INSIDE

THEME

India marches to the first position in coconut production

Positioning India in the forefront of coconut sector

Dear Coconut Farmers,

The vision set for coconut development during the 12th Plan period is to make India the global leader in coconut production, productivity, processing for value addition and export. Presently our country is at the third place in area under coconut, second in production just below Indonesia and first in productivity among major coconut producing countries. When it comes to processing for value addition, our position is around 22nd and in case of exports, it is still below, around 25th position.

Three important events which are having a positive bearing on coconut price and income to the farmers happened during the past one month. Government announced a new Minimum Support Price for copra for the season 2013. Imposition of 2.5% import duty on crude palm oil and permitting the export of coconut oil through all ports without any quantity restriction by Commerce Ministry are the other two important decisions. Increasing of Minimum Support Price of copra by Rs.150 per quintal is a positive change,but seems to be much below the expectation of farmers across the country.Many of the farmer organisations point out that in a country where average annual inflation rate was around 10%, a minimum increase of 10% in the MSP would have been necessary in order to retain the same value in real terms for coconut farmers. Imposing an import duty of 2.5% on crude palm oil by Ministry of Commerce is surely a welcome step.

Export of coconut oil was controlled by port restriction, quantity restriction and packaging restriction. Now that the port restriction and quantity restriction are totally withdrawn, coconut oil can be exported from any ports in India without any quantity restriction. Only packaging restriction is remaining. We expect a hike in the export of coconut oil from India especially from Tamilnadu, Karnataka and Andhra Pradesh. At present our share of export was around 8,500 MT attributing to less than 0.33% of the total global export level of coconut oil. Coconut Development Board is taking all efforts to take the export to a minimum level of 1.5 lakh MT during the current oil year.

Coconut is cultivated in 18 states and 3 Union Territories in India. Almost 90% of total area under coconut cultivation and 93% of total production falls within four southern states of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu. There are other traditional states where more area can be brought under coconut cultivation; especially states like Goa, Maharashtra and Gujarat having good agro climatic conditions and coastal line offer good potential. Since coconut as a crop offers lot of intercropping and mixed cropping, we have to think of a 'coconut based integrated farming system' which need to be encouraged in these new areas of traditional states. On the eastern coast, West Bengal, Odisha and Andhra Pradesh are having areas with conducive agro climatic conditions wherein coconut based integrated farming system can be introduced. Non traditional states like Bihar, Chhattisgarh, Jharkhand and the entire North Eastern states also offer areas which are quite conducive for coconut cultivation and coconut based farming system. Tender coconut plantations is picking up and needs further encouragement.

Assuring a steady and remunerative price to the farmers is the best way to attract more farmers to this field. Educated young people are coming to coconut farming sector in North Eastern states. An educated farmer of Nagaland commented that 'coconut cultivation is just like enrolling his child to an engineering degree course. If you plant high yielding variety of coconut tree, it will start giving yield within three years'. If you maintain the coconut garden reasonably well it will continue to yield for 35-40 years. Another farmer from Tripura pointed out that 'having 500 good yielding well maintained coconut palms is as good as having a class one officers' job in government'. With 1000 coconut palms, he can expect higher income than that of the Deputy Commissioner of a district, and with 2000 well maintained high yielding coconut palms he predicts a monthly income higher than that the salary of Chief Secretary of the state. This underline the fact that educated young farmers need to be supported and encouraged. These comments are radiating optimism, but need to assure a steady price for coconut.

Nowhere in India, especially in the cities, the price of tender coconut has fallen during the last one year while the price of coconut oil, copra and matured coconut nose-dived into the rock bottom. Apart from tender coconut, 'temple coconut' is having a significant contribution in states outside the four major producing states. In none of the major temple areas, the fall in

price of coconut is noticed. This indicates that aggregation of products, marketing of products through a proper network and primary processing need to be taken up by farmers through their collectives.

Formation of CPS and Federations are going on in Tamilnadu, Karnataka and Andhra Pradesh. During next financial year, we have to extend the same methodology to form farmer collectives in other states like Odisha, West Bengal, Maharastra, Goa and in states where there are fragmented, small holdings of coconut farmers. The three tier farmer collectives could be an epicentre for converging all programmes intended for small and marginal coconut farmers under Horticulture Mission, RKVY, State Horticulture Boards etc. apart from the opportunities offered by Coconut Development Board.

Individually farmers may be scattered and quite weak, but through their collectives they can look out for opportunities which are existing within the country and elsewhere. Products like 'packaged tender coconut water', 'virgin coconut oil', 'fat free, gluten free, egg free, nut free, soya free, ice creams', neera, the vascular sap obtained from coconut inflorescence and various value added products from neera, like palm jaggery and palm sugar are possibilities yet to be opened up by Indian coconut farmers.

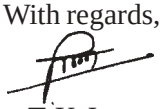
The new MSP announced by Government has to be made effective by appointing state level nodal agencies for doing procurement operations for and on behalf of NAFED. The efficiency, enthusiasm and effectiveness of the state level procurement agencies decides the success or failure of MSP procurement. So it is upto the state governments to ensure that the available FAQ grade copra is produced and passed on to NAFED. State governments can encourage value added coconut products through their industrial policies, extending support for industrial infrastructure, capital subsidy and enabling policies. South Indian state governments have been addressed to establish 'coconut parks' in districts where coconut is cultivated in 25,000 ha. or more. Food processing industry viewed as a sun rise sector in India is given lot of attention and emphasis to coconut sector. Tender coconut water, packaged tender coconut water, coconut milk, milk powder and 'fat free, sugar free, gluten free ice cream' made out of coconut and neera products, especially palm jaggery and palm sugar can bring in lot of export earnings and millions of employment opportunities across the country.

It is found that production of neera by farmers is restricted due to the wrong interpretation of the Abkari Act in various states. It is true that states like Maharastra and Goa do not impose any restriction to tap neera by farmers. But in other states, it is prohibited under Abkari Act. Our farmer collectives have to request to state govermnets urgently to look into these aspects. Neera being a zero alcohol juice taken out from the inflorescence of coconut is wrongly put under the purview of Abkari Act. CDB and various state agricultural universities have developed technologies for preserving neera as a zero alcohol beverage atleast for six months without deterioration in quality. Recently, Government of Kerala has appointed a nine member committee to look into various modalities of how to start neera production from coconut palms.

Almost all the major coconut producing countries are producing neera and value added products from it. The major producer of coconut palm sugar in the world is Indonesia. The export potential of coconut palm sugar from India is to the tune of US$ 2 billion. Considered as a healthy and nutritive sugar, its demand is increasing globally. Enormous opportunity for skilled employment with attractive income is possible through neera tapping. Lot of small units can come up under the MSME sector for processing of neera to jaggery and palm sugar. No doubt it will give a big boost to food processing industry in our country.

Now it is the time for State Budgets. Surely projects for enhancing the productivity and production of coconut, policy initiatives and financial support for establishing coconut processing industries for value addition and product diversification, enabling taxation policies like tax holidays for the next five years to attract more investors in the sector, taking coconut oil also under Public Distribution System with Central Government subsidy etc. are some of the initiatives which CDB request the State Governments to consider. Export and employment generation potentials of this sector can be harnessed by an enabling industrial policy, investment policy and taxation policy at state government level. To impress upon state governments and elected representatives, let the farmer's collectives, CPS, Federation and Producer Companies work together for achieving the cherished goal of making India the true world leader in coconut during this Five Year Plan period itself.

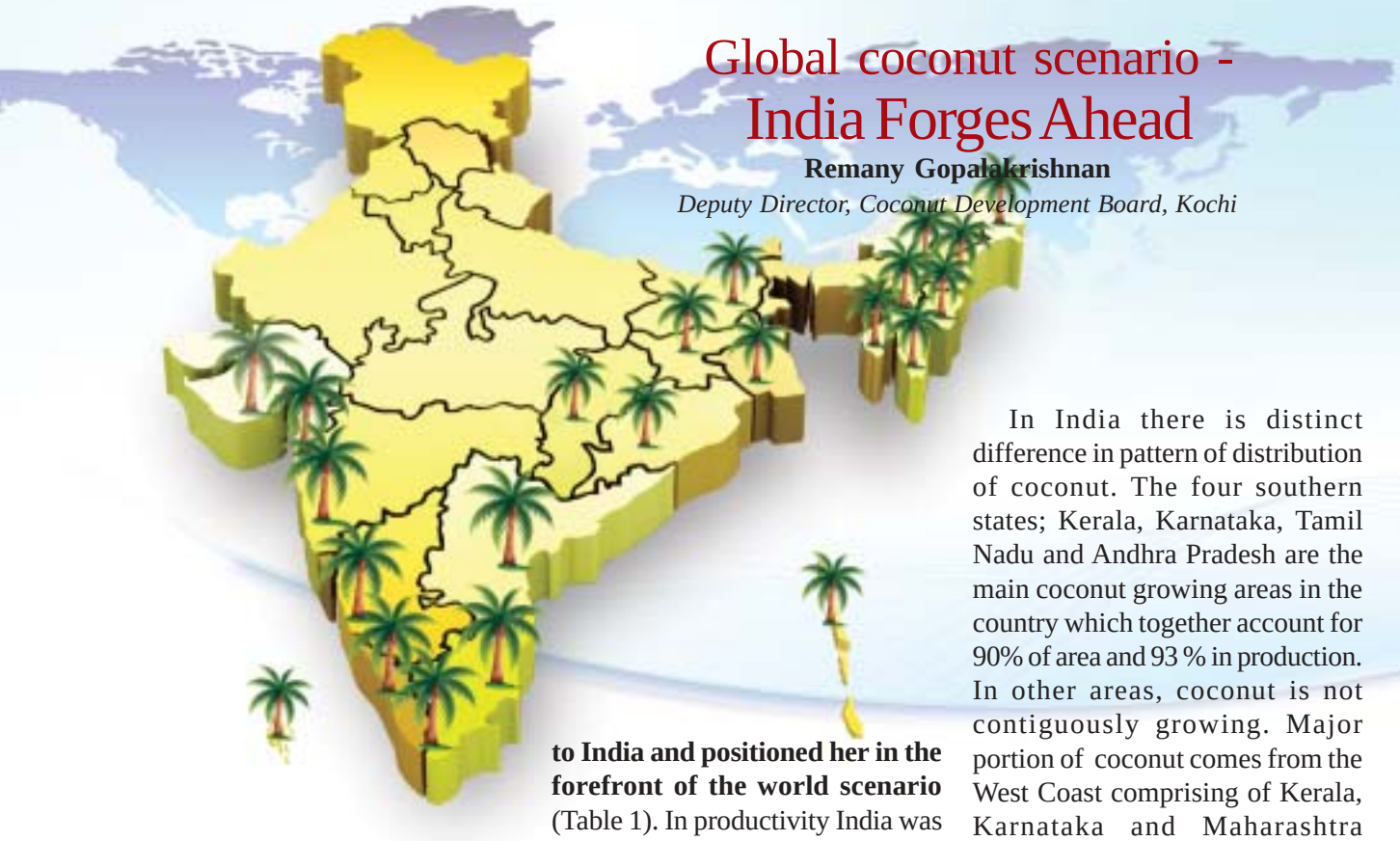
With regards,



T K Jose
Chairman

Global coconut scenario - India Forges Ahead

Remany Gopalakrishnan
Deputy Director, Coconut Development Board, Kochi



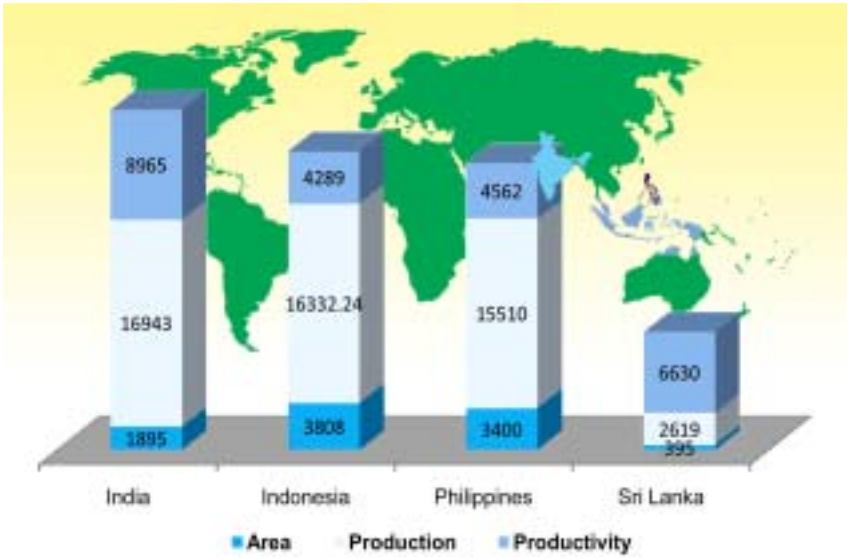
India's population has crossed 1210 million and the country has to feed her entire population. No doubt, food products are becoming scarce day by day. It is in this context, coconut as a food and beverage crop is qualified to be placed at the epitome of food sector.

India was positioned as third in area, second in production and first in productivity till recently with 1.89 million ha of area, 15,730 million nuts of annual production and 8,303 nuts per ha of productivity. This position was as per the statistics released in 2008-09. The latest statistics released by the Horticulture Division of Ministry of Agriculture was in Metric tonnes and the production figure was 10.84 million MT which in terms of whole nuts is equivalent to 16943 million nuts. **This production level gives a facelift to India and positioned her in the forefront of the world scenario** (Table 1). In productivity India was already enjoying the number one status. Now the country could retain the status with a higher level of productivity of 8965 nuts per ha. Indonesia is in the second position with 16,332 million coconuts, followed by Philippines and Sri Lanka with 15,510 million and 2,619 million nuts respectively. These four countries together hold about 74.91% of the total area under coconut and contribute 73.61% to the coconut production in the world. World production of coconut is 64,897 million nuts from an area of 12.15 million ha (Table 2).

In India there is distinct difference in pattern of distribution of coconut. The four southern states; Kerala, Karnataka, Tamil Nadu and Andhra Pradesh are the main coconut growing areas in the country which together account for 90% of area and 93 % in production. In other areas, coconut is not contiguously growing. Major portion of coconut comes from the West Coast comprising of Kerala, Karnataka and Maharashtra followed by the East Coast of Andhra Pradesh, Orissa, Tamil Nadu and Pondicherry. The Islands of Andaman & Nicobar, Lakshadweep and the coastal regions of Gujarat are the other traditional coconut areas. Coconut has made inroads to the interior areas of Karnataka and Tamil Nadu which were hitherto considered as non-congenial areas for coconut. In non-traditional states like Assam, Tripura, Nagaland, Manipur, Meghalaya and Arunachal Pradesh also coconut cultivation has gained momentum.

Table-1. Coconut area, production and productivity of major coconut producing countries (2010)

Country	Area ('000 ha)	Production (Million nuts)	Productivity (Nuts/ha)
India	**1895**	**16943.00**	**8965**
Indonesia	3808	16332.24	4289
Philippines	3400	15510.00	4562
Sri Lanka	395	2619.00	6630



India is spearheading in expanding the crop

Bestowed with most congenial agro climatic conditions, diverse soil types and abundant water resources, coconut cultivation in India is making inroads and the area under the crop attained more or less a linear growth pattern. There has been perceptible increase in coconut area since the last six decades starting from 1950. Area was increased from 63,000 ha to 18.9 lakh ha with an increase of 18.27 lakh ha. In production too this increase was visible. Production recorded an increase from 3280 million nuts to 16,943 million nuts during this period. Productivity, though was not in commensurate with the pace of area and production it increased from 5238 nuts per ha to 8965 nuts per ha. The formation of Coconut Development Board and its field level network in the length and breadth of the country especially the starting of Demonstration cum Seed Production Farms in different agro climatic conditions in 1980s was instrumental for the expansion of the crop nation wide giving a national image to the crop. The growth rate recorded during the 20 year period from the formation of the Board in area was 2.64 per cent, production 3.88 per cent and productivity 1.21 percent (Table 3) It would be pertinent to have a look at the rate of growth achieved by various states in the country during the same period. While Kerala recorded a growth rate of 1.59, 2.838 and 1.228 in area production and productivity, the growth in respect of Tamil Nadu the next neighboring state was 5.2, 4.667, -0.508. Karnataka's achievement was 3.347, 3.369 and 0.02 while that of Andhra Pradesh was 4.7, 9.889 and 4.94 respectively.

The growth rate achieved by the country in coconut sector during the 10 year period after the formation of CDB was more than what the country had achieved in 30 years of pre CDB. But the years followed, failed to keep the same tempo. The cyclone hit in Andhra Pradesh in 1996 and in Odisha in 1999 pushed the country backward and many states often recorded a negative growth rate. The out break of eriophyd mite in Kerala and its vertical and horizontal spread had left sleepless nights to coconut farmers in the country. This aggravated the setback and thereafter the country never performed well and could not keep the pace of the first half of post CDB period (Table 4). Moreover, the state of Kerala which occupied 51 % of area in the beginning of the turn of the century has lost 16.77% area. This set back continues to reflect in the overall performance of the country. This is vivid from the data that growth in area in the last 10 years was only less than half percent despite the country's achievement in production recording a growth rate of 2.73%. Only states like Tamil Nadu and Karnataka recorded tangible increase in area, production and productivity. The rate of growth was 2.41, 6.33 and 3.83 in the case of Tamil Nadu and 2.78, 6.31 and 3.44 in Karanataka. Only Gujarat was in an equable position which recorded growth rate of 3.96, 8.12 and 3.96 respectively during the same period. Therefore it is high time to evolve new strategies for improving coconut area and production. This article reveals among other things the present state of affairs of each state in coconut cultivation. This will help enable to streamline the development strategy for the future.

Kerala, the state which once enjoyed the premier position in coconut cultivation and production is now scarce of suitable land for expanding area under coconut. Instead, the growth in real estate and speedier urbanization and faster

Table-2. Coconut area and production in various states

Sl. No.	State	2009-10		2010-11	
		Area ('000 ha)	Production (Million nuts)	Area ('000 ha)	Production (Million nuts)
1	Andaman & Nicobar Island	21.7	87.528	21.7	102.220
2	Andhra Pradesh	104.0	1042.521	104.0	1042.521
3	Assam	18.8	157.863	18.8	157.863
4	Chattisgargh			0.7	9.847
5	Goa	25.6	137.544	25.6	137.544
6	Gujarat #	16.0	168.804	16.0	168.804
8	Karnataka #	419.0	2339.811	419.0	2339.811
9	Kerala	788.0	6239.496	788.0	6239.496
10	Lakshadweep	2.7	62.520	2.7	62.520
11	Maharashtra	21.0	187.560	21.0	187.560
12	Nagaland	0.9	0.469	0.9	0.469
13	Odisha	51.0	296.970	51.0	296.970
14	Puduchery	2.1	31.260	2.1	31.260
15	Tamilnadu	390.0	5770.596	390.0	5770.596
16	Tripura	5.8	12.504	5.8	12.504
17	West Bengal	28.6	382.935	28.6	382.935
	Total	**1895.2**	**16918.381**	**1895.9**	**16942.920**

Source :Advisor(Hort), Horticulture Division, Ministry of Agriculture, Govt. of India
#Coconut Estimate for 2009-10

substitution of coconut area for more remunerative crops like rubber have resulted in decelerating growth in area under coconut. However, the growing population warrants increase in production of coconut in the state. Despite its 28 per cent share in the total cropped area in the state, the state is losing its share to other competitive states. The share in area and production of coconut reached 42 and 37 per cent respectively. There are about 3.5 million holdings and 42 lakh families in the state which depend on coconut for their livelihood. The average size of coconut holdings in the state is only 0.2 ha. The contribution of the crop to the annual income of the state is around 15 per cent and to the agricultural income is 35 per cent. Of the 14 districts in the state, 11 are having area more than 11000 ha. The toppers in area and production are the districts of Kozhikode and Malappuram and these districts possess more than 1 lakh ha under coconut. Total area under coconut in the state is 7.88 lakh ha.

Tamil Nadu ranks second in production of coconut in the country. Coconut occupies 4.7 per cent of the total cropped area of the state and is the largest horticultural crop grown in the state. It is grown in all the 28 districts of the state and the present area is 4.19 lakh ha, as per the statistics released by the state government. Major coconut growing districts which are in forefront with maximum area under coconut are Coimbatore, Tirupur, Thanjavur, Dindigal, Kanyakumari, Krishnangiri, Velloor, Theni, Salem, Thirunelveli and Erode. Area in these districts ranges from 10,000 ha to 80,000 ha. In productivity too Tamil Nadu has in credit distinctive records. The production of coconut which was pegged at 1945 million nuts in 1985 has now reached to 58,942 million nuts. Thus Tamil Nadu has overtaken the lead in production of coconut of Kerala. Coconut cultivation and allied industries have now become the main source of livelihood and employment security for the chunk of the population in the state. It has been reported that there are 3.52 lakh coconut holdings in the state of which 95.4 per cent are less than 1.25 ha. There are coconut based industries in the state which provide employment opportunities to more than a lakh people in the state. Tender coconut market is another typical example of State's pioneering spirit in coming to the forefront. Tamil Nadu has emerged as the hub of coconut market and Pollachi the hub of tender coconut market in the country.

Karnataka accounts for around 22 per cent of area under and 14 per cent of production of coconut in the country. Coconut is the second largest horticultural crop of the state occupying 31 per cent of the total area under horticultural

crops and 2.85 per cent of the total cropped area of the state. The crop is grown in all the districts of the state and is mainly grown under rainfed conditions. The total area under coconut in the state is 4.19 lakhs ha. The annual production of coconut in the state is 2340 million nuts. Despite the area under coconut being the second highest in the country, the state recorded a lowest productivity. Among the coconut growing districts Tumkur ranks first in area and production of coconut in the state. The other important districts are Hassan, Chitradurga, Chickamangalore, Mandya, Mysore, Uduppi, South Karnataka, Ramanagaram, Davengere and Chamarajnagar. All these districts are having more than 10,000 ha. About 95 per cent of the edible copra produced in the country is Karnataka's share. Similarly Karnataka hold the hegemony of desiccated coconut powder production. Maddur in Mandya district is considered as the largest tender coconut market in the country. The first manufacturing unit of packaged tender coconut water unit in the country was established in Maddur during 1999 with the technology developed by CDB and DFRL Mysore.

Andhra Pradesh is the fourth largest coconut growing state in the country. East and West Godavary, Srikakulam and Vishakapattinam are the districts in forefront in coconut area. In productivity almost all districts show higher level. The state accounts for 5.50 per cent in area and 6.15 per cent of production of coconut in the country. Total area under coconut is 1.14 lakh ha.

Table-3. Growth rate (%) of area, production and productivity in various coconut growing states (1980-2000)

	Area	Production	Productivity
Kerala	1.590	2.838	1.228
Tamilnadu	5.201	4.667	-0.508
Karnataka	3.347	3.369	0.021
Andhra Pradesh	4.712	9.889	4.944
All India	**2.641**	**3.882**	**1.209**

Table-4. Growth rate (%) of area, production and productivity in various coconut growing states (2000-2010)

	Area	Production	Productivity
All India	0.48	2.73	2.25
Kerala	-1.83	-0.46	1.39
Assam	-0.74	1.56	2.31
Andhra Pradesh	0.13	1.11	0.98
Tamilnadu	2.41	6.33	3.83
Karnataka	2.78	6.31	3.44
West Bengal	0.00	-0.78	-1.11
Odisha	2.37	8.09	5.62
Maharashtra	3.20	-7.64	-10.49
Tripura	10.27	-17.97	-25.39
Goa	0.30	0.31	0.01
Gujarat	3.96	8.12	3.96
Andaman & Nicobar Island	-1.60	-0.51	1.11
Puduchery	-0.49	3.49	4.05
Lakshadweep	0.07	0.84	3.67

In West Bengal coconut is grown in 28,600 ha. Murshidabad, 24 South Parganas, Midnapore East, 24 East Parganas, Howrah, Midnapore West, and Koochbehar are the districts in forefront. Goa is another traditional coconut growing state. North Goa and South Goa cultivate coconut in 25, 600 ha. Odisha is another state which recorded unprecedented increase in coconut cultivation. Puri, Gangam, Cuttack, Nayagar and Khurda are the districts where coconut is grown more. Area under coconut in the state is 53,000 ha. The growth rate recorded by the state for the last 10 years is 2.37 and in production in 8 %. In productivity it was 5.62 per cent. Maharastra too is a fast growing state in the country in coconut sector. Sindhudurg, Ratnagiri, Raigad and Thane are the premier coconut growing districts, which together contribute a production of 187 million nuts from 22, 259 ha. Gujarat is another state in the West Coast. Junaghat, Bhavnagar and Valsad are the leading districts. Coconut is spread in 16, 600 ha in Gujarat producing 16.88 crores with productivity of 10,343 coconut per ha.

Coconut is grown in 3 UTs viz., Andaman & Nicobar Islands, Lakshadweep and Pondicherry. In Andaman, coconut is largely grown in Car Nicobar, Carmorta, South Andaman, Rangat, Camban Bay, Diglipur and Little Andaman spreading in 21, 700 ha producing 102 million nuts. Coconut in Lakshdweep has got many unique features. Coconut crop is cultivated there in organic way. Area under coconut is 2, 700 ha and production is 62.5 million nuts. With the highest productivity level of 20, 000 nuts per

Table-5. Districtwise area, production and productivity of south Indian states having 25000 ha. or more under coconut cultivation (2009-10)

Districts	Area ('000 ha)	Production (Million nuts)	Productivity (Nuts/ha)
Kerala			
Kozhikode	119166	8680	7284
Malappuram	108380	10630	9808
Kannur	78024	4790	6139
Thrissur	77509	5380	6941
Thiruvananthapuram	71376	5910	8280
Palakkad	57186	4170	7292
Kollam	56675	4120	7270
Kasaragod	54224	4160	7672
Ernakulam	44475	2350	5284
Alappuzha	39816	2570	6455
Kottayam	28185	1410	5003
Tamilnadu			
Coimbatore	79532	11508	14470
Tirupur	47826	1848	3864
Thanjavur	32077	4951	15435
Dindigul	27113	5474	20190
Karnataka (2008-09)			
Tumkur	132587	9945.66	7501
Hassan	61880	3471.67	5610
Chitradurga	42563	2915.91	6851
Chikmaglur	37990	1844.78	4856
Andhra Pradesh			
West Godavari	50247	5273.82	10496

ha this small Island occupies the number one position in the country in productivity. Puducherry, Mahi, Yanam and Karackal are the coconut growing districts in Puducherry. Coconut growing area is 2, 100 ha and production is 31.26 million nuts. Productivity is 14, 549 nuts per ha.

The North Eastern states viz., Assam, Tripura, Manipur, Mizoram, Meghalaya, Arunachal Pradesh and Nagaland are setting records in coconut expansion. Coconut cultivation was in a very limited extent in the beginning of 2000. Today the districts in Assam viz., Nagon, Barpetta, Kamrupa, Sonitpur, Nalbari, Golaghat, Kachar, Karimganj, Morigav, Udalpuri, Darang, Bongagaon, Baska and Shivsagar are leading in coconut cultivation. Area ranges from 500 to 2000 ha in these states. The South and West districts of Tripura are making inroads in coconut cultivation. Nagaland also cultivates coconut in 920 ha. At present among the North Eastern states, the states reflected in the national statistics released by the Central Government are only Assam, Tripura and Nagaland. Board has taken effective steps to spread coconut cultivation in all suitable belts of North Eastern regions and disturbed areas in the country.

The fifth state in the country next to the southern four states is Odisha with 53000 ha. In the country there are 20 districts with more than 25, 000 ha, 11 in Kerala, 4 in Tamil Nadu, 4 in Karnataka and 1 in Andhra Pradesh (Table 5). Board is in the process of evolving separate development agenda for these districts by opening field units for bestowing special attention in implementing development programmes.

Besides Coconut Development Board, State department of Agriculture, Horticulture, State Agricultural Universities, Research Institutes and other related organizations in government and private sector contribute to the over all growth of Indian coconut sector.

Coconut Cultivars in India-the Best in the World

The varieties and cultivars of coconut grown in the country are the best performers and are mostly released by research institutions and State Agricultural Universities through selection and hybridization. The local Talls of Kerala are, Karnataka, Tamil Nadu, Andhra Pradesh and Goa are West Coast Tall, East Coast Tall, Tiptur Tall, Lakshadweep Ordinary, Goan Tall and Sakhigopal. The growing preference of dwarf for tender nut variety resulted in the release of varieties suitable for tender nut. Chowghat Orange Dwarf is suitable variety for tender coconut. Chowghat Green Dwarf has been released under the name Kalpasree which is mainly utilized for crossing programme in root wilt tolerant hybrids. Gangabondam, a local semi dwarf variety from Andhra Pradesh is also cultivated in selected areas (Table 6&7).

India is the first country where hybrid vigour was first exploited in coconut. It was in 1932 by Dr. J. S. Patel, by evolving a TxD coconut at Nileshwaram, Kerala. Many Tall x

Table-6. Tall cultivars released in India

Varieties of coconut	Characteristics
Chandra Kalpa	Drought tolerant, High oil content
Kera Chandra	High yield
Kalpa Prathibha	Drought tolerant, High oil content
Kalpa Mithra	Drought tolerant, High oil content
Kalpadhenu	Drought tolerant, High oil content
Kalpatharu	Drought tolerant, High oil content, Suitable for ball copra
Prathap	High yield
Kamrup	High yield
Aliyarnagar Tall	High yield
VPM-3	High yield, Drought tolerant
Kera Bastar	Drought tolerant
Kerakerala	Drought tolerant
Aliyar Nagar tall-2	Drought tolerant

Table-7. Dwarf cultivars released in India

Varieties of coconut	Characteristics
COD	Suitable for tender coconut
Kalparaksha	Root-wilt tolerant, High yield
Kalpashree	High oil content, High yield
Gauthamiganga-4	Dwarf, High yield, suitable for tender coconut

Table-8. Hybrid cultivars developed in India

Hybrids	Parental Combinations
Chandra Sankara	CODxWCT
Kera Sankara	WCT x COD
Chandra Laksha	LOxCOD
Laksha Ganga	LOxGB
Ananda Ganga	AOxGB
Kera Ganga	WCTxGB
Kera Sree	WCTxMYD
Kalpa Sankara	CGD x WCT
Kalpa Samrudhi	MYDxWCT
Kera Sowbagya	WCTxSS Apricot
VHC-1	ECT x DG
VHC-2	ECTxMYD
VHC -3	ECTxMOD
Godavari Ganga	ECT x GB
Konkan Bhatye Coconut Hybrid 1	

Dwarf and Dwarf x Tall parental combinations have been evolved in the country. Besides intra varietal hybrids like Tall x Tall and Dwarf x Dwarf are also produced in the crop improvement programme of disease and drought tolerant varieties. Hybrids in general are high yielders and comparatively disease and drought tolerant. In India, so far 15 hybrids have been evolved by various research institutions (Table 8).

Besides Malayan Green Dwarf has been released as a suitable variety for root wilt affected areas under the name Kalparaksha. Other cultivars released through selection are Kalpadhenu, Goudamiganga, Kalpaprathibha, Kalpamithra, Chandrakalpa, Kerachandra, Kalpatharu. Kalpadhenu is recommended for Kerala, Tamil Nadu, Andaman and Andhra Pradesh. Kalpa Prathibha is suitable for Kerala, Maharastra, Tamil Nadu, and coastal Andhra. Kalpamithra is for Kerala and West Bengal and Chandra kalpa is for Kerala, Karnataka, Andhra Pradesh and Maharastra and Kerachandra for West Coast, coastal Andhra, and West Bengal. Kalpatharu is recommended for Karnataka, Kerala and Tamil Nadu. Released cultivars Pradap, Kamarupa, Kera Bastar, Kalyani and Kerakerala are suitable for the respective states.

Research on plantation crops including coconut received adequate attention under the Indian Council of Agricultural Research (ICAR). Central Plantation Crops Research Institute under ICAR is the mandated organization for coconut research among other plantation crops. State Agricultural Universities, other ICAR Institutes, Agriculture, Horticulture Departments of States, UTs, organizations like, NAFED, Kerafed, Marketfed etc. and private institutions are involved in the research and development of coconut in the country.

Consumption Pattern and Demand Projection - Poised for a leap

Coconut is utilised both as tender nut and mature nut. Now nuts are categorized as temple nuts too. The coconut utilised for industrial purpose is 35-40 percent consumed for traditional uses is 50 percent and tender nut purpose is 15 per cent. Milling copra and coconut oil continues to be the major commercial products from coconut. Barring the 50 percent consumed for traditional usage, 15

Chandrasankara

Chowghat Orange Dwarf

Kalpasankara

per cent is utilized for tender coconut. Roughly 30-35 per cent is used for milling copra for oil extraction.

Out of the total production of coconut oil, it is estimated that 40 per cent is consumed for edible purpose, 46 per cent for toiletry use and about 14 per cent for industrial uses. The demand for coconut oil for edible uses is mainly confined to Kerala and to lesser extent in Tamil Nadu. At the all India level the toiletry sector is the major consumer of coconut oil, since coconut oil is used throughout the country as a hair oil and body massage oil either as such or in medicated form. In the production of toilet soaps, liquid soaps, shaving cream and natural shampoo coconut oil finds use as an important raw material. The efforts of the Board is dovetailed in such a way that minimum 40% of the balance 50 % is to be converted into value added products and 25% into tender nut purpose. The rest 25 % only need be diverted to copra and oil purposes. This indicates that India is a country where entire production is utilized domestically. Domestic markets are huge and if the demand is fully met India's production is quite insignificant to feed the Indian population.

Board is now developing innovative marketing strategies for the marketing of coconut products within the country. A country where the population has crossed 1210 million, annual production of 16, 943 million coconuts gives a per head availability of 14 nuts only. To begin with, the Board is concentrating on 63 cities where the population is more than 10 lakhs or in the state capitals or tourists centres. Production of coconut products will be accelerated, so also the marketing of products. Hereafter coconut sector has to rely increasingly on non traditional products and explore new markets. Tender coconut water is becoming the world's finest natural drink and its demand in bottled form is growing manifold. Apart from tender coconut water, in the product basket identified by the Board there are coconut cream, coconut milk, milk powder, coconut chips, ice cream, desiccated coconut powder and ball copra. India will try to cash in the opportunity by finding markets and promoting all the products in these cities.

Board is also trying to popularize the sweet sap tapped from the immature inflorescence of coconut. This product has drawn the attention of many, especially in south India as one of the potential products of future which can bring prosperity in coconut sector. The sweet sap can be further processed into down stream products like palm jaggery, syrup, honey, granulated sugar etc., In countries like Philippines, Indonesia and Thailand tapping and value addition of products have gone a long way and they earn sizeable export value out of it. India, especially traditional coconut growing states like Kerala, Karnataka and Tamil Nadu, will try to follow the suit to widen its coconut based economy and to attract more farmers and entrepreneurs to coconut farming. Board is trying to create sufficient manpower of neera technicians to work in this sector. India will thus shine in production of neera and its down stream products to compete with other countries.

New Development Strategy and Programmes to Position India in the Forefront

India has already attained the prestigious status of number one position in production and productivity. The turn is now to flourish in export and marketing sector.

At present India is not coming under the first 22 countries in value addition and first 25 countries in export. This back seat driving is not suited for a country like India which has topped in many other areas. Though productivity of the country is number one among other major players the country has not fully exploited its vast potential. Many states and Union Territories achieved the productivity level of even upto 20, 000 nuts per ha where the average national productivity is only 8965 nuts per ha. The country has therefore to go a long way.

The productivity oriented programmes will thus be continued with more thrust and emphasis. Reaching a productivity level of 10, 000 nuts is the targeted goal. The Replanting and Rejuvenation programme aimed at improving productivity level in the country will be continued in more areas. Encouraging farmers in more coconut based farming system models in non traditional and north eastern regions will also get priority in the future programmes in the country. Handholding and convergence with related organizations is yet another strategy. National Horticulture Mission, RKVY, NRLM, MNREGS, SFAC, State Agricultural Universities, Research Organizations and Financial Institutions are coming under the ambit of convergence. Formation of farmer collectives, ie., Coconut Producers Societies, Federations and Companies have come true. Development programmes will be implemented only through these systems. They will be attracted to enterprises for value addition and the Board will facilitate the whole delivery system as a catalyst. So far 2100 CPS and 73 Federations have been formed. Formation of 3 Companies is in the offing. 10,000 CPS, 500 Federations and 100 Companies are targeted in the 12th Plan period.

Development programmes carried out in the country are dovetailed in such a way that India shall become the world leader in production, productivity, value addition and export. Coconut Development Board is acting on behalf of Government of India. It takes state government departments, research institutions, state Agricultural Universities and other national and state level organizations along with it to achieve this envious status.

Starting from production and distribution of quality planting material throughout the country, it focuses on expanding the crop to non traditional and North Eastern states including the disturbed areas, replanting and rejuvenation of existing traditional coconut gardens, farmer participatory collaborative research through academic institutions, equipping sufficient labour force through Friends of Coconut Tree (FoCT) training programme, converting neera production into a business enterprise, encouraging value addition through Technology Mission – all have their own objectives which ultimately give a holistic approach for the development strategy. In value addition, it is targeted to establish 500 more processing units apart from the existing 215 units. India is eyeing for a quantum jump in export growth through these measures. Having notified as the Export Promotion Council, the Coconut Development Board is so keenly watching the heartbeat of the export sector in coconut.

New Marketing Strategy

India is a lucrative market for quality products as is evidenced from many edible product sectors in the country. The fact that 31.16 per cent of Indian population ie., around 37.7 crores live in urban

Value added coconut products

areas underlines this vast potential. The September issue of Indian Coconut Journal portrayed the innovative marketing strategy of the Board, on which the country now rely on. The apprehension is as to whether the value added products now focused on have potential for marketing. The strategy evolved is to see that these products are reached in all domestic and international markets. The 63 JnNURM cities in India are aimed as the potential market. The product basket selected consists of products like packaged tender coconut water, coconut chips, desiccated coconut, virgin coconut oil, coconut milk. milk powder, milk cream, ball copra, branded coconut oil and coconut water vinegar. Board has already planned to increase the production potential of the units running in India and also to encourage the manufacturers of each product to form consortiums or associations, collaborating with other commodity boards for creating basic marketing infrastructure, introducing business meets, introducing the products before the public, and by conducting proper media campaigns. Thus these products can be sent to the nook and corner of the Indian markets. The same strategy can be adopted for marketing products in international markets. Quality and attractive packing are important in international marketing. The narrowing gap in the domestic and international markets is also a welcome development to push our entry in the international trade. The marketing strategy proposed in the country is to make the global presence of Indian products.

Rocketing Export Growth – a silver lining

International trade (import and export) plays a vital role in economic development of a country. The global competitiveness of a sector is truly reflected in the volume and value of trade achieved by a country in that sector. The export and import scenario of coconut products in India is not so significant. The export of coconut oil and other coconut products from India is comparatively negligible, as the whole production is largely utilized for domestic consumption. Till recently the lions' share of country's export realization was from coir and coir products. India being a prominent coconut growing country with a production of 16,943 million coconuts from 18.9 lakh hectares of coconut cultivation possesses good potential for growth, owing to the unique quality of Indian products. Indian coconut oil as toiletry oil through value addition has made its presence in the international markets despite its higher price. Similarly, there is growing market for coir and coir products for diversified uses in the scenario of eco-friendly environment consciousness. This growing market could be tapped appropriately if the country takes appropriate development measures. The major countries importing coconut products from India are USA, Nepal, U.A.E., Bangladesh, China, U.S,S.R., Germany, Singapore, Kuwait, Japan and Egypt. The main product imported is coconut oil.

Making a drastic shift from the major export earnings from coir, now an alternative product of more commercial importance is emerging in the export scenario ie., activated carbon. Export earnings from activated carbon have recorded a growth rate of 56 % over the last year. The export earning has crossed Rs. 500 cr within the past 3 years from a very low level. There exist huge markets for activated carbon in North America, South America, Africa, Western Europe and Eastern Europe. The product has an incremental growth rate of 18-20 % and there are about 20 companies spreading in Tamil Nadu, Kerala and Karnataka manufacturing activated carbon. Contribution from activated carbon may overtake that of coir in the near future. It is targeted to reach Rs. 5000 Cr. during the next five years and the total export will touch new heights which will remove the backseat driving of India as a low contributor in international trade.

Consolidation of farmers –the Strong Way out for attaining the goal

The Board under the auspices of Government of India entered into more farmer friendly activities in the country, by uniting farmers under the platform of Coconut Producers' Societies (CPS) and Federations.

Forming farmers collectives are the permanent answer to the widely scattered small coconut holdings and highly unorganized farming community. Formation of Coconut Producers' Society (CPS) of 40-100 farmer members in contiguous areas made a kick start in 2011. By completing 2100 CPSs and 73 Coconut Producers Federations (CPFs), the Board continues its efforts with confidence in bringing a landslide victory in scientific management of gardens, farm level

Packed tender coconut water and desiccated coconut powder, value added coconut products with attractive packaging

processing and aggregation of produces and export of value added products through these collectives. Federations will give way to Coconut Producing Companies (CPCs). In this plan period 10, 000 CPSs, 1000 CPFs and 100 CPCs 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/CPFs 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 ice cream, desiccated coconut or shell powder and activated carbon units.

CPS / Federations and Companies will be given more opportunities in implementation of programmes and for finding out solutions for their problems. The CPS integrated to Federations will have 1 lakh coconut palms under their ambit. Coconut based medium level industries could be started in such circumstances. Coconut Producer Company, a group of 10 Federations will have 10 lakh farmers under their limit. Company shall have farmer equity participation and have equal contribution from central and state governments. The Company can serve as business entities with managerial and technical skills. Integrated processing of higher capacity, export of coconut products both in domestic and international sector, branding of products and many more pathways of development in coconut sector could be fulfilled through Companies.

The Government has started caring and listening to farmers voice and concerns. **The announcement of Government of India, offering of Rs. 10 lakhs each for Farmer Producer Organizations (FPO) and setting apart Rs. 50 crores for a single year 2013-14 is the ring tone of the beginning of a positive and congenial ambience to coconut farming sector.**

Being a food and beverage crop, coconut continues to enjoy the prime place among all horticultural crops in the country. Coconut Development Board being the mandated agency functiong under the Ministry of Agriculture, Government of India is taking all efforts to place Indian industry in number one position in value addition and export also in the coming years apart from production and productivity where India now dominates. The efforts of the Board are therefore dovetailed in this direction through innovative ideas, novel development strategies, linkage and diverse integration with various departments and aggregation of farming community.

Problems and prospects of coconut cultivation in Kerala

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** On deputation from CDB*

Coconut is the most popular crop to the people of Kerala and the crop plays a very important role in the socio-economic development of the state. Among the leading coconut producing states in India, Kerala rank first both in area and production of coconut. Presently coconut is cultivated in the state in an area of 7.88 lakh hectares with an annual production of 3992 million nuts (2010-11). Coconut sector contributes to around 21 percent of total agricultural GDP of Kerala, thus inextricably linked to the agricultural economy of the state. However it is paradoxical to note that the average yield of this crop in the state is very low (32 nuts per tree) and a declining trend in area and production of coconut is noticed. As in the case of other crops, the yield realized by the farmers from coconut is only 30 to 40% of the potential yield reported under ideal management conditions. Kerala's share in the total production of copra in the country has declined to 46% from the 90% which was existing fifteen years ago. The area under coconut has been shrinking continuously since 2000 due to various factors. It has declined from 898 thousand ha to 788 thousand ha in Kerala during the period from 2005-06 to 2010-11 (Table 1). Similarly the production in the state has come down to 3992 million nuts in 2010-11 from 6326 million nuts in 2005-06 with a negative average growth rate of -7.9%.

Shift in cultivation to other more remunerative crops like rubber, high cost of cultivation and low return from coconut, prevalence of pests and diseases like root wilt, bud rot, etc could be the reasons for the negative growth rate in area and production of coconut in Kerala. It is also noteworthy that, being a land scarce economy with high land prices, Kerala faces the danger of diversion of land resources for other profitable ventures notably real estate and other developmental initiatives. Rapid urbanization is undergoing in the state which causes conversion of coconut area for housing and construction of commercial building, roads etc. Hence the magnitude of shortfall in production in Kerala, the major coconut producing state is much higher than the earlier estimates because of reduction in area. Besides the depressed price prevailed in the last few years, shortage of labour, high wages and incidence of diseases have caused negligence of this crop by the farmers and resulted in decline in production. The change in climate pattern and shortage of labour also affect the crop management in the state. Rain fed nature of the crop is considered as one of the major reasons for low productivity of coconut in major coconut growing states. There is ample scope for wider adoption of irrigation system in the country especially in areas where rain fall is scanty and water is the limiting factor and thereby enhances the production and productivity of coconut.

Constraints in profitable coconut farming

Coconut in Kerala is essentially a homestead crop and forms the main component of various crops

Table 1. Area, production and growth rate of coconut in Kerala

Year	Area (000' ha)	Production (million nuts)
2005-06	898	6326
2006-07	873	6054
2007-08	819	5641
2008-09	788	5802
2009-10	788	3992
2010-11	788	3992
Average Growth Rate	**-4.24**	**-7.9**

Coconut garden intercropped with pepper, nutmeg and banana

Chowgat Green Dwarf - a variety with high resistance to rootwilt

grown by the farmers. Small size of holdings is the characteristic feature of land holdings in Kerala. Most of the holdings are less than 0.1 ha. and only few farmers possess holdings of size above 0.40 ha. Since the size of holdings is small and most of these are homestead gardens it could not generate adequate income to support the dependant families. Shortage of farm workers and high labour charges also force the farmers to ignore the timely adoption of agronomic practices and regular harvesting. This results in the neglect of adoption of management practices especially in small holdings leading to low productivity and high cost of production.

High density of over 200 plants per hectare is common in small holdings of Kerala. The crowded plant population coupled with poor adoption of management practices causes low productivity. The potential of coconut palm to provide yield without any management inputs prompt the farmers to leave the farm under neglected conditions. Another reason for the low productivity in coconut is the prevalence of old, senile and unproductive palms. It is estimated that more than 10% of the palm population is over aged. Apart from these, coconut small holdings are facing the problem of overcrowding with perennial trees which cast shade on the palms.

Therefore, the massive replanting and rejuvenation programme implementing in three districts on pilot scale should be extended to other districts also for encouraging farmers to cut and remove the over aged palms and regulating the palm density and to undertake replanting. The budget provision for extending this programme to all the districts of Kerala is a positive step. This would definitely pave the way for higher production and productivity of coconut.

Root (wilt) is considered as the largest single factor which contributes to low productivity of coconut in Kerala. The experiments conducted at farmers' field have shown that disease-advanced palms never respond to any kind of management practices. Juvenile palms that contract the disease before the onset of flowering seldom give yield. There are no proven measures to control the disease. These observations necessitate the removal of all infected juvenile palms and bearing palms in advanced stages of disease which are yielding less than 10 nuts per year. Massive programme for cutting and removal of affected trees and adoption of better management practices to the diseased trees in the initial and middle stage in a time bound manner is the only solution to contain this malady.

Rain fed nature of the crop is considered as one of the major reasons for low productivity of coconut in major coconut growing states. There is ample scope for wider adoption of irrigation system in the state which enhances the production and productivity of coconut. Even though the state receives abundant rainfall to the extent of about 3000mm/annum, its distribution is not uniform throughout the year. From December to May the state receives very little or no rain. As a result, the state experiences severe water scarcity. This very often results in the reduction of yield during the lean periods. Out of various methods of irrigation for

coconut, the drip irrigation system along with fertigation is found to be best suited with maximum water saving and fertilizer use efficiency. Under drip irrigation, water saving up to 36% and fertilizer use efficiency can be increased compared to basin irrigation. Scarcity of on-farm water sources and capital with the farmers for developing such sources and irrigation system are constraints experienced by farmers in practicing summer irrigation.

Though organic manure application is practiced by majority of farmers, the application of inorganic fertilizers to the recommended level is practiced only by few farmers. Most of the holdings follow traditional cultural practices. Severe infestation of this lethal pest, red palm weevil is noticed in coconut gardens which is a major problem faced by the farmers in growing new palms for reviving coconut gardens. Massive plant protection campaign to suppress this pest attack is essential. Plant protection and fertilizer application are yet to be adopted on a wider scale. One of the reasons for this low level of adoption is high cost of fertilizers and difficulty in getting the trained persons for applying plant protection measures. The limitations in the areas of plant protection and fertilizer application should be removed by providing financial assistance through development programmes. Difficulty in getting the services of trained climbers to plant protection measures in time and high cost of labour is also unaffordable. As per the estimation of CPCRI (2011-12) the cost of production of coconut in Kerala from a well-managed coconut garden under rain-fed condition is Rs 5.64 per nut and in the case of irrigated coconut it is Rs 4.91per nut. It is estimated that the cost of cultivation in holding of size of one ha. is Rs.69,182/- under rain-fed and Rs.77,332/-under irrigated conditions. About 58 percent of the total cost is incurred due to labour charges. Similarly the share of labour cost in total cost of cultivation in the case of rain fed coconut is 56 percent. This shows the higher per unit labour charges prevailing in Kerala, which can be attributed to higher labour demand and higher cost of labour in the state. Currently, wage rate prevailing in Kerala is around Rs.500 per day, which is one of the highest costs prevailing for agricultural labour in India. Around 28 and 30 percent of the total cost is for purchasing manures and fertilizers and for plant protection chemicals for rain fed and irrigated coconut. The data shows that high cost of production and low profitability especially from small holding is the main problem experienced in the state. Besides, the fall in price prevailed during the last few years had also affected the crop management in the sector.

Table 2. Cost of production of coconut

Inputs	Input quantity per ha	Rainfed (Rs)	Irrigated (Rs)
Labour charges*	120 days	39000	39000
Labour cost for Irrigation*	20 mandays	0	6500
Fertilizer cost	Package of practice recommendation	6793	6793
Organic Manure cost	Package recommendation	13200	13200
Plant protection cost	Approximate	2100	2100
Miscellaneous expenses	Approximate	1800	2700
Overhead charges	10% of sum of above costs	6289	7029
Total cost per ha		69182	77322
Average Yield (nuts/Ha)**		12250	15750
Cost of Production(Rs/Nut)		5.64	4.91

Source: *CPCRI, Kasaragod.*

* Wage rate used for the above calculation is Rs.325/day

**Calculated @70 and 90 nuts per palm per year for rainfed and irrigated coconut respectively. Number of palms per ha is 175.

Timely harvesting is another difficult task because of shortage of trained climbers. In many gardens where the harvesting frequency was 8-9 trees a year, has now come down to six times or even less. This problem is more serious in small holdings where farmers have to pay higher wages because of limited number of trees. The

harvesting charges go up and presently it varies from Rs. 20 to 25 per tree per harvest. The initiatives of the Board in conducting massive training programme in palm climbing using mechanical devise is useful to solve the problem to a certain extent.

Even though a number of high yielding hybrid and early bearing dwarf varieties are recommended in the state for commercial cultivation, the farmers does not prefer them in place of local tall cultivars for planting on large scale. Non availability of sufficient quantity of planting materials of these varieties to meet the demand of farmers, undesirable traits of few hybrids like alternate bearing and instances of declining trend in productivity after a few years of initial yield discourage farmers for wider adoption.

Opportunities for enhancing productivity

Since the land holdings of coconut farmers are very small, the only way for enhancing on -farm income is by promoting coconut based farming system. Integrate coconut farming with inter/ mixture cropping with high value crops like cocoa, nut mug, pepper, tuber crops and vegetables. Livestock rearing, homestead fisheries, floricultural crops, pollination support through bee keeping etc. are additional income generating activities which need to be promoted. Mushroom cultivation using coconut waste, copra making, coconut based homemade products, farmer participatory group marketing of tender coconut and coconut based food products etc. are some of the potential enterprises. It is suggested that coconut based farming system as a strategy is to be strengthened and popularized to make coconut farming especially in small holdings economically viable. Financial assistance extended under NHM can be made available to the farmers for adopting coconut based farming system by integrating the implementation of suitable NHM and CDB schemes.

Among the hybrids released for commercial cultivation, Kalpa Sankara (CGDxWCT) is relatively tolerant to root (wilt) disease and is recommended for cultivation in the root (wilt) affected tracts. Kalparaksha (MDG) and Kalpasaree are the other tolerant varieties, recommended by CPCRI for root wilt affected areas. In order to promote replanting/ under planting with quality seedlings the nursery programmes in the state both private and public sector may be linked with the replanting programmes to make available seedlings to farmers for replanting. The nursery programme should be targeted to produce and supply only high yielding hybrids or selected ecotypes which are suitable for cultivation under different agro climatic conditions. Planting of dwarf varieties in new locations as well as in existing gardens where space is available should be encouraged for ensuring regular supply of tender nuts. Several exotic varieties MGD, Philippines ordinary, Jawa, Figi and Cochin China are found best suitable for cultivation in Kerala. Commercial production of planting materials of these varieties is also need to be promoted.

The technologies developed by research for effective control of leaf rot, a major disease affecting root (wilt) affected coconut gardens and disease management practices is yet to be adopted on a wider scale. Massive plant protection campaign on cluster basis need to be taken up at the severe stages of its infestation at least twice in a year to check the disease and enhance the productivity of root wilt affected palms. Bud rot and red palm weevil are another lethal disease and pest affecting the coconut garden. Timely adoption of plant protection measures at the peak stage of its infestation in endemic areas is very essential to protect palms. Crop surveillance and timely forecast of disease incidence should be carried out by the research and development agencies in endemic areas. Difficulty in getting the service of skilled climbers to apply the chemicals in time and general reluctance of farmers to use chemicals are the reasons for low level of adoption of plant protection measurers. Efficient bio control measurers of leaf rot and bud rot is yet to be developed. Pheromone traps developed for the management of the pest, red palm weevil could be utilized on community basis for suppressing the outbreak of the pest in endemic areas. Installation of pheromone trap @1 trap/ha. in coconut trunk at a height of 2 meter from the ground is very effective to mass trap and destroy the weevils. This technology should be taken up on community basis especially in the areas where cutting and removal palms are being taken up where the pest infestation is severely noticed. Initiatives taken by the Board in conducting massive training programme “Friends of Coconut

tree "is found successful to meet the demand of skilled labourers to a certain extent. This programme should be continued to generate adequate skilled climbers to carry out timely plant protection measurers.

Since coconut is a traditional crop in Kerala, the continuous cultivation without adequate plough back resulted in poor fertility status of soil. This situation could be retrieved only through adoption of integrated nutrient management practices. Fertilizer application should be based on soil/foliar analysis and applied at the right time during the end or at the beginning of heavy rains along with application of sufficient quantity of organic manures. CPCRI has recommended standard of NPK+Mg and other micro nutrients like Boron, taking into account the different agro climatic conditions. Labour intensive method of application by opening circular basins around the tree in every year may be replaced with equally effective method of application of fertilizers in a circle of about 1.75 meter radius around the palm, lightly digging in and mulching with husk, coconut leaves and fertilizer application associated with weeding will reduce the cost. Carrying out the management practices in farmer groups also help to reduce the cost of production as experienced by farmers' collectives. The financial assistance extended under MGNREG scheme could be made available to the farmers to reduce the high cost of labour in the state.

Water is the most important input-factor for enhancing the nutrient uptake capacity of the tree. Majority of the coconut gardens in the country are rain fed. In order to maintain steady yield and a congenial micro climate condition in the garden, it is necessary to mitigate the water stress conditions with proper irrigation. It has been established that drip irrigation with fertigation unit will go a long way in increasing production and productivity. Fertigation is an efficient method of fertilizer application through irrigation system. Soluble fertilizers like urea, ammonium phosphate and muriate of potash recommended for coconut can be applied through fertigation. Studies conducted at CPCRI indicated that 50% of the recommended dose of fertilizer is sufficient, if it is applied through drip system. There is need to provide assistance to the coconut sector and hence the scheme proposed under national micro irrigation mission needs to be implemented in coconut gardens by converging with coconut development programmes. Coconut economy is presently depending on the price of coconut oil, which is highly unstable. Such dependence on a single product should be minimized through the promotion of farm level and community level processing of diversified products and by-products obtained from coconut palm. Tender coconut marketing is one of the profitable activities which need to be promoted in the state. Farmer's collectives as well as enterprising youths are to be supported in organizing marketing outlets in potential areas for tender coconut. Another profitable area yet to be utilized in the state is production of neera and palm sugar. Tapping of coconut for toddy is practiced in many households in selected palms. Technologies are now available for preserving and packing coconut sap as 'neera 'or sweet toddy as non-alcoholic healthy drink. As in the case of of other coconut growing countries like Indonesia and Thailand tapping could be permitted in the state and farmers organizations could be encouraged for producing coconut sugar in attractive packing and can explore the domestic and international markets. This not only improves the farm level economy of farmers but also create opportunities for employment to the rural youth in the state. Another critical component noticed in promoting coconut production is guaranteed procurement of coconut and copra at remunerative price. The growth of production must be supplemented with guaranteed procurement and remunerative price for the farmers.

Though coconut farming is so popular in the state, it does not attract the attention of farmers, as a result of the prevailing socioeconomic constraints to profitable production. Increasing productivity of coconut in the state is one of the main strategies for enhancing coconut production in the country to meet the increasing demand. The constraints in enhancing productivity are poor cultural management, slow spread of high yielding hybrid and dwarf varieties, lack of diversity in product utilization, high cost of production, low profitability and declining interest in farming. The technologies developed by research viz; new cultivars, profitable production system and integrated pest and disease management requires wider adoption in the field. Several limiting factors could be tackled successfully to make coconut farming attractive and profitable in Kerala.

Tamilnadu excels in coconut cultivation

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Coconut, predominantly a small holders' crop, occupies a prime position in the cultural, social and economic lives of millions of people across the world. Globally the crop has coverage of 12.15 million hectares and an annual production of 64.89 billion nuts spanning across 93 countries. India is the second largest producer of coconut in the world accounting for 24.24% in production, first in productivity and third in area under cultivation (15.59%).

Coconut Scenario in Tamil Nadu

Coconut production in Tamil Nadu is significantly increasing on account of congenial climate and proper management of the coconut gardens by the farmers. Tamilnadu is the second largest producer of coconut in the country with an area of 4,10,149 ha. under coconut cultivation with a production of 58,942 lakh nuts (2010-11). The state has recorded an increase of 2.42% in area and 6.26% in production in 2010-11. The average yield per palm is 14,371 nuts per ha which recorded 5.00% increase over the previous year.

Among the coconut tract of southern India, Tamilnadu holds foremost share in coconut area and production. Coconut cultivation is considered to be one of the major livelihood supports to 3.15 lakh farmers in the state.

Production of Seedlings

The Department of Agriculture, Tamil Nadu Agricultural University and the Coconut Development Board are playing major roles in improving the productivity and production per unit by the way of producing and supplying quality planting materials through various schemes. Many coconut farmers in Theni and Pollachi area are also producing hybrid seedlings in the farmers' field itself with the help of agricultural scientists and experts with out any assistance from any government departments.

The Central as well as the state

Area, production and productivity of coconut in Tamil Nadu (2010-11)

S. No	District	Area (Ha)	Production (lakh nuts)	Productivity (Nuts/ha)
1	Coimbatore	80712	11970	14831
2	Tirupur	49598	4086	8238
3	Thanjavur	33271	5221	15692
4	Dindigul	28284	4902	17331
5	Kanyakumari	24916	4533	18193
6	Vellore	22292	2081	9335
7	Theni	18715	3159	16880
8	Krishnagiri	15887	3217	20249
9	Tirunelveli	15621	1292	8271
10	Salem	14278	1994	13966
11	Madurai	11280	2251	19956
12	Erode	10987	1679	15282
13	Virudhunagar	9512	1082	11375
14	Ramanathapuram	8363	636	7605
15	Pudukottai	8214	1248	15194
16	Dharmapuri	7160	1421	19846
17	Namakkal	6654	1418	21310
18	Sivaganga	6599	1384	20973
19	Thiruchirappally	6397	1215	18993
20	Karur	5937	659	11100
21	Thoothukudi	5876	673	11453
22	Thiruvarur	5142	757	14722
23	Nagapattinam	4041	682	16877
24	Kancheepuram	3442	386	11214
25	Cuddalore	2230	384	17220
26	Villupuram	1948	196	10062
27	Thiruvalluar	1137	133	11697
28	Thiruvannmalai	719	106	14743
29	Perumbalur	541	143	26433
30	Ariyalur	338	33	9763
31	The Nilgiris	58	1	1724
	State	**410149**	**58942**	**14371**

Source: Directorate of Economics &Statistics, Chennai- 6

Hybridisation, need of the hour

Murugan(46), native of Gudalore, Kambam is a teacher who has opted coconut hybridization as his means of livelihood. It is 20 years since he is into farming. He is having 3000 trees in his 70 acre garden. In order to arrest the spreading of root wilt disease, he brought Cowghat Orange Dwarf seedlings from the DSP farm of the Board at Mandya before 10 years. After this, he is doing hybridization in his own garden and planted his own hybrids in 5 acres each year. With the help of a technician from one of the renowned hybrid farms, in his own garden, he is doing hybridization and is selling DxT seedlings @Rs.180. He has already sold 5700 seednuts to Tamil Nadu state agriculture department. Murugan who is producing 20000 hybridized seedlings in a year has already sold 1 lakh seedlings so far. Murugan is also doing tender coconut harvesting. Murugan is available on 9042494347.

COD and MYD in Murugan's garden

government has established coconut nurseries in 111.74 acre for the production of quality seedlings in the state which adds to the productivity of the state. The state government is procuring seed nuts of tall, TxD and DxT varieties for producing seedlings and for supplying to farmers. During 2010-11 government has supplied 3.411 lakhs Tall, 3.930 lakh TxD and 11,000 DxT coconut seedlings to farmers.

Cultivation

Most of the gardens in Tamilnadu are maintained as mono crop with wider spacing. In some areas multi cropping system is also practiced with a combination of coconut + vegetables + cattle + fruits. Since the state is receiving optimum rainfall, most of the farmers are adopting drip irrigation system. This in turn, arrest the spread of pest and diseases. Majority of the coconut gardens are maintained very well by adopting integrated nutrient management as per the recommendations of Tamil Nadu Agricultural University. The recommended fertilizer dosage is being used optimally. The gardens are free from major pests and diseases. In some patches where the tall variety is predominantly grown, eriophyid mite infestation is seen and as a preventive measure, farmers are undertaking root feeding with Azadiractin.

A mother palm of MYD variety

Copra

In Tamil Nadu more than 50%

of coconut is converted to copra and equal quantity of coconut is traded in the form of partially de-husked coconut for supplying to non traditional states in India. In copra production, Tamil Nadu stands at the top position which help the coconut farmers economically. As on December 2012, 29,732 tonnes of copra is produced in the state. (ie. 50% of total production of the country). Around 50 copra driers are established for copra production in the state.

Tender Coconut

The increasing health consciousness among the people has made more importance to natural drinks like tender coconut water and business giants like Pepsico and Coco cola are setting up tender coconut processing units. Since Tamilnadu being a giant in coconut production there is immense scope for developing processing units. Tender coconut consumption needs to be promoted since it is the only natural unpolluted, undiluted and unpoisoned drink. Intensive promotional campaigns can be undertaken under the auspices of the public relations department to increase consumption of tender coconut which will not only provide a nutritious, natural health drink, but will also aid in increased and sustained returns to the coconut growers. CDB has been advocating the consumption of tender coconut water. The Government of Tamil Nadu has already initiated activities for promotion of tender coconut as a health drink and an amount of Rs. 10 crores has been earmarked in the budget for the same. It is also planned to initiate more tender coconut parlours and tender coconut processing units in Tamilnadu with the financial support from CDB and State Government.

The present day farmers of Tamil Nadu are keen to cultivate maximum tender coconut varieties like, COD, CGD, MYD, MGD and MOD. In India, Tamil Nadu is the only state where maximum tender coconut varieties are cultivated. The reason being that tender coconut can be harvested in the sixth month where as mature coconut can be harvested in the 10th month only. Moreover if the coconuts are harvested at tender stage, the incidence of pest and disease can also be reduced and the production will increase proportionally. The price of tender coconut at farm gate itself fetches Rs.13-14/- which goes up to Rs.18-19/- during peak summer. If the farmers are harvesting more tender coconut, the production and productivity will increase manifold.

It is felt that the tender coconut revolution has already begin in

Farmers fix the price of tender coconut based upon meteorological report and market trends

Annamalai Srinivasan, an agriculture graduate is the Secretary of Pollachi based Tender Coconut Grower's Association. Himself a farmer, Srinivasan owns 70 acres of land out of which 60 acres is planted with coconut alone. In 1991, he made his first coconut planting with 1000 Deejay seedlings. Later on with the help of his classmate, he himself did hybridization and planted another 2000 dwarfs and hybrids in his own garden. Now he is selling DxT seedlings @ Rs.130. He recollects that, since his was Deejay's seedlings, he used to get Rs. 5 per tender nut when the prevailing price was Rs.2 only, way back in 1995. Once he realized the potential of tender coconut market, he planted more tender coconut varieties. Tender Coconut Growers Association is fixing the price of tender nut based upon meteorological report and the market reports of metropolitan cities like Mumbai, Chennai, Hyderabad and Banglore. Nearly one lakh tender nuts are traded everyday from Pollachi to Chennai. At the initiative of this Association, nearly one lakh tender nuts are traded to neighbouring states like Andhra and Maharastra. Srinivasan can be contacted on 9942930400.

Realizing the potential of tender coconut market

D. Gavaskar from Theni is a farmer cum businessmen who has identified the vast potential of tender coconut harvesting as well as marketing. Gavaskar's 10 acre coconut garden is having 800 coconut palms of COD, MYD, DXT and tall varieties. Like other farmers of his area he prefers tender coconut harvesting since it can be harvested at the sixth month as well as the premium price it fetches. From Theni district alone around 20,000 tender nuts are traded every day to Chennai, Madurai, Trichy and Kerala. Along with the tender nuts he is getting from his garden, Gavaskar is procuring tender nuts from the nearby gardens and is selling nearly 5000 nuts per day. He is buying nuts @ Rs. 11-13 and is selling @ Rs. 17. Gavaskar is available on 8675956968.

Tamil Nadu. Farmers may be motivated to plant 25% dwarf, 25% hybrid and 50% tall varieties so that the farmer can run his farm as well as his livelihood in a better way without any economic crisis and simultaneously the production and productivity can also be increased in a better way which will make the nation the world leader in this sector. Organized efforts to tap this sector is the need of the hour. Farmers from Pollachi area have already formed the Tender Coconut Growers Association. More than 350 farmers are now deciding the price of their tender coconut.

Coconut value added products of Tamil nadu based entrepreneurs

Value addition

Coconut cultivation and allied industries have now become the main source of livelihood and employment security for the chunk of the population in the state. There are about 7000 coir based industries and 200 coconut based industries in the state which provide employment opportunities to more than a lakh of people in the state. Under Technology Mission on Coconut, Board has supported 44 processing units in the state making the state to stand foremost in national coconut industry. The state has huge investments in coconut based industries like shell powder, activated carbon, shell charcoal, desiccated coconut, coconut oil, copra and packed tender nut water units.

Export

In India, Tamil Nadu stands top in coconut exports also. The state contributes to about 60% of the country's total export of coconut and coconut products. Tamil Nadu exports various products of coconut to various nations mainly fresh coconut, desiccated coconut powder, copra, packed tender coconut water, shell powder, activated carbon, coconut shell charcoal, coir based products etc. As on today, Board has issued 861Registration cum Membership Certificate to coconut product exporters out of which 390 are from Tamil Nadu alone.

CDB programmes in the state

Coconut Development Board is implementing various programmes in the state with futuristic planning. The planning is done in a manner to ensure that the entire benefits are gained by the farming community. Tamilnadu, being one of the important states with coconut cultivation the implementation of schemes for improving the farm level income of coconut farmers will gain more interest and active participation from farmers. The higher productivity and huge investments in coconut sector makes the state a leader in same. Since the Board has a Regional Office in the state itself, the monitoring of the schemes is also smoothly done. The clusters formed under the scheme Integrated Farming in Coconut Holdings for Productivity Improvement will serve as model farm for adoption of scientific management practices. 'Friends of Coconut Tree' implemented in the state is also expected to make a paradigm shift in the employment pattern of rural youth by bringing in lot of employment opportunities for a secure and safe job profile.

For realizing maximum income, coconut farmers must come forward to form farmer collectives like CPSs and to establish Tender Coconut outlets/ Tender Coconut parlours in the state in the major tourist spots, pilgrim centers, hospitals, hotels and on the waysides of National Highways, State Highways.

The recent initiative of the Government of Tamilnadu to allot 33.46 ha. for CDB for research and extension activities is a positive step. This shows the importance attributed to this crop by the Government of Tamil Nadu for exploiting its maximum potential.

Central and State Sector Programmes Implemented in Karnataka

Vijaykumar Hallikeri
Deputy Director, CDB, R.O. Bangalore

Karnataka accounts for 22.1 per cent of area under coconut cultivation and 13.8 per cent of total production of coconut in the country. Coconut is the second largest and important horticultural crop of the state, occupying 31 per cent of the total area under horticultural crop. The crop is grown in all the districts of the state, mainly in 12 southern districts which provide food, shelter and livelihood security to major segments of population especially in the southern districts. The total area under coconut in the state is 4.19 lakh ha and the annual production of coconut is 30,563 lakh nuts with a productivity of 7,110 nuts per ha (Directorate of Economics and Statistics, Government of Karnataka 2009-10). The productivity of coconut in the state is comparatively lower when compared to other neighbouring states. The low productivity is mainly attributed to the fact that coconut is grown mostly as a rain fed crop. Considerable yield reduction is also attributed to the attack of black headed caterpillar, rhinoceros betel, red palm weevil, eriophyid mite and diseases such as stem bleeding, ganoderma, bud rot and of late rootwilt disease in Dakshina Kannada district. Coconut is grown here mainly as a mono crop which has also indirectly resulted in the lower productivity of this crop. Hence the stress has to be given for adoption of mixed farming system and hi-density multi species cropping system to increase the return from unit holdings and thereby improving the economic status of the farmer.

The other area where the thrust is to be given is adoption of scientific management practices to improve the productivity of coconut as at present the farmers do not bestow much attention on coconut farming. This again has resulted in the lower productivity of coconut in the state. Even though, the state is leading in horticulture development, there are some lacunae which include, adopting precision farming, scientific management and effective utilization of water, post harvest technology, processing, value addition, marketing and export of the produce of different crops.

The varieties which are grown here mainly are chowghat orange dwarf, chowghat green dwarf, malayan green dwarf, malayan orange dwarf, malayan yellow dwarf and gangabondam. The dwarf variety is grown mainly for tender coconut purpose. Majority of the farmers are growing tall varieties like West Coast Tall and Tiptur Tall mainly for matured coconut and for conversion to ball copra. It is also used for tender nut purposes especially in Mandya, Ramnagaram, Mysore and Chamarajanagar districts.

Nearly 60 per cent of the coconut produced in the state is utilized as raw nuts for domestic culinary purposes, social cultural and religious purposes. About 25 per cent of the nuts are converted into edible ball copra, desiccated coconut powder and the remaining 15 per cent is utilized as tender coconut for drinking purpose. Prominently, 60–70 per cent of the arrival of coconut is being sent to other states *i.e*. Uttar Pradesh, Delhi, Punjab, Maharashtra, Rajasthan, Madhya Pradesh, Jammu and Kashmir, etc., Coconut utilized for commercial product preparation is only to the extent of 35-40 per cent, while 55-60 per cent is consumed for food and beverage purposes. Milling copra continues to be the major coconut product in Mangalore market. Arsikere and Tiptur markets cater to ball copra which is sent to major cities of North India. Maddur market is the main trading center of tender coconut from where it is sent to other states for consumption of tender coconut water.

Coir industry is an important cottage industry in the rural areas of the state, providing gainful

employment to many villagers. There are 330 units registered with Coir Board manufacturing coir products in Karnataka which are located in Tumkur, Chitradurga, Bangalore, Hassan and Mandya. Out of these, 50 units are fibre extraction units, 30 units make curved ropes, 30 units make yarn and the remaining units are manufacturing other coir products.

The major thrust area where emphasis has to be laid is the economic upliftment of small and marginal farmers to improve the economic standard, creating additional employment potential in the rural and urban sector, creating awareness on new coconut products and development of infrastructure for technology adoption. A vast potential exist for coconut product diversification and efficient utilization of by products. The state has yet to tap this potential. The introduction of modern and efficient copra dryers especially in the small scale sector is a boon to small scale farmers who process coconut into copra for milling purpose and ball copra for edible purpose.

State programmes and plans for the development of coconut and coconut industries.

Comprehensive Horticulture Development

The Chief Minister, Government of Karnataka has announced a special package for Comprehensive Horticulture Development for increasing the horticultural production and productivity by adopting comprehensive scientific management practices, to reduce the loss of different horticulture crops and to promote processing, value addition and to improve marketing outlets for crops which require storage in effective manner. The programme is expected to overcome the lacunas in production of quality produce and will pave the way for the upliftment of farmers financially and economically. Government has earmarked Rs.305 crores for three years starting from 2012-13 onwards.

State sector schemes:

Plant protection occupies an important place in the cultivation of horticulture crops. If the pest and disease problem of different crops is not tackled in time, the yield of the crop reduces drastically. Looking into the importance of plant protection and the overall development of horticulture, state sector and district sector schemes are being implemented in the state.

Wide publicity is being given for scientific management of pest and disease problems. The Department of Horticulture has established 50 parasite production laboratories in different parts of the state. Parasites are being produced in these laboratories for the control of black headed caterpillar in coconut. Bio-pesticides, botanicals, pheromone traps and chemicals are being distributed through different schemes to control the pest and diseases affecting horticulture crops.

Salient features of plant protection programme during 2011-12

- 50% of the cost of the chemicals or Rs.1000/ha for individual beneficiary upto maximum of 4ha. for plant protection chemicals
- 50% or upto Rs.50,000 for purchase of improved implements / equipments for mechanization in horticultural activities.
- Quality certified coconut seedlings at the rate fixed by the department to the farmers.
- Vegetable seeds worth Rs.2,500/-
- The parasites produced in different laboratories will be distributed to the farmers whose coconut plots are affected by black headed caterpillar.

During 2011-12, as against a target of 578.718 lakhs parasites to be produced at a cost of Rs.71.654 lakhs, 4,90,615 lakh parasites have been produced utilizing Rs.57.952 lakhs under state sector and district sector schemes. As against a target of 7.201 lakhs parasites to be produced at a cost of Rs.3.601 lakhs, 0.645 lakhs parasites have been produced utilizing Rs.4.278 lakhs under state sector scheme. A sum of Rs.69.53 lakhs has been utilized against a target of Rs.73.39 lakhs under assistance to farmers, district sector scheme to provide plant protection chemicals to 25,658 beneficiaries at 50% subsidized rate during 2011-12. Bio-pesticides, pheromone traps and plant protection chemicals have been distributed for the management of pest and diseases of horticulture crops. During 2011-12, Rs.159.401

lakhs worth chemicals has been distributed to 16,052 beneficiaries @ 50% subsidy under State Sector Scheme.

Centrally Sponsored Schemes

Drip and sprinkler Irrigation

Under this scheme the annual action plan for 2012-13 for horticulture will be Rs.19,459.57 lakhs out of which the central share will be 10,500.37 lakhs and the state share will be Rs.8,959.20 lakhs.

Production and distribution of improved planting materials

This is a centrally sponsored scheme for production of 25,000 TxD hybrid seedlings at KRS, in Mandya district with an objective for the production and distribution of quality coconut seedlings. Department is producing 25,000 TxD hybrid seedlings every year. 50% of the assistance is from the Board and 50% is from the state government.

Pilot project for establishment of Demonstration cum training centre.

Under the Technology Mission on coconut, CDB has approved the project "Demonstration Cum Training Centre Unit at Javaranahalli Horticulture Farm, Mandya" at a total cost of Rs.100.47 lakhs to Department of Horticulture for demonstration and for conducting training on coconut products especially chips and vinegar making, modern copra dryer, etc.

Processing and Packaging Neera

CDB under the Technology Mission on Coconut has approved the project for processing and packaging of Neera as Pilot Plant at Horticulture Farm, Thumbe, Dakshina Kannada district, at a total cost of Rs.115.00 lakhs of which the CDB share is 28.75 lakhs and share of state government is 86.25 lakhs. The Department has already started the trial production of neera tapping and packaging.

Management of Black Headed Caterpillar on Coconut in Tumkur District

CDB has approved the project under TMOC for the control of black headed caterpillar in Tumkur District at a total cost of Rs.334.00 lakhs during 2010-11. The scheme was implemented on a pilot scale in the cluster villages of pest infested taluks like Gubbi, Tiptur, C.N. Hally and Turuvekere covering an area of 4,550 ha. The scheme is being implemented with state government share of 25% and CDB share of 25% and remaining 50% share is being met by the respective beneficiaries. The overall severity of the infestation of black headed caterpillar has reduced considerably since the implementation of the scheme.

Financial assistance is also extended for the adoption of organic farming, organic certification, vermi- composting /bio-digester and for promotion of rearing of honey bees. Under RKVY programme, the department is implementing precision farming to promote the cultivation of banana.

Integrated farming in coconut for productivity improvement

Integrated farming in coconut for productivity improvement is implemented with 100% assistance from the Board. The objectives of the scheme are laying out of demonstration plots for improving the production and productivity of coconut and extending assistance for construction of organic manure units.

An amount of Rs.34.981 lakhs has been utilized for the establishment of new demonstration plots in 200 ha and Rs.244.023 lakhs has been utilized for the maintenance of old demonstration plots in 1400 ha. During current year, funds for 350 ha has been released for new demonstration.

Scheme for coconut crop improvement

To improve the productivity of existing coconut gardens, the coconut growers need to be supported by the government. Therefore, the Chief Minister of Karnataka announced Rs.25.00 crores package in 2011-12 budget for improving the production and productivity in coconut gardens in the state. The scheme will be continued in 2012-13 and 2013-14.

Scheme for procurement of seeds and nursery maintenance

This scheme is implemented district wise for the production of coconut seedlings required for various departmental schemes and to meet the demands of coconut growers. The main objective of this scheme is to expand the area under coconut by production of good quality coconut seedlings in departmental nurseries after

procurement of good quality seed nuts and distribution of good quality coconut seedlings grown in departmental nurseries. During 2011-12, 4,13,350 seednuts has been procured in various departmental nurseries. An amount of Rs. 98.914 lakhs was utilized for seed procurement and nursery maintenance.

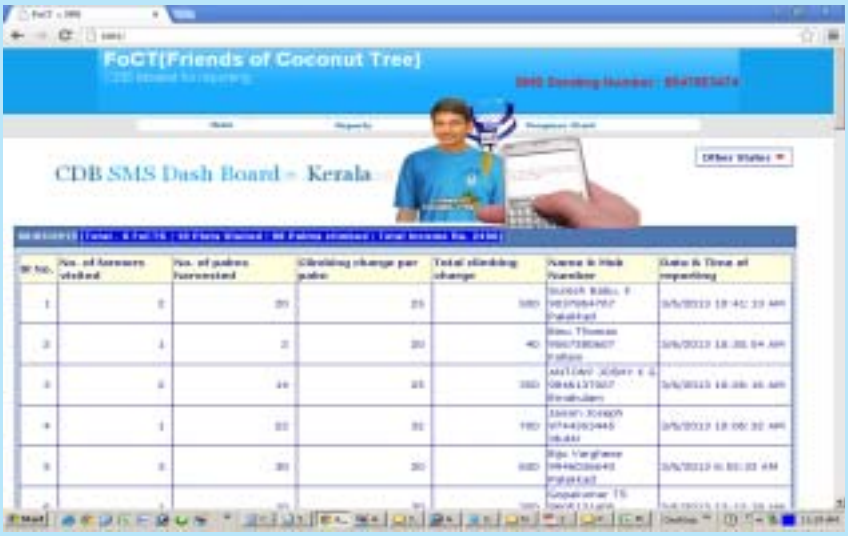
Mechanization in Horticulture

Mechanization in horticulture is encouraged with the intention to reduce the cost of cultivation of horticultural crops, to reduce the manpower requirement and to encourage farmers for high value horticulture production through farm mechanization at all stages of production and post harvest operations.

Mahatma Gandhi National Rural Employment Guarantee Scheme:

The primary objective of Mahatma Gandhi National Rural Employment Guarantee scheme is to enhance livelihood security in rural areas by providing at least 100 days of guaranteed wage employment. An amount o Rs.22.58 crores has been spent under this scheme during 2011-12. During the last 3 years, area expansion of perennial horticulture crops is covered in an area of 38,564 hectares. In addition to this, various other horticulture related programmes like pit opening, tree planting programmes in the premises of schools/hospitals/other government land, farms and nurseries related activities and trenching work in drip irrigation were also undertaken.

FoCTs turn hi-tech



CDB intranet for reporting FoCT SMS

The image makeover given to coconut harvesting by CDB through its Friends of Coconut Tree (FoCT) programme has made it attractive to even educated youths. Coconut plucking, being abandoned by traditional farm workers has turned hi-tech. CDB has uploaded the regionwise list alongwith the contact number of all the trainees in the website. All you need to do is just to get the number of your nearest trainee and call him over phone.

In order to monitor the effective implementation of the programme, Board is urging all the trainees to send daily sms to the Board on their daily activities like the number of trees they have climbed, fees charged and the day's income. Trainees may send the sms to 8547853474 in the format of A-number of gardens, B-number of palms and C- total income. Through this intranet for reporting, CDB is able to make an assessment of the performance of the trained FoCTs. Many of the trainees are making a daily average income of Rs. 600.

Friends of Coconut Tree crossed 10,000

Coconut Development Board has provided FoCT training to 10,049 youths including 512 ladies between the age group of 18-45years on palm climbing. Board is targeting to give training to 15,000 people over a period of two years and to create a pool of trained personnel among the coconut-growing states.

10,049 participants in 456 batches from the states of Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Maharashtra, Odisha and Lakshadweep attended the training programme from 17th August 2011. This project is an attempt of the Board to bring back the lost glory of coconut sector.

For the further development of coconut in North East India

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Coconut palm exerts a profound influence on rural economy of many states where it is grown extensively and it provides sustenance to millions of people. Coconut is grown in more than 93 countries of the world with Indonesia having maximum area followed by Philippines and India. During 2010-11, India produced around 15753 million nuts (equivalent to 10840 thousand metric ton) from an area of 1.896 million hectare. One hectare of coconut accommodates around 175-177 palms with a spacing of 7.5 m x 7.5 m. In India, four southern states; Kerala, Karnataka, Andhra Pradesh and Tamil Nadu occupies more than 90% of total area under coconut and contributes to 91% of total production. The average productivity of coconut in India during the same period was 8313 nuts/hectare with Puducherry and Tamil Nadu recording the highest productivity.

Coconut in North East

Northeast India is the eastern-most region of India connected to East India via a narrow corridor squeezed between Nepal and Bangladesh. It comprises of seven states; Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and the Himalayan state of Sikkim. North East India has a predominantly sub-tropical humid climate with severe monsoon and mild to severe winter. The summer is mostly mild to moderate with medium temperature range and is mostly covered by Brahmaputra-Barack river zone and its tributaries. The states comprise nearly eight per cent of the total geographical area of the country. Coconut, though a crop of coastal areas, of late, it has been introduced to suitable locations of these non-

Coconut area and production of Assam, Tripura and Nagaland

State	2007-08		2008- 09		2009-10	
	Area ('000 ha)	Production (Million nuts)	Area ('000 ha)	Production (Million nuts)	Area ('000 ha)	Production (Million nuts)
Assam	19.0	136.6	19.0	136.0	18.8	146.7
Tripura	5.8	11.6	5.8	11.4	5.8	11.6
Nagaland	0.9	--	0.9	0.200	0.9	0.436

traditional states. The advantage of the successful introduction relates to the fact that coconut is amenable to both large scale and homestead plantation and it can be grown either as a major or a minor crop. Owing to its versatility, the demand for coconut is on rise and it can well substantiated by the fact that the area under coconut cultivation and production has grown considerably over the years. The crop is quite amenable to organic farming and to some extent also tolerates negligent farming. The crop is spreading fast and the country's thrust should be now to exploit the wealth potential of these non-traditional states. Nagaon district in Assam has maximum acreage (3224 hectare) under coconut cultivation followed by Kamrup. Other states like Sonitpur, Morigaon, Darrang, Cachar, Nalbari and Barpeta has noticeable areas under coconut cultivation.

Problems of coconut cultivation in North East

Fragmented holdings, scattered production, homestead nature of cultivation, incidence of pest and diseases and large stock of senile palms are the major constraints in coconut cultivation in India. Lack of adoption of scientific cultivation practices including balanced nutrient management are the reasons for the declining productivity trend in some parts of the country. Coconut in North East is grown mostly as a rain fed crop practicing with subsistence farming which very often lead to poor production. About 80% of the farmers in the NE Region belong to small (<1.44 ha.) and marginal (<0.40ha) category. In Assam,

around 85.25% of the total land holdings are small and marginal (0.63 ha). Hilly terrain constitutes nearly two third of the region's geographical area and large size holding are not feasible. The average plot size is too small for mechanization of agriculture and adoption of modern farming practices. Mono cropping is the predominant method of cultivation. Buttons and immature nut shedding is a common phenomenon in coconut. Immature nut fall in coconut has been attributed to various factors such as nutritional deficiencies, pathological conditions, attack of insect pests, limited capacity of the tree to bear fruits, unfavourable conditions such as deficit of moisture, water-logging and lack of aeration. Among the diseases, stem bleeding caused by the fungus *Theilaviopsis paradoxa*, crown choke and among the pests, rhinoceros beetle, red palm weevil and eriophyid mite are significant. Survey carried out during different period of time in major coconut growing areas of Assam indicated that the incidence of stem bleeding ranged between 1-16% in different areas under districts of Kamrup, Nagaon, Morigaon and Darrang. The incidence of crown choke was estimated to be maximum 20% in some areas of Kamrup. Similarly, preliminary survey carried out in different areas of Kamrup, Nagaon, Morigaon, Goalpara and Udalguri districts of Assam revealed that districts like Morigaon and Nagaon had maximum incidence of eriophyid mite attack with Morigaon district having highest mite incidence (35.75%) and intensity (76.96%) followed by Nagaon.

Development of coconut in North East

Planting genuine quality planting material of adopted varieties, irrigation and manurial management, *in*-situ soil and moisture conservation practices mostly in sloppy areas, undertaking integrated disease and pest management against major diseases/ pests, adoption of coconut based mixed cropping/farming system and recycling of biomass are some of the few suggestions for the development of coconut cultivation in North East India.

Production of quality planting materials

Coconut is a perennial palm living for 80-100 years with an economic life span of 60 years or more. The palm takes about 7-8 years to bear fruit and another 5-6 years to come to the potential yield. Only after 15-20 years the grower will be in a position to reap the reward for his labour. These facts underline the need to plant quality planting material that will ultimately give good yields. The following are the steps to be taken for production of good quality planting materials

Tender coconut sellers

Selection of mother palm

a) Stability in yield: An average annual yield of not less than 80 nuts and preferable 100 nuts per tree is considered necessary for a mother palm. The palm should attain yield stability. Trees having medium-sized nuts with nearly round or spherical shape are better than others for selection as mother palms.

b) Age of the mother palm: Under normal conditions, palms between 25 and 60 years of age would have reached the full bearing stage and can be selected as mother palms.

Collection of seednuts

a) Time of harvest: Preferably during February-May

b) Maturity of seednuts: The nuts to be utilized for seednut purpose are generally harvested only when they are fully mature, i.e., 12 months old.

c) Method of harvest: Seednut bunches should be cut and lowered by means of ropes to avoid damage to the perianth portion.

d) Preservation of seednut: The seednuts after harvest are not immediately planted in the nursery, but are generally stored in shade for about a month till the husk becomes dry.

1. *Nursery techniques*

a. Selection and preparation of site: The best place for a nursery is sandy soil located to water source to facilitate irrigation. The seed beds should be raised preferably, be long and convenient width with provision for walking space or drains in between.

b. Spacing: A spacing of 30 cm between the rows and 15 cm between the nuts is advisable in the nursery. Otherwise, seednuts can be planted in polythene packets of suitable sizes.

c. Time of planting: Plant seednuts with the onset of south-west monsoon, to ensure optimum conditions for germination, as otherwise, profuse and frequent watering has to be done in the initial stage.

d. Care and management of the nursery: The nursery has to be watered twice a week or more often when necessary. It should be kept free from weeds by periodical weeding. The nursery beds should be mulched with dry coconut leaves or any other dry materials to conserve moisture, reduce weed infestation and increase the soil microbial population.

2. *Selection of seedlings:* It is generally expected that early germinated seedlings will flower early.

3. *Vigour of seedlings:* Different parameters *viz*, number of leaves, height of seedling and girth at collar should be taken into consideration. Early splitting of leaf is another important character.

4. *Removal of seedlings from the nursery:* The seedlings should be removed along with the nut from the nursery only just before they are required for transplanting in the field.

5. *Age of seedlings at transplanting*: As a general rule, under ordinary conditions, seedlings of 12-18 months old are considered best for planting in the main field.

Varieties:

North East states, especially Assam. Experiences a prolonged cool weather during November to January and heavy rainfall during July-August. Therefore, crop diversity both in terms of cultivars and variants are substantial in enhancing the productivity status of coconut palms. The dwarf varieties are less hardy and require better soil and congenial climatic conditions for higher yield. So, tall varieties are

preferred to dwarfs under North East climatic condition, which thrives well under different soil and extreme climatic and rainfall conditions. Varieties like Assam Tall (Kamrupa Tall), West Coast Tall, East Coast Tall and Andaman Ordinary are some of the varieties suitable for this region. High yielding capacity, better nut quality, ability to withstand abiotic constraints like low temperature and semi water-logging conditions, greater tolerance to diseases and pests, particularly stem bleeding are the positive attributes of the variety 'Kamrupa'.

Establishment of plantation:

Site selection and lay out

The site selected for main field planting should have sufficient irrigation and drainage facility especially in heavy rainfall and low lying areas. In general, coconut comes up well in uplands having good irrigation facilities. In low-lying and submerged condition, preparation of mounds within a 3 meter radius is desirable to restrict stagnation of water at the base of the palm for a long period. Providing irrigation through drip is proved to be beneficial, which ensures high water use efficiency and low labour requirement. Soil moisture conservation by mulching will help to retain the soil moisture for prolonged periods and reduce the frequency of irrigation.

Spacing and depth of planting:

The recommended spacing is 7.5 m x 7.5 m for ensuring proper interception of light with the pit size of 1m x 1m x 1 m. Closer planting will cause mutual shade, leading to delay in flowering and reduced yield.

Season of planting

Planting in the main field during May-June with the onset of south-west monsoon is recommended for proper establishment of garden. The planting during heavy rainfall may be avoided to keep the seedlings free from water stagnation.

Shading during establishment

For better growth and establishment, seedlings should be given protection against direct exposure to sun during initial period of establishment. The following points should be considered for shade during establishment.

Protect against direct sun light, provide shade during summer, plant shade trees in the border on S-W direction, provide frequent irrigation to seedlings, provide drains to avoid water logging and provide channels 15-30 cm deeper than the depth of planting.

Cultural operations

The main components of cultivation include fertilizer application (both organic and inorganic), weed management, crown cleaning and disease/pest management. Regular crown cleaning is required during the harvest time. The soil should be ploughed during and after showers to maintain proper tillage and to check weed growth.

For reducing surface evaporation, improving the water retention capacity under rain-fed condition, conservation measures like mulching with coconut husk, coir dust, green leaves, dried coconut leaves etc, addition of 30-50 kg organic manures per palm per year and husk burial may be done.

Green manuring and cover crops:

Pureraria phaseoloides, Calapogonium muconoides and Mimosa invisa can be grown as green manure crops in coconut basin as well as in the interspaces. Cover cropping helps to prevent soil erosion, weed growth, and a large quantity of organic matter. Green manuring results in enhanced microbial activity and fertility in coconut soils.

Application of fertilizer:

The following points should be taken into consideration while applying fertilizer to coconut palms:

- First application of fertilizer shall be done six months after planting and it may be applied in two split doses. Fertilizers should be applied in circular basins of 1.8 m radius and 25-30 cm depth followed by closing of basins and irrigation

Fertilizer recommendation

	May-June			Sept-October		
	N	P_2O_5	K_2O	N	P_2O_5	K_2O
1st Year				50	40	135
2nd year	50	40	135	110	80	270
3rd year	110	80	270	220	160	540
4th year & onwards	170	120	400	330	200	800

For palms showing yellowing of leaves due to magnesium deficiency, 0.5 kg $MgSO_4$ may be applied in basins

Irrigation

Coconut palms respond well to irrigation. Restricted soil moisture very often limits coconut production. The irrigation requirement varies according to the soil type and climatic condition. Generally, an adult palm requires 200 litres of water once in four to seven days and irrigation should be done in the basins. Drip irrigation @-30-32 palm/day is helpful which saves labour and water. Fertigation is another method of application of fertilizer through drip or any other system of irrigation that increase the fertilizer use efficiency, reduce labour requirement, enables uniform, precise and direct application to root zone.

Drought management in coconut gardens:

Coconut palms, as rainfed crop are exposed to annual summer dry spells as well as frequent drought in different intensities. West Coast Tall and Laccadive Ordinary Tall are drought tolerant cultivars

Soil moisture conservation practices in coconut basins

- Husk burial
- Application of composted coir pith
- Application of potasic fertilizer
- Surface mulching
- Burial of farm waste
- Heaping of weeds
- Contour bunding, terracing, catch pit filled with coconut husk in sloppy areas

Mixed and intercropping

In North Eastern region, coconut is grown as homestead crop. Sustainable system of production can be achieved through perennial/ seasonal mixed cropping/farming comprising a variety of tree/ seasonal crops with multiple uses and livestock. The system will provide high level of nutritional and diet diversity with substantial extra income.

In coconut gardens where the palms are planted at a spacing of 7.5 m in both the ways, interspaces might appear to offer opportunities for raising other crops, annuals or perennials, as a source of additional income to the grower.

Based on the growth habit of the palm and the amount of light transmitted through its canopy, the life span of the palm could be divided into three distinct phases

- Till full development of canopy (5-8 years): suitable for growing annuals/ biennials-suitable crops are cereals, grain legumes, vegetables, spice crops, fruit crops like banana, pineapple etc.
- Young palms (8-25 years):- suitable intercrops are black pepper, betel vine, chillies, cocoa, coffee, mangosteen, citrus etc
- Mature trees (more than 25 years):-ideal for raising annual and/ or perennial crops as multiple and multi-storeyed cropping models

Organic farming

The availability of waste biomass from a well managed coconut garden is estimated to 14 tonnes/ ha/year. Studies conducted at CPCRI, Kasaragod have revealed that coconut plantation wastes could be effectively converted into rich vermicompost using *Eudrilus* sp. Low-cost vermicomposting technology enables production of organic manure in a period of 60-75 days. On an average, 70% recovery of vermicompost is obtained.

Enhancing farm level income through productivity improvement and other production measures, product diversification and concurrent demand creation for the new products and clustering approach to establish large plantation in suitable areas of Assam are the need of the hour. A holistic approach integrating IPM, IDM and INM practices with the involvement of highly efficient bio-agents, botanical pesticides, pheromones and biofertilizers is imperative to achieve higher productivity. Research efforts yielded fruitful results in terms of increasing the production and productivity through high yielding varieties, development of location-specific integrated cropping/farming system, technologies for management of major diseases/ pests, and development of processing technologies for value addition.

Coconut in Odisha

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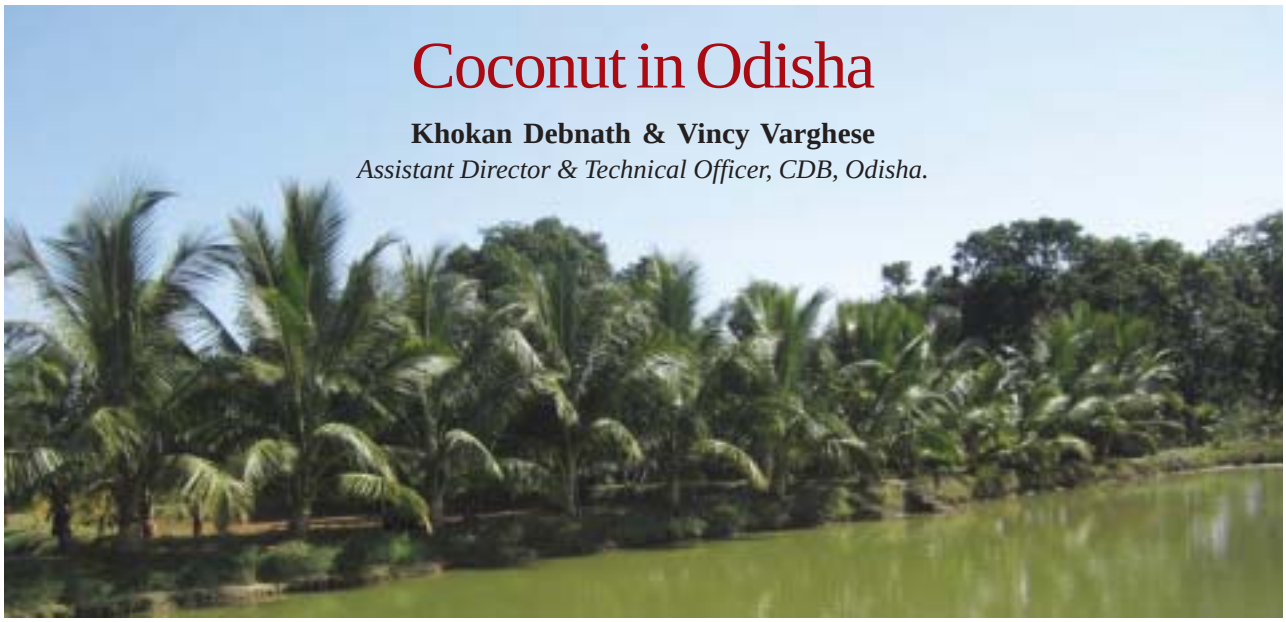

Present scenario of Agriculture in Odisha

In the present agricultural scenario, more than 50% of the farming community in Odisha are marginal farmers. They either own or rent a piece of land for cultivation. As per 2005-06 census, about 25 lakh population hold a land area<1 ha (marginal), 12 lakh possess 1-2 ha (Small), 5 lakh population possess 2-4 ha (Semi-medium), 1 lakh holds an area 4-10 ha(medium) and only 0.1 lakh holds> 10ha(large). The state witnessed a decline in operational area from 50.81 lakh ha in 2000-01 due to urbanization and more of land put to non-agricultural use.

Soil

The soil of the state is broadly divided into 8 groups such as red, laterite, mixed red and black, mixed red and yellow, black, coastal alluvial, brown forest and coastal saline. Nearly 70% of the soils are acidic and have low to medium nitrogen and phosphate and medium in potassium content

Climate

The state enjoys subtropical climate characterized by high temperature, high humidity, medium to high rainfall and short and medium winters. The normal rainfall of the state is 1451.2 mm out of which 80% is received within June to September. Orissa is the most disaster prone state of the country. The state suffers from natural calamities like flood, drought and cyclone and this occurs almost every year.

Crop coverage and crop production:

The net area sown and gross cropped area during 2010-11 were 54.21 lakh ha and 90.80 lakh ha respectively. The cropping intensity was 167%. Of the total cultivated land of the state 47% is high land, 28% is medium land and 25% is low land and about 35% of cultivated land is irrigated. The total irrigation potential created till 2010-11 from all sources is 45.14 lakh ha. and the fertilizer consumption is 62.85 kg/ha

Sakhigopal variety

The area, production and yield rates of major crops grown in the state during the year 2010-11 is given in Table 1.

The major crops in the state are rice, pulses, oil seeds, jute, coconut and turmeric. Crops like tea, cotton, groundnut and rubber are also of great economic importance. Orissa contributes to one tenth of the total rice produced in the country. Other important food grains include pulses like gram, tur and arhar and oilseeds like groundnut, mustard and castor oil. Apart from food grains various cash crops are also cultivated in the state. These include jute, mesta, sugarcane, tobacco, rubber, tea, coffee and turmeric. These are cultivated across different geographical areas of Odisha.

Table 1. Area, production and Productivity of major crops in Odisha (2010-11)

Crops	Area (Lakh ha)	Production (Lakh MT)	Productivity (kg/ha)
Rice	42.26	69.31	1640
Total cereals	47.03	70.71	1652
Pulses	20.80	9.99	481
Oilseeds	7.71	6.38	828
Fibres	1.08	4.75	793
Sugar cane	0.41	29.07	71192
Vegetables	6.98	90.28	12922
Condiments and spices	1.54	4.57	2957

Present scenario of coconut in Odisha

Coconut is one of the most important plantation crops of Odisha. Odisha enjoys 480 kms of coastal belt most suitable for coconut plantation. As per statistics of 2010-11 the total area under coconut in Odisha comes to around 53,092 ha. with a total production of 3566.83 lakh nuts, thereby occupying the fifth position among Indian states in area and production of coconut. The productivity of coconut in the state is 6718 nuts/ha, which is low compared to coconut productivity of India. About 60 per cent of the area and production of coconut comes from the undivided coastal districts of Puri, Cuttack, Balasore, Nayagarh and Gunjam. District wise area and production of coconut in Odisha is given in Table 2.

The traditional area is predominant of tall varieties of coconut which thrive for more than 80 years. Coconut is considered as the cash crop of more than 10 lakh people residing in the coastal belt. The crop has multifarious uses and provides oil, copra, drinks, fuel and raw materials for coir industry.

Coconut is presently grown as a homestead garden in most of the coastal districts of the state except

Table 2. Districtwise Area, Production and Productivity of Coconut in Odisha (2010-11)

Districts	Area in Ha	Production in Lakh Nuts	Productivity (Nuts/ha)
Puri	9994	756.95	7574
Ganjam	7689	572.29	7443
Cuttack	5150	334.16	6489
Nayagarh	4876	340.55	6984
Khurda	3615	243.87	6746
Jagat Singh Pur	2460	168.67	6857
Jajpur	2450	181.52	7409
Kendrapara	2121	151.81	7157
Gajapati	1994	138.84	6963
Keonjhar	1261	73.44	5824
Balasore	1160	67.57	5825
Bargarh	1139	49.68	4362
Dhenkanal	1096	67.88	6193
Mayurbhanj	1083	60.16	5555
Bhadrak	964	54.13	5615
Bolangir	911	28.79	3160
Angul	863	54.92	6364
Sundargarh	856	43.62	5096
Phulbani	440	21.44	4873
Rayagada	427	29.40	6885
Boudh	415	12.69	3058
Kalahandi	392	17.16	4378
Sambalpur	347	19.72	5683
Sonepur	312	17.01	5452
Nawarangpur	237	13.65	5759
Malkangiri	212	14.18	6689
Koraput	201	10.28	5114
Jharsuguda	176	9.74	5534
Deogarh	136	7.60	5588
Khariar	115	5.11	4443
State	**53092**	**3566.83**	**6718**

a few pockets of Puri district mainly Brahmagiri area. Since farmers are not cultivating coconut as a plantation crop, it is very difficult to improve the production and productivity of coconut in the state. The availability of quality coconut seedlings is another important factor for increasing the area under coconut. Due to lack of knowledge on latest coconut technology, farmers are not adopting that in their field for improving the productivity of coconut in the state. Coconut is generally utilized mostly as matured nuts during festival seasons and people are not aware about the value added products.

Tender coconut market at Sakhigopal

Banana intercropped with coconut

Due to shortage of raw materials for coconut based industries as well as poor marketing infrastructure, the entrepreneurs are not coming forward for establishing coconut based industries.

Coconut varieties of the state

Sakshigopal Tall, a distinct member of East Coast Tall group is found in most of the areas. Other recommended varieties in Odisha are East Coast Tall and Tiptur Tall. The other important local variants are Bana reported to be superior yielding i.e. more than 80 nuts per palm per year. Oddisi Giant Dhila and Tahaji were recorded to be the largest and heaviest nut with higher husk percentage. Dhanei and Surya Bana are dwarf varieties with ivory skin colour. In coastal coconut growing belt of Orissa, 17 tall and dwarf varieties were identified based on its size, shape and colour of nuts.

Potential area of Coconut

Presently coconut is grown in an area of 53,092 ha. It is estimated that another 50,000 ha area can be brought under coconut with the concerted efforts of the Government of Odisha as well as Coconut Development Board by implementing various programmes in the state. Coconut cultivation should be extended to other non-traditional districts of the state besides the traditional coastal districts. Even though Orissa are a coconut producing state, there is no coconut oil producing unit in the state. However, there is a good market for coconut oil for toiletry use with annual consumption of about 8 thousand tonnes per year. Puri and Ganjam district have many small scale nut fibre and coir manufacturing units in the state. There are about 30 small units producing coir and coir products in Orissa. The consumption of edible copra is not much in the state and is confined mainly to Cuttack, Bhubaneswar and other industrial townships. The demand is maximum during the festival season. Desiccated coconut powder is mainly used by biscuits, bakery and sweets manufacturing industries. About 45 tonnes of desiccated coconut is consumed in the state. There are few manufacturing units in private and cooperative sector located in Puri and Bhadrak district. Moreover, lack of integrated development approach for production of coconut has arrested the further expansion and development of coconut industries in the state. Orissa has very good potential for production and post harvest processing of coconut.

How to achieve potential

Government of Odisha and

Coconut Development Board should work together to converge various schemes/ programmes under NHM, RKVY, MGNREGS, NRLM, ATMA, state plan being implemented in the state to provide maximum benefits to the farming community for increasing the area under coconut, improving the productivity of existing plantations, capacity building on the latest technology, awareness campaign for the entrepreneurship on coconut based industry etc. Timely supply of quality planting material at the doorstep of the farmers should be ensured by the government agencies.

Concerted efforts need to be done by the Coconut Development Board as well as the Directorate of Horticulture, Government of Odisha for improving the production and productivity of coconut by adopting innovative schemes and technologies suitable for farming community. Integrated coconut based industry for value added products like packed tender coconut water, desiccated coconut, virgin coconut oil, activated carbon, shell charcoal, coir based products etc. should be established in major coconut growing districts for increasing the coconut price at farm gate.

Constraints in achieving potential

The average farm size in Orissa is only 1.25 ha which is very small and it has still gone down in recent years. The size of operational holdings poses a big problem in increasing coconut area of the state. The farmers of Odisha have less knowledge about different schemes of government for availing incentives for cultivation of coconut. This unawareness about the schemes as well as production technology of coconut based products becomes the bottleneck for the development of coconut in the state.

Non-availability of quality coconut seedlings is also one of the most important factor restricting the expansion of area of coconut in the state. About 34% of cultivated area is irrigated and the rest 66 % is rain fed, exposed to the vagaries of monsoon and other natural calamities like cyclone, drought etc. Hence the production of coconut in the state depends much on occurrence of a favorable monsoon and other climatic factors.

Farmers are not cultivating coconut as a plantation crop and mostly growing as a homestead crop. Hence the income from per unit of coconut garden is very poor in the state. Due to non-adoption of latest technology in coconut cultivation, the productivity of coconut in the state is very poor. The production and productivity of old, senile coconut plantation particularly in Sakhigopal areas are also very low. Cutting and removal of the senile plantation and rejuvenation of the existing gardens need to be done in a phased manner. The people of Odisha are not aware of utilization of coconut and its by-products. Unavailability of bulk quantity of good quality coconuts also hinder for the establishment of coconut based industries in the state. Due to the infestation of eriophyid mite, the quality of the husk is deteriorating in recent years which is affecting the coir industry.

Tender and mature coconut markets in Odisha

The present agricultural marketing system of the state is governed by the Odisha State Agricultural Produce Marketing Act, which came into force back in the year 1956. Under the present dispensation there are 65 Regulated Market Committees (RMCs) functioning under the supervision and control of the OSAM Board and the Directorate. A Regulated Market committee (RMC) is a democratically elected body consisting of elected members from different constituencies such as farmers, traders, farmer's cooperatives, local urban bodies etc. Generally the concerned sub-collector or collector, under whose jurisdiction an RMC falls, is nominated as the chairman of the RMC.A Regulated Market ensure correct weighment for the produces of the farmers, so that he is not cheated by the middlemen/ wholesalers/semi-wholesalers etc. and prompt payment to the farmers for his produce.

The Sakhigopal Regulated Market for coconut in Puri district is the most important market for matured nuts and accounts for nearly 70 per cent of the total arrival of the matured nuts. However, recently Behrampur, Sambalpur, Raurkela, Bhubaneshwar and Balasore have also developed the independent assembling and marketing centre of coconut in the state. It has been reported that about 20 per cent of the total coconut produced in the state are consumed as tender nuts and 5 per cent are retained by the farmers for household and seed nut purpose.

About 42 per cent of the coconut production is consumed in the state itself and 33 per cent is exported to Bihar and Madhya Pradesh. Since, the tender nuts are available throughout the year, they are sold all over the state along highways bus stand, railway station and rural market centres. The demand increases to the maximum during peak summer months from March to June. It has been roughly estimated that about 52 to 200 nuts are sold by each retailer. The price for tender coconut is Rs.10-15 for large sized mature nuts is Rs.10, for medium about Rs. 8.5 and for small nut is about Rs.5.00 in the retail market. The wholesale market price is much lower and it depends on various festival seasons.

State programmes/ plans/ schemes on the development of coconut and coconut industries

Now the Directorate of Horticulture is working on an ambitious coconut cultivation programme with an outlay of Rs.834.98 lakh during 2012-13, that aims not only to bring back its old glory, but also make Orissa one of the top three states in coconut productivity and area under plantation.

Concerted efforts need to be done by the Coconut Development Board as well as the Directorate of Horticulture, Government of Odisha for improving the production and productivity of coconut by adopting innovative schemes and technologies suitable for the farming community. All the potential area of about 50,000 ha suitable for coconut cultivation in Odisha should be brought under coconut on a mission mode by the Government of Odisha as well as Coconut Development Board by providing higher incentives and supplying of quality planting coconut seedlings in time at the door step of the interested farmers. Coconut cultivation should be expanded to other non-traditional districts of the state. Farmers should be encouraged to adopt drip irrigation system and should cultivate coconut mixed with other profitable crops to increase the production and productivity of coconut as well as to enhance the income of the farming community from unit area. Integrated coconut based industry for value added products like packed tender coconut water, desiccated coconut, virgin coconut oil, activated carbon, shell charcoal, coir based products etc. should be established in major coconut growing districts for increasing the coconut price at farm gate as well as enhancing the better utilization of the coconut.

Coconut, best source of renewable energy

Scientists of Centre for Biomass and Renewable Energy have found out that coconut is a best source of renewable energy. Coconut is a potential raw material for cocodiesel/ coconut biodiesel. Many countries across the world are using coconut oil based bio diesel. The processing technology developed by these scientists to produce coco-diesel/ coconut biodiesel is not complicated and can be made through a simple process. This can be done by the people living in rural areas in their household itself. One high potential and valuable product from coconut is VCO (Virgin Coconut Oil). VCO as well can be used as coco-diesel

source. In Indonesia, local farmers produce VCO in traditional method, with high FFA still remaining in the product and unstandardized by SNI (Indonesian codex standard product). Coco-diesel/coconut biodiesel has higher oxygen content, compared with fossil diesel fuel.

VCO (Virgin Coconut Oil) is one of coco-diesel source in Indonesia. It is made without high heating. Circulating by pumping through a nozzle is a new process for producing VCO. Initially coconut milk is made from fresh coconut. Each one liter milk is pumped through pipe and nozzle with variation in circulation time and pressure. After 10 hours when the water and oil is separated, the oil at upper layer is taken as the final product.

(Source: International Journal of Renewable Energy)

High Value Agriculture in Andaman and Nicobar Islands

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The UT of Andaman and Nicobar Islands have congenial agro climatic conditions for horticultural crops like fruits, vegetables, flowers, spices, medicinal, aromatic plants and plantation crops. After the tsunami, the cultivable land area have shrunken and due to scarcity of land High Value Agriculture is encouraged to increase the productivity, sustainability and make agriculture commercially viable for the overall economic development of the islands. The Andaman & Nicobar Islands constitutes about 572 Islands of which only 38 are inhabited. It is divided into two groups namely Andaman Group and Nicobar Group.

High Value Agriculture Programme was announced as one of the priority sectors in Andaman & Nicobar Islands in 2003. Government of India has approved the implementation of High Value Agriculture Programme during Xth Plan in Andaman and Nicobar Islands. An Empowered Committee constituted by Government of India has the power to sanction funds within the framework of existing scheme. However keeping the local conditions, any flexibility required can be considered with the approval of Empowered Committee.

High Value Agriculture Programme (HVA) is tailored for these islands to boost the productivity of various horticultural crops. For implementation of the HVA for the over all development and holistic growth of Horticultural Sector in the islands, an autonomous society namely High Value Agriculture Development Agency (HVADA) was registered during 2004. Under the High Value Agriculture Programme, all the schemes have been formulated based on the guidelines of National Horticulture Mission, National Horticulture Board and Coconut Development Board.

Large farmers, Co-operative Societies, NGOs, SHGs and contract farmers are the beneficiaries of this programme. Due focus on small and marginal farmers to ensure proper economic return of farming sectors and weaker section is also envisaged under this programme.

Objectives

The present need is to commercialize horticulture and make it export oriented. An end-to-end approach comprising of technology dissemination from sowing – harvest – post harvest technology – market – consumer linkage needs to be established.

The primary objective of this programme is to enhance productivity. The programme aims at providing holistic growth of horticulture sector through

Laying out demonstration plot in coconut garden

Removal of senile palm

technology promotion, extension, post harvest management, processing and marketing. Establishing convergence and synergy among all on-going horticulture programme and to create opportunity for employment generation and income support to farmers are the other objectives.

Strategies

Ensure holistic approach covering production of High Value fruits, flowers , spices etc through hi- tech and protected farming; post harvest management, processing and marketing, value addition through marketing of by-products and organic produces, promotion of organic farming, promotion of technological interventions, export promotion and strengthening of administrative mechanism are the major strategies of the programme.

Major components of HVA programme

National Horticulture Mission Schemes

Under NHM's schemes, 50% of cost subsidy is admissible for area expansion of fruits, spices, flowers and plantation crops including cashew. Assistance is also extended for the establishment of Hi –tech model nursery for fruit plants tree spices and plantation crops, rejuvenation of orchards and plantations and for the cultivation of crops under protected environment (construction of poly house/green house/shade net house, plastic mulching, tunnel etc).

Coconut Development Board Scheme

For Productivity improvement of coconut, demonstration plots in coconut garden adopting full packages, Coconut Development Board is providing assistance @ Rs.35,000/- per ha in two installments. 50% subsidy for organic manure production units or Rs.20,000 per unit is provided for small units. For setting up of coconut processing units, 25% subsidy with a maximum of Rs.50.00 lakh per unit is admissible. Under replanting & rejuvenation of coconut gardens, subsidy @ Rs.500/- per palm @ 10 palms per ha shall be provided to the farmers for cutting and removal of old, senile, unproductive and disease advanced palms and for adoption of integrated management practices, a subsidy of Rs.15, 000/ha will be provided in two installments @ Rs.7500/- each.

National Horticulture Board Programme

NHB is providing 50% back-ended capital investment subsidy with a maximum of Rs.62.50 lakh for the development of commercial horticultural crops through production and post harvest management. For construction/ expansion/ modernization of cold storage/ storage of horticulture produce, 50% back ended capital investment subsidy is allowed with a maximum of Rs.100 lakh for 5000 MT capacity.

Protected cultivation

In the present scenario, the cultivable land area is decreasing day by day. Hence, there is an immediate need for drastic changes in the agriculture sector incorporating the recent advances in science and technology. Therefore, production under controlled atmosphere is the only alternative to get production even during off-season. The main purpose of protected cultivation is to create a favorable environment for the sustained growth of crop so as to realize its maximum potential even in adverse climatic conditions. Protected cultivation in the forms of polyhouse/ greenhouse/ shade net house, tunnel etc offer several advantages to grow crops of high quality and yields, thus using the land and other resources more efficiently.

Coconut Mission at Car Nicobar

The Nicobar group of Islands is separated from the Andaman group by channel. The Nicobar group is having 19 islands of which 12 are inhabited which is divided into three groups- Car Nicobar inhabited by Tribal Nicobarese, the Nancowry group of islands inhabited by the Tribal Nicobarese and Sri Lankan expatriates and Great Nicobar Island inhabited by Tribal Shompens, Nicobarese and Ex-servicemen settlers.

Rain fed agriculture is practiced in Car Nicobar. The climate of this island is congenial for the plantation crops wherein coconut occupies about 70% of the total geographical area. Most of the plantations are old and the farmers are deriving income without incurring any expenditure on maintenance of plantation. The plantation does not adhere to scientifically recommended agronomic practices. Hence, the productivity of coconut is very low, much below the national average.

Recognizing the importance of coconut in the lives of the Nicobari people and its traditional influence on the economic and social development and aiming at the quality of life of the Nicobarese, the Andaman & Nicobar UT administration has launched Coconut Mission at Car Nicobar to bring a paradigm shift in the process of coconut production and

its commercial use. The mission adopts a synergetic approach by bringing the isolated efforts being put forth by different government agencies under different schemes to increase the productivity of coconut and its allied processing activities under one umbrella and its implementation on a mission mode. Coconut Mission was launched in Car Nicobar on 26th Jan,2009 with an objective to increase the coconut productivity from 22 nuts/ palm to 60 nuts per palm per year and uplift the socio- economic status of the tribal farmers.

***Scenario after the launch of Mission*:**

After the launch of Mission, the average yield of coconut has increased from 20 to 49 nuts per palm per ha per year. Interventions like intercropping of pineapple, banana, papaya, root crops, vegetables etc have been found to have tremendous impact in the productivity in the demonstration plots. Altogether 300 ha area is so far covered in the farmers' field under laying out demonstration plots in coconut garden adopting full package of technologies for productivity improvement of coconut. The introduction of bee colonies installed in various villages of Car Nicobar show increased production of coconut and other crops in the vicinity of colonies due to assisted pollination by bees and yielded honey and vax as additional income. Cutting and Removal of senile/ diseased coconut palms was undertaken in villages of Car Nicobar. For improving and sustainable maintenance of soil fertility, 650 high density polythene vermibeds were installed in the farmers' fields for the production of vermicompost along with 45 organic manure production units which facilitated in recycling the plantation waste.

Seeing the impact of Coconut Mission at Car Nicobar, the Nicobaries of Teressa Island also demanded similar Mission for their Island. Accordingly, the Lieutenant Governor A&N Islands approved Mission for Teressa Island. In Teressa, the then Chief Secretary launched Teressa Coconut Mission during December 2011.

Coconut Mission in Teressa Island

Tressa Island comes under the Nancowrie group with a geographical area of 90.41 sq. km. Teressa is having undulated terrains. Coconut is the most important and integral part of day today life of the tribes of Teressa Island. The staple food is coconut and is next in importance is tuber crops, pandanus, fruits like banana, papaya, pineapple and jack fruit. But the productivity of coconut is not up to the mark due to the poor maintenance by the tribals.

To improve the coconut productivity from the present annual yield of 19 to 60 coconuts per palm and to improve the cropping efficiency and socio-economic status of the tribal farmer, the Administration launched Teressa Coconut Mission during 2011-12. The action plan for three years from 2011-12 to 2013-14 will be implemented to achieve the targeted output in a mission mode.

Fruits and Vegetables Mission at Car Nicobar

Recognizing the importance of vegetables and fruits in the lives of Nicobarie people and popularizing vegetable and fruits in dietary habit of the Nicobarese aiming at better quality of their life, administration has resolved to launch a Mission to promote the cultivation of fruits and vegetables by increasing the area and production of vegetables and fruits and ultimately improving the nutritional status of the tribals. The mission aims at integrating various government agencies like Department of Agriculture, ATMA, RKVY, dovetailing with MGNREGA, Department of Health Services, Food and Nutrition Department and Education Department under one umbrella and its implementation on mission mode in a short-term strategy of two years.

The main objective of the mission is sustainable vegetable and fruit cultivation through transfer of technology, capacity building and training programmes. The mission will focus on increasing the area, production and productivity of vegetables and fruits and also popularize mushroom cultivation. The technologies will be disseminated in a participatory mode to promote and address the existing gaps.

The activities to be carried out by the department through this Mission will be - establishing demonstration plots on vegetable and fruits cultivation; protected cultivation of vegetables in polyhouses; distributing kits of vegetable seeds and fruit saplings to improve vegetable and fruit garden in each and every household; setting up of vermibed in each Tuhets; establishing demonstration unit of mushroom in each village and establishment of spawn production unit.

Laying out of demonstration plots in Khetri, Assam

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About 89 per cent of the population in Assam lives in rural areas and nearly 75 per cent of the state's population directly or indirectly dependent on agri-horticulture, while about 69 per cent of the workforce in the state is engaged in agri-horticulture activities. Addressing the productivity issues in small and marginal farms under rain-fed agri-horticulture areas would call for an improvement in the production and productivity of agri-horticulture crops. Coconut, arecanut, pepper, etc. inter-cropped through an integrated approach of management of pests and disease, nutrient, water and crop systems increase the net income from unit holdings. For improving the production and productivity of coconut for the sustainable development of the poor and marginal farmers to show as a model to the farming community, CDB in collaboration with the NGO, Resources Centre for Sustainable Development (RCSD) implemented LODP programme during August 2009 for a period of two years covering the villages of Nakuchi, Bhelguri, Badhaikuchi, Deulguri, Khaloibari, Borbitoli and Chitolpur, under Dimoria Block, Kamrup district in Assam.

In Assam coconut is mostly grown in the warmer foothills and the plains. Assam Tall is the most common variety grown here. Coconut palms are mostly planted as homestead garden along with other perennial horticultural crops. Coconut is widely a neglected crop in the state. The only management practice undertaken by the farmers is cleaning of the crown before the monsoon and application of farm yard manure to the palms. The harvesting of mature nut is undertaken twice or thrice a year during the festival seasons. Sale of tender nut during summer has a flourishing market in urban and sub-urban areas and fetches a price of Rs 10-12 per nut. The price of mature nuts depend upon the dried whole coconut and can fetch within a range of Rs 5 to Rs 20 per nut. Activities related to processing of coconut are almost negligible in the state. The average size of coconut holdings in the state is less than the all India average of 0.40 hectares. The major coconut growing areas are Kamrup, Nagaon, Barpeta and Nalbari districts of lower Assam. According to 2010-2011 statistics the area under coconut cultivation is 19,426 ha. with a production of 1585.65 lakh nuts. The productivity of the state is 8163 nuts per ha.

Mixed farming with aquaculture

An inference from the primary survey amongst the coconut farmers of Khetrigaon panchayat reveals that most of the farms exhibit very low productivity, dearth of quality planting material and are in small land holdings. There was neither systematic scheme nor encouragement for practicing intercropping for additional income. Under such conditions it was highly essential to improve production and productivity of small and marginal coconut farms through integrated approach and management of pest and disease, nutrient, water and crop system and thereby increase the net income from the unit holdings.

Programmes of Coconut Development Board

Coconut Development Board supplied fertilisers viz; Urea, MoP, SSP, Borax and MgSo4 for productivity enhancement, green manure (dhaincha), intercrops (lemon, papaya) robon cake for rat control, chloropyriphos, monocrotophos and copper-oxychloride for plant protection and extended technical guidance from time to time.

Majority of local community are totally dependent on agriculture. Paddy is cultivated as a major field crop for food and income security. Horticultural and vegetable crops are the next important source for generating additional subsidiary food and income. Fertilizers (urea @1 kg, MoP @2kg, SSP, borax@ 50gm, green gram @ 200gm and MgSo4 @ 300gm/plant) were provided by CDB in two consecutive years. Post project survey was undertaken during August, 2011 for an LODP project area of 10.4 ha

As per the evaluation, the programme has helped to increase the production in comparison to the past. Prior to the project intervention, limited productivity was reported by the farming households. For example in the case of productivity of coconut, during the year 2008 a total annual production of 29 ,990 nuts was achieved from 1696 bearing palms and following the introduction of crop management practice and fertilizer inputs support from CDB from August 2009, the palm production increased to 40,894 nuts from 1733 bearing palms. With regard to pest and disease impact on bearing and non-bearing palms, only 14% of palms were earlier reported to be free from pest and disease, while with the introduction of traps and some traditional management practices there has been a reduction in pest and disease attack by around 30%.

Majority of the home gardens with coconut palms prior to the project interventions had few intercrops such as beetle leaf, mango, banana and lemon. Farmers under the project were provided with papaya and black pepper saplings. Majority of the farmers express a keen interest on the two economic crops promoted and it was observed that farmers are properly looking after the intercrops.

Almost every households possess bearing palms. In addition to the sale of mature nuts and tender nuts, women undertake value addition of the mature nuts by producing pitha and laddu which find sale in the local roadside restaurants. 90% of the households are involved in the direct sale of livestock, mostly poultry.

Partnership to develop sustainable coconut oil supply chain

A program to develop a certified coconut oil supply chain to enhance sustainability and improve the livelihoods of 2,500 coconut growers in the Philippines has been launched through the partnership between the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, BASF and Cargill Philippines. The partnership is co-financed by the German Federal Ministry for Economic Cooperation and Development (BMZ)

The certified coconut oil supply chain program focuses on smallholder coconut growers in the southern Philippine island of Mindanao. It aims to raise farmers' income by improving productivity and coconut oil quality. It also will introduce the Sustainable Agricultural Network (SAN) standards as a basis for Rainforest Alliance Certification™ for coconut production. Farmers already have started the first phase of Good Agricultural Practices training for coconut production. They will be provided with newly designed coconut dryers to improve the quality of copra (coconut meat) and coconut oil. In addition the project helps provide greater healthcare access for coconut farmers to the country's health insurance program, PhilHealth. By working with Small Coconut Farmer Organizations (SCFOs), other cooperatives and by leveraging the project's financial support 2,500 coconut farmers have enrolled in Phil Health.

(Source: Cocommunity)

Union Budget 2013-14:
Coconut in Budget Speech

Shri. P. Chidambaram Hon'ble Union Finance Minister

51. A pilot scheme to replant and rejuvenate **coconut** gardens that was implemented in some districts of Kerala and the Andaman & Nicobar Islands will be extended to the entire State of Kerala, and I propose to provide an additional sum of Rs 75 crore in 2013-14.

Farmer Producer Organizations

52. Farmer Producer Organizations (FPO), including Farmer Producer Companies (FPC), have emerged as aggregators of farm produce and link farmers directly to markets. To signal our support to them, I intend to provide matching equity grants to registered FPOs upto a maximum of Rs 10 lakh per FPO to enable them to leverage working capital from financial institutions. I propose to provide Rs.50 crore for this purpose. Besides, a Credit Guarantee Fund will also be created in the Small Farmers' Agri Business Corporation with an initial corpus of Rs.100 crore. I urge State Governments to support such FPOs through necessary amendments to the APMC Act and in other ways.

Budget provision for Producer Companies

Producer Companies, the apex body of Coconut Producers' Society and Federation envisaged by CDB can avail the benefit of Rs.50 crore allocated for FPOs in the Union Budget 2013. Rs.10 lakh is earmarked for each FPO and around 500 companies across the country can avail this benefit. CDB has already represented state governments to get equity participation in the Producer Companies. Farmers may make use of this opportunity and accelerate the formation of CPS, Federations and Producer Company for getting priority in availing this benefit.

Rs. 75 crore to root out old, infected coconut trees

Staff Reporter

KOCHI: More than four million coconut farmers in the State stands to gain from the Union budget announcement on Thursday that Rs. 75 crore has been earmarked for replacing senile and disease-affected coconut trees in Kerala and the Andaman and Nicobar Islands during the next financial year.

The money is part of the Rs. 350 crore sought by the Coconut Development Board over the next five years to replant coconut trees in the wake of serious slowdown in production across traditional coconut producing states in the country.

The chairman of the board T. K. Jose said the pilot project for replacing old and unproductive coconut trees in Kerala was underway in Thiruvananthapuram, Kollam and Thrissur districts in Kerala and in the Andaman Islands.

The money allotted in the Union budget would allow the programme to be taken to all other districts in Kerala and the Nicobar Islands, he said.

The pilot project, launched in 2009, has so far covered 1.35 lakh hectares in Kerala and six lakh farmers had benefitted from the programme. Around 16 lakh old or senile coconut trees have been replaced at an expense of Rs. 125 crore so far.

Mr. Jose said the programme was expected to be completed in five to six months and he welcomed the Union budget provision for coconut replantation in other districts in the state.

Rs. 75 crore is part of the Rs. 350 crore sought by the Coconut Development Board.

Only re-plantation and rejuvenation of coconut plantations would ensure better productivity and replantation and rejuvenation programmes had been undertaken for other crops like cardamom, tea, coffee and pepper in the past, he said.

Sunny George, an award winning farmer, said there were hundreds of coconut trees that needed to be replaced to ensure better productivity in the future. Senile trees and those affected by mite attacks must be replaced to ensure higher production of coconut to meet demand from newly organised milling and other activities centred on coconut plantations.

It is estimated that there are around 18 crore coconut trees in Kerala of which 75 per cent are in the productive age. However, a combination of factors, including poor prices, have forced thousands of farmers to abandon coconut farming and take up more lucrative crops like natural rubber.

Source: The Hindu Daily, dated 1.3.2013

Scope for coconut processing units in major coconut producing states

Jayashree. A
Senior Technical Officer, CDB, Kochi

Coconut production, processing and marketing sectors face an uphill task of achieving a sustained growth in the present scenario. Competitiveness through higher productivity, post harvest processing and value addition of coconut for effective utilization of harvested produce has become a major thrust area of the coconut growing countries. Though India accounts for 15.60 % of area and 25.63 % of total production, the potential for product diversification and value addition has not been fully exploited. Fluctuation in price of the product is mainly due to the over dependency on coconut oil and it is high time to reorient our strategies so as to avoid this situation. Opportunities in coconut industry can be realised by focusing attention on non-traditional and value added products from coconut. Research undertaken and recent technological developments brought out viable technologies in the processing sector and thereby preference for processed and convenience oriented products opened the global market for promoting such value added coconut products.

Since the price of coconut and its by products have attained high demand recently, the scope for establishment of units for coconut products have increased considerably. More priority has to be given for integrated processing for full utilization of coconut along with all other by products like husk, shell, leaf, midrib, timber etc. which will increase the overall income from coconut by farm level processing.

Under Technology Mission on Coconut (TMOC), component-adoption of technologies, Coconut Development Board is providing assistance for setting up of coconut based industry other than husk. 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 to address the serious problems faced by the coconut industry in a strategic manner. The implementation of Technology Mission on Coconut (TMoC) programme by Coconut Development Board has helped to solve production constraints to a greater extent besides developing many technologies in coconut product diversification and by-product utilization sector for their commercial adoption. Technology transfer for manufacture of products viz. virgin coconut oil and dietary fibre, packing of tender coconut water, spray dried milk powder, vinegar and other convenience foods is available with the Board on payment of technology transfer fee. Under TMOC, Board has extended financial assistance to 215 coconut processing units having capacity to process 1989.64 million nuts per year at a total investment cost of Rs.212.849 crores. CDB's financial assistance is to the tune of Rs.29.490 crores.

M/s Vittal Agro Industries, Kanhangad, a desiccated coconut unit assisted by Board

Table-1.Value added coconut products units assisted under TMOC in Kerala (Coconut area 10,000 ha. or more)

No	Districts	Area (in Ha)	Production (lakh nuts)	Products	No. of coconut processing units	Capacity	Capacity utilised / year (lakh nuts)	Capacity utilised (in %) to production
1	Kozhikode	121688	7700	Virgin Coconut Oil	1	7500 Nuts/day	29.53	0.77
				Virgin Coconut Oil (RUBCO)	1	2000 nuts/day		
				Ball Copra	3	103000 / batch		
2	Malappuram	104178	9160	Ball Copra	1	3000 / batch	12.03	0.26
				Virgin Coconut Oil (RUBCO)	2	4000 nuts/day		
3	Kannur	76917	5290	Virgin Coconut Oil	1	5000 Nuts/day	21.15	0.80
				Virgin Coconut Oil (RUBCO)	1	2000 nuts/day		
				Ball Copra	1	15000 per batch		
4	Thrissur	75364	4930	Virgin Coconut Oil	2	18000 Nuts/day	205.5	8.34
				Virgin Coconut Oil (RUBCO)	5	10000 Nuts/day		
				Desiccated Coconut	1	10000 Nuts/day		
				Spray Dried Milk Powder	1	20000 Nuts/day		
				Chips	1	500 Nuts/day		
				Vinegar	1	10000 Nuts/day		
				Shell Charcoal	1	450000 shells/day	1350	27.38
5	Thiruvanan thapuram	69668	4990	.....	.....	.....	.....	.....
6	Palakkad	57094	4080	Virgin Coconut Oil	1	20000 Nuts/day	139.5	6.84
				Virgin Coconut Oil (RUBCO)	2	4000 nuts/day		
				Desiccated Coconut	2	22000 Nuts/day		
				Chips	1	500 Nuts/day		
7	Kasargod	56174	4180	Desiccated Coconut	1	50000 Nuts/day	156.0	7.46
				Virgin Coconut Oil (RUBCO)	1	2000 nuts/day		
8	Kollam	56060	3780	…..	…..	…..	…..	…..
9	Ernakulam	42894	2210	Virgin Coconut Oil	1	7500 Nuts/day	39.6	3.58
				Virgin Coconut Oil (RUBCO)	2	4000 nuts/day		
				Vinegar	2	12500 Nuts/day		
				Chips	1	200nuts/day		
				Ice cream cup	2	20200 Nuts/day	57360	133.72
				Activated Carbon	3	191 T shells/day		
				Wood product	1	10 wood/week		
10	Alappuzha	39344	2640	Virgin Coconut Oil (RUBCO)	1	2000 nuts/day	6.0	0.45
11	Kottayam	28410	1480	Vinegar	1	55000 Nuts/day	171	23.10
				Virgin Coconut Oil (RUBCO)	1	2000 nuts/day		
12	Idukki	17012	800	….		….		
13	Pathanamthitta	15627	1120	Virgin Coconut Oil	1	5000 Nuts/day	17.0	3.06
				Virgin Coconut Oil (RUBCO)	1	2000 nuts		
14	Wayanad	10043	510	….		….	….	….

** Percentage utilisation worked out for value added food products (kernel based) considering that 50% of the production shall be available for processing units since 50% is utilised for direct consumption at present whereas for shell based units 100% of production considered for shell based products.*

The capacity utilization is found to be meager when we look at the state wise distribution of processing units and compare it with the production and area under coconut. The following tables detail the district wise coconut processing units for value added products from coconut assisted under TMOC programme. As per the present composition pattern of coconut in India, the major portion i.e., upto 50% is used as raw nut, 15% as tender nut and 35% goes for copra and oil. Approximately 92% of the raw nut is used for direct consumption and pooja purposes and only 8% is used for industrial purpose. Hence, the capacity in percentage to total production is worked out here considering that 50% of the available raw material is converted to value added products.

It shows that there is wide scope for utilization of products. In Kerala in all the 14 districts coconut is cultivated in 10,000 ha or more. In Kerala, under TMOC 108 projects are approved of which there are 47 coconut oil units with a capacity to process 13.20 lakh coconuts per day, 10 virgin coconut oil units using cold processing technology (8300 nuts per day) and 17 virgin coconut oil units RUBCO technology (34000 nuts/ day) seven ball copra units (2,61,000 nuts/batch),six copra units (1,29,000 nuts/day), three coconut chips units (1200 nuts/ day) five vinegar units (77500 nuts/ day), four desiccated coconut units (82000 nuts/ day), two shell ice cream cup units (20000/ day) one shell charcoal unit (4,50,000 shell/ day) one spray dried milk powder unit (20000 nuts/ day), three activated carbon units (191MT shell) and one wood processing unit.

The capacity utilization for value addition is seen more in Kottayam, Thrissur, Palakkad and Kasargod districts whereas Thiruvananthapuram, Kollam, Idukki and Wayanad have not utilized potential. Eventhough the area under coconut in Ernakulam district is much less than Thiruvananthapuram and Kollam, the district is having 10 or various value added product units including shell products. The capacity utilised for shell based products are on the higher side.

In Karnataka, Board under TMoC has extended assistance to 32 units of which 3 units are producing coconut oil with a capacity to process 34,000 coconuts

Table-2. Units for value added coconut products assisted under TMOC in Karnataka (Coconut area 10,000 ha. or more)

No	Districts	Area (in Ha)	Production (lakh nuts)	Products	No. of coconut processing units	Capacity	Capacity utilised / year (lakh nuts)	Capacity utilised (in %) to production
1	Tumkur	138660	9859	Desiccated Coconut	11	352000 Nuts/day	1056	21.42
				Activated Carbon	1	360000 Shells/day	1080	10.95
2	Hassan	62256	4427	Shell Powder	1	375000 shells/day	1125	25.41
3	Chitradurga	42388	2950	….	….	….	….	….
4	Chikmagalur	37996	2032	….	….	….	….	….
5	Mandya	25410	2551	Tender Coconut Water	1	10000 Nuts/day	30	2.35
6	Mysore	22070	1309	Desiccated Coconut	1	7000 Nuts/day	21	3.21
7	Udupi	16224	1301	Desiccated Coconut	4	11500 Nuts/day	34.5	5.30
				Shell Charcoal	1	600000 shells/day	….	138.35
8	Dakshina Kannada	16096	1144	Virgin Coconut Oil	2	15000 Nuts/day	45	7.86
9	Ramanagar	14328	1019	….	….	….	….	….
10	Davangere	12101	994.1	….	….	….	….	….
11	Chamarajanagar	11365	808.1	….	….	….	….	….

** Percentage utilisation worked out for value added food products (kernel based) considering that 50% of the production shall be available for processing units since 50% is utilised for direct consumption at present whereas for shell based units 100% of production considered for shell based products.*

M/s Swastika Agro products, Kundapura, Karnataka, aDesiccated coconut unit assisted under TMOC

per day followed by 20 desiccated coconut powder units (6,19,500 nuts/ day), one tender coconut water unit (18000 nuts/ day), two virgin coconut oil unit (15000 nuts/ day), two activated carbon units (75.6 MT shell/ day), one copra unit (10000 nuts/ day), a shell charcoal unit (6MT shell /day) and a shell powder unit (3.2 MT shell/day).

It is observed that there is much scope for establishing units in Chitradurga, Chikmagalur, Ramanagar, Davangere and Chamarajanagar. In Karnataka more than 90 desiccated coconut units already exists in Tumkur districts were not taken into account since only CDB assisted units under

Table-3. District wise units for value added coconut products assisted under TMOC in Tamil Nadu (Coconut area 10,000 ha. or more)

No	Districts	Area (in Ha)	Production (lakh nuts)	Products	No. of coconut processing units	Capacity	Capacity utilised / year (lakh nuts)	Capacity utilised (in %) to production
1	Coimbatore	80712	11970	Virgin Coconut Oil	1	5000 Nuts/day	693	11.58
				Desiccated Coconut	4	216000 Nuts/day		
				Tender Coconut Water	1	10000 Nuts/day		
				Shell powder	3	220000 shells/day	2580	21.55
				Shell Charcoal	2	640000 shells/day		
2	Tirupur	49598	4086	Desiccated Coconut	2	70000 Nuts/day	219	10.72
				Tender Coconut Water	1	3000 Nuts/day		
				Shell powder	1	220000 shells/day	4080	99.85
				Shell Charcoal	2	1140000 shells/day		
3	Thanjavur	33271	5221	Virgin Coconut Oil -	1	15000 Nuts/day	45	1.73
4	Dindigul	28284	4902	Shell Charcoal	1	210000 shells/day	630	12.85
5	Kanyakumari	24916	4533	Shell Charcoal	1	10000 shells/day	30	0.66
6	Vellore	22292	2081	....	....	....	....	....
7	Theni	18715	3159	....	....	....	....	....
8	Krishnagiri	15887	3217	....	....	....	....	....
9	Tirunelveli	15621	1292	Shell Powder	1	120000 shells/day	1710	132.35
				Activated Carbon	1	450000 shells/day		
10	Salem	14278	1994	Shell Powder	4	510000 shells/day	1530	76.73
11	Madurai	11280	2251	....	....	....	....	....
12	Erode	10987	1679	Activated Carbon	1	830000 shells/day	2490	148.32

** Percentage utilisation worked out for value added food products (kernel based) considering that 50% of the production shall be available for processing units since 50% is utilised for direct consumption at present whereas for shell based units 100% of production considered for shell based products.*

Tender coconut water unit assisted under TMOC, M/s VSA Foods and Beverages Pvt Ltd, Dindigul, Tamilnadu

TMOC are listed. Considering the availability of raw material as well as labour in the state, there is scope for more desiccated coconut units adhering to the food quality standards. Maddur in Mandya being the biggest organised market for tender coconut, the raw material availability for tender coconut water units will be available in plenty. More entrepreneurs are attracted to the tender processing sector in Karnataka.

Board has assisted 56 units in Tamil Nadu of which the major ones are 11 activated carbon units (498 MT shell/ day), nine shell charcoal units (of 19.79 MT shells /day), nine desiccated coconut units (3.82 lakhs units / day) four tender coconut water units (47000 nuts/ day) and 3 virgin coconut oil (40000 nuts / day). Here it may be noted that only two activated units were established in the districts having more than 10000 ha area, other nine units with huge capacities have been set up in the districts having lesser coconut area. In Vellore, Theni, Krishnagiri and Madurai even though coconut area is sizeable coconut processing units for value added products are not there. Capacity utilisation for shell based units in Tirupur, Thirunelveli and Erode are very high. The scope for setting up shell based units and tender coconut processing units is very high in Tamil nadu.

In Andhra Pradesh Board had assisted 11 units. There are five ball copra units with processing capacity of 10.19 lakhs nuts per day followed by two desiccated coconut units (52000 nuts/ day) two tender coconut water units (35000 nuts/ day), one virgin coconut oil unit with 25000 nuts/ day capacity and one shell powder unit with a capacity to process 10 MT shell/day. When we look into the area under coconut, only three districts are having 10,000 ha under coconut cultivation of which Srikakulam district does not have any coconut processing units. But Ongole and Visakapattanam districts which are having lesser area under coconut cultivation is having a virgin coconut oil and shell powder unit.

Table-4. Districtwise units for value added coconut products assisted under TMOC (Coconut area 10,000 ha. or more)

No	Districts	Area (in Ha)	Production (lakh nuts)	Products	No. of coconut processing units	Capacity	Capacity utilised / year (lakh nuts)	Capacity utilised (in %) to production
1	East Godavari	50789	6034	Desiccated Coconut	1	12000 Nuts/day	41.19	1.36
				Ball Copra	4	519000 per batch		
2	West Godavari	20437	2927	Desiccated Coconut	1	40000 Nuts/day	155	10.59
				Tender Coconut Water	1	10000 Nuts/day		
				Ball Copra	1	500000 per batch		
3	Srikakulam	14619	1475	....	....	....	....	....

** Percentage utilisation worked out for value added food products (kernel based) considering that 50% of the production shall be available for processing units since 50% is utilised for direct consumption at present whereas for shell based units 100% of production considered for shell based products.*

Ball copra unit, East Godawari, Andhra Pradesh

Apart from these, Board has also given assistance to a shell powder unit in Jammu and Kashmir, tender coconut water unit in Orissa, copra unit in Goa, copra and oil units in Lakshadweep, two virgin coconut oil and desiccated coconut powder units in Andaman and Nicobar Islands. These are classic examples to prove that coconut processing units can be established and can be operational in non-traditional areas.

The demand for coconut value added products is very huge with the potential markets in 63 Jawaharlal Nehru National Urban Rural Marketing cities in India with 65% urban population. As per the estimate, 100 tender coconut water units, 1500 coconut chips units, 40-50 VCO & ball copra units and 10-15 desiccated coconut powder, milk powder and coconut cream units should be established for catering to the existing demand. It is estimated that around 3500 lakh nuts will be required per day for meeting the demand of the urban markets.

The price level will definitely improve when new markets for coconut products will be established in non producing coconut states. International quality standards, attractive and healthy packaging, proper labeling with nutrient contents and the usage coupled with brand name and competitive price are essential for competing in the export markets. Consortium of manufacturers of various products has to be encouraged as in case of activated carbon for getting better price for the product as well as for the betterment of the manufactures of particular products.

Indian coconut sector has inherent strengths of varied agro climatic conditions, huge domestic demand, highest productivity, sound research and development and technology transfer systems. However, the sector has to utilize the possible linkages for increasing the by product utilization. Vast growth opportunities for product diversification and value addition exist today.

Through TMOC, Board has opened up avenues to entrepreneurs, industrialists and artisans to showcase their products in national and international exhibitions and fairs which help them get better access to the open market. They could also develop networking and market tie ups with prospective buyers. Products like tender coconut water, desiccated coconut powder, coconut milk powder and activated carbon produced in India possess good demand in upcountry markets. The globalization and trade liberalization warrant a sustainable growth in the entire industry to sustain the economic prospects of Indian coconut farmers.

The immense scope for setting up coconut processing units by more investors as joint ventures with existing players in the global market will increase the demand for the nut and thereby increase the price of coconut. This will definitely result in better remuneration to coconut farmers.

Awakening of a Greener Spirit- the KADS model

K.G. Antony
President, KADS, Thodupuzha

Kerala Agricultural Development Society (KADS) is the dream come true of a group of committed farmers. It was formed at a time when farming wasn't anymore promising, the yield was very poor and the cost of produce was very high and many turned to other jobs, leaving their mainstay farming. But, as always, tough times also produce tougher spirits. Well before it was founded, KADS took deep roots in the minds of a group of farmers belonging to Thodupuzha, the fertile heart of vegetable farming in Kerala.

Formally beginning full-scale operations in the year 2000, KADS is a non-profit charitable society, formed to protect the better interests of the farmers and end-users alike, keeping the objectives of promoting agriculture, and help farmers adapt to changing market conditions, to involve farmers directly in the marketing system, enabling them to gain more value for their produce and to eliminate middlemen and develop a full-fledged marketing system with active farmer participation.

Spreading a Green Revolution

Since its inception, KADS is making steady progress in turning agriculture into a profitable livelihood for farmers. A most comprehensive approach has been worked out to achieve the goal. Farmers are given expert help in effectively planned farming. They are provided with high yield seeds and the necessary financial assistance to prepare the land, to buy livestock, or to set up aquaculture. Specialist services of agricultural/livestock experts are sought at every stage to optimize yield. Member farmers are also given assistance in availing the facilities offered by Governmental organizations like Spices Board, Kerala Agricultural University etc. to set up organic manure units and other facilities. Once the harvest is ready, KADS helps farmers to market their produce directly through open market system, without involving middlemen.

KADS with its innovative concept of farmers open market has proved successful in the marketing of agriculture products. The Society which started with 35 farmers as members and Rs.17,500 as working capital in 2001 has now grown to a Rs.4 crore asset company with 4000 farmer members. The objective of this initiative is to equip the farmer to fix the price of his produce.

KADS' Farmers open market functions on 365 days. Farmers can directly sell their produce by avoiding the middlemen. KADS while ensuring the quality of the products traded here is also making available the selling as well as the buying price to the general public. The farmer is getting the best price for his produce while the consumer is able to buy the product on a reasonable rate. Along with this innovation in marketing, KADS in association with other related departments is making available best quality planting materials.

KADS' open markets recorded trail blazing successes as the open markets enabled producers gain more returns for their produce.

Farmers' Open Market at Thodupuzha

Products displayed for sale in the Open Market

End-customers, can buy fresh, good quality vegetables and other farm produces at rates far lower than the current market prices. This has enabled more unemployed or underemployed men and women to turn to agriculture and livestock raising as mainstay activities. The activities of KADS are gradually turning the socio-economic profile of a vast region. There are more employment opportunities. More children enjoy quality educational facilities.

Nurturing Greener Hopes

KADS gives special thrust to high yielding paddy and vanilla cultivation. Spices and other perennial crops also find a prime place in KADS' agenda. Apart from agri-horticulture, a whole lot of enterprises have been spawned off by KADS. A major area is food processing industry - cafeterias that promote local flavour in adjacent cities and towns, tender coconut stalls along highways etc.

Greener Future

KADS believes that the future holds a lot for itself. Gradually the world has come to appreciate the efforts of this small movement, taking place in the foothill regions of the Western Ghats. The Society is helping its member farmers to reinvent themselves to adapt to the challenging opportunities.

KADS knows the market pulse. When the coconut price steeped low during November 2012, KADS procured coconut @ Rs.14. Gradually this price was revised and by January this year the procuring price reached Rs.18. KADS is procuring coconut from Coconut Producers' Societies @ Rs.17. KADS is trying to bring down the gap between the procuring price and the market price and thereby ensuring better price to the farmer as well as a reasonable price to the consumer.

An ambitious plan to export farm-fresh vegetables and other farm produce to the Middle East, Europe, America and other developed countries is on the immediate anvil. The vegetables and farm produce it collects for export from member farmers conform to accepted global standards in quality and hygiene. Doing away with artificial fertilizers and other harmful chemical pesticides and insecticides make KADS farm produce pollution free and naturally healthy. A highly professional system is established to help meet the quantity and quality demands of overseas importers of Indian vegetables, taking as little turnaround time as possible.

Challenges and Constraints

KADS is trying to bring back the weekly open market system prevailed in Kerala wherein the farmer is directly linked with the consumer. Slowly this system has evaded and the role of farmers is more or less zero now. It is here that KADS has come to the forefront for helping the farmers. KADS knows that the greatest challenge faced by this sector is the lack of coordination between production, procurement and marketing. Hence KADS dreams of an open market system, a single window system where farmers will be linked with government departments and bodies. All agriculture products must be processed further for value addition. Block based open markets must be the center point of this marketing chain.

Future projects

KADS is planning to work in association with Coconut Development Board in the production of quality seedlings, making available labourers and in the marketing of coconut products. KADS is also planning to open Kerasamrudhi super bazaars in Thodupuzha, Ernakulam and

Thiruvananthapuram wherein all coconut product from broom to value added coconut products will be available. KADS is planning to set up a training center for farmers. Discussions are also being held for setting up organic cocoa processing units at the initiative of farmer groups. KADS further plans to open outlets of local organic products. In order to explore the international market, KADS has registered 'Le Organic' brand and has taken export license too. It is the dream of KADS to make its presence in the international market too.

Government of Kerala has recently sanctioned an Agro Service Centre for KADS with the immediate financial assistance of Rs.32 lakhs to purchase farm machineries and other infrastructure. The Agro Service Centre will provide the 'Green Force', a labour force for undertaking any farming activity, whether it is mechanical or skilled labourer.

The concept spearheaded by KADS is spreading far and wide in Kerala. Today, more and more farmers appreciate the need to preserve eco-balance. Awareness against the use of chemical fertilisers, insecticides and pesticides is also gaining momentum. Through its consistent efforts, KADS has successfully proven that agriculture can be profitable. As a result, a green awakening is gradually spreading across Kerala.

KADS model - Best for CPS and Federation

KADS's Open Market System is a best model that can be followed by CPSs. Presently farmers are getting only a nominal or even low price for his produce while the consumer is buying it on a higher rate. The profit is always enjoyed by the middlemen. In the open market system farmer can have a say on his produce and can sell any product right from broom to value added coconut products like vinegar, chips, virgin coconut oil etc. Here the farmer is directly linked to the consumer and this will ensure a reasonable price for both the consumer and the farmer.

Megastar with the goodness of coconut oil

Shri. Mohanlal, the megastar of Malayalam is the brand ambassador for KLF Coconad, the new edible coconut oil brand from KLF Nirmal Industries (Private) Limited, Thrissur, Kerala. Nearly two years back KLF Nirmal Industries reviewed its business portfolio as a whole and its branding in particular. Out of this came the strategy of creating individual brands in the market segments in which the company had offerings. The company also looked at re branding its product categories and KLF Coconad is the result of this elaborate exercise.

People of Kerala have been using coconut oil for a variety of purposes from time immemorial. Its usage as an edible oil is common in Kerala. It is used in a large scale in Ayurvedic preparations too, as massage oil, and hair oil. Yet there has been a campaign going on against its usage as edible oil. KLF thought it was time to challenge the misconceptions and establish the genuine worth of coconut oil as an edible, healthy product. KLF was sure that the manufacturing process it adopted gave a wholesome product that retained its natural properties and values, attractively packed and preserved. The company felt that the characteristic of the product has to be communicated well. It was considered absolutely necessary to have a popular and well-accepted personality to convey the message. Thus Shri. Mohanlal, the Megastar of Malayalam became the brand ambassador for KLF Coconad.

The founder of KLF Nirmal Industries, late K L Francis was a

veteran of more than 60 years experience in the coconut oil industry. His experience and expertise in this field was the prime factor which helped KLF to achieve its legitimate place among coconut oil manufacturers in the country. His stress on proper processing technology and his extraordinary zeal for maintaining the highest quality standards have led KLF to launch a bouquet of trusted and quality products in the country. Coconad is available in 500 ml and 1 ltr sachets and pet containers.

Doon, a boon for coconut marketing

Kumaravel S[1], GR Singh[2], Jayakumar S[3]
[1]Technical Officer, [2]Deputy Director, [3]Field Officer, CDB MDIC, Delhi

There won't be any afterthoughts to eulogize a coconut palm as *Kalpavriksha*, as this tall tree which is found in tropic and subtropic parts of the world has great versatility as seen in many domestic, commercial and industrial uses of its different parts. It has cultural and religious significance also in many societies that use it.

Though coconut is cultivated in 18 States and 3 Union Territories across India, about 90% of area and production are confined to southern parts of the country. The agro climatic factors inhibit the growth of coconut palm in central and northern India where the winter is severe. Coconut forms a major part of traditional diet, either as tender coconut water, matured coconut, copra, milk, oil, neera, etc. of the coconut growing areas mainly the southern states, east and west coast belts, North Eastern states and some parts of Chhattisgarh and Bihar. Matured coconut, as an offering for worship, copra as a major dry fruit, tender coconut for its medicinal value and coconut oil as a cosmetic always gained popularity in all parts of the country irrespective of local cultivation.

Coconut Development Board in association with several research and academic institutions developed new products from different parts of coconut, technologies for better storage and shelf life of different coconut products, identified alternate uses of different products for better utilization of the crop which leads to better remuneration for all the stakeholders. The products like packed tender coconut water, virgin coconut oil, coconut milk, cream, coconut milk powder, coconut chips, natural coconut vinegar, coconut ice cream, etc. have definite market in north Indian urban pockets, apart from the products of industrial use.

Board has identified a product mix of desiccated coconut, ball copra, packed coconut oil (edible & non edible) apart from the above mentioned value added coconut products for market promotion in 63 JnNURM cities in India at the 'first level', during the 12th Five Year Plan period.

In northern part of India, state capitals have the potential markets for any innovative and convenient products, where the population is in search of novel, time-saving and health related products especially in foods, snacks and cosmetics. These cities help in popularising these products to different parts of the state, country and world, as people (including tourists) move to and from these places.

One such city is Dehradun, the state capital of Uttarakhand, located in the Doon Valley on the foothills of the Himalayas nestled between two of India's mightiest rivers - the Ganges on the east and the Yamuna on the west. The city is famous for its picturesque landscape and pleasant climate. The city is about 230 km from New Delhi towards north and is one of the counter magnets of the national capital region. The population of the city is about 5.78 lakh with 89% literacy. The climate is generally temperate and varies from 1 to 20°c during

Tender coconut seller

Value added coconut products for sale in supermarkets in Dehradun

winter and reaches upto 40°c during summer. High rainfalls are received during July-August. The per capita income of Dehradun is more than double the national average (Rs. 44,345 for FY 2010).

As tourism is one of the major industries in the state, the capital city is one of the preferred locations for overnight and day tourists from adjoining cities including Delhi who visit Haridwar- Rishikesh-Dehradun and Mussourie during weekends and other holidays. A 12-month pilot survey conducted during April 2005- March 2006 by AC Nielsen ORG-MARG Pvt. Ltd., a reputed measurement and information firm, for the Ministry of Tourism, Government of India reported that around 1.16 crore people including 1.09 lakh foreigners visited Uttarakhand. More than 25 lakh people have visited during May to July. About 10 % of the foreign visitors were from USA followed by UK and Australia (about 8 % each). About 18.3 % and 6.7 % of the expenditure of the visitors are spent on food and beverage services and processed foods.

An informal survey for collecting preliminary information on supply and demand of various coconut products was undertaken during February 2013 and the observations are briefed in this article.

Fresh tender coconut: The lone wholesaler of fresh tender coconut informed that the sale of tender coconut in the city is quite good and he could dispose one truck load (10 tonnes) nuts within a fortnight during summer months and the nuts are directly ordered from Karnataka. It takes about a week for transportation from Karnataka.

Since the business is sluggish during rainy and winter season he uplifts the nuts in small lots from Delhi, which would be a mixed lot from Karnataka and West Bengal. He is also doing the retail sale of tender nuts through push carts, specially designed by himself, at 10 hotspots in the city. According to him, consumers prefer Karnataka nuts as the appearance and taste are comparatively better than nuts from other parts of the country. The retail price of each nut varies from Rs. 35 to 40 depending on the size and presence of kernel inside. He

Arrival and price of coconut in Dehradun (2011 and 2012)

Month	Arrivals tonnes		Prices Rs. per MT	
	2011	2012	2011	2012
January	62.2	62.5	6050	6070
February	34.1	154.4	6150	6300
March	81.5	128	6180	6500
April	52.5	211	6030	6300
May	83	129	5050	5100
June	103.5	104.1	6030	6050
July	62.5	63.1	6150	6180
August	85	86	9000	9050
September	83.1	41	8150	8220
October	72.5	79	6050	8250
November	2	6	4700	6050
December	32.5	36	5800	6050
Total	**754.4**	**1100.1**	**6278**	**6677**

is having tender coconut outlets in Haridwar and Mussourie also. There are huge sales of tender coconuts in frequent fairs being held in Parade Ground of the city.

Matured coconut: Few traders sell matured coconut in the APMC, Dehradun, which is an A class Mandi of the state. The nuts are regularly transported from the traders down south in Karnataka and Andhra Pradesh. The sale is peak during February to June (during Holi & Navratra) and quite good during Diwali in October. The arrivals and model prices of matured coconut at the APMC, Dehradun during the past two years are furnished in Table 1.

The data reveal that about 110 tonnes of matured nuts have arrived and were disposed during 2012 which is 45 % more than that of 2011. November recorded the lowest arrival of 6 tonnes whereas April recorded a maximum of 21.1 tonnes. Though there is significant rise in the arrivals during 2012 over 2011, the prices remained same. However, seasonal variations were observed in the model price of nuts from Rs. 5100 per tonne during May 2012 to Rs. 905 during August 2012. The fair price was also obtained during September and October 2012.

The nuts are preferred with different husk content as per need: 4 striped (about 50 % dehusked) for longer storage, 10 % husked and 90 % husked for worshipping. The nuts are received from southern states in gunny bags of 42kg, 52 kg, 60 kg, 75-80 kg. In retail markets the nuts are sold @ Rs. 15-20 per piece with seasonal variations.

Copra and desiccated coconut powder: The commodities, ball copra and desiccated coconut powder are widely sold in grocery shops. The main wholesale market for these items in Dehradun is Ram Lila Bazar where few major distributors are involved in the trade, who pass on the products to wholesalers and retailers. On an average around 1000 kg of copra and 1500 kg of DC are sold per month with 3-4 times hike during festive seasons. The wholesale prices of ball copra and desiccated coconut range from Rs.75 to 85 per kg which is sold @ Rs.85-100 at retail outlets. No branded DC was seen in the malls and other retail shops. These are sold in loose quantities on demand. Copra is one of the ingredients in the *prasad packets* of dry fruits. DC is mainly used by the bakers in different sweets and biscuits. DC is also purchased in bulk and repacked in retail packs by few merchants.

Coconut oil: Though coconut oil is not an edible oil in Dehradun, packed coconut oil is used here as a cosmetic item, for application on hair and skin. Several brands of coconut oil have good market and the hot oil of a popular brand (with 20 % coconut oil blend with *Piper nigrum* oil and Malakangani oil) is popular in this cool hilly areas. However, it was observed that majority of the population are not aware of the medicinal properties of coconut oil. Very little awareness about virgin coconut oil was observed among the urban population.

Packed Tender Coconut Water (TCW): People of Dehradun are very much aware about the goodness of tender coconut water. A distributor is supplying products of Indian origin in Dehradun, (Tender Coco & Purich in polypropylene containers without pulp@ Rs. 35/ 250 ml) and foreign origins (Pam & Grace, with pulp, in glass of 300 ml @ Rs. 55/- and in tin containers of 330 ml @ Rs. 55) since the last three years. The products are supplied in 10-12 retail outlets in the city. The products also move to Haridwar and Mussourie frequently.

Coconut Milk and Coconut Milk Powder (CMP): Many people in the city are aware about these products and they are purchasing this regularly. Dabur Homemade is the only brand available in the city as no Indian brands have hit the city so far. About 50-60 tetra packs (250 ml each @ Rs. 48/-) are the average sales of a retail chain. Nestle Maggi brand of CMP is also available in several outlets @ Rs. 72/- per 100g.

Coconut chips: People of Dehradun were not aware about coconut chips. But on tasting the product, many have shown interest to buy this snack and has showed eagerness once the product is available in the city.

The above data reveals that there is ample scope for building up a sound market for tender coconut water, matured coconut, traditional and value added coconut products. The current supply is too meager to meet the demands of a city like Dehradun where the catering and toiletry industries are in search of wide product ranges to capitalize

the tourists. However, the goodness on the nutritional and pharmaceutical values of tender coconut water, coconut, coconut oil in culinary preparations as well as in cosmetic and toiletries has to be intensified.

As few value added coconut products of foreign origin already exist in the Dehradun markets, it is easier for the Indian products as these products are not new to people in the city. However, the brand promotion for Indian products makes the task tougher for which synergized action on brand awareness, improved and attractive packing, pricing etc. apart from popularizing different recipes are needed. The foreign brand coconut milk powder has atleast two recipes in the outer pack which prompt the consumer to buy and try them.

The manufacturers may introduce small trial packs at affordable prices for the first time users and for lower income groups. It may be noted that even giant players in health food drinks, eatables, toiletries and cosmetics have retail packs costing Re. 1, 2, 3, 5, 10, etc. to increase their volume of sales. Manufacturers need to be cautious about the quality of the containers chosen for refill packing since the coconut oil gets frozen at low temperature prevailing in the city during winter. Research may also be triggered early on preservation of tender nut water in economy packs (with screwable lids) of higher quantities which can be used atleast for a week after opening.

Several central and state government organizations, IT parks and educational institutions are also located in and around Dehradun apart from shopping malls. These are the potential spots for introducing these products. Identification of prospective beneficiaries for establishment of tender coconut parlours in different parts with the financial and technical assistance of CDB would help in popularizing tender coconut, matured coconut, coconut oil and value added coconut products. Awareness about the goodness of coconut and its usages among the traders and consumers shall be created by organizing awareness programmes among the general public, medical practitioners and nutritionists by conducting Business to Business meetings.

Intervention of the Board with the State Governments for exempting value added coconut products like virgin coconut oil, coconut milk,cream, milk powder, chips, etc. from the ambit of VAT for a minimum continuous period of three years (atleast for Indian brands) will definitely boost the market volume of Indian coconut products across the country. Uttarakhand Government is levying 5% VAT on fresh green tender coconut, which is an exempted commodity in several states.

Non-availability of data on demand and supply for the above products in the city is the main lacuna for the manufacturers, traders and policy makers to proceed further in a planned manner, which requires early attention. Let us hope that Dehradun would definitely be a boon for manufacturers and traders dealing with coconut and coconut products.

Courtesy: *APMC, Dehradun and traders in Dehradun for sharing the market information*

Training Programme on Coconut Cultivation and Processing

Coconut Development Board, State Centre, Pitapally, Odisha organized a training programme on coconut cultivation and processing at Nayagarh, on 5nd February 2013. The programme was inaugurated by Shri. Mahendra Nath Sarangi, Deputy Director of Horticulture, Nayagarh. He spoke on the importance of coconut cultivation in the district. Dr. Ram Chandra Sahoo, Special Officer, Coconut, Directorate of Horticulture, Odisha spoke on the various schemes for the development of coconut in the state of Odisha. Shri Khokan Debnath, Deputy Director i/c, CDB, State Centre spoke on coconut cultivation techniques and the schemes of the Board implemented for overall improvement of coconut in the state. Dr. S.C. Sahoo, Scientist-in-Charge, AICRP on Palms, OUAT, Bhubaneswar spoke on the various aspects of coconut cultivation like seednut procurement, selection of quality seedlings, planting technique, intercultural operations, INM, IPM, water management and value addition in coconut. Field level implementing officers of the Directorate of Horticulture and more than 100 progressive coconut farmers attended the training programme. Shri Subash Chandra Panda, Assistant Horticulture Officer, Khandapara, Nayagarh proposed a vote of thanks.

Coconut Oil industry sees the brighter side

A V Ramanathan
Consultant, Exports, CDB, Kochi

Coconut Oil industry is passing through a crisis. The price of coconut oil had fallen to its all time low, which has affected the price of copra and coconut which is a means of livelihood to one crore small and marginal farmers who depend solely on this crop for survival. Coconut Development Board explored all avenues and possible ways to bring down the crisis. It put in place two approaches: representing to the Parliamentarians, state Government, Central Government and media. The second was to explain the rationale using statistics to drive home the pitiable state of the farmers and stakeholders with the Ministry of Finance, Ministry of Agriculture, and Ministry of Commerce of Government of India.

Board could achieve success on some fronts, while on others, we are trying to achieve success. Tariff values of palm oil was raised from $447 per tonne to $ 802/MT vide Customs(NT) Circular 08/2013 dated 23rd January 2013 issued by Central Board of Excise & Customs, New Delhi. Through a Customs notification, the existing Customs levy of 0% was modified to 2.5% with effect from 17th Jan 2013 while the duty for RBD was retained at 7.5%. Coconut Oil is allowed to be exported through all EDI Ports and select Land Customs Stations (LCS) without any quantitative and packaging restrictions. (No 32(RE-2012)/ 2009-14 dated 5th February 2013). Permission was also given to export edible oils with a minimum export price (MEP) of US $ 1500/MT in branded consumer packs of up to 5 kgs without any quantitative limit. These new measures proposed by the Government will go a long way to increase the growth of the coconut oil industry reeling under unstable prices and economic crisis.

Coconut Development Board has set a target to export 1, 50,000 MT coconut oil to be achieved by the end of Oil Year 2013. Branded and non branded coconut oil to the extent of 50,000 MT can be shipped out of Kerala while the target for the rest of India is 1,00,000 MT. This can be easily achieved based on the feedback received from some of the foreign markets, where large amount of coconut oil is used for cooking and industrial uses.

During the last three months, RCMC registrations from Coimbatore, Dindigal, Madurai areas of Tamilnadu and Pondicherry went up by appreciable percentage. The Registrations were under 'Merchant category' and Coconut 'Fresh' was the item of export. People who were mainly textile manufacturers feel the situation tough due to non tariff barriers, non availability of yarn, processing problems and low profit margins. These exporters had resident buying agents across the world. On the advice of these agents, the erstwhile textile exporters are venturing into coconut export business because of nil manufacturing costs, higher price margins and brewing demand. Already couple of them have managed to procure orders for supplying 10 million coconuts/ year. The average rate is $6.50 per pack of 25 nos each weighing 0.650 gms. Instead of concentrating on 20' container where the capacity can be at its maximum only 20,000 (800 packs of 25 each), 40' container provides more space and the difference in freight costs, insurance, container rent etc would be around Rs 20,000/- only. The total freight, insurance and cost of container would be around Rs 60,000/-(for 40' container). Netherlands which is re-selling

3,00,000 MT of coconut oil can account for 1 lakh MT or more of coconut oil. If a warehouse is established and located within 150 miles of Rotterdam by a group of coconut exporters, the entire Europe can be serviced from there. Market Access Initiative Scheme of the Government of India finances exporters' associations to set up bonded Warehouses abroad. It is a suggestion, worth looking into.

South East Asian countries account for more than 84.72% of coconut exports. Indonesia, Malaysia, and Philippines are dominating the market. Distance wise India is nearer to Middle East than these countries. There is a huge Indian ethnic population in the Middle East and in Europe. If we need to prioritise our coconut oil as super-grade, we need to do so, by getting some foreign quality agency to do the attestation.

Presently, coconut oil's visibility is spread over South India, while in other parts of India, it has feeble presence. We need to catapult into an all-India product, and the suggestion to tap JnNURM was one in that direction. Coconut oil exports should shed its inhibition and should pan out on an all-India basis so that shipments could be made through cost effective and cheap new Ports like Mundra, Kakinada (Andhra), Kandla and Krishnapatanam (Andhra).

Since branded edible oil up to 5 kg packaging without any quantitative restrictions can be exported without prohibition, this is expected to be filled by oil in the premium category. The minimum export price has been fixed at $ 1500 / MT. All coconut oil manufacturers who brand their oil, and use pouches, bottles, cans, can ship any quantity through any of the ports. Virgin coconut oil also qualifies to be exported under this category.

Indian coconut oil industry should be in a position to export 33% of its present production (4,80,000 MT), while it can also concentrate on increasing quantum of exports to land-locked countries like Nepal, Bhutan and Bangladesh. In addition, our industry needs to go for out-right capacity expansion and we should aim at a target of 1 million MT by 2020 AD.

The target of 1,50,000 MT of coconut oil export is quite achievable. Philippines exports 13.5 lakh MT, that is 52.72% of the total coconut oil exports of 25 lakh MT. Indonesia, the largest country in production of nuts accounts for 6.93 Lakh MT of exports garnering 27% of total exports of coconut oil. Malaysia is exporting 1.32 lakh MT, while Netherlands is reselling exports worth 3 lakh MT. USA has an export volume of 20,000 MT while Singapore accounts for 8,500 MT. Papua New Guinea exports 45,300 MT while Fiji is accounting for 9,000 MT of exports. India exports a feeble 8,441 MT which is 0.33% of the total exports though we are the second highest coconut producing country with the highest productivity and is the third largest area holder in terms of coconut cultivation. Distance wise with Middle East, Europe and Russia, we are closer than the South Asian countries. Indonesia, Malaysia and Philippines are exporters of Palm Oil to India which is around 79 lakh MT. In view of the above, Board is of the view that the industry must make exemplary steps to take advantage of the sops granted by the government to its advantage.

Pure economic performance and well managed competitive advantages will count in today's global market. For coconut oil market sector, there need not be any apprehension of anti dumping and countervailing duties in the selected countries, as they are not at all producers in the strict sense of the term. Buoyancy and favourable trade climate will result in extra ordinary growth of coconut oil industry.

Agri-horticulture Show

Coconut Development Board, Regional Office Guwahati participated in the 1st Mega Agri Horticulture Show held at Veterinary ground, Assam from 20th to24th February 2013. Shri Tarun Gogoi, Chief Minister, Assam inaugurated the show. Shri. Nilimoni Sen Deka, Minister of Agriculture was also present during the occasion. The show was jointly organized by Department of Agriculture, Directorate of Horticulture and Food Processing and Assam Horticultural Society. Department of Agriculture, Horticulture, University of Agriculture, Food Processing Department, Private Horticulturist and Floriculturists took part in the exhibition.

CDB displayed different varieties of coconut seedlings, handicraft items on coconut and coconut based food products. Pamphlets and booklets on coconut were distributed to the farmers. Around 50,000 people visited Board's stall. Shri Rajeev P George, Director, Coconut Development Board, Regional Office, Guwahati made a presentation on prospects of coconut and CDB schemes in Assam during the seminar which was held as part of the show.

Review Meeting of Replanting and Rejuvenation programme

Coconut Development Board conducted review meetings of the Replanting and Rejuvenation programme in Thiruvanathapuram, Thrissur and Kollam districts. The review meeting of the Horticulture Assistants in Thiruvananthapuram district was held at CDB, Field Office, Thiruvanathapuram on 23rd January 2013. Shri. T.K.Jose, IAS, Chairman, CDB, presided over the meeting. Smt Nisha G and Dr S R Harish, Technical Officers, CDB, Field Office, Trivandrum attended the meeting.

In his presidential address, Chairman emphasized the role of Coconut Producers' Societies and the various activities that can be taken up by CPSs to uplift the coconut farmers. He also stressed the need to convert coconut clusters under R&R scheme to CPSs. He called upon the FoCT trainees to take up other activities like cultivatiing vegetables as intercrop in coconut gardens with the assistance from VFPCK in leased land.

Based on the progress in the implementation of Board's scheme, Smt. G. Vijayalakshmi and Smt. Sumaja Rose were selected as the best performing Horticultural Assistants from Thiruvanthapuram district.

The Review meeting of Horticultural Assistants of Thrissur district was held on 29th January 2013 at Kera Bhavan, Kochi to review the progress under the programmes Replanting and Rejuvenation of Coconut Garden, CPS and FOCT. Dr. T.I. Mathewkutty, Director chaired the meeting. Dr. A.K. Nandi, Secretary gave the introductory remarks. Shri. T K Jose IAS, Chairman CDB addressed the meeting and emphasized the need to form CPS in each ward of all the 105 panchyats. 53 Horticulture Assistants from 2nd and 3rd phase of R&R programme attended the meeting.

Based on the performance in the implementation of Boards scheme, Mr. Anil Babu. N, of Mathilakam Krishi Bhavan Ms. Dhanya. K, and Ms, Jisha. K.P of Venkitangu Krishi Bhavan were selected as the best performing Horticultural Assistants from Thrissur district.

The review meeting of Quilon district was held on 13th February 2013 at Kuripuzha, Kollam. Shri. T.K Jose IAS, Chairman, Coconut Development Board presided over the meeting. Smt. C.O Hemalatha, Principal Agriculture Officer, Smt . R Jayanthidevi, Deputy Director, Agriculture, Kollam, Dr. Remany Gopalakrishnan, Deputy Director, CDB, Smt. Sonia V R, Assistant Principal Agriculture Officer, Kollam, Shri. R Jayanath, Technical Officer, CDB and Smt. Thejaswini bhai Technical Assistant took part in the meeting. Shri. T K Jose IAS, Chairman, CDB recalled that Kollam district was performing well in the implementation of the scheme from the beginning and he congratulated the department officials for the wholehearted cooperation extended. He called upon the Horticulture Assistants to form CPSs in all the clusters of Replanting and Rejuvenation programme. These CPSs should together form Federations and initiate processing of coconut value added products. Kum. Aneesha S and Smt.Elizabeth Peter are selected as the best Horticulture Assistants from Kollam district.

Shri. T.K. Jose IAS, Chairman, CDB addressing the review meeting at Kochi and Kollam

Government hikes MSP of copra by Rs. 150 per quintal

The Government of India has hiked the minimum support price (MSP) of copra by Rs 150 a quintal for the 2013 season over last year. The Cabinet Committee on Economic Affairs approved the MSP hike for fair average quality (FAQ) milling copra to Rs 5,250 per quintal and ball copra to Rs 5,500 per quintal. National Agricultural Cooperative Marketing Federation of India Ltd (Nafed) would continue to act as the nodal agency to undertake price support operations in the coconut-growing states. Government is revising and fixing the MSP every year to encourage farmers to step-up investment in coconut cultivation and thereby improve the production and productivity. But the present nominal hike will hardly make any impact on the income of coconut farmers

CDB conducts statistical survey for concurrent estimation of production of coconut

With the objective of making a concurrent estimation of the yield and production of coconut in Kerala, Tamil Nadu, Karnataka and Andhra Pradesh, Coconut Development Board is conducting a statistical survey for concurrent estimation of production of coconut for the period 2012-13. Board is undertaking field surveys and yield estimate based on established phenotypic characters of the buttons/nuts. The survey is expected to develop a scientific model for predicting the yield of coconut in the country at least 6-10 months in advance and also to make a forecast of yield and production for coconut for the year 2013-14.

Kerala, Tamil Nadu, Karnataka and Andhra Pradesh account for more than 90 percent of area and production of coconut in the country. It is assumed that the yield of coconut palm in a particular year is the sum of total harvest undertaken during that period. In most of the southern states during summer months, coconut is harvested at 45 days interval and during the rainy seasons / winter seasons at 65 days interval. Thus the total harvest in a year is taken as 6- 8 harvest. It is assumed that the bunches having buttons of 3 - 4 months will be ready for harvest 8 months after the survey.

The selected districts for the survey in Kerala are Kozhikode, Malappuram, Thrissur, Kannur, Thiruvananthapuram, Palakkad, Kollam, Kasargod, Ernakulam, Alappuzha and Kottayam. The survey is undertaken through educational institutions having post graduate degree programmes in Statistics, Economics, Agricultural Economics or Agriculture Statistics having adequate infrastructure facilities including computer and network system. In Kerala, Department of Agricultural Economics and the Department of Statistics, College of Agriculture, Vellayani, Thiruvnatha puram;Cochin University of Science and Technology; Department of Economics, Christian College, Chengannoor; Department of Statistics, St Thomas College Pala; Department of Economics, Government College, Kasargodu; Department of Statistics, Farook College, Kozhikodu and Department of Statistics, St. Thomas College, Thrissur are conducting the survey for the Board.Board is providing necessary support, appropriate training and periodic advices for the successful conduct of the field work and analysis of data. Field work of the survey is already completed in Kasaragod, Kannur, Kozhikode, Thrissur, Alappuzha, Kottayam, Kollam and Thiruvananthapuram districts. Field work is progressing in other districts in Kerala.

The selected districts for the survey in Tamil Nadu are Coimbatore, Tiruppur, Thanjavur, Dindigul, Kanyakumari, Theni, Tirunelveli and Dharmapuri. Uduppi, Mangalore, Hassan, Chickmagalur, Tumkur, Mysore, Mandya and Chitradurga are the districts selected for the survey in Karnataka. In Andhra Pradesh, Srikakulam, East Godawari and West Godawari are the selected districts.

The survey is expected to complete by March 2013. The survey will be continued on a regular basis for having concurrent estimation of yield and production of coconut in all coconut growing states.

49th APCC session held at Fiji

The 49th Asian and Pacific Coconut Community (APCC) Session/ Ministerial Meeting was held in Fiji from 28th to 31st January 2013. His Excellency Honorable Commodore Voreqe Bainimarama, Prime Minister, Fiji was the chief guest and keynote speaker of the meeting. The meeting was hosted by Fiji's Ministry of Agriculture, Forests, Fisheries and Provincial Development.

In his key note address, His Excellency Honorable Commodore Voreqe Bainimarama stressed that since the Fijian coconut industry was once a major source of exports, Fijian government is determined to support the coconut industry with appropriate and adequate resources. He further informed that the Fijian Government is planning to plant 1 million coconut trees over a period of 3 years to increase the future yield.

Mr. Romulo Arancon, Jr., Executive Director, APCC in his opening remarks said that APCC as the first commodity based organization has brought about the strong foundation for cooperation, coordination, exchange and sharing of technologies and experiences, specifically in respective policies, strategies and development programs for the coconut industry including resources from the member states for the benefit of farmers and various stakeholders. He further told that since the productivity as well as farmers income need to be increased, APCC is challenged to assist the smallholders through the policies and development programmes.

The four-day meeting included field visits to small holder coconut farms, coconut processing factory and the show room of cocowood furniture for export as well as the launch of the 1 million coconut replanting program where the delegates from the APCC member countries and UN related agencies and APCC partner organizations planted one coconut seedling each in the Fijian town of Sigatoka.

Shri. Sanjeev Chopra IAS, Joint Secretary (NHM) and Plenipotentiary member from India to APCC, represented India and presented the country status of coconut industry.

Farm feature workshop

A three day farm feature workshop organized by Farm Information Bureau, Thiruvananthapuram was held at Kerala Live Stock Development Farm, Mattupetty, Idukki from 1st to 3rd February 2013. Shri. K P Mohanan, Minister for Agriculture, Government of Kerala inaugurated the programme. In his inaugural address he called upon the media to ensure that the various programmes implemented by the government agencies are reaching the deserving beneficiary. In order to make the agriculture sector rich through integrated farming, coordination between departments is essential, he added. Old traditions and new technologies shall be integrated for the way forward for agriculture.

Shri. S Rajendran, MLA presided over. Shri. K K Jayachandran MLA, Dr. B Ashok IAS, Vice Chancellor, Kerala

Shri. K P Mohanan, Minister for Agriculture, Government of Kerala inaugurating the Farm Feature Workshop

Veterinary University and Shri. R Ajithkumar, Director, Department of Agriculture spoke during the occasion.

The workshop consisted of technical sessions on high tech farming in Kerala, possibilities and constraints, organic farming, rice bio park, zero budget farming, media and agriculture development, preserving bio diversity, value addition, floriculture, integrated farming and agriculture @ internet. Experts from the field; Dr. Mary Rejeena, Associate Professor, KVK, Thrissur, Dr. P V Balachandran, Director, Agri. PPM Cell, Shri. K N Raveendran, Managing Director, Oil Palm India Ltd, Dr.A Abdul Kareem, Prof& Head, KVK Kannur, Dr.K G Suma, Director, Department of Animal Husbandry and Dr. Ahmed, Director, Center for E-learning took part in the discussions. Smt. Mini Mathew, Publicity Officer, CDB was the moderator of the session on value addition.

Monthly operations in coconut gardens

March

Andaman & Nicobar Islands: Continue watering the nursery. Start collection of seednuts from the mother palms. Store them for about one month before sowing. Prepare land for new plantation by removing weeds and cutting down unwanted plants.

Andhra Pradesh: Search for rhinoceros beetles on the crowns of the palms with beetle hook and kill the beetles. Fill the top three leaf axils of the palm with a mixture of 25g sevidol 8G with 250g fine sand. Spray the manure pits with 0.01 per cent carbaryl. Continue irrigation. Collect seednuts from selected mother palms. Release parasitoids if the attack of black headed cater pillar is noticed, particularly in coastal belt. If the palms are infected by scale insects, spray the palms with 0.01 per cent malathion or fenthion.

Assam: Dig isolation trenches of one metre depth and 30 cm width two metres away from the base of the Ganoderma affected palms. Cut down and destroy the affected trunk of dead palms in the garden. If planting pits have not been dug in January or February dig them during this month and fill up with top soil+sand+cow dung manure mixture up to 60 cm for transplanting. After one or two showers, bring the soil to a fine tilth around the palms. Start preparing the nursery beds for sowing of seednuts.

Bihar/Jharkhand: Irrigate the palms. Apply plant protection chemicals to avoid attack of pests and diseases. Repair the irrigation channels. Prepare the land and dig pits of 1m x 1m x 1m size at a spacing of 8m x 8m. Replant/ transplant the seedlings in low-lying areas where flood water is a problem. Adopt surface planting if water table is high. Check for the incidence of termite attack, especially in young palms. For the management of termite, adequate soil moisture is a prerequisite. Drench the nursery with 0.05 per cent chlorpyriphos twice at 20-25 days interval. Fill the top three leaf axils of the palms with 25g Sevidol 8G mixed with 250g fine sand to prevent rhinoceros beetle/red palm weevil attack.

Chhattisgarh: Irrigate the palms, nursery and inter crops in the garden. Remove weeds from the garden. Plough the land and mulch the basins. Plant summer vegetables and other intercrops. Apply vermi compost to coconut palms.

Karnataka: Irrigate the garden. Give 70-80 litres of water per palm per day under drip irrigation. Plant suitable intercrops under irrigated conditions. Check the attack of rhinoceros beetle. Clean the crowns of the palm and fill top 3 leaf axils of the palms with a mixture of 25g sevidol with 200 gm fine sand. Fill the leaf axils with two naphthalene balls covered with fine sand at 45 days interval. Treat manure pits and other possible breeding sites of rhinoceros beetle with carbaryl (0.1 per cent) which is to be repeated in every three months. Spray 1 per cent bordeaux mixture against leaf spot. Adopt integrated control measures against the attack of leaf eating caterpillar. Release parasitoids of suitable stage immediately after noticing the infestation and subsequently three times at fortnightly intervals. For tall plants and large orchards a combination of biological and chemical methods are suggested. If the attack of mite is noticed, spray neem oil formulation containing 0.1 per cent Azadirachtin / Neemazal@ 4 ml/ litre of water. The spray droplets are to be directed towards the second to fifth immature bunches. In order to improve the nutrient status of the soil grow green manure crops like daincha in the basins of the palms and incorporate into the soil within 45 days. Apply organic manure @ 25 kg/ tree/year. Provide neem cake @5 kg / tree/year.

Kerala/Lakshadweep: Continue irrigation. Continue collection of seednuts from selected mother palms and store them in a cool dry place. Apply one fourth of the fertilizers in irrigated gardens. If the attack of mite is noticed, spray neem oil formulation containing 0.1 per cent Azadirachtin / Neemazal@ 4 ml/ litre of water. The spray droplets are to be directed towards the second to fifth immature bunches.

Maharashtra/Goa/Gujarat: Undertake hoeing in the garden. Remove the grasses and shrubs and

burn them. Check for attack of pests/diseases and take appropriate steps to control them. Ensure irrigation. Start collection of seednuts for raising seedlings.

Odisha: Irrigate the palms. Remove weeds from the garden. Mulch with dry coconut leaves and coirpith for moisture conservation. Collect seednuts from selected mother palms and store them in cool and dry place. Spray the palms affected by leaf eating black-headed caterpillar with 0.02% dichlorvos or malathion 0.05 per cent. Repeat the spraying after an interval of 15 days if the attack is severe. Before spraying, cut down the affected leaves and burn them to prevent further infestation. Alternatively liberate parasites of black-headed caterpillar on the affected palms after 15 days of spraying. Palms on which the parasites have been released should not be sprayed with insecticides as it will kill the parasites also. If the attack of mite is noticed, spray neem oil formulation containing 0.1 per cent Azadirachtin / Neemazal@ 4 ml/ litre of water. The spray droplets are to be directed towards the second to fifth immature bunches.

Tamil Nadu/Puducherry: If the attack of mite is noticed, spray neem oil formulation containing 0.1 per cent Azadirachtin / Neemazal@ 4 ml/ litre of water. The spray droplets are to be directed towards the second to fifth immature bunches. Spraying has to be done especially on the perianth region of buttons and affected nuts. Wherever spraying is difficult root feeding may be done with Azadiractin 50% formulation 7.5 ml in 7.5 ml water. Continue irrigation. Treat manure pits and other possible breeding sites of Rhinoceros beetle with 0.01 per cent carbaryl to control grubs. Continue collection of seednuts from selected mother palms and store them in a cool dry place.

Tripura: Irrigation should be continued and the frequency of irrigation should be based on the quantum of rainfall received. Regular irrigation will improve the production of bearing plants.

West Bengal: Continue irrigation. Apply 200 litres of water in basin twice a week depending upon moisture retention capacity of the soil. If drip irrigation is adopted give 70 to 80 litres of water per palm per day. Provide proper shade to newly young seedlings. Mulch the basins with coconut husk, green leaves, dried coconut leaves in 3 to 4 layers or spread coir pith in six-inch layer for moisture conservation. Harvest mature nuts. Collect the seednuts from the selected mother palms, which are regular bearers and have an annual yield of hundred nuts and above. Store the collected seednuts in shade. Check for the attack of rhinoceros beetle (triangular cuttings in new spindle leaves). Hook out the beetles from affected palms. Clean the crowns of the palms and fill the top most axils of the palms with 25g sevidol 8G with 250g fine sand at 45 days interval. Treat manure pits once in every three months with carbaryl (0.1 %). If bud rot is noticed remove all the affected portions. Treat the wound with Bordeaux paste or paste of Blitox. Spray the crown with Blitox @ 5g per litre of water or Dithane M 45 @ 2 g per litre of water. To manage eriophyid mite infestation, spray the crowns with 0.1 per cent Azadiractin (Neemazal) @ 4.0 ml per litre of water. The spray droplets are to be directed towards the second to fifth immature bunches. Alternately, root feeding with 7.5 ml of Neemazal (5%) dissolved in 7.5 ml of water can also be done. Plough the interspaces and destroy weeds. Grow summer vegetables and flowers like marigold as intercrop.

Horti India 2013

CDB participated in Horti India 2013 - Workshop cum Exhibition - organised by Institute of Horticulture Technology, Greater Noida, Uttar Pradesh on 16th and 17th February 2013. The programme was inaugurated by Smt. Deepa Dasmunsi, Union Minister of State for Urban Development. The Minister and other delegates were briefed on the activities of the Board. The Minister appreciated the efforts of the Board. Shri Sanjeev Chopra, Joint Secretary (NHM), Dr. Gorakh Singh, Horticulture Commissioner, Dr. KL Chhadda, and other delegates also visited Board's stall.

A seminar on the theme 'Innovative Production Systems' was held as part of the programme. Farmers from Chhattisgarh, Haryana, Uttar Pradesh and Punjab attended the programme. Display cum sale of coconut oil, virgin coconut oil, coconut milk, virgin coconut oil based skin and hair care herbal preparations, etc. were arranged in the Board's stall.

Market Review - January 2013

Deepthi Nair S.
Marketing Officer, CDB, Kochi

Highlights

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

The month of January witnessed an increasing trend in the prices of copra and coconut oil which provided an interim relief and hope for the coconut farmers. Still the prices of copra did not rise above Minimum Support Price in major producing states.

COCONUT OIL

The price of coconut oil quoted at all the major marketing centres in the country expressed an increasing trend during the month under review.

The monthly average price of coconut oil at Kochi was Rs.7062/- per quintal. The price of coconut oil at Alappuzha market also moved in tune with the price behaviour of Kochi market. The monthly average price was Rs. 7050/- per quintal at Alappuzha market and Rs.7494/- at Kozhikode market. The prices at Kochi, Alappuzha and Kozhikode markets were 10-15% higher than the prices prevalent in December 2012.

MILLING COPRA

The monthly average prices of FAQ copra recorded at Kochi market was Rs.4880/- per quintal. The monthly average prices of Rasi copra at Alappuzha market was Rs.4740/- and at Kozhikode market was Rs.4813/- per quintal. The prices at Kochi, Alappuzha and Kozhikode were 9-10% higher than that of the previous month. The procurement operations under Price Support Scheme were negligible during the last month since procurement for season 2013 had not gained momentum. The minimum support price of milling copra has been fixed at Rs. 5250/- per quintal for 2013 season.

The monthly average prices of milling copra at Ambajipeta market in Andhra Predesh was Rs.4440/- per quintal compared to Rs. 4040/- recorded during the previous month.

EDIBLE COPRA

The monthly average prices of Rajapur copra at Kozhikode market was Rs.5189/- per quintal, which was marginally lower compared to the price of the previous month.

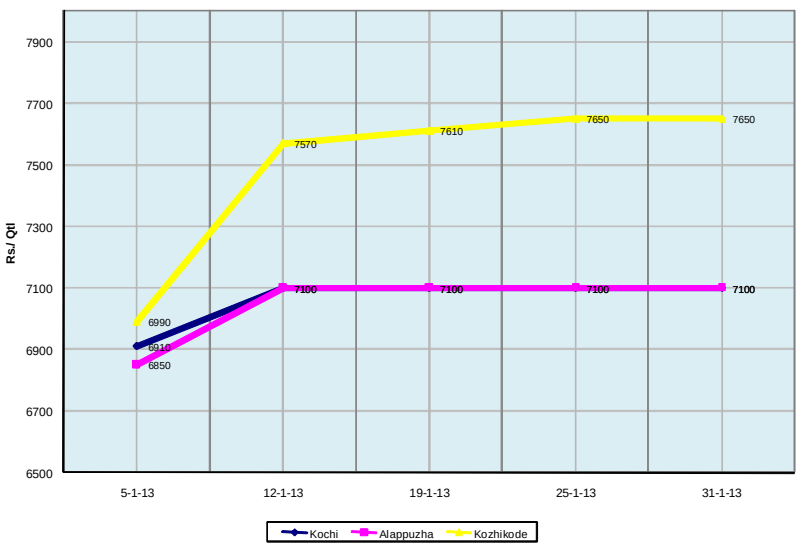
The monthly average prices of ball copra at Kozhikode market averaged at Rs. 4631/- per quintal.

The monthly prices of ball copra at APMC market Tiptur, in Karnataka averaged at Rs. 4973/- per quintal in January 2013 while it was Rs 5800/- in Bangalore and Rs. 4945/- in Arsikere.

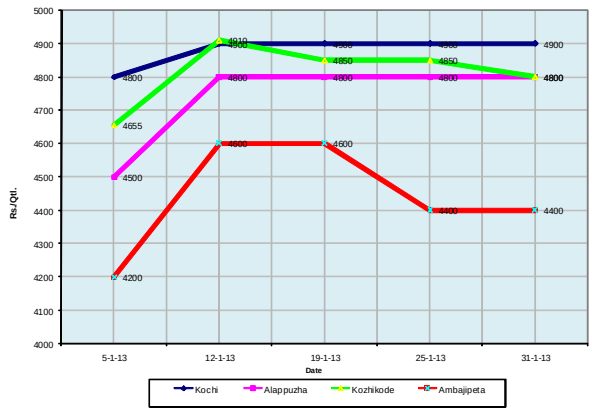
The minimum support price of edible copra has been fixed at Rs. 5500/- per quintal for 2013 season.

DRY COCONUT

The monthly average price of dry coconut was around Rs.4280/- per thousand nuts at Kozhikode market which was about 3 percent



Price behaviour of coconut oil during January 2013



Price behaviour of milling copra during January 2013

higher than that of the previous month.

COCONUT

The monthly average price of Rs.7200/- per thousand nuts for dehusked coconut at Nedumangad market, remained the same as that of the previous month.

Arsikere APMC market recorded an average price of Rs.6509/- for thousand partially dehusked nuts which was about 14 percent higher than that of previous month.

The monthly average prices of partially dehusked coconut at Bangalore APMC market was Rs. 6675/- which was marginally lower than that of previous month.

The monthly average price of partially dehusked coconut Grade-1 quality at Mangalore APMC market improved to Rs.10,500/- per thousand nuts which was about 5% higher than that of the previous month.

The monthly average price of coconut was Rs.28/- at Sonitpur and Rs. 36/- at Guwahati in Assam, while it was Rs.50/- at Aizawl in Mizoram and Rs. 30/- at Agartala in Tripura.

TENDER COCONUT

The retail prices of tender coconut at Kochi market ranged from Rs.20-25/- per nut. The monthly average price of tender coconut in Assam was Rs.19/- per nut while it was Rs.40 at Aizawl in Mizoram and Rs. 20/- at Agartala in Tripura.

INTERNATIONAL PRICE

The monthly average price of US $840 per MT for coconut oil in Europe (C.I.F. Rotterdam) for the month of January 2013 was about 6 percent lower when compared with the price in previous month and lower by about 42 percent compared to that of the corresponding month last year. The monthly average price of US$ 492 per MT for copra was about 4 percent lower than that of the previous month and about 66 percent lower than that of the corresponding month last year.

The domestic price of coconut oil during the month of January 2013, in Philippines was US$810 per MT and in Indonesia; the price was US$809 per MT. The international price of Palm oil, Palm kernel oil(RBD) and Soybean oil were US$ 805, US$ 780 and US$ 1101 per MT respectively.

Market Price

Date	Coconut Oil			Milling Copra				Edible Copra	Ball Copra				Dry coconut	Coconut	Partially dehusked coconut		
	Rs./Qtl.												Rs./1000 nuts				
	Kochi	Alappuzha	Kozhikode	Kochi (FAQ)	Alappuzha (Rasi Copra)	Kozhikode	Karkala	Kozhikode	Kozhikode	Tiptur	Bangalore	Arsikere	Kozhikode	Nedumangad	Arsikere	Bangalore	Mangalore (Grade-1)
5-1-13	6910	6850	6990	4800	4500	4655	4200	5290	4660	5093	5800	5053	4400	7200	6860	6500	10500
12-1-13	7100	7100	7570	4900	4800	4910	4600	5275	4720	5022	5800	5008	4320	7200	6500	6500	10500
19-1-13	7100	7100	7610	4900	4800	4850	4600	5225	4690	5000	5800	5013	4280	7200	6360	6500	10500
25-1-13	7100	7100	7650	4900	4800	4850	4400	5130	4585	4870	5800	4846	4200	7200	6550	6875	10500
31-1-13	7100	7100	7650	4900	4800	4800	4400	5025	4500	4880	5800	4804	4200	7200	6275	7000	10500
Average	7062	7050	7494	4880	4740	4813	4440	5189	4631	4973	5800	4945	4280	7200	6509	6675	10500

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