thyagarajan is grateful to the Board for bringing him back to his normal and a secured life. Thyagarajan is available on 9745719160.

Inspired by the overwhelming response from the farmers and the success stories of the trainees, Board is planning to give training to 10,000 persons in the second phase of the training programme in 2012-13. 1061 trainees from Kerala, Tamil Nadu and Maharashtra have already completed training in 44 batches. Region wise list of 'Friends of Coconut Tree' (FoCT) with phone number and other details of the training programme is available in Board's website [www.coconutboard.gov.in](http://www.coconutboard.gov.in).

## Sound (box) of Music

The sound of cool breeze blowing through lush green leaves of the coconut tree is Mother Nature's opera which is pure joy to the ears of the listener. The sound box of many of the musical instruments made by man, emitting divine music are made out of the coconut shell. A sound box is an open chamber in the body of a musical instrument which modifies the sound of the instrument, and helps transfer that sound to the surrounding air.

**Yehu:** Yehu is a Chinese coconut shell bow lute (Chinese mandolin) which belongs to the 'huqin' family of musical instruments. Ye means coconut and hu is for huqin. The sound box of this magnificent



instrument is made out of coconut shell, which is cut on the playing end and covered with a piece of coconut wood which is attached to a bamboo rod. Silk threads are used as strings to give the instrument its distinct timbre. The yehu is used mostly in Southern China.

**Banhu:** This stringed musical instrument also belongs to the



Chinese huqin family of instruments. The sound box of the banhu is a neatly halved coconut shell. The banhu has two strings and is held vertically. It is used mainly in the traditional classical music of Northern China.

**Đàn gáo:** Primarily used in the traditional music of Southern Vietnam, the Vietnamese two stringed bow string instrument Đàn gáo is closely related to the Chinese Yehu. Its body is made from half of a coconut shell which covered with wood and a small seashell functioning as the bridge.

**Đàn bõu:** A Vietnamese string instrument which in its original form, is made of four parts, a bamboo tube, a wooden rod, half a coconut shell and a silk string. The Đàn bõu is known to create soft, serene sounds.

**Puniu:** Hawaiiin coconut (niu) shell knee drum. For making this percussion instrument coconut shell is prepared by cutting the stem end off at the greatest diameter and a piece of sharkskin membrane is lashed over the instrument for its distinctive sound. The drum beater is made from a thick two ply cord of coir fiber.

**Saw Sam Sai:** The Thai Saw sam sai is a bowed instrument with a triangular body and one spiked leg. The body of this instrument is made from half coconut shell. The half which is used must have three bulges in the formation of the points of a triangle. The size of the instrument depend on the size of the coconut shell .

**Saw u:** Saw u is a two stringed Thai musical instrument. The head is made of a rather large coconut shell



without lumps and more of an oval shape.

**Cocolele:** Portuguese immigrants brought a small guitar like instrument - cavaquinho to Hawaii in the 19th century. The ukulele originated as the Hawaiiin interpretation of the cavaquinho. Ukulele made out of coconut shell (either one or more) is known as cocolele.



**Coconut Maracas:** Maracas a native instrument of Latin America is a kind of percussion instrument; idiophones usually played in pairs, consisting of a coconut shell filled with seeds or dried beans, affixed on a wooden handle. Coconut shells are hollowed out and filled with



## Coconut shell-made musical instruments set national record in Vietnam

In Vietnam, a set of musical instruments made from coconut shell by two artisans was recognized as a national record at the Coconut Festival, which closed on April 11 in Ben Tre province.

Le Thanh Liem and Vo Van Ba from the southern province of Ben Tre spent nearly a year to make 27 instruments, including drums, Vietnamese violin and the one-stringed zither, from coconut shells and fiber.

Artisans used coconut shells and fibers from coconut trees of 30-50 years old.

Mr. Liem says that he thought of making instruments by coconut shell and fiber in 2006 but the idea became reality when he met Mr. Ba in 2008. The two men, who are musicians, have produced over

100 instruments but only 27 of them meet standards to be recognized as Vietnam record.

The set of instruments were displayed at the Coconut Festival 2012 in Ben Tre, the “capital of coconut” in Vietnam.

*Source: VietnamNet*

beans to make unique sounds. Often one ball is pitched high, and the other is pitched low.

**Coconut Kabbas:** Kabbas or the shaker is an easy to play percussion instrument. The shaker features a coconut wrapped in color beads affixed on a wooden handle. By

twisting and rolling the kabbas, the beads roll back and forth over the rough coconut exterior and produce a distinct “shoop shoop” sound. The coconut Kabbas creates a lower pitched sound.

**Kalimba:** Kalimba (thumb piano) has been a part of African culture for hundreds of years. Coconut kalimbas are bowl shaped which generates



increased resonance. The 7 metal keys can be tuned to create different types of sound and are played with the thumb and forefinger.

**Goura:** Goura the national



instrument of the Khoi khoi people of South Africa is a single stringed instrument. It has a string attached to a coconut shell resonator and with a tension noose wrapped around the string to adjust the pitch.

**Ektara:** Found in India and Pakistan, the ektara is a string instrument of wandering bards and



minstrels and is plucked with one finger. It is usually a stretched single string an animal skin or a head made of gourd or coconut and pole neck.

**Ravanhatta:** Ravanhatta is a two-string stick fiddle from Northwest India used by singers of the bhoppa community to accompany the epic tales of Pabuji, a fourteenth century hero. It has a wooden body and a small coconut resonator covered in skin.



**Pena (a.k.a Bana, Bena, or Tingtelia):** Pena is a bowed lute found in North East India and Bangladesh. The main body of the instrument is made by taking a length of bamboo and passing it through a half coconut shell. This forms the neck of the instrument. The bamboo is trimmed at the base and then passed through two holes cut in the half coconut shell.

**Pulluvan Veena:** Kerala’s own pulluvar seek blessings of the serpent Gods and ward off evil by playing the veena, made by themselves, simply out of a halved coconut shell, bamboo stick and a brass wire to create vibrant sound in accompaniment to their songs.

The ever versatile coconut tree which provides man health and wealth even blesses him with peace of mind with soul soothing music from the musical instruments created from its mere shell.

*compiled by Vindu Rani.N, CDB, Kochi*

# Business Opportunities

## WHITE COPRA

White copra produced in Indonesia is available for shipment at capacity of 4 tons/day of finished product.

Interested parties, please contact:

Mr. Mazuki Chen

Jln. Raya Malingping Banyah Km.4

Desa Cilangkahan, Kec. Malingping

Lebak, Banten 42391, Indonesia

Tel: 62-818123052

Fax: 62-252-508020

Email: marzuki.chen@gmail.com

## DESICCATED COCONUT AND COCONUT MILK POWDER

Viet Delta Corp. can supply the said products with good quality and competitive price. Interested parties may contact:

Ms. Susan Nguyen

Export Department, Viet Delta Corp.

20/5 Dinh Bo Linh, Ward 24

Binh Thanh District

Ho Chi Minh City, Vietnam

Tel: 84-8-35114928

Mobile: 84-01689977498

Fax: 84-8-38998085

Email: sales14@vdelta.com.vn

## COCONUT WATER AND MILK

We are looking for suppliers of long term coconut water and coconut milk that are not tied up with major global brands. Interested parties may contact:

Dr. Vinay Chand,

230, Finchley Road, London, NW36DJ

United Kingdom

Tel: 020-77945977, Fax: 020-7431 5715

Email: vinaychand@msn.com

## REFINE COCONUT OIL

An ice coating producer from Poland is looking for Refine Coconut Oil. They annually use approx. 1000 MT. Interested parties may contact:

Mr. Dorota Hoffmann, Import Department,

Terravita Sp. Z.o.o.,

ul. Szarych Szerega 48, 60-462 Poznan, Poland

Tel: 48 61 66 88 315, Fax: 48 61 822 19 31

Mobile: 609 479 239

Email: import@terravita.com.pl

www.terravita.pl

## GRATED COCONUT

A trade company, who deal with import export of different raw materials, is looking for grated coconut.

Interested parties (exporting companies) contact directly:

Mr. Carlos Marin

Director of NISA S.A. de CV

Cancun-Quintana Roo Mexico

Tel: 52 998 886 88 96

Email: carlos.marin@grouponisacar.com

## ORGANIC COCONUT MILK

An Australian buyer has approached Pacific Islands Trade & Invest, expressing interest in importing certified organic coconut milk from the Pacific islands. The buyer is currently buying in 20 litre containers from Thailand. Product must be certified organic. For further details contact:

Mr. Jeremy Grennell

Pacific Islands Trade & Invest

P.O. Box 5407, Sydney, NSW 2000, Australia

Tel: 612 9290 2133

Email: jeremy.grennell@pacifictradeinvestment.com

## COCONUT WOOD

A company is looking for suppliers of wood of red coconut and black palmyra (black palm tree) as lumber/timber/ squares/logs/planks with specification of the thickness: 20/30/40/50 mm, widths: 5 – 15 cm (may be 20 cm), or square: 5x5 6x6 8x8 10x10 cm, Lengths: 1m+, high + medium density, best quality, and dry (AD+KD). Interested parties may contact:

Mr. Mathias Pfeifhofer

Email: brainwood@gmx.de

## CRUDE COCONUT OIL

Registered company; KATTNA Agency Fiji Ltd. specializes in the importation of copra from Kiritimati Island in Kiribati planning to crush the imported copra in Fiji. They are seeking interested buyers for their crude coconut oil. Interested parties may contact:

Ms. Sue, Director, KATTNA Agency

Email: kattna.agency@gmail.com

*Source: Cocommunity, October 2012*

## CDB team visited Kottakkal Aryavaidya Sala



*Officials of the Board in discussion with Shri. M.S. Money IAS (Retd.), GM, Kottakkal Aryavaidya Sala*

A proposal to introduce medicinal plants in coconut gardens through the coconut cluster under CPS has been initiated by the Board. Officials from Kottakkal Aryavaidya Sala called on Chairman, Coconut Development Board on 21st September 2012 and held discussion on this. Subsequently, officers of Coconut Development Board visited Kottakkal Aryavaidya Sala on 21<sup>st</sup> September 2012 and held discussion with Shri. M.S. Money IAS (Retd.), General Manager, Kottakkal Aryavaidya Sala and other senior officials. General Manager opined that the present acute shortage of raw materials for ayurvedic medicines can be solved to an extent by cultivating medicinal crops in coconut garden. It was felt that awareness may be created among farmers about the potential of planting various medicinal crops in

coconut garden. Kottakkal Aryavaidya Sala will raise seedlings of satavari and palmuthukku and supply free of cost by next planting season i.e., by May - June 2013. Other tree crops will be supplied on cost on need basis.

It was reported that requirement of Satavari and palmuthukku per year is 3 lakh tons. If cultivation of

these crops is taken up in 300 acres incessant supply of raw material is possible. Farmers will also be interested to venture into, if a perfect buy back arrangement is made. From one acre intercropping, income of Rs.1 lakh is possible from 3<sup>rd</sup> year onwards. One acre intercropped satavari is expected to yield 3 tons of raw material. The present market price is Rs.26/kg.



*Oushadi garden of Kottakkal Aryavaidya Sala*

## Annapoorna- World of Food India 2012

Coconut Development Board participated in 7th Annapoorna - World of food India -2012 from 26th -28th September 2012 at Bombay Exhibition Centre, Goregaon, Mumbai. Shri Kailash Vijay Vargiy, Horticulture and Food Processing Minister, Govt. of Madhya Pradesh inaugurated the exhibition.

A number of centre/state departments and NGOs from various sectors like, food, processing, importers &, service companies participated in the exhibition. 160 exhibitors from different parts of the country along with international firms from Korea, South Africa, Indonesia, Japan, Germany, Spain, Canada, USA &, Tunisia took part in the exhibition.

Coconut Development Board displayed various coconut value added products like packed tender coconut water, coconut oil, coconut milk powder, virgin coconut oil, handicrafts, well informative charts



*A view of Boards Stall in Annapoorna*

and posters and publications of the Board in CDB stall. M/S Shakti Coco-Products, Tamil Nadu, M/S Anu Coco-products, Andhra Pradesh, M/S Keratech, Trichur, M/s.Hahit Welingness Pvt.Ltd. Mumbai, M/s. Adiwasi food Pvt.Ltd. Kudal, Sindhudurg, Maharastra and M/S Jupiter wood

works, Kerala had their sales cum display counters in the Boards stall.

More than seventy thousand persons visited the exhibition. The exhibition was organized by Federation of Indian Chambers of Commerce & Industry, New Delhi.

## Krishi Darsan Expo 2012

Coconut Development Board participated in Krishi Darshan Expo 2012 at Hisar from 5<sup>th</sup> to 7<sup>th</sup> October 2012. Shri. Ashok Tanwar, Member of Parliament, Sirsa inaugurated the exhibition. Shri Balwinder Kumar, Additional Secretary, Ministry of Agriculture, Government of India, and Dr.A.N. Meshram, Director, NRFMTTI, Hisar were present during the occasion. More than 15,000 people attended the programme.

Samples of various brands of edible, industrial, utility and decorative products made from the 'Kalpavriksha' were exhibited in the Board's stall.

The visitors were briefed about various uses of different parts of coconut and the value added products derived for various edible including the medicinal properties and industrial purposes. The prospects of marketing of packed tender coconut water, coconut chips, virgin coconut oil, desiccated coconut powder, coconut oil, etc. in Haryana and Punjab were highlighted to the visitors. About 50 farmers Thanjavur, Thiruvarur and Nagappattinam districts of Tamil Nadu visited this Exhibition as part of exposure visit through Department of Agriculture,

Government of Tamil Nadu. The farmers from traditional coconut growing states were enlightened to know the schemes of the Board, need for value addition, necessity for forming Coconut Producers' Societies and FoCT. Board's publications on various aspects of the tender coconut, coconut and other value added products were distributed to the visitors at Board's stall. Dr. Meshram, Director, NRFMTTI visited Board's stall and appreciated the Board's initiatives for technological advancement in the development of coconut industry.



## Monthly operations in coconut gardens - *November*

### Andaman & Nicobar Islands:

Treat stem bleeding affected palms if any. After removing the affected tissues on the stem, apply 5 per cent calixin on the wound. When it dries apply warm coal tar. Application of 5 per cent calixin (5 ml in 100 ml water) at quarterly intervals by root feeding thrice a year during June, October and January will prevent further spread of lesions. Apply 5 kg neem cake per palm per year along with the second dose of fertilizers to the affected palms. Regulate field moisture by providing drainage during rains and irrigating the palms during summer. Remove ungerminated and dead sprouts from the nursery.

### Andhra Pradesh:

In low lying areas, plant one year old seedlings in the main field. If there is attack of black headed caterpillar, spray young seedlings with 0.2 per cent dichlorvos/0.05 per cent endosulphan/0.05 per cent phosalone on the lower side of the leaves. On older palms, release specific parasites according to the stage of the pest. Inject the red palm weevil affected palms 0.1 per cent

endosulfan or one per cent carbaryl. When the pest entry is through the trunk put Aluminum phosphide tablets @ 1-2 tablets per tree in the holes and plug with cement or plaster and allow to set. Isolate Ganoderma wilt affected palms from healthy ones by digging trenches of 30 cm width and one metre depth, 2 metres away from the diseased palms. Treat the palms with 5 per cent calixin (5 ml in 100 ml water) at quarterly intervals by root feeding for one year. Grow leguminous crops in the garden.

Apply neemcake @ 5kg/ palm/year. Apply the second dose of fertilizers i.e. 750 g urea, 1300 g single superphosphate and 1300 g muriate of potash per adult palm, if not applied in October.

### Assam:

If Ganoderma disease is noticed remove the badly affected palms and dig isolation trenches of 30 cm width and 1m depth, two metres away from the diseased palm. Treat the palms with 5 per cent calixin (5 ml in 100 ml water) at quarterly intervals by root feeding and apply 5 kg neem cake per palm. Treat the

crown choke affected palms by the application of 50g borax per palm at half yearly interval.

### Bihar / Madhya Pradesh/ Chhattisgarh:

Keep the garden free of weeds. Remove the soil from the collar region of the newly planted seedlings. Apply the first dose of fertilizers. In order to protect the seedlings from winter effect, provide shade. Search for the attack of termites. If found, clean the termite galleries from the affected portion and apply 0.05 per cent chlorpyrifos twice at 20-25 days interval. Irrigate the garden. Cultivate vegetables as intercrops.

### Karnataka:

Plough the garden and keep nursery free of weeds. Start irrigation if dry spell prevails. Apply the 2nd dose of fertilizers if not applied during October. Crown cleaning may be taken up if not done in earlier months. Bordeaux mixture may be sprayed if not applied last month.

### Kerala/Lakshadweep:

Manure the young seedlings. Start the post monsoon prophylactic



spraying of the palms. Discard the seedlings in the nursery which exhibit poor growth and delayed germination. Provide shade to the nursery. Select mother palms for collection of seednuts. In gardens where vegetables are grown under irrigation, transplant the vegetable seedlings. To control the leaf rot disease in root (wilt) affected areas, pour Hexaconazol (Contaf 500) @ 2 ml per 300 ml water per palm, after cutting and removing the rotten portion of the spindle and the innermost fully opened leaves. Apply 20 gm phorate 10G mixed with 200 gm sand around the base of the spindle. If mite infestation is noticed clean the crowns of the palms and spray neem oil - garlic - soap emulsion 2 percent (20 ml neem oil + 20 gm garlic emulsion +5 gm soap in 1 litre water) or azadiractin 1 % (Nemazal) @ 4ml per litre of water or root feed 5 % azadiractin @ 7.5 ml with equal quantity of water.

#### **Maharashtra/Goa/Gujarat:**

Weed the garden. Clean the irrigation channels. Spray the palms with one per cent bordeaux mixture.

#### **Orissa :**

Continue the ploughing in low-lying areas to conserve moisture. Remove weeds and grass and burn them. Transplant seedlings of winter vegetables.

#### **Tamil Nadu/Puducherry :**

Irrigate the young seedlings. Keep the nursery free of weeds and continue discarding poor seedlings. Select mother palms for subsequent seednut collection. Palms affected with mite infestation may be applied with neem oil-garlic- soap emulsion 2 per cent, i.e. 20 ml neem oil+5 gm soap in 1 litre of water or azadiractin 1 per cent @ 4 ml per litre of water on the perianth region of buttons and affected nuts. Root feeding 5% azadiractin @ 7.5 ml with equal quantity of water is also

effective. Apply 20 gm phorate 10G mixed with 200 gm sand around the base of the spindle against rhinoceros beetle and red palm weevil.

#### **Tripura:**

Entire garden should be cleaned properly if not done earlier. Newly planted seedlings should be provided shade to protect them from sun scorching. Mulching should be done with dry leaves and husk around the palms for moisture retention. To avoid attack of white ants, drench the nursery with 0.05 per cent chlorpyrifos twice at 20-25 days interval depending upon the severity of infestation. The affected trunk may be swabbed with the above chemical.

#### **West Bengal:**

Apply the second dose of fertilisers if not applied during October. Discard seedlings which exhibit poor growth and delayed germination in the nursery.

## 6 Reasons to Add Coconut Oil to Your Diet

### **It might help you lose weight.**

Thanks to satisfying fat, consuming coconut oil will make you feel full more quickly, so you'll consume fewer calories overall. Additionally, coconut oil contains medium-chain triglycerides, which have fewer calories than other dietary fats that contain long chain fatty acids (8.3 calories per gram versus 9 calories per gram). Medium-chain triglycerides are easily digestible and quickly converted to energy.

**It can give you more beautiful hair and softer skin.** Coconut oil provides essential proteins needed for nourishing damaged hair. Massaging coconut oil into your

scalp can even help alleviate dandruff issues. Coconut oil also has antioxidant and anti-inflammatory properties that help prevent signs of aging in the skin.

**It can give you stronger bones and teeth.** Coconut oil improves the absorption of calcium and magnesium in the body—both of which are important for healthy teeth and bones.

**It can help you ward off colds.** Coconut oil contains lauric acid, which has anti-bacterial, anti-microbial, and anti-viral properties that might help fend off potential illnesses. Coconut oil can boost a weakened immune system by

improving white blood cell counts.

**It can raise your "good" cholesterol.** Even though coconut oil contains saturated fats, they're not the "bad" kind you normally hear about. Instead, coconut oil can actually raise your good HDL cholesterol.

**It might improve inflammatory diseases.** Coconut oil has anti-inflammatory properties, so it may relieve pain associated with inflammation. It might improve inflammatory diseases, such as ulcerative colitis and rheumatoid arthritis.

(Source: [www.newshealth.com](http://www.newshealth.com))

# Market Review - September 2012

## Highlights

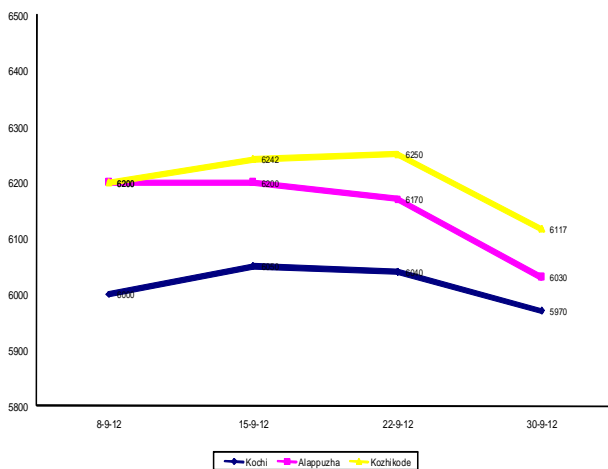
- ◆ The price of milling copra, ball copra and coconut oil expressed a downward trend at all the major markets during the month under report.
- ◆ The international price of coconut oil expressed a downward trend during the month under report.

The prices of copra and coconut ruled below Minimum support Price in major producing states and procurement activities were initiated by the Government machinery under Price Support schemes.

## 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 monthly average price of coconut oil at Kochi was Rs. 6015/- per quintal. The price of coconut oil at Alappuzha market also moved in tune with the price behavior at Kochi market. The monthly average price was Rs. 6150/- per quintal at Alappuzha market and Rs.6202 at Kozhikode market. The prices at Kochi, Alappuzha and Kozhikode markets were marginally lower than the prices prevalent in August 2012.



Price behaviour of coconut oil during September 2012

## MILLING COPRA

The monthly average prices of FAQ copra recorded at Kochi market was Rs.4154/- per quintal. The monthly average prices of Rasi copra at Alappuzha market was Rs.4093/- and Kozhikode market was Rs.4039/- per quintal. The prices at Kochi and Alappuzha were marginally lower than that of the previous month whereas the price in Kozhikode showed a marginal increase. The procurement operations under Price Support Scheme have already been initiated in Tamilnadu and Kerala by TANFED and NAFED respectively. The Minimum support price of milling copra has been fixed at Rs.5100/- per quintal for 2012 season. A total quantity of 21864 MT of copra was procured by Nafed through Tanfed in Tamilnadu and 12331 MT was procured in Kerala by Nafed through Kerafed and Marketfed. Around 5508 Mt of

copra was procured in Andhra Pradesh and 3350 MT in Lakshadweep.

The monthly average prices of milling copra at Ambajipeta market in Andhra Pradesh was Rs.3688/- per quintal compared to Rs. 3876/- recorded during the previous month.

## EDIBLE COPRA

The monthly average prices of Rajapur copra at Kozhikode market was Rs.5334/- per quintal, which was marginally higher compared to the price in previous month.

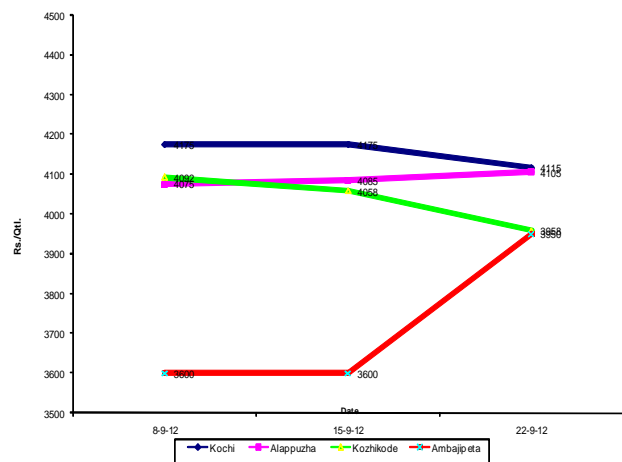
The monthly prices of ball copra at Kozhikode market averaged at Rs. 4826/- per quintal.

The monthly prices of ball copra at APMC market Tiptur, in Karnataka averaged at Rs. 5061/- per quintal in September 2012 while it was Rs 5800/- in Bangalore and Rs. 5023/- in Arsikere.

The Minimum support price of edible copra has been fixed at Rs. 5350/- per quintal for 2012 season.

## DRY COCONUT

The monthly average price of dry coconut was around Rs. 4542/- per thousand nuts at Kozhikode



Price behaviour of milling copra during September 2012

market which was marginally lower than that of the previous month.

## COCONUT

The monthly average price of Rs.5500/- per thousand nuts for dehusked coconut at Nedumangad market, which was marginally higher than that of the previous month.

Arsikere APMC market recorded an average of Rs.5765/- for thousand partially dehusked nuts which was lower than that of previous month.

The monthly average prices of partially dehusked coconut at Bangalore APMC market was Rs. 7000/- which was about 1.45 percent higher than that of previous month.

The monthly average price of

partially dehusked coconut Grade-1 quality at Mangalore APMC market reduced to Rs.9258/- per thousand nuts which was marginally lower than that of the previous month.

The monthly average price of coconut in Assam was Rs.21 per nut while it was Rs.24.38 at Dimapur in Nagaland.

The Government of India has declared the Minimum Support price of dehusked mature coconut with water at Rs. 14/- per kg.

## TENDER COCONUT

Prices of tender coconut at Kochi market ranged from Rs.15-25/- per nut. The monthly average price of tender coconut in Assam was Rs.15 per nut while it was Rs.20 in Dimapur in Nagaland.

## INTERNATIONAL PRICE

The monthly average price of US \$978 per MT for coconut oil in Europe (C.I.F. Rotterdam) for the month of September 2012 was about 2.3 percent lower when compared with the price in previous month and lower by about 25 percent compared to that of the corresponding month last year. The monthly average price of US\$ 626 per MT for copra was about 4.57 percent lower than that of the previous month and about 52 percent lower than that of the corresponding month last year.

The domestic price of coconut oil during the month of September 2012, in Philippines was US\$935 per MT and in Indonesia; the price was US\$832 per MT. The international price of Palm oil, Palm kernel oil and Soybean oil were US\$997 US\$996 and US\$ 1319 per MT respectively.

### Monthly average prices of Mature nut, Tender nut and Ball copra in North Eastern Region during the month of September 2012.

Products	ASSAM							NAGALAND	MIZORAM
	Guwahati	Nelbari	Nagoan	Sonitpur	Darrang	Karimganj	Silchar	Dimapur	Aizawl
Mature nuts (in Rs./ nut)	13	18	20	18	21	22	25	24	50
Tender Nuts (in Rs./ nut)	14	15	8	16	16	19	25	20	52
Ball Copra (in Rs./ Kg. )	80	80	NR	160	95	180	160	120	120

## Market Price

Date	Coconut Oil			Milling Copra				Edible Copra	Ball Copra				Dry coconut	Coconut	Partially dehusked coconut					
	Rs./Qtl.																	Rs./1000nuts		
	Kochi	Alappuzha	Kozhikode	Kochi (FAQ)	Alappuzha (Rasi Copra)	Kozhikode	Karkala	Kozhikode	Kozhikode	Tiptur	Bangalore	Arsikere	Kozhikode	Nedumangad	Arsikere	Bangalore	Mangalore (Grade-1)			
8-9-12	6000	6200	6200	4150	4107	4046	3600	5336	4821	5148	5800	5024	4600	5500	5800	7000	9600			
15-9-12	6050	6200	6242	4175	4075	4092	3600	5367	4850	5045	5800	5017	4567	5500	5625	7000	9600			
22-9-12	6040	6170	6250	4175	4085	4058	3600	5358	4850	5099	5800	5050	4550	5500	5883	7000	8233			
29-9-12	5970	6030	6117	4115	4105	3958	3950	5275	4783	4951	5800	5000	4450	5500	5750	7000	9600			
Average	6015	6150	6202	4154	4093	4039	3688	5334	4826	5061	5800	5023	4542	5500	5765	7000	9258			

**Source: Kochi:** Cochin Oil Merchants Association and Chamber of Commerce, Kochi - 2, **Kozhikode:** The *Mathrubhumi* daily **Alappuzha:** The *Malayala Manorama* daily, **Arsikere :** APMC, Arsikere  
Price quoted for *office pass* copra at Kozhikode and *Rasi* copra at Alappuzha markets. NT : No transaction