

# Coconut development in India - The status

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## Introduction

Coconut is an important crop of economic importance to many of the Asian and Pacific countries in the world. The crop provides livelihood security and employment opportunities to a major segments of the rural mass of these countries. India being the largest coconut producing country in the world occupies 31% of global production. Widely acclaimed as Kalpavriksha or Tree of life, the coconut palm provides food security and livelihood opportunities to more than 10 million people in India. It is an important food crop for the major chunk of Indian population. Similarly it is an important cash crop for more than 10 million farm families and a fiber-yielding crop for more than 15,000 coir based industries which provides employment to nearly 6 lakhs workers of which 80 per cent are women folk. The crop contributes around Rs. 1,00,000 million (US\$ 1530 M) to the country's GDP and earns export revenue of around Rs. 30,000 million (US\$ 458 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 the country covering 17 states and 3 Union Territories. This country paper encompasses the major developments in Indian coconut sector along with other salient outcomes.

## Indian Coconut Scenario

### *Area, Production and Productivity*

As per the India estimates for the year 2014-15, the area and production of coconut in the country is 1.98 million hectares and 20439.61 million nuts respectively. The corresponding figures for the year 2013-14 were 2.14 million hectares and 21665.19 million nuts, recording



decrease in area by 7.69 percent and production by 5.66 percent. The four southern states of Kerala, Karnataka, Tamil Nadu and Andhra Pradesh accounted for 87.86 percent of the coconut area and 90.11 percent of the coconut production in the country.

The productivity of coconut at national level for 2014-15 is 10345 nuts per hectare which showed an increase by 223 nuts over the previous year. The highest yield is reported from Lakshadweep Islands at 27591 nuts per hectare followed by Chhattisgarh at 16287 nuts per hectare and Telengana 14994 nuts per ha. Tamil Nadu is having highest the yield among the major coconut growing states with 14873 nuts followed by Andhra Pradesh with 13808 nuts.

As per 2014 world statistics, India is the largest coconut producing country in the world contributing 31.02% of the world production. World Production has decreased from 70931.79 million nuts in 2013 to 69836.36 million nuts in 2013. India, Indonesia and

Table 1

Area, Production and Productivity of Coconut in India 2014-15						
	States	Area "000" ha	% Share in Area	Production Million nuts	% Share in Production	Yield (Nuts /Ha)
1	Kerala	649.85	32.89%	4896.61	23.96%	7535
2	Karnataka	515.03	26.07%	5141.15	25.15%	9982
3	Tamil Nadu	465.11	23.54%	6917.46	33.84%	14873
4	Andhra Pradesh	105.99	5.36%	1463.56	7.16%	13808
5	Odisha	50.68	2.57%	324.89	1.59%	6411
6	Gujarat	31.63	1.60%	295.03	1.44%	9328
7	West Bengal	29.41	1.49%	372.23	1.82%	12657
8	Maharashtra	28.10	1.42%	187.44	0.92%	6670
9	Goa	25.79	1.31%	127.72	0.62%	4952
10	Andaman Nicobar	21.91	1.11%	129.77	0.63%	5923
11	Assam	21.14	1.07%	237.49	1.16%	11234
12	Bihar	14.90	0.75%	141.38	0.69%	9489
13	Tripura	6.93	0.35%	28.41	0.14%	4100
14	Lakshadweep	2.57	0.13%	70.91	0.35%	27591
15	Puducherry	1.88	0.10%	21.90	0.11%	11649
16	Chhattisgarh	1.71	0.09%	27.85	0.14%	16287
17	Telangana	1.69	0.09%	25.34	0.12%	14994
18	Nagaland	1.45	0.07%	16.32	0.08%	11255
19	Mizoram	0.04	0.00%	0.16	0.00%	4000
20	Daman & Diu	Neg		13.99	0.07%	
		1975.81	100.00%	20439.60	100.00%	10345

Source : Horticulture Division ,Government of India

Philippines are the leading coconut growing countries having 75.87% of the total coconut area and contribute 75.48% of the coconut production in the world. Among the major coconut growing countries, Brazil holds the highest productivity of 11630 nuts per ha followed by India with 10119 nuts per ha. Area, production statistics of India and world is given in Table 1 and 2.

### Price Scenario

The price of coconut and coconut products was on the declining trend during the last one year. The price which was steadily in an upward trend from the middle of 2013-14 exhibited a very encouraging trend through out 2014-15; but it was on reverse move in 2015-16. Average domestic price and international price of coconut oil per Metric Tonne was US \$ 2407 and US \$ 1225 in 2014-15. This has come down to US \$ 1701 and

US \$ 1121 respectively in 2015-16.

The domestic price of coconut products in India was always ruling higher compared to international price. During many occasions domestic price was 100 % higher than the international price. But after a long spell, the gap between international and domestic price started narrowing down and in March, 2016 the international price became higher than that of domestic price which presents immense opportunity for India for exporting coconut products.

### Export of Coconut Products

During the financial year 2015-16 export of coconut products (excluding coir items) was valued at Rs. 14502.84 Million (US\$ 221.07 M) against Rs. 13123.85 Million (US\$ 214.20 M) during the previous year, recording an increase of 10.50 % in terms of value. Activated Carbon was the single largest item of export both in terms of quantity and value of export, at 61212.58 tonnes and Rs. 6320.81 Million (US\$.96.35M) respectively. Significant increase was recorded in the export of desiccated coconut, activated carbon and coconut oil. Activated carbon accounted for 43.58 percent of total export value. Over the last 5 years value of export of coconut products showed an increasing trend from Rs.

8386.47 Million (US\$ 174.60 M) in 2011-12, to Rs. 14502.84 Million (US\$.221.07 million) in 2015-16.

The export earnings are picking up with the surge in growth of industries based on 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 1<sup>st</sup> April 2009 which also has contributed to a perceptible improvement in export which is depicted in Table 3:

Table - 2

## Coconut Scenario - Global

## Area, Production and Productivity in Major Coconut Growing Countries (2014)

Sl. No.	Country	Area ('000 ha)	% Share in Area	Production (Million Nuts)	% Share in Production	Productivity (Nuts/ha)
1	India	2141.00	17.55%	21665.00	31.02%	10119
2	Indonesia	3610.00	29.60%	16354.00	23.42%	4530
3	Philippines	3502.00	28.71%	14696.00	21.04%	4196
4	Brazil	251.00	2.06%	2919.11	4.18%	11630
5	Sri Lanka	440.00	3.61%	2870.00	4.11%	6523
6	Papua New Guinea	221.00	1.81%	1483.00	2.12%	6710
7	Vietnam	159.00	1.30%	1245.59	1.78%	7834
8	Mexico	169.00	1.39%	1118.75	1.60%	6620
9	Thailand	206.00	1.69%	1001.00	1.43%	4859
10	Tanzania	128.00	1.05%	545.80	0.78%	4264
	Others	1369.00	11.22%	5938.12	8.50%	4338
	Total	12196.00	100.00%	69836.36	100.00%	5726

r - Revised

Source: APCC Statistical Year Book - 2014

Table - 3

Year	Export value	
	(In INR Million)	(In USD Million)
2009-10	4323.84	91.71
2010-11	5256.50	115.61
2011-12	8386.47	174.60
2012-13	10225.33	187.92
2013-14	11561.19	190.24
2014-15	13123.85	214.20
2015-16	14502.44	221.07

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.

### Strength of Indian Coconut Sector

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) and presence of dominant ethnic population in the Gulf, UK and US are the strengths of India. Low level of processing and value addition, highly disorganized and fragmented supply side and geographical distance from terminal markets are India's weakness.

India is having good network of organizations for conducting research in coconut. Central Plantation Crops Research Institute (CPCRI) was established in 1970 as one of the agricultural research institutes under the Indian Council of Agricultural Research (ICAR). An International Coconut Gene Bank for South Asia (ICG-SA) was established at Kidu, Karnataka in 2013. The Research Centre at Kidu helps to cater to the needs of the farmers by supplying elite planting materials of the mandate crops, in addition to serving as the International Coconut Gene Bank for South Asia.

The All India Coordinated Research Project on Palms, started in the year 1972, is coordinating research in coconut, oil palm and palmyrah in different agro-climatic regions for the identification of location specific technologies. The project provides adaptive research support for coconut through collection, conservation, cataloguing and evaluation of germplasm, evaluation of new hybrids and high yielding varieties of

coconut, standardization of agro-techniques for various agro-climatic regions including development of appropriate farming systems and development of efficient pest and disease management strategies. Some of the coconut research achievements in India are given below.

- World's largest germplasm collection of coconut comprising 398 accessions is being maintained in CPCRI. The Gene Bank includes exotic collections from 28 countries of South Asia, South-East Asia, Africa, Caribbean Islands, Indian Ocean Islands and Pacific Ocean Islands.

- Breeding efforts at CPCRI and State Agricultural Universities have resulted in the release of eighteen varieties and fifteen hybrids suitable for different parts of the country.

- A protocol for aseptic collection of embryo in coconut, their storage during transport and successful culture to develop plantlets has been standardized and used in collection of exotic coconut accessions for conservation in the gene bank. This is found to be very useful in field collection of coconut germplasm from distant places.

- The protocol for plumule culture of coconut has been standardized
- In vitro active conservation of coconut zygotic embryos (short-term) was standardized.
- Cryopreservation of coconut pollen was standardized and viability/ germinability could be maintained even after the pollen was cryopreserved for 16 months.

### **Programmes and Policies to Promote Development of Coconut Sector**

In India, development programmes in coconut are mainly undertaken by Coconut Development Board under the Ministry of Agriculture and Farmers Welfare. The programmes undertaken during the last year for the benefit of farming community are listed below along with the overall growth of coconut sector.

#### ***Production and distribution of planting material***

Establishment of Demonstration cum Seed Production (DSP) Farms in different parts of the country for creating infrastructure facilities for production of quality planting materials besides demonstrating and educating the scientific coconut cultivation and processing to various stake holders 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 Govt. sector, establishment of Nucleus Coconut Seed Garden and coconut Nurseries in private sector are taken up under this programme. Last year nearly 20 lakh seedlings were produced and distributed under this scheme. 10 DSP farms are established in different parts of the country.

#### ***Expansion of Area under Coconut***

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 for Productivity Improvement programmes***

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.

#### ***Technology Demonstration/Quality testing lab***

The Technology Development Centre set up in Kerala is engaged in the development and demonstration of technologies for product diversification and by-product utilization of coconut. The centre is devoted to product

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 is designated as CDB Institute of Technology (CIT).

#### ***Marketing, market intelligent services, Statistics and Export Promotion Council***

Under this scheme, activities such as Market information and intelligence service, modernization of coconut processing by the introduction of improved copra dryer/other processing machineries/equipment, surveys and evaluation studies including concurrent estimation of coconut production and productivity and activities of export promotion council are undertaken.

#### ***Information and Information Technology***

The Board is disseminating information on various aspects of coconut cultivation and industry through various media and publications 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 under this programme.

#### ***Technology Mission on Coconut***

The Technology Mission on coconut 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. Last year technical and financial support was given to establish 61 processing units with processing capacity of 330 million nuts per year. Subsidy of Rs. 145.4 million (US \$ 2.22 M) was extended to entrepreneurs and manufacturers of desiccated coconut(DC), virgin coconut oil(VCO), coconut oil (CNO), packaging of tender coconut water(TNW), flavoured juice etc. So far 402 processing units have been established in the country under the financial assistance of TMOc

#### ***Replanting and Rejuvenation of Coconut Gardens.***

In pursuance to PNG declaration in 2006, India initiated 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 1/3<sup>rd</sup> of palm population was old, senile and disease advanced. Apart from the 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 the R&R programme was implemented in the state from 2009 and is still continuing. The main objective of the scheme is to enhance the 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. So far more than 3.3 million palms have been cut and removed under the scheme and nearly 5 lakh ha was rejuvenated.

#### ***Coconut Palm Insurance Scheme (CPIS)***

The Coconut Palm Insurance Scheme 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. 50% of the premium is borne by the Board and balance is shared between the State Govt. and farmers @ 25% each.

#### ***Kera Suraksha Insurance Scheme for Coconut Tree Climbers (CTC)***

The 'Kera Suraksha' Insurance Scheme provides insurance coverage to the coconut tree climbers (CTC) @ Rs.2 lakh against 24 hours accident related risk including death. 75% of the annual premium of the policy is borne by the Board and the 25% by the beneficiary. The scheme is implemented in all coconut growing states.

#### ***Establishment of new Coconut Orchards***

The objective of the scheme is to improve the production and productivity of coconut by establishing coconut orchards with high yielding varieties released by research institutes for different agro climatic conditions. The scheme is implemented through Farmer Producer Organization (FPO) in coconut growing states including scheduled and hilly areas

## **New policies and initiatives**

### ***Three tier Farmer Producer Organization (FPO) in coconut sector.***

Coconut Development Board (CDB) has facilitated the formation of three tier Farmer Producer 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 9251 CPS, 716 CPF and 65 CPCs functioning in the country.

### ***Skill Development Training Programmes (Friends of Coconut tree (FoCT)***

Acute shortage of palm climbers to harvest and adopt plant protection measures is one of the problems faced by coconut growers. With a view to tackle this problem, the Board is conducting skill development programme from 2011-12 onwards, to train unemployed youths in developing special skills and confidence in coconut climbing and plant protection activities for the benefit of coconut farming community. The skill fetches the youth handsome income for their decent living and help to make available sufficient manpower to society in coconut climbing.

### ***Promotion of Neera production and marketing***

Coconut Development Board has developed the technology for neera harvesting and processing Neera, the vascular sap from coconut inflorescence is one of the most profitable value added products from coconut. Considering its nutritive value, health benefits and profitability its production has been permitted by the major coconut growing states. Coconut Development Board has taken the initiative for developing a pool of Neera technicians. This is achieved in two phases, the first phase concentrating on moulding traditional toddy tappers into Neera Master Technicians through a training conducted at the CDB Institute of Technology (CIT) for a duration of two weeks. These master technicians in turn will train interested and eligible candidates at the respective Coconut Producer Company and Federation levels.

### ***Product Development***

India was lagging behind in technology development for product diversification till the last two decades. Introduction of Technology Mission has given momentum

to this area and now India possesses many technologies in value addition. Acceleration to the activities of CDB Institute of Technology, further quickened the products development. Technology for processing and packing of neera and various down stream products like neera sugar, jaggery, honey etc have been developed. Food products like sweet/spicy chips, sweet chunks, chocolate, cookies, burfi, lemonade, flavoured juice, ice cream and milk spread are also the other new additions of CIT's contribution to the coconut product basket.

Product basket from coconut - Value added coconut products
Water based
Packed Tender Coconut Water, Coconut Vinegar, Nata de coco etc.
Kernel based
Coconut Oil, Virgin Coconut Oil, Desiccated Coconut, Ball Copra, Coconut Cream, Coconut Milk Powder, etc.
Inflorescence sap (Neera) based
Neera beverage and Neera based value added products etc.
Shell based
Shell Powder, Shell Charcoal, Activated Carbon, etc.

### Marketing Strategy

Having achieved considerable progress in value addition and product development, India has to embark upon new marketing strategy for directing coconut products to all domestic and international markets. The current trend in domestic and international markets for various products is encouraging. While considering the domestic market it could be seen that urban India comes ahead of USA in the order of populous nations. The population of urban India is about 360 million which is above the total population of USA. Population of USA is only 315 million. Our domestic market is bigger than that of USA if 75 % urban population is taken into account. More than 78% of India's urban population is located in the 63 major cities. India is aiming at introducing, making available and marketing maximum value added coconut products in these cities. In the international markets, countries like China, India, USA, Indonesia and Brazil are top five most populous countries. In this era of globalization, products of all countries are available in all potential markets. Coconut products of India have to reach the markets of other countries. But quality adherence assumes significance. India is giving thrust to manufacture best quality products with attractive packaging through innovative marketing strategies. By giving further boost to Indian opportunities, niche markets for pharmaceutical, nutraceutical, and cosmeceutical products with coconut as major ingredient

are emerging. India will take the advantage of such new developments.

### Future thrust

Indian coconut sector has to improve in many areas in spite of unprecedented progress achieved in selected sectors. There are many issues to be addressed and solutions arrived at. Inadequate availability of quality planting material in tune with the increasing demand, low pace of value addition, low level of productivity than the potential, low pace of expansion of crop and low level of Replanting and Rejuvenation of old plantations, and the non availability of disease tolerant and short statured high yielding varieties are issues which need solution. Against the annual requirement of 10 million seedlings, the present supply of is only 3.5 million seedlings. Considerable area suitable for coconut is available in traditional and non-traditional areas in the country which need to be utilized for expanding the crop. Through convergence of various programmes and bridging the gap in existing schemes, India will try to make coconut a more remunerative crop by enlarging the scale and size of operations and reducing production costs giving more thrust on irrigation, drought management, and soil and moisture conservation. Restructuring of planting population giving more stress on hybrids and dwarf and more diversion of production to value addition, improvement in quality standards matching with international standards, adoption of new marketing strategy for tapping domestic and international markets and widening the skill development in all essential areas of production and processing will be other areas of priority. More focus need to be given on popularizing the health, nutrition and wellness benefit of coconut in the national and international level.

### Conclusion

Indian Coconut sector is striving hard to grow further for the benefit of millions of farming community. The country is aiming at sustaining the premier status enjoyed at global level in production and productivity and also in the process of gaining the prime position in export front too. India look forward to have collaboration and involvement with APCC, its member countries and other international organizations in collaborative research especially on coconut oil, development of new varieties resistant to biotic stress, exchange of technologies, joint ventures in coconut sector etc. ■

*\* Paper presented by Dr. A.K. Singh, Chairman, CDB during the 47<sup>th</sup> Cocotech meeting held during 26-30 September at Bali, Indonesia*