

# Technology Mission on Coconut : the platform which ignited value addition in Indian coconut Sector

Remany Gopalakrishnan

Consultant, Coconut Development Board, Kochi-11

## Introduction

Traditionally coconut has been indispensable in religious, cultural and social functions throughout the country. It finds a prominent place in household culinary purposes both in mature and tender forms in some parts of the country. Mature coconuts were mainly used for making milling and edible copra and for the manufacture of desiccated coconut. Kerala was the prime cultivator, and producer of coconut till recently; but the monopoly is slowly getting eroded. However, her role as the premier consumer is still continuing. Consumption of coconut in the state in the form of kernel and oil is maximum and in the tender nut stage is limited. In other South Indian states the utility is mainly confined to tender nuts, social and religious purpose and coconut oil in toiletry sector. In states like West Bengal it was more valued as a beverage crop. For the non traditional, north and north-eastern population coconut has been a fruit of reverence utilized for offerings and auspicious occasions. At the national level coconut is valued as a food, beverage, oilseed and fibre yielding crop. The utilization pattern of coconut in 1980's was that fifty two percent of the total coconut production as raw nuts for edible and seed nut purposes, 10% as tender coconut and roughly 40% for copra production, both milling and edible. Only less than 5% was processed into products like desiccated coconut and other coconut based food products. Therefore the price of coconut was controlled by the coconut oil industry which consumed less than 40% of the production.



## Background

Technology development for product diversification and byproduct utilization in coconut was almost nil or in the budding stage when the Coconut Development Board came into being in 1981. Whereas the technologies available in coconut cultivation, production and protection in India were rated as number one when compared to other coconut growing countries like Philippines, Indonesia, Sri Lanka, Malaysia etc. Development of technologies for product development was therefore a felt in need in the country. Product diversification required focused attention to generate multiple income opportunities rather than pinning around copra and coconut oil sector. This shift was needed to protect the farmers from vagaries of frequent price fluctuation and unprecedented price fall.

The country witnessed many production and productivity oriented programmes since the Board started

implementation of development programmes from the mid of VI Five Year Plan period. Establishment of a Technology Development Centre as one of the schemes in the VII Plan period made a small beginning in this direction which subsequently paved way for launching of Technology Mission on Coconut.

## Technology Development Centre – The stepping stone in coconut value addition in India

The utilization pattern of coconut prevailed in the country during the VII Plan period necessitated evolving strategies to canalize the major portion of coconut production in the country for manufacturing value added coconut products. The Board therefore started giving thrust to the area of product diversification and byproduct utilization. The concept of a Technology Development Centre was mooted and got approved in the VII Five Year Plan programmes and the Centre started functioning attached

to the head quarter of the Board. This was the stepping stone in the area of technology development in the country. Projects were sponsored through institutions like Central Food Technological Research Institute, Defence Food Research Institute and evolved appropriate technologies which had triggered the hitherto dormant coconut value addition sector in India. Variety of products was evolved in edible and non-edible sectors. Technologies thus developed for coconut cream, coconut spray dried milk powder and packed tender coconut water set the milestones for starting many coconut based industrial units later in the country. It was a realization that diverse range of value added coconut products has considerable economic value and market potential. Similarly results of the studies conducted through the Bio-Chemistry Department of Kerala University on the effects of consumption of coconut kernel and coconut oil on the serum lipid profile and the Sree Chithira Tirunal Institute of Medical Sciences and Technology on the effect of consumption of coconut kernel and coconut oil in the regular food habits of coronary artery disease patients were drawn much attention of the public and could dispel the misconception on the consumption of coconut and coconut oil.

### Technology Mission on Coconut (TMOC)

When the Board completed its journey of two decades, Technology Development Center could make tangible achievements in Technology Development and many processing technologies based on coconut kernel, coconut water, husk and shell were evolved and available with the Board. But potential entrepreneurs were not freely coming forward for want of sufficient capital investment. It was at this juncture the Government of India cleared the Technology Mission on Coconut in 2001-02 for vertical



and horizontal integration of programmes and to bridge the existing gaps in Research and Development in coconut. Thus Technology Mission on Coconut was launched to develop a mechanism which makes coconut farming competitive and that ensures reasonable returns. In this context it was felt inevitable to converge numerous ongoing schemes in Departments and build up synergy through vertical and horizontal integration of existing programmes and bridge the gaps through appropriate new programmes in a Mission Mode to ensure adequate, appropriate, timely and concurrent action. Technology Mission has four components and they are the management of insects and pests, processing and product diversification, Market Research and Market Promotion and Technical Support, External evaluation and emergent requirements. Any institution having capacity to do research can avail the benefit under the mission. TMOC converges and synergizes all the efforts and addresses the problems in a manner, which should provide maximum output in terms of investment, improves the output resulting in enhanced competitiveness of coconut to ensure the livelihood of millions of dependent people.

### The goals and objectives of the Mission are:-

- To establish convergence and synergy among numerous ongoing governmental programmes in the

field of coconut development in order to bring in horizontal and vertical integration of these programmes.

- To ensure adequate, appropriate, timely and concurrent attention to all the links in the production, post harvest and consumption chain.
- To maximize economic, ecological and social benefits from the existing investment and infrastructure created for coconut development.
- To promote economically desirable diversification and value addition to generate skilled employment.
- To disseminate technologies using participatory approach through demonstration and promotion to address the gaps in a mission mode.

### Major Focus areas

- Research and development.
- Capacity building and participatory planning and implementation.
- Infrastructure development.
- Integrated insect pest and disease management.
- Quality, quantity and productivity improvement.
- Facilitating credit availability and management.

## The Mission in a Nutshell

Technology Mission on Coconut aims to establish a convergence and synergy among ongoing programmes of Coconut Development Board to bring about vertical and horizontal integration to ensure adequate, appropriate, timely and concurrent attention to all the links in production, processing, product diversification and marketing an dissemination of technologies in the consumption chain for the upliftment of stakeholders on coconut. Four components under TMOc are:

### 1. Management of insect pests and disease affected gardens

#### *Development of technologies:*

- 100% of the cost of project limited to Rs. 50 lakhs for ICAR (CPCRI)/State Agricultural Universities/State Department of Horticulture/Agriculture/and cooperative sector.
- 50% of the cost of project limited to Rs. 25 lakhs for NGO's and other organizations.

#### *Demonstration of technologies:*

- 100% of the cost limited to Rs. 25 lakh projects to ICAR (CPCRI)/State Agricultural Universities/State Department of Horticulture/Agriculture/ other related public sector units/ Registered cooperative societies.
- 50% of the cost for individuals/ group of farmers/ NGO's, private companies limited to Rs. 10 lakh.

#### *Adoption of technologies:*

- 25% of the cost of technology adoption.
- 25% of the cost in case of group of farmers/ NGO's/ other organizations.

### 2. Processing and product diversification

#### *Development of technologies:*

- 100% of the project cost limited to Rs. 75 lakhs for all the Government institutions and cooperative societies.
- 50% of the project cost limited to Rs. 35 lakhs for NGO's, individual entrepreneurs and other research organizations.

#### **Adoption of technologies:**

Financial assistance @ 25% of the project cost limited to a maximum of Rs. 50 lakhs is extended as credit linked back ended subsidy for setting up of coconut processing units for production of value added coconut products. Modernization and expansion of existing processing units will also be eligible for assistance. The detailed project for seeking assistance for setting up coconut processing unit should be submitted through the financial institution, willing to sanction a minimum of 40% of the project cost as term loan for private entrepreneurs and 25% term loan for Co-operative societies.

#### **Eligible products**

*Packed tender nut water, coconut water based vinegar, desiccated coconut powder, defatted coconut powder, coconut cream, coconut mild powder, packed and branded coconut oil with agmark standards, virgin coconut oil (VCO), coconut chips, coconut jaggery, snow ball tender coconut, shell powder, shell charcoal, activated carbon, shell/ wood based handicrafts, coconut wood processing units, copra dryer, integrated processing units and such other new and innovative coconut based products, which are backed by commercially viable technologies will be considered for granting financial assistance.*

### 3. Market Research and Promotion

#### *Market Research :*

- 100% of the cost limited to Rs. 25 lakhs for Government agencies and cooperative societies.
- 50% of the cost limited to Rs. 12.50 lakhs for individuals, NGO's and other organizations.

#### *Market Promotion:*

- 100% of the cost limited to Rs. 25 lakhs for Government agencies and cooperative societies.
- 50% of the cost limited to Rs. 10 lakhs for NGO's and private institutes. Financial assistance is provided to manufacturers for market promotion of coconut products through brand publicity through electronic media including website, print media, parlours, kiosks, warehouse, undertaking activities like buyer-seller meet, exchange of delegations, participations of exhibitions/ fairs/ melas, printing of leaflets, pamphlets, brochures, posters, display of coconut products at Air Ports/Railway Stations and erection of hoardings etc. on the basis of approved proposals. The financial assistance is 50% of the project cost limited to Rs. 10 lakhs for individual and Rs. 25 lakhs to cooperative organizations on reimbursement basis.

### 4. Technical support, external evaluation and emergent requirements

Technical support for scrutinizing the project proposals, hiring experts from various fields as per the requirements, concurrent external evaluation and mid term corrections wherever necessary are being carried out by engaging experts/committees under this component programme. Besides, those colleges having Botany, Zoology, Bio Chemistry and Bio Technology departments can also apply for taking up the research projects of CDB.

Post-harvest processing, product diversification and value addition.

During the last one and a half decades of functioning TMOc made significant achievements under the development of technologies under the component viz., 'Management of insect pests and diseases' and adoption of technologies under 'Processing and Value Addition' and their commercial utilization. Achievement made under processing and value addition are discussed here.

#### Current status of the processing units

The opportunity available under TMOc for setting up of coconut based industries under 'Adoption of Technologies' was utilized by prospective entrepreneurs and manufactures of coconut. Production units of preserved and packed tender

coconut water, virgin coconut oil, spray dried milk powder, desiccated coconut, shell powder, charcoal and activated carbon are the successful outcome of commercialization of technologies developed by the Board and adopted by entrepreneurs. At present 313 coconut processing units are functioning in the length and breadth of the country. Of these 144 units are in Kerala, 77 units in Tamil Nadu, 22 units in Andhra Pradesh, 62 units in Karnataka, one in Goa, one in Odisha, one in Jammu Kashmir, one in Maharashtra, two units in Lakshadweep and two in Gujarat. Among these units the Activated Carbon units in Tamil Nadu and Spray dried milk powder units in Batlagundu, Tamil Nadu and Thrissur, Kerala, VCO units in south India, Coconut Shell Powder units in

Jammu Kashmir and Karnataka, Mosons Extractions in Kannur and Nexus Foods in Kalady in Ernakulam district are some of the prestigious projects assisted by Board.

There are 22 tender nut water packaging units in the country with processing capacity of 124 million nuts per year. The pioneers in this field have entered into export market. The tender nut water packaging technology of India is considered to be superior to that of other countries. Products which made remarkable entry in the export market are virgin coconut oil and activated carbon. Now India can compete with other countries in virgin coconut oil production. There are 36 Virgin Coconut oil units, 16 shell powder making units, 18 shell charcoal units

#### Processing Capacity of Major Units

Name of the Coconut Product	Number of Units	Processing Capacity
Tender Coconut Water Preserving and Packing Units	2	123 million nuts per year
Desiccated Coconut Powder Making Units	73	400 million nuts per year
Virgin Coconut Oil Production units	36	60 million nuts per year
Coconut Chips Making Units	4	0.36 million nuts per year
Vinegar Making Units using mature coconut water	6	21 lakh litre of coconut water per year
Coconut Milk and Spray Dried Coconut Milk Powder Making Units	1	6.0 million nuts per year
Coconut Shell Powder Making Units	16	52110 MT Shells per year
Coconut Shell Charcoal Units	18	1 lakh MT Shells per year
Activated Carbon Making Units (raw material coconut Shell Charcoal)	24	5.50 lakh MT Shells per year
Other Traditional Products Making Units (Ball Copra, Copra, Coconut Oil)	109	1252 million nuts per year

Units assisted under TMOC

Name of Products	No. of units
Tender coconut water	22
Desiccated coconut powder	73
Spray Dried Milk	1
Coconut milk	1
Virgin coconut oil	36
Coconut oil	58
Copra dryer	20
Ball copra	29
Vinegar	6
Ice cream cup	2
Coconut shell powder	16
Shell charcoal	18
Activated Carbon	24
Coconut chips	4
Coconut wood product	1
Neera and Neera products	2
<b>Total</b>	<b>313</b>

and 24 activated carbon units. Shell powder making units consumes more than 52,000 MT shell annually. VCO units have the processing capacity of 60 million nuts per year. Activated carbon units have the capacity to utilize 5.5 lakh MT shell per year. The shell charcoal units which serve as the raw material source of activated carbon process 1 lakh MT shell annually. Coconut shells on burning in controlled condition yield 1/3<sup>rd</sup> of its total weight of shell charcoal which in turn on processing yield 1/3<sup>rd</sup> of its weight of activated carbon. Desiccated coconut is another prominent product which got significant support from the Board. There are 73 Desiccated coconut powder making units which are funded under TMOC with processing capacity of 400 million nuts per year. Desiccated coconut is not a novel product but it always enjoys demand in confectionery and bakery sector. Karnataka holds the monopoly of Desiccated Coconut industry and the state continues to occupy the position, though in northern Kerala and states like Odisha a few units are functioning. Quality of the final product is very important and quality DC always enjoys good demand in the market. Nutraceutical and

cosmoceutical properties of coconut oil have been attracting public and cosmetic manufacturing sector alike. This is in the midst of an alleged image for coconut oil as a causal factor of cardio vascular disease. Research studies sponsored as early in the mid 1990's could disprove the allegation. Still lack of clinical studies always has been haunting the positive effects of coconut oil. In this background a clinical study undertaken under TMOC by Amrita Institute of Medical Sciences at Kochi was a boon to the coconut oil consumers who are always in dilemma as to which oil to be opted whether sunflower or coconut oil. The study revealed that sunflower and coconut oil have similar characteristics and impact while consuming by CAD patients and the study has disproved the claimed superiority of sunflower oil over coconut oil. CNO is even superior to sunflower oil in certain parameters studied. More than 10 research studies under different disciplines have been undertaken under TMOC and the 11<sup>th</sup> one to study the impact of virgin coconut oil in HDL elevation and triglycerides has since been initiated by Amrita.

Another milestone achieved under TMOC is the transformation of the erstwhile Coconut Technology Development Centre at Aluva, Vazhakulam, Ernakulam District into CDB Institute of Technology (CIT) which is equipped with a full fledged quality testing laboratory. The institute possesses NABL (National Board for Accreditation of Testing and Calibration Laboratory) accreditation for authentic chemical and microbial analysis of food products, oils & beverages and fertilizers.

The increase in price of CNO raises the chances of adulteration of coconut oil with other vegetable oils or mineral oils. Merchants or consumers or industrialists can make use of the facilities available in CIT to test the adulteration of CNO for further proceedings. The CIT can be

contacted over phone 0484 2679680. e-mail: citaluva@gmail.com. The institute also provides technical and consultancy services for setting up coconut based industrial units, training on neera technicians and coconut convenient foods.

The way forward..

Most of the Asian Pacific countries are far ahead of India in production and export of value added coconut products. They have established strong presence in the international market with many value added coconut products. The percentage share of production diverting for processing and value addition is huge. Demand for packaged and preserved tender coconut water is estimated to be growing at an annual rate of 40%.

The new initiatives in the field of product diversification and its promotion had helped to provide some cushion to the farmers from the fluctuations in the market price. The commercial introduction of various coconut products and by-products in the domestic market and their aggressive market promotion has had a definite influence on the purchasing behavior. The Indian coconut market experienced a gradual shift from coconut oil centered market to diversified products market. A relatively stable domestic coconut market in the country during this period has resulted in the better management of gardens.

Since 95% of India's coconut production is domestically consumed, we have to enhance our production for making value added products. The industrial environment in the states of Tamil Nadu, Karnataka and Andhra Pradesh are more congenial to that of Kerala for promotion of coconut based industries. Since it is not so easy for the individual entrepreneurs to start new ventures more units should be encouraged through farmer community groups and cooperatives.

The initiative of the Board in forming Coconut Producer Societies and their Federations and Companies will definitely help bring a many fold increase in the number of processing units, which in turn, will bring about a revolutionary transformation in value addition in coconut. This strategy would be the only clear path before us for ensuring profitability and sustainability in coconut sector through backward and forward integration. Now population of India has crossed 1210 million and the country has to feed the entire population. Food products will face acute shortage and in this context coconut as food and beverage is qualified to be placed at the epitome of food sector. India's production of 24 billion nuts will have its own role to feed the people in various forms. Processed coconut food products are nutritious and can supplement the

nutritional requirement and food security of the country. Technology Mission can take the role of processing and diversifying the products in line with the entrepreneurial requirement and production of value chain products. Board has taken effective steps for identifying good markets for coconut products.

In the XII Plan emphasis has been given *inter alia* for encouraging export of edible and non-edible products, promoting farmer oriented research programmes, promoting coconut product diversification and value addition, developing cost-effective technologies and innovative value added products, attaining international quality standards for coconut products and cost competitiveness. It is also envisaged to utilize 25 % of our production

for tender coconut purpose and 40% for value addition other than copra and coconut oil. All these thrust areas can be directly addressed under the ambit of TMOC programmes. The progress in the Mission mode programmes will accelerate the pace of achievability of the thrusts and priorities envisaged. Earmarking sufficient funds for the TMOC is absolutely essential for dreaming high and to achieve a leapfrog growth. The present momentum holds good for an accelerated growth for coconut industry with the support made under Technology Mission. (The terms and conditions, application forms, and mode of submission can be had from the website of the Board: [www.coconutboard.gov.in](http://www.coconutboard.gov.in) Link: *Technology Mission on Coconut*. Tel: 0484-2376265- Extn-135,254)

## Statement of ownership and other particulars about the

### INDIAN COCONUT JOURNAL

#### FORM IV

#### (See Rule 8)

- |   |   |   |
|---|---|---|
| 1. Place of Publication   | : | Kochi - 11  |
| 2. Periodicity of Publication   | : | Monthly   |
| 3. Printer's Name   | : | Sugata Ghose  |
| Nationality   | : | Indian  |
| Address   | : | Chief Coconut Development Officer<br>Coconut Development Board,<br>Kochi - 11, Kerala.  |
| 4. Publisher's Name   | : | Sugata Ghose  |
| Nationality   | : | Indian  |
| Address   | : | Chief Coconut Development Officer<br>Coconut Development Board, Kochi - 11, Kerala  |
| 5. Editor's Name  | : | R Jnanadevan  |
| Nationality   | : | Indian  |
| Address   | : | Deputy Director<br>Coconut Development Board, Kochi - 11, Kerala  |
| 6. Names and addresses of individuals who own the newspaper and partners or shareholders holding under more than one percent of the total capital | : | The periodical is owned by the Coconut Development Board which is a body corporate set up by the Government of India under the Coconut Development Board Act, 1979. |

I, Sugata Ghose, hereby declare that the particulars given above are true to the best of my knowledge and belief.

Sd/

(Sugata Ghose)

Date : 01-03-2015