

Sustainability of coconut industry in Kerala State, India

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Introduction

Among the major coconut producing countries in the world Indonesia ranks first with an area of 3,808 thousand ha and a production of 16,332 million nuts (year 2010), followed by Philippines (area 3,400 ha and production 15,510 million nuts). India is placed in the third position in terms of area and second in terms of production (15,730 million nuts). Brazil has the highest productivity (12,619 nuts/ha), followed by India (8,303 nuts per hectare). The extent of area is the major factor that has contributed to the higher production in Indonesia and Philippines. The high productivity in Brazil and Myanmar (10,192 nuts/ha) may probably be due to favourable climatic and soil conditions rather than organized cultivation. In spite of the fact that organized plantation based coconut industry prevails in Indonesia and Philippines, productivity stagnates around 4,500 nuts per ha. The highly variable factor in coconut industry that causes concern therefore is productivity.

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The productivity factor is all the more significant in India. The major coconut producing States in the country are Kerala (787 thousand ha), Karnataka (419 thousand ha), Tamil Nadu (389 thousand ha) and Andhra Pradesh (104 thousand ha). In terms of productivity Lakshadweep ranks first (19,630 nuts/ha), followed by Pondicherry (14,619 nuts/ha), Tamil Nadu (13,771 nuts/ha) and West Bengal (12,430 nuts/ha). The productivity in Kerala, one of the most traditional coconut growing states in the country is only 7,365 nuts/ha. The low productivity in Kerala is attributed to the wide prevalence of root wilt disease, small scale homestead cultivation under rain fed conditions and unscientific management practices. It may be pointed out at this juncture that in the major south Indian coconut growing States other than Kerala coconut is managed under irrigated conditions.

A malady remedy analysis of the factors responsible for sustainable development of coconut industry in India should start from Kerala which accounts for major share in area and production in the country. Coconut is cultivated in all the fourteen districts in Kerala. The extent of variability in productivity ranges from 8,793 nuts in

Malappuram District to 4,703 nuts in Idukki District. Idukki and Wynaad Districts are in the High Ranges and are not suitable for profitable coconut cultivation. About 50 years back there was no coconut cultivation in these two districts.

In spite of the several adverse circumstances, coconut is the major crop cultivated by a large number of small farmers in Kerala. Measures to increase the productivity of coconut therefore assume major significance towards the sustainability of coconut industry in Kerala. The factors responsible for low productivity can be traced to the following situations:

1. Seedling Production

While area expansion and replanting programme continue to be major schemes of the Coconut Development Board, Government of India, large scale production of coconut seedlings to cope with the needs has been lagging behind. The main sources of quality coconut seedlings in Kerala are nurseries of State Department of Agriculture, Kerala Agriculture University (KAU) and Coconut Development Board (CDB). Although large numbers of private nurseries also supply coconut seedlings, there are no effective regulatory measures to check the quality of seedlings produced by them. The first step in sustainable coconut production is to ensure production of sufficient number of quality seedlings to deal with the increasing demand.

A significant factor that has to be taken into account is that the productivity of coconut is much higher in non-traditional areas like Tamil Nadu and Andhra Pradesh than in traditional area like Kerala. In most of the non traditional areas selection of planting materials and quality of management are better than in the traditional area like Kerala. The CDB has taken steps to facilitate the production of quality planting material of high yielding varieties and hybrids. The increasing trend in the consumption of tender coconut water in Kerala state demands large number of dwarf and hybrid seedlings. During the 12th Five year plan period CDB plans to produce 250 lakh seedlings of different cultivars and hybrids (25% hybrids, 35% dwarf and 40% tall) and in this process Coconut Producers Societies (CPS), farmers, and science based college and research institutions are proposed to be involved. The most laudable step of the CDB will be assurance of the quality of seedlings through labeling of seedlings produced. The *tag* or *label* will contain details of parent stock, expected month of flowing, first harvest and average yield expected.

2. Integrated farming

Sufficient research information generated by the Central Plantation Crops Research Institute (CPCRI) Kasaragod, India and KAU are available for adoption by the farmers of Kerala. Integrated farming through intercropping, mixed farming and drip irrigation not only increases the income to the farmers, but also helps to increase the productivity of coconut. There is immense scope for selection of suitable intercrops and application of inputs like fertilizers and manures. Organic farming is gaining popularity in coconut, especially for producing tender nuts. The result of the field practices adopted by the Amrita Vishwa Vidyapeetham University in Coimbatore has clearly shown that high yields could be obtained through organic farming in Coimbatore District of Tamil Nadu

3. Precision farming

New concepts like sustainable agriculture, conservation agriculture, organic farming and precision farming are relevant to judicious use of natural resources and ecologically viable management practices. The negative impacts of current or modern agriculture practices include soil degradation, water depletion and contamination, inefficient energy use, loss of plant and genetic diversity and destruction of non agriculture habitat. "*Precision Farming or Precision Agriculture*" is an agricultural concept relying on the existence of field variability. This is information and technology based management system which allows the farmers to identify, analyze and manage the spatial and temporal variability of soil and crop for optimum profitability, sustainability, and protection of environment.

It requires the use of new technologies such as global positioning system (GPS) geographic information system (GIS) satellite or aerial imagery and sensors to assess and understand variables. There is considerable scope for application of precision farming in coconut. Coconut is totally propagated through seeds. In spite of the best efforts for selecting mother palms and selection of seed nuts, considerable variability exists in the productivity between palms. The present practice is to give inputs on a blanket basis for a region or large areas without considering the productivity per palm or the fertilizer status of the soil grids.

Coconut, especially in Kerala, is a crop of the small farmers. Application of inputs like fertilizers and manures

should be based on individual needs of trees depending on their productivity. Soil data are now available Block wise or Panchayath wise in all Districts. Satellite imageries through remote sensing and the application of GIS can be made use of to pin point soil capabilities and crop productivity. Such micro geographic data analysis will be helpful for precise input recommendations for a specific region or a plot.

4. Product Diversification

Coconut is an oil seed, beverage and a food crop. Till two decades ago coconut was considered only as an oil seed crop in India and the emphasis given was to produce *copra* and coconut oil (CNO). The consumption of coconut oil started decreasing due to false propaganda which related CNO to heart diseases. Effective measures taken up by the CDB from 1994 onwards through awareness programmes helped to explode the myth that CNO was responsible for heart diseases. The research finding of Dr. Mary Enig and her presentation of the benefits of CNO in the Cocotech meeting held in Kochi in the year 1996 triggered a chain of discussions through out the State of Kerala, which subsequently resulted in increased consumption of CNO. The virtues of CNO in wellness and virgin CNO for consumption, massage and toiletry purposes are well understood and the world over CNO is now looked upon as health friendly oil.

Further efforts by CDB in popularising coconut as a food, through product diversification have created substantial awareness and acceptance of these products throughout India. The story of increased tender coconut consumption in Kerala from 1994 is a typical example where CDB has played a prominent role. While tender coconut is very popular in West Bengal, Tamil Nadu, Karnataka and through out the northern India, Keralites rarely consumed tender coconut water as a drink. Today tender coconut water is an accepted drink in Kerala. The packaging of tender coconut water in small packs and containers developed by the efforts of the CDB has made possible, wider distribution of tender coconut water throughout the country. Today tender coconut water is accepted as a health drink through out the world.

5. Products and byproducts

With the implementation of *Technology Mission* by the CDB in coconut, several projects were sanctioned for

the development of value added products in the 11th Plan period, which continue in the 12th Plan period also. Besides packed tender coconut water, products like vinegar, coconut jelly, Nata de coco, desiccated coconut, coconut chips, coconut milk, coconut cream, coconut powder, refined jiggery have made their entry in the markets in India. However, other than desiccated coconut, most of the products mentioned are produced by small scale industries. Coconut products are yet to make an impact among the food products in India. Further efforts of the CDB and State Government are necessary to develop coconut industry on firm footings.

6. Export of coconut and coconut products

The trend of export of coconut and coconut products from India is not encouraging (Table 1). The major export product is coir and coir products. Bulk of coconut products are consumed within the country. The price variations in coconut and CNO are alarming and unpredictable. This can be overcome only through product diversification, increased consumption of coconut products within the country and through export promotion of products.

Table 1. Export of coconut products from India (Year 2010-11)

Item	Quantity (in tons)	Value (Rupees in lakhs)
Coconut (fresh)	16422.30	2737.98
Coconut (dried)	5294.86	2584.29
Other coconuts excluding fresh/dried	4189.73	952.69
Desiccated coconut	11217.44	4060.17
(a) Coconut Oil (crude)	70.18	40.25
(b) Coconut Oil (refined)	4180.91	3951.58
Other residues of coconut or copra	13314.56	673.02
Oilcake (defatted/expeller)	2.72	0.66
Coconut shell (raw)	466.05	173.74
Shell charcoal	15862.00	3019.59
Shell Hukah	-	-
Copra	16927.18	8820.50

Source: Directorate General of Commercial Intelligence and Statistics, Kolkata

The data presented in Table 2 clearly show that role of India in the export of coconut and coconut products is insignificant. The volume of trade is a major factor which reflects the global competitiveness of an industry and the

Table 2. Country wise details of export of coconut product (Year 2010-11) Quantity in MT.

Country	Coconut products				
	Fresh coconut	Copra	Coconut Oil	Copra meal	Desiccated coconut
APCC Countries	309,811	83,900	2,236,400	1,050,700	214,428
Fiji	-	-	9,700	300	-
India	16,578	-	3,000	1,900	1,563
Indonesia	100,119	38,000	692,500	286,400	47,065
Malaysia	16,016	-	131,600	3,300	6,766
Philippines	2,499	-	1,342,500	724,400	109,170
Samoa	-	1,200	-	500	1,444
Sri Lanka	38,911	8,500	2,300	14,200	46,905
Thailand	12,971	-	800	1,800	1,515
Vietnam	122,767	1,000	800	100	19,600
Vanuatu	-	13,500	6,900	1,200	-
Tonga	-	-	1,000	-	-
Marshall Islands	-	-	-	2,000	-
Papua New Guinea	-	17,000	45,300	14,600	-
Kiribati	-	4,700	-	-	-

Source: Compiled from information provided by APCC member countries, FAO Trade Yearbook and Oil World. For fresh coconut, conversion factor of one ton of husked nuts=1,250 whole nuts

present scenario needs critical considerations. The coconut price often plummets in India and under such situations manufacture of diverse products can help to stabilize the price.

7. Import of coconut products

Coconut oil cake, both solvent and expeller variety is the most significant product imported to India. During the year 2010-11 a quantity of 35,508.25 tons of oil cake worth 3,069.37 lakh Rupees was imported in India. The data on the various food products imported into India are not immediately available. However, significant quantities of products like desiccated coconut, coconut cream, coconut milk, coconut powder *etc.* are imported into the country. Surprisingly small countries like Indonesia, Sri Lanka and Philippines are in the forefront in the production of coconut products. The possibility of several products including packed tender coconut water, invading Indian markets from other coconut growing countries cannot be ruled out. The product development and product based industries are therefore important aspects to be strengthened for the sustainability of coconut industry in Kerala.

Conclusion

Coconut in India and especially in Kerala is a small farmer's crop and their livelihood provider. Sustainability

of coconut industry is therefore of paramount importance to provide price stability and assured income to the farmers. Until very recently coconut was considered only as an oil seed crop in India. In fact coconut cultivation and management should have an industrial bias, in order to convert coconut into value added products and byproducts. Global competitiveness in coconut industry can be achieved only through increased productivity. The potential of coconut as food and beverage has to be fully exploited. The consumption of CNO for edible use is mainly confined to Kerala. Intensive marketing technique and propaganda are necessary to create acceptance of coconut and coconut products throughout India. The product development research in coconut is now spread over several organizations, the major among them being Central Food Technology Research Institute (CFTRI), Mysore and Defense Food Research Laboratory (DFRL), Mysore. Research on product development and by product utilization in coconut should be intensified in one centre rather than spreading over to centres as smaller projects. There is a need to develop the Technology Development Centre (TDC) of CDB to a full fledged Research Institute where R & D will be focused on product development and marketing techniques.