B N S Murthy

Coconut – the tree of life

Coconut is called the *Kalpavriksha* or *tree of abundance*. It is an important food crop of economic importance to many Asian and Pacific countries in the world. The crop provides livelihood security and employment opportunities to major segments of the rural mass of these countries. India being the largest coconut producing country in the world, occupies 31% of global production. The coconut palm provides food security and livelihood opportunities to more than 12 million people in India. It is also a fibre-yielding crop for more than 15,000 coir-based industries which provides employment to nearly 6 lakh workers of which 80% are women folk. The crop contributes around ₹ 2,50,000 million (US$ 3788 M) to the country's GDP and earns export revenue of around ₹ 43,654 million (US$ 661 M). Coconut and coconut products are gaining global importance as a contributing factor to the health, nutrition and wellness of human beings. This is due to its multiple medicinal and nutraceutical properties being revealed day by day. This new development in health sector brought in unprecedented increase in demand of coconut products in domestic and international markets. It is estimated that there are 5 million coconut holdings and 12 million farmers in our country covering 17 states and 3 Union Territories, says Dr B N S Murthy, Hort. Commissioner, Government of India.

COCONUT is predominantly a small holders crop with about 98% coconut holdings owned by small and marginal farmers in the country. It is cultivated in 17 states and 3 Union Territories located in different parts of the country. As per the All India estimate for the year 2016-17, the area and production of coconut in the country is 2.096 million hectares and 22,237.99 million nuts respectively. The area under coconut cultivation and coconut production increased by 0.39% and 0.32%, respectively. India being the largest producer of coconut in the world having sufficient raw material surplus, good reputation in global markets, access to good technologies (virgin coconut oil, packed tender nut water, minimally processed tender coconuts, activated carbon), presence of dominant ethnic population in the Gulf, UK and US are the strengths of India. India is having good network of organizations for conducting research in coconut.

Coconut Production

India tops in world production of coconut with 20,440 million nuts. About 22,237.97 million coconuts (2,835 tonnes of copra equivalent) are produced in our country. During 2012-13 to 2016-17, coconut production decreased by 1.95% from 22,680.03 million nuts to 22,237.99 million nuts. Droughts resulted by insufficient monsoon in major coconut-growing states coupled with natural calamities like cyclonic storms and effect of pests and diseases attributed mainly to this decrease.

Kerala, Tamil Nadu, Karnataka, and Andhra Pradesh accounted for 89% of coconut area and 91% of coconut production in our country. Kerala with largest area under coconut cultivation and production accounted for 36.86% of the total area and 33.57% of the total production.

The productivity of coconut at national level on 2016-17 is 10,611 nuts/ha. The highest yield is from Chhattisgarh at 16,508 nuts/ha, followed by Andhra Pradesh (13,759 nuts/ha) and Tamil Nadu (13,423 nuts/ha). Andhra Pradesh and Tamil Nadu outperform to about 40% over Karnataka (9,744 nuts/ha) and Kerala (9,663 nuts/ha).

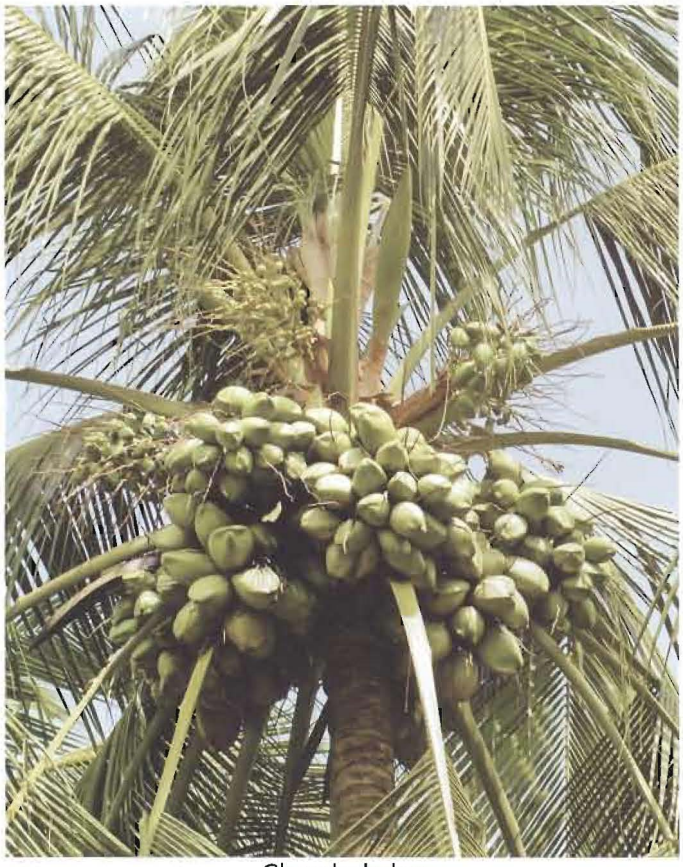
India contributes 30.49% of world coconut production and enjoys first position in terms of production. About 75.60% of area under coconut and 74.55% of production are contributed by India, Indonesia and Philippines.

Chowghat Orange Dwarf

Kalpa Jyothi

India ranks second in terms of productivity (10,349 nuts/ha) next to Brazil (11,574 nuts/ha).

During 2012-13 to 2015-16, area under cultivation of coconut decreased from 21.37 to 20.96 lakh ha. The decrease in area is mainly because of the rapid urbanization, especially in Kerala coupled with the effects of back to back cyclones that hit coastal Andhra, Tamil Nadu and Odisha.



Chandrakalpa

Table 1. Area, production and productivity of coconut growing countries – 2015

Country	Area ('000 ha)	Production (Million Nuts)	Productivity (Nuts/ha)
Indonesia	3571	14804.00	4146
Philippines	3517	14735.00	4190
India	1975	20440.00	10349
Sri Lanka	440	3056.00	6945
Brazil	250	2893.57	11574
Papua New Guinea	221	1483.00	6710
Thailand	202	809.00	4005
Mexico	169	1116.02	6604
Vietnam	162	1434.00	8852
Tanzania	128	553.88	4327
Samoa	99	267.00	2697
Vanuatu	92	378.27	4112
Malaysia	82	538.00	6561
Mozambique	81	241.93	2987
Fiji	64	165.00	2578
Myanmar	48	491.29	10235
Solomon Islands	38	100.00	2632
Ghana	27	385.07	14262
Jamaica	15.9	99.20	6239
Others	806	3051.44	3786
Total	11988	67041.67	5592

Coconut is a traditional crop in major coconut-growing states of the country, which is cultivated over centuries. Since coconut is grown as a homestead plant and cultivation is mainly taken up by small and marginal farmers, major part of the palms are retained even after their economic life. Hence about 20% of the palm population in India is estimated to be senile and unproductive. The massive replanting and rejuvenation programme is being taken up in the country after the successful implementation of the pilot projects in few areas of the country. The seedlings of new and improved varieties are also being planted under the area expansion programme assisted by the Central and State Governments

Coconut Product Utilization

It is estimated by the Board that 45% of the production is used as raw coconuts for domestic consumption (70%) and for industries (30%) for production of desiccated coconut, virgin coconut oil, coconut milk/ cream, frozen grated/ dry coconut, etc. The rest 39% are converted to copra of which about 23% is consumed directly for various edible purposes. Coconut oil is extracted for edible, toiletry and other purposes from the balance 77% of the copra. Remaining 16% of the total coconut production in India is consumed as tender coconut.

Kalpamitra

in India. It is estimated that about 10% of the palms in India are still in juvenile phase.

Non-availability of sufficient quantity of planting material of new and improved high-yielding varieties is one of the major obstacles faced by farmers who are interested in coconut cultivation. Coconut is a smallholders' crop and the homestead/ fragmented nature of coconut cultivation makes it difficult to adopt modern scientific technologies and farm mechanization for higher income and reduced production costs. Dearth of skilled labour for farm operations including harvesting, plant protection measures, crow cleaning, etc. is one of the reasons for lesser productivity. The natural calamities like droughts due to deficit monsoons, cyclones, and climate change factors affect the coconut production and productivity. The incidence of pests and diseases in coconut is increasing due to the constraint that as most of the plant protection operations are to be carried out at the crown. This makes the process tiresome coupled with the old/ senile and uncared palms due to absentee landlordism service as breeding sites for the insects and pathogens. The wild fluctuation in coconut prices due to its seasonal nature and too many middlemen in the supply chain are also the reasons for reduced level of interests in coconut cultivation by the farmers which ultimately leads to reduced production and productivity.

POLICIES TO PROMOTE COCONUT PRODUCTIVITY

In India, developmental programmes and policies in coconut are mainly dealt with by Coconut Development Board under the Ministry of Agriculture and Farmers Welfare. Production and distribution of quality planting material, expansion of area under coconut, especially in non-traditional states, promotion of adoption of integrated nutrient management, pest management and coconut-based farming systems by establishing farmer participatory demonstration plots, replanting and rejuvenation of old and senile coconut gardens, technology mission on coconut for promoting value addition, facilitating formation and handholding farmer producer organizations for promoting

Coconut Processing Plants and their Capacities

During 2015-16, 61 coconut processing units were assisted by the Coconut Development Board for producing copra, coconut oil, flavoured coconut juice, virgin coconut oil, packaged tender coconut water, Neera and Neera based products, shell charcoal, activated carbon, etc. About 30 units were assisted during 2016-17. Sanctions have been issued for establishment of 22 processing units in the country during 2017-18.

The coconut shell based activated carbon units are run with about 80% of the installed capacity to produce 9300 tonnes activated carbon.

production, processing and marketing of coconut are the major policies adopted in India for promoting coconut sector. Formation of farmers' collectives in coconut sector is encouraged by the Government to aggregation, farm level processing and also to facilitate taking collective plant protection measures.

Replanting/New Planting, Rehabilitation

India started replanting and rejuvenation of traditional coconut gardens in the country. To begin with, the programme was introduced in Kerala, the state with longest history of coconut cultivation where one-third of palm population was old, senile and disease advanced. Apart from longest recorded history of coconut cultivation, the state is under the grip of a lethal disease called root wilt. Cutting and removing the disease advanced trees and giving management care to the existing palm population is the only strategy to manage the gardens. Therefore, R&D programme was implemented in 2009. The main objective of scheme is to enhance productivity and production of coconut by removal of disease advanced, old and senile palms, replanting with quality seedlings and rejuvenating the remaining palms by giving compensation to farmers for cutting and removal, replanting and rejuvenation. The scheme has been extended to other traditional coconut growing states from 2016-17onwards. So far, more than 3.5 million palms have been cut and removed under the scheme and nearly 3.05 lakh ha were rejuvenated.

Production and Distribution of Planting Material

Establishment of Demonstration cum Seed Production (DSP) farms in different parts of the country for creating infrastructural facilities for production of quality planting material besides demonstrating and educating scientific coconut cultivation and processing to various stakeholders in those regions, establishment of regional coconut nurseries for extending support to various participating states for strengthening the seedling production programme, distribution of hybrids/dwarf seedlings in Government sector, establishment of nucleus coconut seed garden and coconut nurseries in private sector are taken up. Last year, nearly 20 lakh seedlings were produced and distributed under this scheme. 10 DSP farms have so far been established in different parts of the country.

Expansion of Area

This programme is to extend adequate technical and financial support to the farmers to take up coconut cultivation on scientific lines in potential areas to attain a significant achievement in the future production potential. Financial and technical assistance is extended under the scheme for taking up new planting of coconut in potential areas.

Integrated Farming

The objective of the programme is to improve production and productivity of the coconut holdings through an integrated approach and thereby increasing the net income from unit holdings with the following component programmes under laying out of demonstration plots and establishing organic manure units by providing incentives. Scientific integrated management practices including coconut based farming systems are

National Quality Standards

The CDB established a Technology Development Centre in Kerala which is engaged in the development and demonstration of technologies for product diversification and by-product utilization of coconut. The centre is devoted to products development, microbial analysis of coconut based products, apart from skill development programmes to interested entrepreneurs and self help groups for acquiring technologies on post harvest coconut processing and process demonstration. The institute received the recognition of NABL. Many value added and novel products were developed by the institute during the last year and the institute has now been designated as CDB Institute of Technology (CIT).

The Bureau of Indian Standards (BIS) is the National Standard Body of India established under the BIS Act 1986 for the harmonious development of the activities of standardization, marking and quality certification of goods and for matters connected therewith or incidental thereto. The BIS has set standards for coconut oil (IS:542-1968), desiccated coconut (IS:966 1975) and edible coconut flour expeller pressed (IS 8676 :1977) and solvent extracted (IS 8664 :1977). Minimum 65% fat is prescribed for Desiccated coconut and a maximum of 9% crude fat % by weight is fixed for expeller pressed edible coconut flour.

FOB Price of Major Coconut Products

The time series price movement of coconut oil (domestic as well as international) for the last 13 years (from 2004 onwards) revealed that whenever there is rise in domestic coconut oil price, the international prices exerted a pull-down-force to make the prices integrated. This aspect very well validates the international trade theory on price integration of primary commodities in the trade liberalized regime. The crucial interpretation is that dependency on single commodity like coconut oil will never provide the adequate margin to sustain for a longer period.

The FOB prices of major coconut products have shown a downward trend during 2017 compared to previous couple of years, except for desiccated coconut and charcoal. The copra prices have gone down to about 22% i.e. US$ 392.12 per MT during 2017 compared to US$ 1817.01 prevailed during 2015. Decrease in the FOB prices ranging from 15 to 41% were observed for activated carbon, fresh coconut, raw coir fibre, and coconut oil. Since there is no separate HS code for coconut milk/ cream/ powder, coconut water and coconut sugar, there is no possibility of getting precise data on their export from India.

Table 2. Area, production and productivity of coconut in India (2016)

State	Area ("000" ha)	Share in area (%)	Production million nuts	Share in production (%)	Yield (nuts/Ha)
Kerala	772.43	36.86%	7464.25	33.57%	9,663
Karnataka	526.38	25.12%	5128.84	23.06%	9,744
Tamil Nadu	459.74	21.94%	6171.06	27.75%	13,423
Andhra Pradesh	103.98	4.96%	1430.62	6.43%	13,759
Odisha	50.9	2.43%	327.65	1.47%	6,437
Gujarat	22.81	1.09%	295.03	1.33%	12,934
West Bengal	29.63	1.41%	375.31	1.69%	12,667
Maharoshtra	27.79	1.33%	279.57	1.26%	10,060
Asom	24.71	1.18%	171.89	0.77%	6,956
Bihar	14.9	0.71%	141.38	0.64%	9,489
Tripura	7.2	0.34%	29.51	0.13%	4,099
Chhattisgarh	1.85	0.09%	30.54	0.14%	16,508
Nagaland	0.47	0.02%	3.78	0.02%	8,043
Others	52.89	2.52%	388.56	1.75%	7,347
Total	**2095.68**	**100.00%**	**22237.99**	**100.00%**	**10,611**

Source: http://agricoop.nic.in/statistics

Table 3. Production and exports of traditional coconut product (tonnes) (2015, 2016 and 2017)

	2015		2016		2017	
	Production	Exports	Production	Exports	Production	Exports
Copra	10,72,000	7,284.49	12,44,000	4388.69	12,46,000	54,132.48
Coconut oil (Crude and refined)	5,22,500	7,216.57	6,06,900	6,806.55	6,81,000	33,536.09
Copra meal	2,92,600		3,39,900		3,40,600	
Desiccated coconut		3,243.82		3,442.77		14,907.47
Coconut milk/cream						
Shell charcoal and shell charcoal		75,840.00		16,761.00		39,134.00
Activated carbon		54,345.07		71,672.71		85,804.95
Coir fibre		2,19,103.00		2,55,293.00		3,70,356.70
Other Coir Products* (Coir pith, Tufted mats, Handloom mats, Coir geo-Textiles, Coir yarn, Curled coir, Handloom mattings, Rubberised coir, Coir rope, Coir rugs, Powerloom mats, Coir Other Sorts, Powerloom mattings)		4,07,563.00		4,96,727.00		5,86,687.89

promoted under the scheme by establishing farmer participatory demonstration plots in farmer's field.

Coconut Palm Insurance Scheme

The Coconut Palm Insurance Scheme (CPIS) intends to provide insurance coverage to coconut crop. Under the scheme all healthy bearing palms in the age group from 4 years to 60 years are eligible to get insurance coverage against natural perils leading to death / unproductive. Half of the premium is borne by the Board and balance is shared between state government and farmers @ 25% each.

Publicity and Extension

The Board is disseminating information on various aspects of coconut cultivation and industry through various media and publication besides organizing training programmes to impart skills and knowledge to farmers, unemployed youths and rural women in various fields related to coconut apart from participation in exhibitions and fairs.

Technology Mission on Coconut

The Technology Mission gives emphasis on the development of technologies for the management of insect pest and disease affected gardens and product diversification besides demonstration and promotion of these technologies for adoption. Under the Mission, research projects and clinical studies are sponsored through reputed institutions in the area of technology development and also to establish the medicinal and nutraceutical properties of coconut products especially coconut oil. Technical and financial support was given to establish 407 processing units with processing capacity of 2,200 million nuts per year.

COCONUT PROCESSING INDUSTRY

During 2016-17, export of coconut products (excluding coir items) was valued at ₹ 20,776.50 million (US$ 314.77 M) against ₹ 14,502.40 million (US$ 220 M) during the previous year, recording an increase of 43.26% in terms of value. Activated carbon was the single largest item of export both in terms of quantity and value of export. Significant increase was recorded in the export of desiccated coconut, activated carbon and coconut oil. Activated carbon accounted for 39.23% of the total export of coconut products from

India during 2016-17. Major coconut products such as coconut oil, desiccated coconut, copra, and coconut shell charcoal registered triple digit growth in export value.

As India started exporting coconut oil to Malaysia, Indonesia and Sri Lanka, 392.70% increase in quantity of export was recorded, i.e. from 6,806.55 tonnes in 2015-16 to 33,536.09 tonnes in 2016-17. It may be noted that prior to this, India was importing coconut oil from these countries. The export earnings are picking up with the surge in growth of industries like virgin coconut oil, activated carbon, shell charcoal etc. Indian products are moving to US, UK, Germany, Japan, France, Middle East, and African Countries. Advancement in technology development and the technical and financial support extended by India through the Coconut Development Board under the Technology Mission programme for starting coconut based industries have been instrumental for this success. Added to these, the Board has been designated as Export Promotion Council (EPC) for various products other than coir based products from 1st April 2009 which has also contributed to a perceptible improvement in export which is depicted below:

Three-tier Farmers Producer Organization

CDB started a novel extension approach / strategy to organize farmers by formation of three tier Farmers Producers Organization (FPO) with Coconut Producers Societies (CPS) at primary level and integrate them to form Coconut Producers Federation (CPF) at intermediate level and Coconut Producer Company (CPC) at apex level. A Coconut Producer Society (CPS) consists of around 50 farmers and 5000 coconut palms and 20 such societies form federations and 10 Federations form a company. Thus a company which is formed by 10,000 farmers will be producing around 8 crore coconut from their jurisdiction. The main role of the Company is to establish processing unit for production of value added products from coconut procured from the member farmers. There are at present 9,439 CPS, 733 CPF and 67 CPCs functioning in the country.

Year	Export value	
	(In INR Million)	(In USD Million)
2009-10	4,323.84	91.71
2010-11	5,256.50	115.61
2011-12	8,386.47	174.60
2012-13	10,225.33	187.92
2013-14	11,561.19	190.24
2014-15	13,123.85	214.20
2015-16	14,502.44	221.07
2016-17	20,776.50	314.79

In the capacity of EPC, Board has so far given registration to 2346 exporters under its fold. This has enabled the Board to monitor the export scenario closely which is an indication of country's growth in the sector.

PRICE TRENDS AND FACTORS AFFECTING PRICE

Price of coconut oil has shown decreasing trend during the year 2012-13. Price started improving from mid of 2013 and same trend continued during 2014. In the year 2014, the monthly average price of coconut oil which opened at ₹ 10,982/- per quintal in January at Kochi market expressed a bullish trend and attained ₹ 16,477/- per quintal in August. Thereafter the price expressed a slight declining trend. In 2015, the monthly average price express mixed trend till August and thereafter expressed a declining trend and closed at ₹ 10,118/- per quintal and same trend continued till July 2016. Thereafter, price showed an upward trend. The price started rising up from the month of May, 2017 and at present is ruling at the highest level of ₹ 16,700/- per quintal in September at Kochi Market.

The price of milling copra was below MSP of ₹ 5,100 per quintal in all the three major markets in Kerala throughout the year 2012. The year 2013 started with a mixed trend in the prices of milling copra and the prices remained below MSP of ₹ 5,250/ quintal till the middle of the year. The prices improved from mid of 2013 and same trend continued during 2014. In 2014, the monthly average price of milling copra which opened at ₹ 7,911/ quintal in January at Kochi market expressed a bullish trend and attained ₹ 11,394/quintal in August. Thereafter the price expressed a slight declining trend and closed at ₹ 8,957 with a net gain of ₹ 1,046/ quintal. In 2015, monthly average price expressed a mixed trend till June, thereafter expressed a declining trend and closed at ₹ 6,562. In January 2016, the monthly average price recorded at ₹ 6,040/ quintal, expressed a mixed trend till July and thereafter expressed an upward trend and closed at ₹ 7,356/quintal. In 2017, the monthly average price opened at ₹ 8,200/quintal in January showed an upward trend and is ruling at the highest level of ₹ 11,700/ quintal in September at Kochi Market.

Neera Products

VCO bottles

Value-added products

Major Market Destinations

The UAE, China, Iran, Oman and Saudi Arabia are identified as the major markets for fresh coconuts. Copra attracts a very good demand from the countries like Bangladesh, Nepal, Iran, Vietnam and Hong Kong. Coconut oil enjoys a good market in Indonesia, Malaysia, Sri Lanka, Ireland and Mauritius. USA, Korea, US, Russia and Netherlands area the major purchasers of activated carbon.

Tender coconut water

As far as the non-traditional coconut products are concerned, VCO has a good demand in Brazil, France, USA, UAE, Oman, Mexico, Qatar and the United Kingdom. Countries like UAE, Kuwait, Oman, USA, Saudi Arabia, Qatar, Canada, UK have good markets for the products like coconut water and coconut milk powder.

GOVERNMENT POLICIES RELATED TO COCONUT TRADE AND MARKET

The Government of India is providing positive environment for the trade of coconut products and also ensuring that farmers are not exploited by traders by declaring Minimum Support Price (MSP) for coconut and copra. The MSP for copra has been introduced since the year 1986 for ensuring a remunerative price to coconut farmers for their products. It is a policy decision of the Government of India to announce the MSP for milling as well as ball copra for every season with the guarantee to purchase the copra at the pre-announced price, in the event of a fall in market price and thereby ensuring reasonable price for the produce of the coconut farmers. The present MSP for coconut, ball/ edible copra and milling copra are ₹ 17,600/- (US$ 274) per MT, ₹ 67,850 (US$ 1,054) per MT and ₹ 65,000/- (US$ 1,010) per MT, respectively.

The Government of India implemented Goods and Services Tax (GST) on 01st July 2017 with the aim to improve ease of doing business in the country. GST was implemented by amalgamating large number of Central and State taxes into a single tax which would mitigate cascading or double taxation in a major way and paves way for a common national market. GST, being a simple tax regime, is expected to reduce the complications in doing business and improve trade. The GST applied on various coconut products ranges from 0 to 28% with the slabs of 5, 12 and 18% . Coconut hookah and hair cream are the only two products attract the maximum of 28% GST.

In order to discourage import and protect domestic industry, import tariff is introduced by the Government of India. The Basic Customs Duty for for various coconut products are in the range between 10% and 150%. Coconut milk powder and coconut water powder only attract 150% import duty. Coconut oil import draws an import duty of 12.50% and virgin coconut oil draws 20%. The other vegetable edible oils like soyabean oil, groundnut oil, olive oil, palm oil, mustard oil, sunflower oil, etc. also attract duties ranges from 12.50% to 25% on import similar to duties on import of coconut oil.

Coconut and coconut products have very good market potential within as well as outside the country. Towards expanding the market for Indian coconut products across the globe, the Board is extending support to the industry through the programmes: Support for sales outlets/ kiosks for value added coconut products, facilitating participation in domestic exhibitions/ trade fairs and buyer-seller meets in metropolitan cities within the country, encouraging coconut product exporters with Award for export excellence, overseas and domestic industrial exposure visits to prosperous manufacturers, organising workshops/ seminars for entrepreneurs and exporters.

For further interactions, please write to:
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