

# Indian Coconut Journal



# INDIAN COCONUT JOURNAL

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### COCONUT DEVELOPMENT BOARD

Ministry of Agriculture, Department of  
Agriculture and Co-operation,  
Government of India

Kera Bhavan, Kochi - 682 011, India

Phone : 0484- 2377266, 2377267,  
2376553, 2375266, 2376265  
Fax : 91 - 0484-2377902,  
Grams : KERABOARD  
E-mail : kochi.cdb@gov.in  
cdbkochi@gmail.com  
Website : www.coconutboard.gov.in

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Articles, research papers and letters on different aspects of coconut cultivation and industry are invited for publication in this Journal. All accepted material will be paid for. The Board does not accept responsibility for views expressed by contributors in this Journal. All remittances and correspondence should be addressed to the Chairman, Coconut Development Board, Kochi - 682 011.

## Coconut Development Board

The Coconut Development Board is a statutory body established by the Government of India for the integrated development of coconut cultivation and industry in the country. The Board which came into existence on 12th January, 1981, functions under the administrative control of the Ministry of Agriculture, Government of India, with its headquarters at Kochi in Kerala State and Regional Offices at Bangalore, Chennai and Guwahati. There are six State Centres situated in the states of Orissa, West Bengal, Bihar, Maharashtra and Andhra Pradesh and in the Union Territory of Andaman & Nicobar Islands. DSP Farms are located at Neriyaamangalam (Kerala), Vegiwada (Andhra Pradesh), Kondagaon (Chhattisgarh), Madehpura (Bihar), Abhayapuri (Assam), Pitapalli (Orissa), Mandya (Karnataka), Palghar (Maharashtra) and Dhali (Tamil Nadu) besides a Market Development cum Information Centre at Delhi. The Board has set up a Technology Development Centre at Vazhakulam near Aluva in Kerala.

## Functions

□ Adopting measures for the development of coconut industry.  
□ Recommending measures for improving marketing of coconut and its products. □ Imparting technical advice to those engaged in coconut cultivation and industry. □ Providing financial and other assistance for expansion of area under coconut. □ Encouraging adoption of modern technologies for processing of coconut and its products. □ Adopting measures to get incentive prices for coconut and its products. □ Recommending measures for regulating imports and exports of coconut and its products. □ Fixing grades, specifications and standards for coconut and its products. □ Financing suitable schemes to increase the production of coconut and to improve the quality and yield of coconut.

□ Assisting, encouraging, promoting and financing agricultural, technological, industrial or economic research on coconut and its products. □ Financing suitable schemes where coconut is grown on large scale so as to increase the production of coconut and to improve its quality and yield and for this purpose evolving schemes for award of prizes or grant of incentives to growers of coconut and the manufacturers of its products and for providing marketing facilities for coconut and its products. □ Collecting statistics on production, processing and marketing of coconut and its products and publishing them. □ Undertaking publicity activities and publishing books and periodicals on coconut and its products.

The development programmes implemented by the Board under the project Integrated Development of Coconut Industry in India are- production and distribution of planting material, expansion of area under coconut, integrated farming for productivity improvement, technology demonstration, market promotion and Information and Information Technology. Under the Technology Mission on Coconut, the programmes implemented by the Board are development, demonstration and adoption of technologies for management of insect pest and disease affected coconut gardens, development and adoption of technologies for processing and product diversification and market research and promotion.

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# Let's 'Make in India' futuristic coconut products

Dear coconut farmers,

A casual visit to a small super market in our national capital revealed that around 60 varieties of coconut products imported from Thailand were occupying their shelves. More than 20 products were made from coconut milk alone! Products from Thailand are reaching once in a month and the stock is getting over within a fortnight. On enquiry it was told that, this shop is unable to supply these products as per consumer demand. India is having 10 times more area under coconut and 27 times more production than Thailand. While a country like Thailand with such a low area under coconut cultivation and production is able to produce diversified value added coconut products and is marketing it in Indian capital city, only very few indigenous products are seen in the same super market.

The statistics division of Coconut Development Board was asked to analyze movement of prices of copra and coconut oil during the past three decades in major markets in the country. This issue of Indian Coconut Journal is carrying an article containing the result of this analysis. They are trying to study the behaviour of price movements of copra and coconut oil, its historic value; various components like trend (both short term and long term) price cycles and erratic behaviour of this time-series data of prices. Interesting observations and valuable insights are obtained through this study. Now they are trying to make future predictions of price movements of these products using econometric and statistical tools. Along with this, this journal is also carrying data on the availability of value added coconut products (domestic and imported) in various Indian markets, its availability, country of its origin etc. collected by Regional Offices and State Centres of CDB.

We have to keep in mind the changing patterns while undertaking coconut cultivation in future. Variety of planting material, value addition, consumption pattern etc needs to be chosen accordingly. The varieties of coconut trees planted and nurtured by earlier farmers were to suit to the requirements of old times when major products from coconut were only copra and coconut oil. This was the only objective during those days while selecting the plating materials. The change in consumer behaviour have led to the innovation of new products and change in marketing strategies. New technologies are developed and versatile uses of coconut products are evolved. Along with this, opening up of our economy

and agriculture during the last two decades gave us lot of insights into the potential of coconut and its versatility, as we opened our markets for export and import. The product mix started growing from mere two to more than two dozen items. At present only 8% of coconut produced in our country is used for producing value added products other than copra and coconut oil. We should increase this to 25% so that value added products can decide the price movement of coconut to ensure a fair, reasonable and steady price to coconut farmers.

Coconut is no more looked upon with its traditional status as an edible oil crop and food crop. Now a days it is the raw material for various pharmaceutical, nutraceutical and cosmeceutical products. The global market is turning to certain specific coconut products. We need to study and understand the current trends in international markets for various such value added products. Let us try to study what is going to happen in the next 20-25 years in value added coconut product in both domestic and international markets. International trend in product diversification and value addition in coconut sector needs to be closely monitored. Thailand, a pioneer in value addition in coconut started facing shortage of material for processing for value addition. Recently, a major food processing conglomerate from Thailand, which is making maximum number of coconut based products globally, has approached the Indian Embassy in Thailand to explore the possibility of tie up with Indian coconut industry for sourcing coconut from India and also for producing value added products in India through joint ventures. The Embassy has conveyed this information to Government of India, Ministry of Agriculture and Coconut Development Board. CP Group is a conglomerate, marketing products in more than 60 countries having a turnover of US\$ 12 billion per annum. Even though India is the global leader in coconut production and productivity, very few are aware of our leadership status. International business experts and consultancy groups in food processing sector started recognizing this and advising their clients to look toward India for their expansion. This could be a reason for CP Group approaching India for the raw material. International coconut product manufacturers are advised by these consultancy firms to approach India, particularly south India for sourcing coconut.

Australian company, 'Coyo' is importing coconut milk from many countries and is producing and exporting

coconut milk based products including ice cream and yoghurt to more than 12 countries including India. 'So Delicious Dairy Free', a US company, is producing and marketing around 65 different products from coconut milk! These products are exported to Europe also. The managing director of 'Big Tree Farms', world's largest coconut sugar producer and exporter based in Indonesia, has shown interest in visiting India looking forward to expand their base. In short, world leaders in coconut processing sector are eyeing India for their future growth. So what are the indications? We should act fast and our entrepreneurs need to be informed, inspired and motivated to take the advantage of home turf and be the early birds. Let our FPOs also rise up to the situation and accelerate their pace of functioning.

Who are the stars in coconut value added product market now and who are going to be the future stars? Farmer Producer Organizations (FPO) in coconut sector need to plan their future strategies in accordance with these information. Copra and coconut oil are moving away slowly from the main stream and new products have made their entry. During the last one decade, tender coconut and tender coconut water have made a strong growth record in both domestic and international markets. In the US market, palm sugar produced from coconut neera has recorded 100% growth rate per annum for the last two years and tender coconut water market records 100% annual growth continuously for the last 12 years! Virgin coconut oil, the only product which has recorded 402% annual growth in export from India compared to the previous year, was the star of India's export market during last year. While a US based company is producing 65 coconut milk based products, Indian coconut farmers, through the FPOs, can very well explore the possibility of making at least a quarter of the number of such products.

Most often, our farmer collectives are not recognizing their strength and opportunities. It was from the realization that the millions of small and marginal coconut farmers are individually weak and helpless and cannot take up greater tasks of aggregation of products and processing on individual basis; CDB initiated the formation of three tier farmer collectives, the FPOs in coconut sector. FPOs need to inform, inspire and motivate their members to open their eyes to the new realities and make use of the opportunities thrown open in our country. Make in India campaign and the new Foreign Trade Policies has to be effectively utilized by our FPOs and other entrepreneurs. Studies need to be undertaken on the future course of action. The assistances and opportunities available for the farmers and entrepreneurs, the potential of export markets and the opportunities available for exporting coconut products in the new global markets need to be

explored. Accordingly, each Coconut Producer Company needs to design a product basket of coconut products both for the domestic and international markets. Assisting and equipping the FPOs through facilitation and hand holding them is the role of Coconut Development Board while formulating innovative marketing strategies.

Urban India comes ahead of USA in the order of populous nations. The population of urban India is about 360 million above the total population of USA, which approximately is 315 million. If 75% of urban population with better purchasing power is taken into account, it can be said that our domestic market is bigger than that of USA. More than 78% of India's urban population are located in the 63 major cities. Our target should be introducing, making available and marketing maximum value added coconut products in these cities. If the Thai producers could get hold of the nook and corner of Indian market, is it not much easier for the Indian producers? We need to produce best quality products with attractive packaging for making it available to consumers through innovative marketing strategies. The primary role of this task rests with FPOs in coconut sector.

We have already discussed about innovative marketing strategies. Getting to know the consumer behaviour and market trend and, making available required products in sufficient quantities in appropriate locations is very much essential for making it successful. Collectives of small and marginal farmers can take the lead role in this. We need to change to a pattern where products are made in accordance with the market demand and farming is planned accordingly. There are so many intermediaries between the producers and consumers that farmers are getting much less price even when consumers are paying high price. Many avenues are available now wherein the producer can directly market his produces to the consumer. The new initiative of Central Government, Online National Agriculture Market (ONAM) is an excellent opportunity to our farmers to take their product to the national markets. Our FPOs should attempt at directly marketing their products to the consumers using the new opportunity of ONAM rather than selling it through intermediaries. Coconut Producer Companies need to learn modern management techniques for knowing the market and for initiating production and supply of products as per consumer demand. It is high time that we move away from the traditional thinking and venture into farming, keeping these objectives and opportunities in our mind. Let us make the best use of our opportunities.

With regards



TK Jose  
Chairman

# Coconut oil market – an insight and the way forward

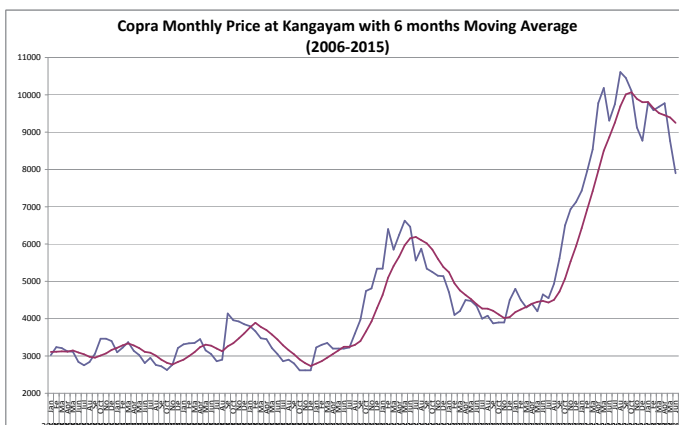
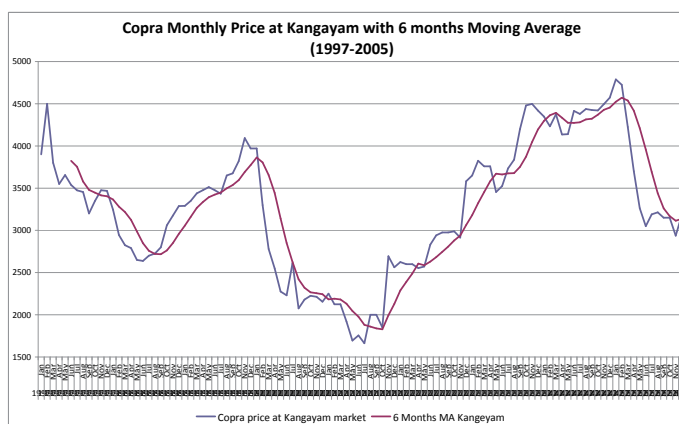
● Vasanthkumar V.C \* ● Renu P. Viswam # ● Vijayan R # ● Geethika Thomas #

Coconut is a versatile crop grown all over the world. India, Philippines and Indonesia are the major producers of coconut accounting for three-fourth of the global coconut production.

India accounts for nearly 31% of global coconut output. Kerala, Tamil Nadu, Karnataka and Andhra Pradesh are the leading producers of coconut in the country. Coconut, copra and coconut oil markets are concentrated in these four southern states of India. The price of coconut and coconut oil is influenced by many factors viz. production, global demand, policy decisions of the government formulated from time to time, price of other vegetable oils etc. The marketability and price realization of coconut and coconut products determine the financial security of the coconut farmers. The price behaviour of coconut and its products has a profound influence on the rural economy of many states of India.

This article is making an econometric analysis of the price of coconut oil and copra in the last three decades and the farmers are warned on how to tackle the price fluctuations. Coconut oil is purely an elastic commodity as every movement in its production and consumption are reflected in the price. To analyze the price behaviour, the basic principles of Time Series is used for the analysis, which comprises of four components viz. trend, cyclicity, seasonality and irregularity. The presence of all these factors is clearly visible while observing the price behaviour of the last three decades. The monthly average and daily price of copra and coconut oil for the last three decades (decade wise) were taken for analysis from three markets in Kerala, viz. Kozhikode, Kochi and Alappuzha and from Kangayam market in Tamil Nadu. The market price from 1988 to 2015 were analyzed based on the comparison

**Montly Price of copra at Kangayam market and six months moving average**



between price and moving average. While plotting moving averages with periods of 30, 45, 60, 90 and 120 days, it was observed that the 120 days period moving average for daily price and six months moving average for monthly price is most suitable for interpretation. As a good relationship between copra and coconut oil exists in all the markets, the movement

of price of these products in different markets is almost alike.

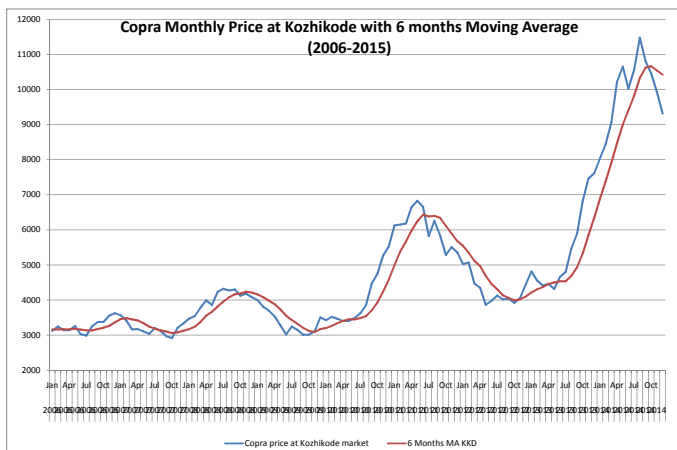
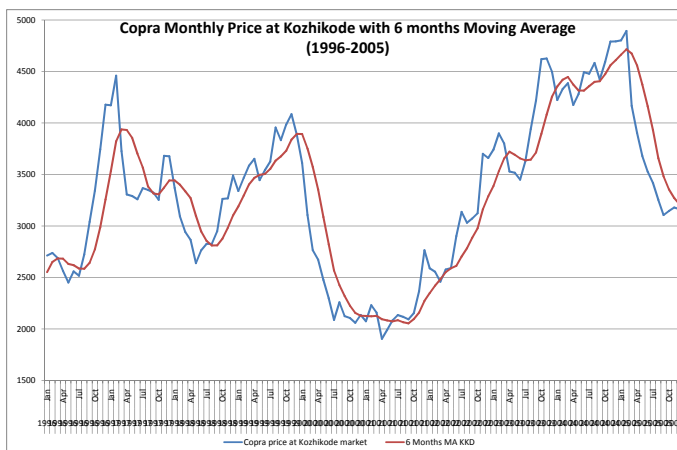
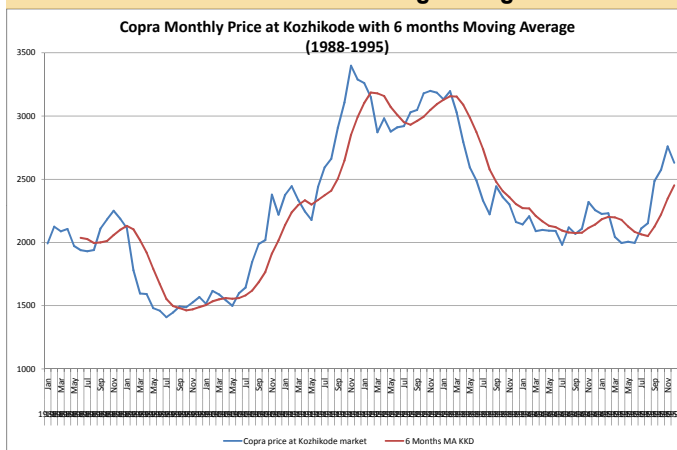
Even though there were fluctuations comprising of bullish and bearish phases, ultimately an overall increasing trend is visible in the price of coconut products during this period. The difference of price recorded at two crests and troughs in consecutive cycles is constantly increasing. During the first decade, the lowest price of Rs.1439/- per quintal for copra at Kochi market was recorded in July 1988, whereas the highest price recorded for the same commodity in the same market was Rs.3005/- per quintal, in November, 1991. While the difference between these two extremes is Rs.1966/- in the first decade, a higher increase in difference is observed in the next two decades. Similarly, the difference between the price recorded at crests and troughs in successive cycles is also increasing. Apart from this, there also exists regular cycles. While examining the wave lengths of these cycles, it can be seen that, even though there were no relation between these cycles in the earlier stages, the cycles in the third decade (2006-2015) depict a uniform pattern. The difference in periods of cycles of two successive increase and decrease is more or less uniform, whereas, the length of cycles during a price increase is three years and the same during a price decrease is almost two years. As such, even though a fall in price is expected upto August 2016, the prices remained without much noticeable decrease. Farmer Producer Organizations can stabilize this price trend through recourse mobilization, procurement and marketing of products through their three tier farmer collectives.

Seasonality is another factor which is strongly visible in the coconut market price. In general, coconut prices remain low during the monsoon season and with the onset of winter season the price starts picking up. Based on the monthly price, it can be observed that the highest prices are recorded during November-December and lowest prices during May-June.

The close of harvest season in Kerala and Tamil Nadu, sluggishness in tender nut demand during monsoon and the increasing demand from upcountry markets for coconut oil during festival seasons were attributed as the major reasons for this changing price pattern. Presently, the price pattern is influenced by various other factors such as setting up of tender coconut water, virgin coconut oil and other coconut processing units in Tamil Nadu and Karnataka and the increase in the usage of tender coconut from the earlier 10-15% to

25% of the production. Coconut Producer Companies formed by farmer collectives are also setting up coconut value added production units. Global giants like Vita Coco and C P Group are associating with Indian companies in setting up units in India. Many more companies are in the process of commencing production in India, either directly or through joint ventures. Since the main harvesting season in Kerala is from January to

### Monthly Price of copra at Kozhikode market and six months moving average





May and that of Tamil Nadu is from February to June, there is a tendency of recording low prices from December to June while the arrivals are low. The three tier farmer producer organizations can arrest this price fall or can keep the price steady through proper coordination. The population of urban India is higher than the total population of USA and 75% of this urban population is having better purchasing power. Coconut farmers can tap this opportunity by introducing maximum value added coconut products in the urban centers of India.

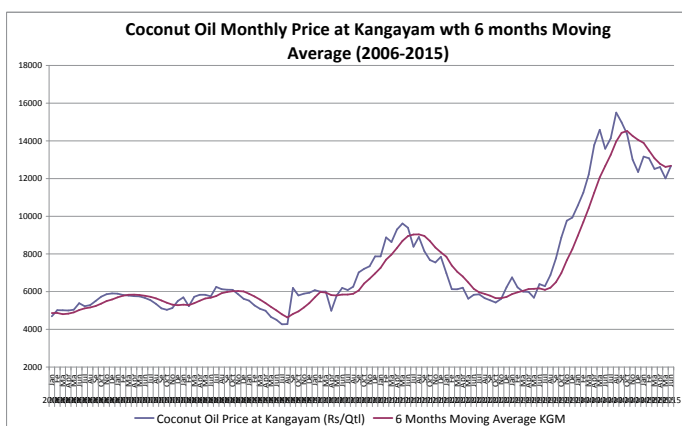
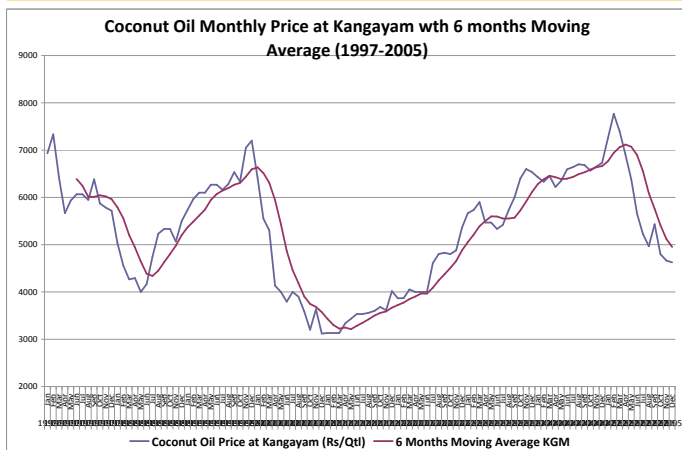
During these three decades, especially during the period from 1980 to the beginning of this millennium, randomness in price is visible, as the wave lengths during the periods of increasing and decreasing cycles doesn't show a uniform behaviour. The highest bullish phase recorded in this period is during September 2013 to August 2014, which is an all time record. The price of copra in Kozhikode market sky rocketed from Rs.5,887/- per quintal to Rs.11,475/- per quintal and coconut oil from Rs.8,620/- to Rs.17,524/- per quintal. Compared with the other bullish phase in these three decades, the increase from trough to crest during this cycle is huge and stable. As a result the difference between the highest and lowest price in the third decade is also high.

### Reasons for price fluctuations

Two major reasons are attributed to the recent price variation. Coconut production in the four southern states is showing a decreasing trend and contributes to 89% of the country's total coconut production. The impact on shortage of the produce as a result of this decrease is much higher. Results of the statistical survey for concurrent estimation of production and productivity of coconut in India conducted by the Board since 2012-13 also underline this fact. As per the study conducted during 2014-15, a decrease in production is estimated in the states of Kerala, Karnataka and Andhra Pradesh. Compared to the previous year, production in Kerala is expected to record a decrease of 17.48%, while in Karnataka the estimated decrease is 4.87%. Even though a slight increase is estimated in the coconut production of Tamil Nadu, compared to the higher production decrease in the state during the previous year, a decrease in coconut production in Tamil Nadu is also observed during 2014-15. The all India production of coconut in 2014-15 is estimated to come down by 10% compared to the previous year.

Andhra Pradesh, which was severely affected by two successive cyclones, viz. Phailin in 2012

### Monthly Price of coconut oil at Kangayam market and six months moving average



and Hud Hud in 2014, is expected to experience the highest fall in production in 2014-15. As a result, the processing companies in the state will be forced to procure produce from the neighboring states to meet their production capacity. Quite naturally, as per the basic demand-supply theory of Economics, variations will be evident in price. From 2012 onwards, diversion of coconut for value added products like processed tender coconut water, virgin coconut oil, desiccated coconut powder, coconut milk, coconut milk powder etc. is increasing. The change in the consumption pattern of coconut also catalyzed the steep increase in price during 2013 to 2014. It is natural to experience a bearish phase for all bullish phase in each cycle. But, maintaining price stability and wave length between cycles to the minimum possible extent depend on how the coconut farmers react to the price behavior.

### Limitations and Remedial Measures

As individuals, farmers have limitations in intervening into the market, but as collectives, unlimited opportunities are awaiting them. The formation of three tier farmer collectives in coconut sector has gained momentum and is spreading across the country with more vigour and strength. Within a

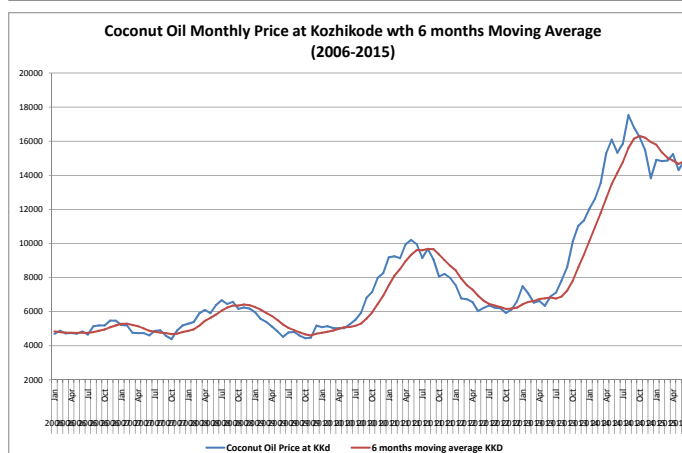
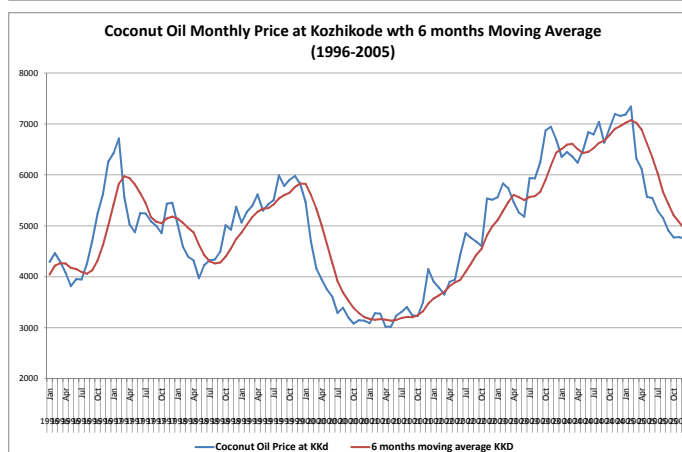
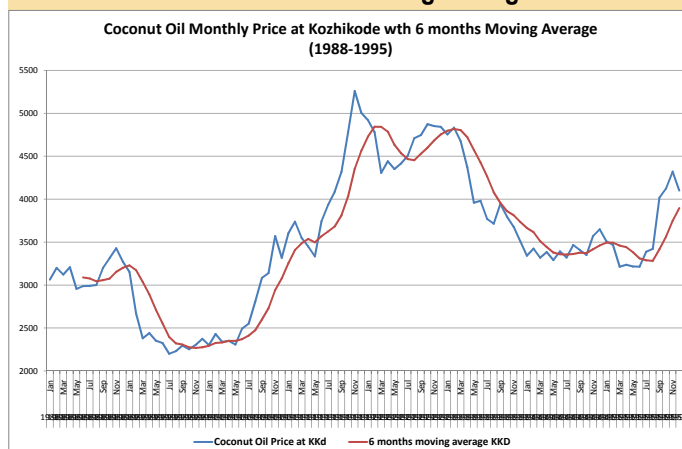


short span of five years, this movement has reached in the formation of 7806 Coconut Producer Societies, 580 Coconut Producer Federations and 35 Coconut Producer Companies. Definitely these Farmer Producer Organizations (FPOs), can react and take precautionary steps against the price fall. Farmers should not get panic and stop selling their entire produce at the available price in case of false propaganda on price fall. Under the efficient leadership of FPOs, the farmers should have a clear plan for procurement and processing and work accordingly so as to control arrival of produce in the market.

In this scenario, Coconut Producer Companies, the upper tier in the FPO has a major role to play. Tapping 1% of the total palms for Neera production, (tapping 10,000 palms, based on the assumption that a company is having 10, 00,000 bearing palms under it), setting up coconut oil processing units with capacity of five MT per day, installing modern copra driers in all the Federations (with the capacity to process 10,000 nuts per batch), setting up virgin coconut oil units with a capacity of 25,000 nuts per day etc. need to be the immediate target of the the Coconut Producer Companies. Through this movement, by products such as husk, shell and coconut water can be effectively used to generate additional revenue to farmers. There is also need for the companies to cooperate in marketing of coconut products. Think of a situation where 100 Coconut Producer Companies are formed all over the country and they plan strategies and execute it with good team work. This will definitely change the scenario and will certainly give a facelift to this sector. In addition, Companies should also aim at increasing the productivity of coconut. Agricultural and management practices shall be planned accordingly. Since the availability of agricultural land is scarce and costly, increasing productivity is a better option to increase production. High revenue can be realized through a marginal increase in the cost of inputs. Availability of good planting materials is also to be ensured. Companies should promote local nurseries in each Federation which can ensure the timely supply of good quality coconut seedlings to farmers. Taking up good management practices, adopting novel irrigation methods and structural changes in coconut cultivation is the need of the hour.

This article is an attempt to inform the farmers about the external forces that create temporary sluggishness in the coconut markets with vested interest. The objective of the study is to inspire and motivate the farmers and to educate them to react accordingly. Statistics section of the Board

### Monthly Price of coconut oil at Kozhikode market and six months moving average



will continue with the studies and disseminate the observations and information to FPOs on a fortnightly basis. Board welcomes Research and Educational Institutions to become part of this study. ■

*\*Statistical Officer, #. Statistical Investigators, CDB Cochin-11*



 **K. S. Sebastian**, *Assistant Director, Marketing, CDB, Kochi-11*

**T**he basic function of marketing is to attract and retain customers at a profit. The failure of many products in the market is often attributed to a lack of attention to customer needs. It is estimated that the cost of attracting new customers is about six times higher than the cost of retaining existing ones. Companies recognized the importance of building relationships with the customers by providing satisfaction and attracting new customers by creating added value only succeeded in the market.

## Market segmentation

To implement marketing concepts and satisfy customer needs successfully, different product offerings must be made to the diverse customer groups. The technique used by marketers to get to grips with the diverse nature of markets is called market segmentation. Market segmentation is defined as the identification of individuals or organisations with similar

characteristics that have significant implications for the determination of marketing strategy.

Market segmentation involves the division of a diverse market into a number of smaller submarkets that have common features. The objective is to identify groups of customers with similar requirements so that they can be served effectively. It is near impossible to create a marketing mix that satisfies every individual's particular requirements exactly.

There are many reasons for companies to segment their markets. It allows companies the opportunity to enhance their profits. Many customers are willing to pay a premium for products that match their needs. Through segmenting markets, companies can examine growth opportunities and expand their product lines. In many competitive markets, companies are not able to compete across all segments effectively; by segmenting

markets, companies can identify which segments they might most effectively compete in and develop strategies suited for that segment.

Once the market segments have been identified, the next important activity is the selection of target markets. Target marketing refers to the choice of specific segments to serve and is the key element in marketing strategy.

The aim of evaluating market segments is for a company to arrive at a choice of one or more segments to concentrate on. There are four generic target marketing strategies from which to choose: undifferentiated marketing, differentiated marketing, focused marketing and customised marketing.

## Undifferentiated Marketing

Market analysis will occasionally reveal no pronounced differences in customer characteristics that have implications for a marketing

strategy. Alternatively, the cost of developing a separate marketing mix for different segments may outweigh the potential gains of meeting customer needs more exactly. Under these circumstances a company decide to develop a single marketing mix for the whole market. The absence of segmentation is called undifferentiated marketing. Companies that lack a marketing orientation may practice undifferentiated marketing through lack of customer knowledge. Undifferentiated marketing is more convenient for managers since they have to develop only a single product/marketing strategy. Sugar and salt are examples of products that can be marketed effectively through an undifferentiated strategy.

### Differentiated Marketing

Specific marketing mixes can be developed to appeal to all or some of the segments when market segmentation reveals several potential targets. This is called differentiated marketing. It is a popular market targeting strategy that can be found in sectors as diverse as cars, hotels and fashion retailing. A differentiated marketing strategy exploits the difference between marketing segments by designing a specific marketing mix for each segment. A coconut producer company that produce neera might identify life stage based market segmentation and produce flavoured neera for the kids and carbonated neera for the youths and plain neera for the middle aged customers.

### Focused or Concentrated Marketing

Just because a company has identified several segments in a market, it does not mean that it should serve them all. Some may be unattractive or out of step with its business strengths. Perhaps the most sensible route would be to serve just one of the market segment. When a company develops

a single marketing mix aimed at one target(niche) market it is practising focused/concentrated marketing. This strategy is particularly appropriate for companies with limited resources. A company producing packed tender coconut water can project their product as the natural sports drink and concentrate on the segment 'athletes'.

### Customized Marketing

The requirements of individual customers in some markets are unique, and their purchasing power sufficient to make viable the design of a discrete marketing mix for each customer. Segmentation at this disaggregated levels leads to the use of customised marketing.

### Positioning

Positioning can be defined as the act of designing the company's offering so that it occupies a meaningful and distinct position in the target customer's mind. Positioning is essentially that act of linking your product or service to the solutions that consumers seek and ensuring that, when they think about those needs, your brand is one of the first that comes to mind.

Positioning is both important and difficult. It is important because today we live in an over communicated society. Consumers are constantly exposed to thousands of marketing messages per day. To cut through this clutter, a company needs messages that are simple, direct and resonate with the customer's needs. Failure to gain a position in the customer's mind significantly increases the likelihood of failure in the market place.

### Branding

Developing a brand is difficult, expensive and takes time. Brands enable companies to differentiate their products from competitive offerings. The financial value of companies can be greatly enhanced by the possession of strong brands. The concept of brand equity is used to measure the strength of the brand

### Novel Usages

It's difficult to escape pollution but easy to get rid of its dullness.

Pond's Pure White. It has activated carbon, which has the power to take out pollution particles and impurities. So it cleanses your skin from deep within to give you a pollution - free glow.

Activated carbon was prominently used for pollution control, gold purification and automotive industry. Activated carbon's power to take out pollution particles and impurities has attributed it novel usage in cosmoceutical industries too. This would add to the demand for this product.

in the market place and high brand equity generates tangible value for the firm in terms of increased sales and profits. Strong brand names can have positive effects on consumer perceptions and preferences. This in turn leads to brand loyalty where satisfied customers continue to purchase a favoured brand. The impact of strong, positive perceptions held by consumers about top brands means it is difficult for new brands to compete. Even if the new brand performs well on blind tests, this may be insufficient to knock the market leader off the top spot.

Strong market leading brands are rarely the cheapest. This is because their superior brand equity means that consumers receive added value over their less powerful rivals. Strong brands also achieve distribution more readily and are in a better position to resist retailer demands for



price discounts. Research into return on investment for US food brands supports the view that strong brands are more profitable. The number one brand's average return was 18 per cent, number two achieved six per cent, number three returned one per cent, while the number four position was associated with a minus six per cent average return on investment.

Brands are a source of information about a product. Through their associated marketing communications, they communicate information about a product and its benefits which assist consumers in making a buying decision. The associated brand elements also make it easier for consumers to identify products. Brands reduce functional risk (that the product does not perform expectations), financial risk (that is not worth the price that is paid) as well as social risk (that the product produces social embarrassment). As we have seen already, we live in an over communicated society where consumers are faced with a proliferation of product choices. To rationally evaluate all these options is impossible, so brands make consumers' lives easier by providing shortcuts for product choices. Trusted and preferred brands are purchased again and again giving rise to the notion of brand loyalty.

### Product Life Cycle(PLC)

Both individual brands and product lines need to be managed over time. A useful tool for conceptualizing the changes that may take place during the time that a product is on the market is called the product life cycle. The classic product life cycle has four stages introduction, growth, maturity and decline.

The PLC emphasizes the need to review marketing objectives and strategies as products pass through the various stages.

When a product is first introduced in to the market its sales growth is typically low and losses are incurred

as a result of heavy development and initial promotional costs. The strategic objective is to build sales by expanding the market for the product. The brand objective will be to create awareness so that customers will become familiar with generic product benefits. The product is likely to be fairly basic, with an emphasis on reliability and functionality rather than special features to appeal to different customer groups.]

The second stage is marked by a period of faster sales and profit growth. Profits may begin to decline towards the latter stages of growth as new rivals enter the market attracted by the fast sales growth and high profit potential. The strategic marketing during the growth phase is to build sales and market share. The strategic focus will be to penetrate the market by building brand preference.

Sales would peak and stabilize as saturation occurs. The need for effective brand building is felt most acutely during maturity and brand leaders are in strongest position to resist to pressure on profit margins.

During the decline stages (when new technology or changes in consumer tastes work to reduce demand for the product) sales and profits fall. Suppliers may decide to cease production completely or reduce product depth.

### New Product Development

The introduction of new products to the market place is the lifeblood of corporate success. Changing customer tastes, technological advances and competitive pressure mean that companies cannot afford to rely on past product successes.

The degree of risk and reward involved will vary according to the new product category. New-to-the-world products normally carry the highest risk since it is often difficult to predict consumer reaction. Often, market research will be unreliable in predicting demand as people do not

really understand the full benefits of the product until it is on the market and they get the chance to experience them.

Product development consists of seven steps viz. idea generation, screening, concept testing, business analysis, product development, market testing and commercialisation. The sources of new products idea can be internal to the company; scientists, engineers, marketers, sales people and designers. Once new product ideas have been developed they need to be screened in order to evaluate their commercial value. Once a product idea has been deemed worthy of further investigation, it can be framed into a specific concept for testing with potential customers. Concept testing thus allows the views of customers to enter the new product development process at an early stage. The buying intentions of potential customers are a key factor in judging whether any of the concepts are worth purchasing further.

This stage involves the development of the actual product. It is usually necessary to integrate the skills of designers, engineers, production, finance and marketing specialists so that product development is quicker, less costly and results in a high quality product that delights customers. Products also need to be tested with consumers to check their acceptability in use.

It is measurement of customer acceptance by forcing consumers to put their money where their mouth is, so to speak. The basic idea is to launch the new product in a limited way so that consumer response in the market place can be assessed. The final stage of this rigorous process is the launch of the product in the market. Bringing out new products and services is the key to long term corporate success. It is a risky activity, but a systematic approach is likely to improve the chances of success. ■

# Re-orientation of Coconut production to meet the demand for value addition

● R Jnanadevan, Deputy Director, CDB, Kochi-11



**P**ost harvest processing of coconut is now being changed from the edible and inedible traditional products to several other value added products. Research conducted by the Board and other research institutions with technical and financial support of the Board has developed new technologies for several coconut products and byproducts. Presently several food products are developed from coconut kernel like desiccated coconut, coconut milk powder, coconut milk and virgin coconut oil which are having high demand and prospects for commercial production and marketing. Hence high kernel output per hectare has now emerged as an important factor in coconut. We have to analyse various characteristics that facilitate industrial processing taking into account the changing uses of coconut and the changing

technologies in handling and processing. Other important changes, namely, the small size of holdings due to fragmentation of coconut land and the necessity to breed varieties and forms suitable for smallholder management need to be explored. A fast growing consumer demand is recorded for coconut kernel based products especially in those areas where fresh coconut are not readily available and in cities where people do not have enough time in grating coconut for various culinary purposes. Kernel based ready to eat products like coconut milk powder and edible coconut gratings are now acceptable and are widely used by different categories of consumers for usage in households, bakery and confectionary units, hotels and other fast food eating centers. Tender coconut is a refreshing drink and a delicious food across

the globe. It's valuable sweet water and gelatinous kernel is a tasty and healthy food. Value added products made from tender coconut are also available in the country. Another important value added product is Neera, the unfermented sap from coconut inflorescence. Several value added products from Neera such as Neera sugar, honey, chocolate and jaggery are also available now which are having fast growing demand. Hence there is need for reorienting production or coconut farming based on the demand of processing industries i.e. with high kernel content, nuts suitable for tender nut purpose and which can yield more Neera.

## Increase production of nuts with higher kernel output

It is a matter of concern that there exist great disparity in kernel to nut

weight ratio in variety to variety and also soil to soil. The kernel output is low in India compared to other major coconut growing countries. Kernel nut ratio is different even in various states of India. The number of nuts required for production of one tonne of coconut kernel in Srilanka, Philippines, Indonesia and Malaysia ranges from 3000 to 3500 nuts against 4000 to 4500 nuts in India. This is also reflected in the price of coconut and coconut products in India and other countries. This demands the need for re-orienting our efforts both in research and development towards achieving increase in production in terms of higher kernel output per tree or per unit area.

Potash is one of the three major fertilizer element commonly recommended for successful production of any crop. It is required for coconut in large amounts. For example an arecanut tree requires 250 gram of potash while coconut palm requires 1200 gram per year, that is five times of the requirement for arecanut. Potassium is known to be important in plant metabolism in regulation of stomata function (water economy of the plant) and in the formation of chlorophyll. It also participates in photosynthesis, helps in root development, enabling uptake of more nutrients and water from the soil and subsequently in increasing yield and improving quality of nuts. Coconut is a heavy



feeder of potassium. Potassium stimulates early shooting and early fruit maturity. Supplementing potassium in the soil substantially increases the yield. Experimental results revealed that palms receiving regular dose of fertilizers bear fruit at the fifth year of planting while palms with proper potash nutrition needed eight years to start yielding. Studies conducted indicate that nitrogen contribute only eight per cent increase in kernel yield whereas potassium contribute around 25 to 39% increase. Thus potassium plays an important role in coconut kernel quality and thickness. The deficiency of potassium affects all the production factors, particularly the nut set and would result in poor quality of nut and kernel. Potassium is also found to have effect in the early bearing of coconut palms.

A number of factors such as the availability

and the fixation of potassium in the soil affect potassium status of individual coconut soil. The absorption of potassium is interfered by an excess of nitrogen, calcium and magnesium in the soil, thus affecting potassium nutrition and kernel weight of coconut. The response of coconut to the available potassium is also influenced by other ionic inter-relationship in the soil and absorption of potassium by the palm.

For better and profitable farming and higher kernel yield, balanced fertilization with nitrogen, phosphorus and potassium is most essential. The general recommendation for fertilizing adult bearing palm is to apply 500g N, 320g  $P_2O_5$  and 1200g  $K_2O$  in two split doses, namely  $\frac{1}{3}$  of the above dosage during May- June and two – third during Aug – September. To supply this quantity of nutrient it is required to apply 1.1Kg urea, 1.5kg mussoriephos and 2 kg Muriate of Potash. This enables the farmer to get higher crop yield with higher kernel output.

High crude fibre content in kernel is perhaps related to firmness or rigidity of kernel. The high fibre kernel gives good quality kernel which is not rubbery and possesses more milk content. The same applies to expelling cream from grated kernel. Firmness or rigidity is favorable to efficient cutting of kernel into small particles for production of desiccated coconut or expelling cream. The mature kernel of dwarf varieties and immature kernel of tall varieties are known to contain lower levels of crude fibre than mature kernels. Hybrid varieties, especially Chandrasankara, Kalpasamardhi and Tall varieties Lakhadweep ordinary, Malayan Dwarf varieties are giving comparatively more kernel output than other varieties. Hence for future replanting and new planting programmes, planting of these varieties can be given more





preference. However, more varietal studies on kernel and coconut milk outputs are also to be taken up by research agencies.

### Plant varieties suitable for tender nut

Studies conducted by various research institutions identified suitable varieties for tender nuts. Dwarf cultivars like Chowghat Orange Dwarf (COD) was recommended and released as best tender nut variety by CPCRI for this purpose. Besides these varieties such as Chowghat Green Dwarf (CGD) Gangabondam and Malayan Orange Dwarf (MOD) are also recommended for tender nut purpose. However, exotic varieties with more water content and sugar and other nutrient contents are also available in other countries suitable for cultivation in India for this purpose. Malayan Dwarf varieties, King Coconut seen in Srilanka and Cameroon Red Dwarf in African countries are suitable for cultivation in India for this purpose. These varieties can also be planted in our country while taking up new planting and replanting coconut to meet the tender nut demand in the market.

### Suitable varieties for Neera production

Neera tapping and coconut palm sugar industry is another source of higher income to small coconut holders and making coconut farming profitable in future. Growing coconut palms with higher Neera production is another re-orientation in coconut farming which is required to meet the increasing demand of Neera and Neera based value added products. Neera yield differ with the variety, vigor of the palm and the seasons. Trees which yield large number of nuts and are in their prime age of around 40 years are known to produce plenty of Neera. The annual yield of neera in such palms had been found to vary

## Letter to Editor

I write to convey our appreciation for the April 2015 ICJ issue and its excellent content beginning with the Chairman's page and the individual articles promoting coconut planting with carefully selected material to ensure viability of coconut farmers in the long term. The adage of 'beginning with the end in mind' is so true in coconut cultivation going forward today especially with the fast emerging non-traditional products of coconut of much higher and increasing value driven by the market demand. Selecting what to plant is to be determined by what final products one would pursue in the expanding market – this could become the trend in coconut cultivation. India's exemplary ways become the endorsed way forward also for many other coconut nations around the world.

Keep up the great work.



**Uron Salum**  
Executive Director  
Asian and Pacific Coconut Community  
Jakarta, Indonesia

I found the April 2015 issue of Indian Coconut Journal very interesting.

**Merv Aranha,**  
Concession Drive  
Glencoe, Ontario, Canada



between 300 and 400 litres. In India an average yield of 300 litres has been recorded for a tapping period of six months. Studies on tapping in Sri Lanka revealed that the hybrids yield more neera than the Ordinary Talls (OT). In India varieties like DxT hybrids and Lakshadweep ordinary (Tall) have reported to higher neera yield/tree. The vigor of palms used for neera tapping should be maintained by adopting integrated nutrient management practices with irrigation to get maximum economic yield of Neera on a sustainable basis.

In household uses as well as for the local markets, the quality and yield of kernel, quality and quantity of water in tender coconut and neera yield per spathe or palm are important considerations. There are dwarf cultivars which are known to yield nuts containing large

volume of water with good flavour and higher contents of total and reducing sugars. Likewise, some hybrid and tall cultivars produce nuts with higher proportions of both kernel and neera. Such cultivars could be popularized and also used in breeding programmes. The neera yield of these cultivars and their hybrids is also likely to be high as high yielding palms are known to produce plenty of neera. Such cultivars or hybrids have to be identified and promoted.

Thus timely adoption of integrated management practices, planting hybrids and other varieties suitable for kernel, neera and tender coconut production are essential to re-orient production based on demand for processing industry for making value added products suiting the changing need and taste of the customers. ■

# Promotion of coconut and its value added products- Marketing Strategies

● G.M. Siddarameswara Swamy, Assistant Marketing Officer, CDB, Kochi



Over the years, Coconut Development Board (CDB) has been implementing several schemes for the Integrated Development of Coconut Industry in India since its establishment in 1981-82. As a result of the implementation of various programs of the Board, the production and productivity of coconut in the country has recorded manifold increase.

The total area under coconut cultivation in India is 2137 thousand hectares and annual production of coconut in the country is 22680 million nuts. India ranks first in coconut production and third in area under coconut in the world. Even though, India is the largest coconut producing country in the world, its contribution to international market remains insignificant. Due to the efforts made by the Board, ample growth is recorded in coconut processing. As a result, many value added coconut products complying with international standards are introduced in the Indian market. The thrust in product development

value addition, product diversification and quality improvement gradually resulted in diversification of coconut market.

Today the world-wide trend in value addition, product development and product diversification in several coconut producing countries is growing fast. As a result, there is an increase in demand for value added coconut products in the international market. Accordingly there is need to embark upon product diversification and by-product utilization through value addition. Ironically due to the increasing competition from other edible oils, the demand for coconut oil is coming down in the domestic market. Further, the misconception against coconut oil has resulted in decline in demand in the domestic market. Coconut is not only significant in socio cultural needs of our society, but also in the national economy as a potential source of rural employment and income generation to coconut farmers.

In view of the changing

scenario in coconut sector, it is most vital to develop marketing strategies for coconut and its products and make fresh appraisal of the changing pattern of coconut production, trade and its industries. This will help the genuine manufacturers of coconut products to capture the domestic market for coconut products particularly in nontraditional belts.

## Marketing Practices

Marketing of coconuts differs from that of other fresh fruits due to its natural durability, which is sold as fresh tender nut, mature nuts and dry nuts. Now a days coconut is available in many value added forms that too in consumable packets. Marketing of coconut products like any other horticultural products, has two aspects i.e. marketing activities and market promotional activities. In marketing activities, sellers and buyers have mutual coordination in each other's activities, where goods and services from producers move through certain channels by conscious application of marketing

tools. Market promotional activities comprises of gathering information and passing it to consumers, farmers, traders, business organizations and other concerned agencies to facilitate marketing functions. The tools used for market promotional activities are marketing research, advertising and effective coordination between producers and consumers. Market promotional activities play the supporting and strengthening role in marketing activities which require professional and commercial skill.

A product basket can be made from coconut with an array of value added products. Some of the products that can be made from coconut is detailed below. Coconut farmers of our country through their farmer collectives need to venture into producing various products for realizing a fair, reasonable and steady price for coconut.

### **Packed Tender coconut water in pouches/ aluminium cans**

The water of tender coconut, technically the liquid endosperm is the most nutritious wholesome beverage that the nature has provided for the people of the tropics to fight the sultry heat. It has caloric value of 17.4 per 100gm. Coconut Development Board in collaboration with Defence Food Research Laboratory, Mysore has developed the technology for packing tender coconut water in pouches/ aluminium cans with shelf life of more than six months under normal ambience condition and 12 months under refrigerated conditions.

### **Neera (Coconut Flower Sap)**

Neera is the non-alcoholic and nutritious drink from the immature inflorescence of coconut tree. Neera is popular as a delicious health drink. It is good for digestion, facilitates clear urination and prevents jaundice. The nutrient-rich “sap” has low Glycemic Index (GI of only 35) and hence diabetic-friendly since very low amounts of the sugar is absorbed into the blood. It is an abundant source of minerals, 17 amino acids, vitamin C, broad-spectrum B vitamins and has a nearly neutral pH. Treated Neera can be preserved in cans upto two months at room temperature.

### **Coconut Palm Jaggery**

Coconut Palm Jaggery is made from unfermented coconut sap. It is used as a sweetening agent for the preparation of dishes and is superior to cane jaggery.



### **Coconut Palm Sugar**

The coconut palm syrup or jaggery can be crystallized to produce fine granules of sugar. Transition of coconut jaggery into ground granule sweetener is more accepted by global markets. The application of palm sugar offers



huge potential owing to its important health attributes, the low Glycemic index and its high nutrient content. It can be the most suited alternative sweetener, especially when agave sugar is being rejected owing to the high fructose

content. It is understood that in countries like Indonesia, around 6 lakh MT of coconut sugar is produced per year.



### **Ball Copra**

Ball copra is an edible grade of copra consumed as a dry fruit and used in preparation of sweets and also used for religious purposes. Edible copra is also available in cups.

### **Coconut Oil**



Coconut oil is used in the country as a cooking oil, hair oil, body oil and industrial oil. Coconut oil is made from fully dried copra having maximum moisture content of six per cent. Steam cooking of copra is also practiced by some millers to enhance the quality and aroma of oil. Coconut oil is marketed in bulk as well as in packs ranging from sachets containing 5 ml. to 15kg tins. The branded coconut oil in small packs is mainly marketed as hair oil and body oil. There are several brands known for their superior grade oil which have export market throughout the world. India has unbeatable quality advantage in this sector. Refined coconut oil is also manufactured in the country for industrial uses. Refined coconut oil is mainly used in the manufacture of biscuits, chocolates and other confectionery items, ice cream, pharmaceutical products and costly paints. Generally, filtered coconut oil is used for cooking and toiletry purposes.

### **Virgin coconut oil**

Virgin coconut oil is made from the milk extracted from raw kernel. Virgin coconut oil (VCO) is abundant in vitamins, minerals and anti-oxidants, thus making it the ‘mother of all oils’. Extracted from fresh coconut kernel without any chemical processes, it is the purest form of coconut oil, water white in colour. Virgin coconut oil is a major source of Lauric Acid and Vitamin E. Virgin coconut oil is free from trans fatty acid, high in medium chain fats (MCFA) or medium chain triglycerides (MCTs) known as lauric acid, which is identical to special group



of fats found in human breast milk. VCO is widely consumed as MCT oil for weight loss treatment, etc. It is an ideal massage oil for babies and also for skin and hair applications. It protects the skin from infections caused by bacteria, viruses and fungi, prevents dandruff and hair loss. It even eases muscular pain. Virgin coconut oil slows down the ageing process and it helps in the absorption of fat soluble vitamins A, D, E and K.

### Desiccated coconut (DC)

Desiccated coconut is used as a substitute to grated raw coconut in various food preparations. Desiccated coconut is marketed in bulk as well as in small packs. Defatted desiccated coconut is also available in the country. It finds extensive use in confectioneries, puddings and many other food preparations as a substitute to raw grated coconut.

### Coconut Cream, Coconut Milk

Coconut cream is the processed milk extracted from fresh matured coconuts. This is an instant product, which can either be used directly or diluted with water to make various preparations such as curries, sweets, desserts, puddings, etc. It can also be used in the manufacture of bakery products and for flavoring food stuffs. Processed and packed coconut cream has a shelf life of six months and once opened it should be stored in refrigerator for subsequent use.



### Spray Dried Coconut Milk Powder

The spray dried coconut milk powder is available in convenient and ready to use packs with same

**Table 1** Processing capacity of major coconut processing units (edible) in India

Name of the Coconut Product	Number of Units	Processing Capacity (Million nuts per year)	Volume of production
Tender Coconut Water	22	123.00	24,600 K. ltrs.
Desiccated Coconut Powder	70	723.75	72,375 MT
Virgin Coconut Oil	36	60.00	3,600 MT
Coconut Chips	4	00.36	36 MT
Vinegar Making Units using mature coconut water	6	210.00	21,000 ltrs.
Coconut Milk	1	6.00	300 MT
Spray Dried Coconut Milk Powder	1	10.50	525MT
Neera	2		3000 Kl/year
Other Traditional Products (Ball Copra, Copra, Coconut Oil)	109	1252.00	-
<b>TOTAL</b>	<b>251.00</b>	<b>2051.36</b>	

freshness of fresh coconut milk. It has a longer shelf life and is convenient to use. This can be used in place of fresh coconut milk for food preparations/beverages in households and food industries by dissolving it in water. Central Food Technological Research Institute, Mysore with the financial assistance of the Board has developed the technology for spray dried coconut milk powder which is available to entrepreneurs.

### Coconut Vinegar

Coconut vinegar is made from fermented coconut water and is used extensively as a preservative and flavoring agent in pickles, salads, sauces and many other condiments. Coconut vinegar is also made from the sap of coconut tree and is similar to fresh coconut water. Naturally fermented coconut vinegar is rich in minerals and vitamins such as Beta carotene, calcium, iron, magnesium, phosphorous, potassium and sodium. Coconut vinegar helps in digestion and improves the quality



of cooked meat and fish. It is a healthier alternative to synthetic vinegar. Vinegar has extensive use as a preservative in pickle industry and flavoring agent in food processing sector. Now natural vinegar enjoys export market in place of synthetic vinegar.

Coconut Development Board under its Technology Mission on Coconut is extending financial assistance for setting up coconut processing units. This programme is formulated with a view to converge and synergize all the efforts through vertical and horizontal integration of existing programmes and to address the problems and bridge the gaps through appropriate programmes in mission mode to ensure adequate, appropriate, timely and concurrent action. The programme aims at increasing the productivity of coconut to generate higher income at farm level, creating opportunities for product diversification and value addition, improving marketing infrastructure and market promotion of coconut & its by-products both in national and international markets in order to cope up with the present era of change and to make coconut industry more competitive. Under

the mission focused attention is given for the development and adoption of new technologies and their promotion especially in respect of insect pest and disease management, product diversification and market research and promotion. Details of edible coconut processing units assisted by TMoC is given in Table1.

## The challenge

Developing a customer base is a major challenge in the marketing of coconut products. However, it can be made easy by developing a proper distribution network, supply chains and transportation hubs for simplifying the movement of products. Since coconut is mainly cultivated in Southern states viz., Kerala, Karnataka, Tamil Nadu and Andhra Pradesh and nominally in coastal areas of Maharashtra, Goa, Gujarat, Orissa and West Bengal and majority of the coconut processing units are situated in these states, the marketing of these products need to be targeted in non traditional areas.

## The Approach

Awareness creation as well as campaigning for promotion of value added coconut products is the need of the hour. This can be made possible through continuous

## Objectives

- Make available coconut and its value added products all over the country.
- Increase domestic consumption and develop new market opportunities for coconut based value added products by creating awareness on health benefits of coconut products.
- Disseminate information to the general public and canvas for use of coconut products.
- Ensure the availability of products to the consumer.
- Attract new consumers.
- Helping manufacturers to introduce / establish market for their produce and boost their sales.
- Helping manufacturers to identify the distributors / dealers and make agreement.
- Take effective steps in meeting the consumers in the markets and to know where, when, how and at what prices, the products may be made available in the consumer oriented markets.

campaigning to inform, inspire and motivate consumers through various product promotional campaigns. Prominent distributors and dealers need to be identified so that the commercialized coconut products are always available in the market. The product manufacturers have to ensure the uninterrupted supply of products. Product quality should be to the satisfaction of consumer and the packaging shall be attractive so that the customer will be impressed and will buy the product. Value Added Taxation or a unified taxation

system need to be followed and it shall be ensured that the tax-regimes same across the country for coconut and its products. For creating more awareness on value added coconut products it is felt necessary to participate in local fairs, festival melas, conducting entrepreneurs and B2B for creating maximum outreach of products. Engaging reputed management institutions for conducting market promotional activities for promoting coconut products will also ensure a high regime. ■

## Neera products launched



*Launching of Neera and its value added products held at Krishi Bhavan, New Delhi on 22<sup>nd</sup> June 2015. Shri. Sanjiv Chopra IAS, Joint Secretary, MIDH receiving Neera products from Shri. T.K. Jose IAS, Chairman, Coconut Development Board. Smt. V. Usha Rani IAS, Horticulture Commissioner and Secretary, Andhra Pradesh, Dr. S.K. Malhotra, Horticulture Commissioner, Government of India, Shri. Rajesh Lakhoni IAS, Agriculture Production Commissioner, Tamilnadu, Shri. Rajiv Chawla IAS, Principal Secretary (Horti), Karnataka and Dr. K. Prathapan, Director, State Horticulture Mission, Kerala are seen.*

# Garden city; a hot spot for value added coconut products

● Simi Thomas, Technical Officer, Regional Office, CDB, Bangalore

The Farmer Producer Organizations (FPOs) are getting deep rooted in coconut sector India. Through these FPOs, the entire coconut sector can be revolutionized and each and every farmer in the coconut sector can reap the benefit of being a part of FPO. For making this happen, the Coconut Producer Companies and Federation in the country has to kick start their activities immediately for value addition of their product.

Online shopping is the latest trend in marketing. The product will reach the consumer in a single click with the finger tip. The opportunity is being utilized from big corporates to common men across India. Online purchase of vegetable and fruits are also increasing day by day. Nowadays there is no need for the working women to go to shop after their long schedule of work in search of fresh fruits and vegetables, instead, they will be delivered cut fruits and vegetables at their door step.

Online shopping sites like [www.ebay.in](http://www.ebay.in), [www.shopclues.com](http://www.shopclues.com), [www.flipkart.com](http://www.flipkart.com), [www.bigbasket.com](http://www.bigbasket.com), [www.amazon.in](http://www.amazon.in) are some of the online portals from where one can purchase anything and everything. Vendors in the cities have started online delivery of the fruits and vegetables. Coconut products from coconut milk to shell charcoal are available in online shopping. Manufacturers of various branded value added products of coconut are having their own online shopping websites for marketing their products. Thus there is wide scope for value added products of coconut in the market no matter whether the marketing is done through online or through retail outlets.

While entering to Bangalore city,

## Products available for online shopping



the first coconut product we notice in the roads/streets is tender coconut which is similar to any other cities/tourist places of India. We can see the tender coconut vendors in every nook and corner of the city. There are regular customers for these vendors and also we can see the regular supply of tender coconuts in the morning like news paper and milk in many households in the city. Even though tender coconuts are available across the city, packaged tender coconut water and minimally processed tender coconut is available only in malls and super markets across the city. Bottled tender coconut water of different brands like Nature's First and Cocojal is marketed through malls and super markets like Metro, Food world etc. The product is having good demand among the city dwellers as the product can be purchased and stocked and can be used whenever necessary. This product can also be

easily carried while travelling. All these factors make packaged tender coconut water a favourite drink for consumers. Another product which can be seen in the hyper markets and supermarkets in Bangalore city is minimally processed tender coconut supplied by Farm Fresh India Agrotech Pvt. Ltd. This product is also having good acceptance in the market.

Dehusked coconut is available in rural and urban markets across the state. Dehusked coconut is also available in hypermarkets and super markets in the city. The supermarkets and other retail shops in the city collect the same from the wholesale market and the consumer is paying minimum Rs. 25 per nut. The FPOs can play a major role here by directly marketing dehusked coconut in the retail outlets in the city and the husk can also be marketed which provides additional income to the farmers. The husk chips are marketed online



priced between Rs. 65 and 500/kg which is ideal for Orchid and Anthurium gardening and for use in flower beds and in gardens.

Tumkur district of Karnataka is famous for ball copra. There is high demand for ball copra in the city especially during festival seasons. The product is sold through super markets and retail stores across the city. They procure the product from whole sale market and is repacked and sold.

Karnataka state is having maximum number of desiccated coconut powder units in India, which is mainly concentrated in Tiptur taluk of Tumkur district. This product is not prevalently seen in retail shops across the city of Bangalore as the product is marketed mainly to North India and also to the bakeries for making confectionaries. As told by a desiccated coconut powder manufacturer, the people are not much aware of this product

## Products available in Hypermarkets and super markets of Bangalore



*Packed tender coconut water*



*Coconut Milk*



*Dehusked coconut in hypermarkets and super markets*



*Ball copra*

and product promotion is required in the city. Very few supermarkets are collecting desiccated coconut powder from the wholesale market/manufacturers and repacking and selling the product. The product is having movement through online shopping websites also. Some retail shops in Mysore are also purchasing the product in small quantities.

Another branded value added coconut product available in the market is coconut milk powder. This product is available in retail stores and is having good demand. Women prefer to use coconut milk powder instead of fresh coconut in their recipes since it is easy to prepare coconut milk with the milk powder. Like instant coffee powder, this product is having good demand in the preparation of various household dishes.

Coconut milk and milk cream are also available in the market which are having lesser demand than milk powder. Dabur's homemade coconut milk is available in tetra packs. The same product imported from Thailand and Indonesia with brand name Real Thai (Rs139/500 ml can) and Kara (Rs 130/425 ml can) available in cans and tetra packs.

The coconut creams available in super markets are imported from Thailand with brand name Real Thai (Rs195/400 ml can). These products find good demand among city dwellers.

Another value added product of coconut which is found in supermarkets and retail shops is coconut oil. The space for coconut oil in these shops is very less when compared to other refined oils. More space for the product is seen in super markets and retail shops owned by Keralites or shops having regular Malayalee customers who are using coconut oil for cooking purpose.

People are becoming more aware about the health benefits of virgin coconut oil. The uses of virgin coconut oil in beauty and cosmetic field are also well known. In the hyper markets and supermarkets of Bangalore only virgin olive oil is available but not virgin coconut oil. Virgin coconut oil is available in organic and natural shops across the city. There are so many outlets in Bangalore where one can get the VCO like Fresh Earth Organics, Indiranagar; P V Organic Food stores, Koramangala, Satvik Organic, Basavanagudi etc. Max care Virgin

## Products available at 'The Body Shop' for online shopping



*Coconut Beautifying Oil*



*Coconut Body Butter*



*Classic Coconut Gift*

Coconut oil brand is available in all these shops and also they are having own outlets in Bangalore. Another branded product of virgin coconut oil available in The Body shop retail outlet is Rainforest Coconut hair oil which is sold @ Rs. 695 per 200ml. Eventhough priced high, this product is having good demand and the review about the product is also good. It is manufactured in UK and imported by M/s Quest Retail Pvt. Ltd., Jaipur. The website of The Body Shop shows many products produced by them using virgin coconut oil and coconut oil like coconut beautifying oil, mini coconut body scrub, coconut hand cream etc. Other major hair oil brands like Parachute also occupies a space in the super markets and cosmetic shops like Health and glow. Health and glow has coconut milk hibiscus lotion in their product list for sales which contain coconut oil as one of the ingredient.

There are very few people who

doesn't like ice creams. Naturals is pioneer in making ice creams using only fruits, dry fruits, chocolate milk and sugar. They also have tender coconut ice cream in their menu. While eating the ice cream, we will get bits of original fruits and chocolates for chewing which is same in tender coconut ice cream which makes it mouth watering for the customers. Naturals have so many outlets across Bangalore and have regular customers for their products. Tender coconut ice cream is having good demand in their outlets. One scoop of tender coconut ice cream costs Rs.55. Restaurants in Bangalore have tender coconut products in different names like Elanear Mouse (Rs. 60/-) which is available in the up south outlets in Bangalore. Thengu Mane (house of coconuts) at Rajajinagar, Bangalore sells various products made from coconut like ice-cool tender coconut, sweet lassi and souffle, jelly, barfi, holige, ice creams made of coconut

milk in basic, cardamom and vanilla flavours.

Along with chips and other confectioneries coconut laddoo and burfi manufactured by Munees, Bangalore has also found its space in the shelves of the super markets and bakeries. Holige, made out of coconut is a favorite confectionery which is available in bakeries and retail shops all over Karnataka. Chutney powder in various flavors made out of coconut are seen in condiment shops and in some super markets in the city.

The shops around us displays so many products of coconut right from dehusked coconut to coconut burfi. The Coconut Producer Companies and Federations can utilize the latest trends in marketing and can reap the benefits. Time is not so far for products of various Coconut Producer Companies occupying the spaces of hypermarkets and supermarket across the beautiful garden city – Bangalore. ■

## Maharashtra- gearing up with value added coconut products

● **Rajeev Bhushan Prasad** , Deputy Director, State Centre, CDB, Maharashtra

Coconut is a crop which has multifaceted uses in everyday life. As truly called Kalpavriksha every part of coconut in its every stage is used for the production of an array of products. Apart from this its by products like shell, husk, fronds and wood also can be put to a multitude uses.

Coconut Development Board aims to bring to the market varieties of value added and processed products from coconut thereby widening the product base, promotion of consumer acceptability and thus ensuring a steady growing market for coconut and coconut product through the three tier Farmer Producer Organization system. The coconut on conversion as an industrial raw material will be able to demand price and also exploit the immense potential that the domestic and export markets offer for coconut and its products. Initiation of

processing units by the CPS can be done in an integrated manner ensuring maximum utilization of all the products and by products each incrementally adding to the income of the farmer as a whole. CDB provides a support of 25% to units undertaking processing of coconut into various value added products.

Once the Coconut Producer Companies are established, the next step is to create an identity for the products of Producer Companies. A brand for a product which directly comes from the farm extends a special appeal to the consumer. India is having a vast potential market for innovative value added coconut products. A survey conducted in different malls in Thane, Maharashtra revealed that coconut oil, coconut biscuits, coconut milk powder, coconut water and desiccated coconut powder are the various value added coconut products available in Maharashtra. ■



# Potentiality of coconut value added products in Chennai market

● Lunghar Obed, Director & T.N.Subramanian, Statistical Investigator, CDB, RO, Chennai

Chennai is a thickly populated metropolis having more than 91 lakhs population. There are many established super market chains and specialty retail outlets catering to various food products including coconut and its products.

Retail vendors selling tender coconuts on road side is a common sight in Chennai. It is estimated that around two lakh tender coconuts are sold in city and suburbs. The sales touch peak during summer season. The price of tender coconut varies from Rs.25 to 40 per tender nut depending on the water content. Pollachi variety is a sought after variety in the city. Pollachi tender coconut traders are now putting labels on their tender nuts.

Regional Office, Coconut Development Board, Chennai initiated a quick study to explore the potentiality of coconut value added products in Chennai market. Various retail outlets and supermarkets viz. Nilgiris retail a Chain Store at Ashok Nagar, Nilgiris Store in West Mambalam, Big Bazar in Pondy Bazar situated in T Nagar, Saravana Store at T. Nagar, More, Super Store at T. Nagar, Nuts and Spice, Shanti Colony at Anna Nagar, Santosh store, Anna Nagar were visited to ascertain the availability of various coconut products in the city.

Coconut milk powder, various brand hair oils, Ayurvedic hair oil, Dhatri hair oil, Parachute hair oil-Bio coconut face cream, Coconut oil combination- Garnier triple nutrition shampoo, Natural coconut milk, Parachute sclap therapy, virgin coconut oil, Real Thai coconut milk- Thailand product, Palm Dew brand tender coconut water concentrate (powder), Kara coconut



milk imported from Indonesia and marketed by an Indian company, desiccated coconut powder, home made coconut milk and tender coco- packed tender coconut water in plastic bottles are the products found in these shops.

The availability of imported coconut based products such as coconut water, coconut milk, coconut powder etc. in Chennai market shows the acceptance of coconut based products among the consumers irrespective of the make, brand and price. The price and convenience factor and easy availability prompts customers to purchase these products.

In most of the Super Markets, people shop for products like cloths, electronic items etc. In medium speciality stores which are selling food related products, it is easy for the customer to identify the products easily. Medium speciality stores are having more stock of

food items including coconut based products. Creating awareness on the goodness of coconut especially the medicinal properties of virgin coconut oil and its availability is most essential for popularizing the usage of coconut products.

Time is now ripe for the Farmer Producer Organizations in Tamil Nadu to tap the potential of Tamil Nadu market extensively and make available all products in shelves of stores. There are few stores in Chennai where desiccated coconut, coconut milk, tender coconut water etc are available. The information on its availability of the same and also stores where coconut products are available are not known to many customers.

To overcome this lacuna, proper and timely awareness creation among the consumers highlighting its health benefits and convenience is the need of the hour. ■



# Prospects of coconut value added products in Delhi and NCR

● G.R.Singh, Director & Arun Paul, Technical Officer, CDB, MDIC, New Delhi

Coconut provides a diverse range of products. It is a unique crop, where every part is useful in one way or the other. The main commercial product of coconut is copra out of which coconut oil is produced. The other value added coconut products include desiccated coconut, coconut cream, virgin oil, vinegar, tender coconut water, coconut milk based product, Neera and its by products and other industrial non-edible products such as coir. Out of these many products are available around the globe, but some are not. Majority of the north Indian population are not aware about the various value added coconut products available and its usage in daily life.

A random survey was carried out in some of the malls and retail outlets in New Delhi and NCR area to get an idea about the availability of different coconut products in the area. The survey revealed that coconut hair oil and tender coconut water are the products that are having high demand in Delhi and surrounding areas. Coconut oil for edible purpose is mainly available in south Indian stores. Coconut hair oil of different brands are available in all the small retail outlets which indicates that majority of people in northern region are still considering it as a good hair oil and not as a cooking medium. However beyond any ethnicity everyone is fond of enjoying the tender coconut water and tender coconut pulp. Understanding the scope of tender coconut water in northern India especially in summer months,

many business men are doing the distribution and marketing of packaged tender coconut water. As a result, packaged tender coconut water could be seen in many retail outlets. It is felt that if tender coconut water is having this much acceptance among the people of Delhi, Neera, the nutritious health drink from coconut will replace all the carbonated soft drinks, once the people of Delhi get a chance to taste it during the severe and prolonged summer.

Apart from the domestic products many foreign coconut products are also available in the super markets which include mainly coconut products from Thailand. Among these, coconut water with



pieces of suspended pulp or nata-de-coco or enriched with lychee or mango juice are also getting popular in this area, though it is having a high price compared to Indian products.

Coconut milk and cream are also imported from Thailand and marketed by Indian business men, which is popular among the chefs and bakers. The coconut milk/cream marketed by Dabur and Nestle are having wide acceptability among the homemakers, small scale sweets makers and bakers. Even though many of the coconut based companies from south India are manufacturing and marketing the same products they are familiar only among a limited number of people from the south. Wide public campaigning and TV advertisements will create a very good demand among the people for these products which are used in the preparation of a variety of sweets and deserts.

The milk chocolate bars with coconut fillings (Bounty) manufactured and marketed by Mars International is one of the favorite chocolates for all ages. Indian made chocolate with coconut fillings is not found in any of the shops. It seems that there is good scope for such chocolates provided if there is good publicity.



The availability of foreign coconut products in Delhi markets are increasing day by day irrespective of its high price compared to the Indian products. This indicates that there is huge demand for high quality processed products in north India. In addition to this, there is a huge south Indian population residing in New Delhi and NCR who is habitual to different coconut products. The present supply of these coconut products is not at all sufficient

to cater to their demand. Hence there is large scope for marketing of coconut based products in and around Delhi.

Agro industries have always been given significant priority in economic development of India. Mahathma Gandhi's emphasis on developing village based agro industry in the movement for independence marked the beginning. Coconut based industries are one of the best suitable tool for such

village based industry. The present survey has revealed the ample scope of coconut based products in particular, packaged tender coconut water, sweets and coconut based hair oils. Moreover, awareness creation on different coconut products and its nutritional and medicinal benefits has to be augmented among the common folks through mass media which will wipe out the misconceptions about the palatability and ill effects of coconut products. ■

## Awareness creation essential for introducing coconut products in Bihar

● Shyamlal, Assistant Director, State Centre, CDB, Bihar

Coconut is one of the ten most useful trees in the world, providing food for millions of people, especially in the tropics. Regardless of its origin coconut has spread across much of the tropics and coastal areas. Every part of coconut in every stage of its development, the tender nut water, tender kernel, mature coconut water, kernel, coconut milk etc. can be made use for production of an array of products. Apart from this, the byproducts like shell, husk, fronds and wood also can be put to a multiple usage. Initially coconut was introduced to Bihar by the pilgrims who visited Jagannath Temple Puri in Orissa and nearby historical places. On their way back home they carried coconut and planted it in homestead garden as utility and ornamental plants. At present coconut cultivation is mainly confined to the Kosi command area and Northern Bihar, and there is sporadic distribution of the crop mostly along the northern bank of Ganges in Central Bihar and some areas in and around Patna. Coconut is mainly grown as homestead utility plant or planted along the borders of the farm. Regular commercial cultivation of coconut has so far not been attempted by the farmers of Bihar.

### Status of value addition of coconut in Bihar

Coconut is mainly used for religious purposes particularly in Chat festival and many people are using coconut for hair and massage purpose in Bihar. A survey was conducted in shops and malls in Patna on the availability of various value added products of coconut. The major products identified are coconut juice, coconut hair oil, coconut oil, coconut biscuits, desiccated coconut powder, coconut milk, coconut cream etc.



Since, most of the population are not aware of coconut products available in the market of Patna, awareness creation is very much essential for introducing coconut products in Bihar. As very few value added products are available in the market, there is a huge scope of value addition in coconut in the state. ■

# Hyderabad- a potential market for value added coconut products

(Shri. Jayanath R, Assistant Director &

Marjana Beegum. K. C. Technical Officer, CDB, Hyderabad)

Coconut- nature's supermarket, is itself a self service store from where we are getting different types of products like nut, water, oil, copra, coir, husk etc. Coconut has been produced in India since time immemorial and has a crucial role in the Indian culture. India is one of the leading coconut producers in the world. Andhra Pradesh occupies first position in coconut productivity and the fourth position in area under coconut among the major coconut growing states viz, Tamil Nadu, Kerala and Karnataka. Coconut occupies nearly 1.02 lakh hectares in Andhra Pradesh with an annual production level of 1678 million nuts which accounts for 6.03 % area and 8.52 % production in the country. The crop is one of the important horticultural crops cultivated in the state. Bulk of the coconut produced in the state of Andhra Pradesh is utilized as tender coconuts, as temple coconuts, edible nuts for culinary purpose or as edible copra. Copra processing, coconut oil extraction and coir manufacturing are the traditional coconut based industries in the state.

A study was undertaken to explore the availability of various value added coconut products in the major retail shops and shopping malls located in Hyderabad. Major 16 supermarkets/malls like Reliance market, D mart, Walmart, More hyper market, Ratnadeep, Inorbit Mall, Big bazar, Forum Mall, Manjeera- Mall, Spencer's hyper market etc. were visited as part of this study. It was found that all supermarkets have varieties of edible and non edible coconut products in their shelves. The major edible products found were cut copra, coconut milk, coconut powder, tender coconut water, desiccated coconut powder, coconut based confectionaries and chocolates.

Cut copra was seen in major markets of Hyderabad due to its utility in culinary items in this area. People of Andhra Pradesh are mainly utilizing coconut for making edible copra for their household purposes. Cut copra is used here as a major ingredient in a variety of dishes. Because of its culinary use, there is demand for copra in the state during all seasons. Amalapuram, Ampajipeta and Palakol are the important trading centres for coconut and copra. All super markets and malls have cut copra in their own packets. Retailers are purchasing it from wholesalers and repacking and selling with their own label. Even though copra is sold at a very high price at the retail outlets, the farmers are not getting even half



of its profit share. This is a good avenue for the Farmer Producer Organizations in coconut sector to become part of this sector and earn the best and maximum price for their produce instead of being a mere producer of copra.

Desiccated coconut powder is another product found in most of the supermarkets and malls in small packets. Coconut milk is also having a prominent position when compared with other coconut products. Dabur's coconut milk is available in almost all supermarkets. Some of them are manufactured in Nepal and imported by Dabur India Ltd. It shows the high demand of coconut milk in urban areas. The high income groups are using packed coconut milk for preparing variety of dishes. Coconut milk based squash with the brand name of 'Mapro' was also found in many of the markets during the study. It is felt that production and marketing of coconut milk is having tremendous scope in Andhra Pradesh.

Even coconut based confectionaries like biscuits and cookies have separate shelves in all supermarkets. Britannia, Nice time and Parle's coconut are few of the coconut based biscuits found in all shops and super markets.

Packed tender coconut water of M/s Push, Manjeshwar, Kerala have franchises in Hyderabad and the company is distributing packed tender coconut water to Q mart, Ratnadeep, Max hyper, Spencer's and Heritage fresh. Tender coconut water of M/s Cocojel



was found in Ratnadeep. This product also seems to have high demand among the residents of Hyderabad as a rehydrating drink.

Edible coconut oil could be found only in Reliance market and Ratnadeep. Edible coconut oil of major brands like Kera and KPL, coconut milk powder of KPL and Maggi, and chutney powder is available only in retail Kerala stores run by Keralites for catering to the need of Malyalees living in Andhra Pradesh. Unlike Kerala, coconut oil is not used for edible purposes in Andhra Pradesh. Usage of copra for milling is very negligible and contribution of Andhra Pradesh to the coconut oil industry is meager.

The consumption of coconut is dominated by the food sector. The oil is further used in industrial applications like hair oils, soaps, shampoos etc. Toiletries occupies a major share among non edible coconut products in almost all the supermarket surveyed. Parachute and Dabur Vatika have separate sections in most of the supermarkets. Other than this, other brands like Vijaya, Everest, Meera, Parajet, Dabur Anmol Gold, Clinic plus etc. are also found its space in the hair oil sections of major markets. Coconut oil based soaps, coconut milk based hand wash etc. have also found in major markets. The fast developing market for these toiletries offer good prospects for realizing better income to coconut farmers.

International brands of packed tender coconut water, fruit juice with nata de coco, syrup etc. are also available in various malls in the hi-tech city. Jell O Fresh, bottled tender coconut water and coconut water with pulp are imported from Thailand and is sold @ Rs. 90 for 290 ml This drink with a shelf life of two years contains fructose and sugar. Another foreign product found in the same mall was a Malaysian made coconut flavored syrup named Monin which is sold @ Rs 240 per 500 ml. Fruit juice with nata-de-coco was also found in many of the market with different brand names like 'Kokozo (Rs.50 for 300 ml)' and 'Mogu mogu (Rs 55 for 300 ml)' from Thailand. Other imported products available in the markets are Maggi coconut milk powder imported from Srilanka and Bounty tender coconut covered with chocolate from Netherland. These foreign products have high demand in areas where the high income groups are residing due to their willingness to pay the premium prices for high quality products.

The study revealed that coconut and coconut based products are very popular and are having good demand in Hyderabad. People are using different coconut based products in their day today life like raw coconut for culinary purposes, copra for edible purposes and milling, coconut oil for non edible purposes, desiccated coconut, coconut milk and milk powder for household purposes and packed tender coconut water as a soft drink. Thus, the demand for coconut in the state of Andhra Pradesh is much higher than the current production. If the Farmer Producer Organizations can ensure a steady supply of coconut and other value added products based on the consumer demand, coconut farmers can be ensured of a fair, steady, and reasonable price for their produce. FPOs can also take the advantage of the growing consumer trends to have eco-friendly chemical free natural products by supplying quality products at a premium price. ■

## North-East India - an emerging hub of value added coconut products

● **Dr. Rajat Kumar Pal,**  
*Deputy Director, CDB, RO-Guwahati*

**N**orth-East India comprising of seven states-Assam, Meghalaya, Manipur, Mizoram, Nagaland, Arunachal Pradesh and Tripura is gradually becoming a potential market for value-added coconut products. Edible products like coconut biscuits and cookies, coconut water, coconut cream, coconut milk powder, coconut oil etc. are now available in the shelves of retail shops and shopping malls in the North East.



Bihu is the most important festival of Assam which is celebrated three times a year, during April-May, January and October, followed by Durgapuja which is celebrated in October. During these festivals, home-made coconut products locally called as pitha and laru are in huge demand amongst Assamese and Bengalis staying in Assam. During these occasions, these products are commercially available in bazaar, retail shops etc.

Out of non-edible items, it is an ancient tradition to use coconut hair oil amongst Assamese. Other than hair oil, coconut based shampoo and soap are also available in the market and are gaining importance.

The market potentiality of coconut products (edible & non-edible) needs detail survey in North-East India and accordingly market strategy may be framed regarding market promotion, logistics, backward and forward linkage etc.

Edible products like coconut biscuits, coconut milk, coconut milk powder, coconut cream, coconut water, coconut pickle, coconut toast pitha, coconut pickle and coconut squash and non edible products like coconut shampoo, coconut hair oil and coconut soap are available in various shops in the North East. ■

# Marketing strategies for coconut and it's value added products in Odisha

● E. Aravazhy, Deputy Director, State Centre, CDB, Odisha

The coconut is a benevolent tree, a nature's gift to mankind, as it is a source of food, beverage, oilseed, fibres, timber, health products and is an important source of earning livelihood to the people. The total area under coconut in Odisha is 55297 hectares with a total production of 2942 lakh nuts, thereby occupying the fifth position among Indian states in area and production of coconut (2013-14). The productivity of coconut in the state is 6080 nuts/hectare, which is low compared to coconut productivity of India. Of the 30 districts in Odisha, about 60 per cent of the area and production of coconut comes from the undivided coastal districts of Puri, Cuttack, Balasore, Nayagarh and Ganjam.

Marketing of any product is communicating the value of a product, service or brand to customers, for the purpose of promoting or selling that product, service, or brand. The activities relating to marketing or market promotion of coconut, copra and coconut oil alone during the previous years has resulted in remarkable changes. So the scope of marketing has been extended to cover a variety of coconut products.

## Status of value addition in coconut in Odisha

As far as Odisha is concerned, value addition in coconut is confined to coconut oil. In the state, coconut is mainly used for religious purposes and only a very small population is using coconut oil for culinary purposes. But small scale units are emerging in the state for the production of cookies and sweets from coconut.

A survey was conducted in major



supermarkets in Bhubaneswar, like Big Bazar, Reliance fresh, Vishal for exploring the availability of various value added products of coconut. The major products identified were packed coconut water, coconut biscuit and coconut oil, coconut sweets, coconut milk powder, coconut milk, coconut cookies, coconut milk, enriched coconut hair oil, nourishing hair oil, sugar sprinkled coconut biscuits, conditioner, body lotion (coconut butter), ball copra, body lotion (coconut milk), shampoo etc.

## Marketing of coconut in Odisha

The presence of middlemen in the marketing channels prevent farmers from obtaining a higher share of the final product price. It is seen that a number of intermediaries are grabbing a greater proportion of the price paid by the consumers. RMC Sakhigopal is the hub of coconut trading in Odisha. Since 1979, RMC has enforced regulation (compulsory buying and selling in the yards) and

price discovery mechanism through competitive auctioning of coconuts.

Co-operative marketing societies by acting as an agency in marketing of coconut can help the growers by reducing, if not eliminating the various malpractices such as arbitrary deduction from the real prices of the produce, manipulation of weights etc.,. It can also increase the growers' share in the consumer price by eliminating the middlemen. The major marketing centre for coconut in Odisha is Puri. The marketing activities are being carried out by Sakhigopal Regional Co-operative Marketing Society (Sakhigopal RCMS) and Brahmagiri Regional Co-operative Marketing Society (Brahmagiri RCMS). Coconut oil is consumed mainly during winter and its trade is confined mainly to rural areas. Trade in coconut was essentially monopsonistic in nature with a large number of cultivators selling their products only to a few village traders, local copra makers and agricultural co-operative societies and this is one of the major reason for the cultivators not being able to get a fair price.

In addition to the traditional products of copra, coconut oil and copra meal, coconut has the advantage of producing a wide variety of edible and non edible products which are used both domestically and for the export market. The availability of value added products of coconut in Odisha is very less. The existing products in the market are getting higher price. This indicates the huge scope of coconut based products in the market. In order to ensure higher income to the coconut farming community, the marketing strategies need to be strengthened. ■



Neera, the nature's health drink, can be converted into syrup, honey, jaggery etc, which can be used as a source of sugar in many food items.

This Christmas, bake your cake with the delicious Neera jaggery and surprise your loved ones...

It's diabetic-friendly too...



### *jaggery cake*

#### **Ingredients:-**

Wheat flour/Maida	- 450g
Butter (unsalted)/	
Vegetable Oil	- 250g
Jaggery powder/syrup	- 250g
Baking Powder	- 3tsp
	(leveled)
Egg	- 6 Nos
Vanilla essence	- 1tsp

#### **Method of preparation :-**

Sift wheat flour and baking powder together

Cream butter and maida together in a bowl, mix egg yolk well

Add Jaggery powder/syrup and mix well to thick batter

Beat egg white stiff with vanilla essence and fold in to the batter

Pour this batter into the prepared cake tin.  
Bake in pre-heated oven (180° C / 350° F) for 25 - 30 minutes or until done



**नारियल विकास बोर्ड**

(कृषि मंत्रालय, भारत सरकार)

**Coconut Development Board**

[MINISTRY OF AGRICULTURE, GOVERNMENT OF INDIA]

Kera bhavan, SRVHS Road, Kochi - 682 011, India

[www.coconutboard.gov.in](http://www.coconutboard.gov.in)





# Deliciously Milky

## So Delicious Dairy Free with 65 Coconut milk based products



So Delicious Dairy Free products are for those who prefer dairy and gluten free food., This is the only company that provides maximum many delicious dairy-free milks, cultured products, coffee creamers and frozen treats.



vegetarian-sourced saturated fat consisting of medium chain fatty acids (MCFAs). Scientists have long recognized MCFAs such as lauric and capric acid for their anti-viral and anti-microbial properties. The body utilizes MCFAs as energy instead of storing them as fat. The umpteen health benefits ascribed to coconut makes it a much sought after product. Here is the success story of So Delicious Dairy Free, a US based company which is producing around 65 products using coconut milk.



collectives venture into processing for value addition.

For centuries, people around the world have revered and relied upon coconut for its nutritional powers and infinite practical uses. Native tradition attributes healing and life-giving properties to coconut. In western society, the health benefits of coconuts is just beginning to be understood. The mystery appears to be in the favorable fats found in coconut. Coconut represents a

**P**roduct diversification, value addition and by product utilization are the key areas that must be attended on an emergency basis in coconut sector for realizing a fair, reasonable and steady price to coconut. Coconut is having a product basket with an array of value added products like virgin coconut oil, desiccated coconut, coconut milk, coconut milk powder, milk cream, ball copra etc. It is high time that our farmers through their farmer

Realizing its manifold health benefits, So Delicious Dairy Free started producing an array of novel delicious dairy-free delights that can make one feel good about sipping, biting, pouring, scooping, licking, and chugging throughout day. So Delicious Dairy Free is bringing joy to dairy-free lives since the last twenty-five years

So Delicious Dairy Free offers so many ways to enjoy dairy-free





milk holiday beverages. These milk beverages are creamy and versatile alternatives to dairy milk. These delicious beverages can be used with cereal, in coffee, added to recipes, or just poured into a glass. There are eleven different kinds of varieties viz. Chocolate, Original, Unsweetened, Vanilla, Chocolate single-serve, Sugar free original,

with its dairy free beverages, dairy free desserts, dairy free cultured, dairy free creamers and dairy free for cooking. So Delicious Dairy Free milk beverages are 100% plant based, soy-free, gluten-free products. Dairy Free Desserts & Toppings are a complete line of dairy-free ice creams made from coconut milk. Dairy Free Cultured products are a wide array of dairy-free cultured coconut milk products. So Delicious Dairy Free's Coconut

Milk coffee creamers are made with three delicious flavors. This product is a special product for all coffee lovers. Dairy Free For Cooking products include Dairy Free Culinary Coconut Milks in eco-friendly re-sealable containers and are replacements for heavy dairy cream and canned coconut milks.

Under the Dairy free beverage category, So Delicious is producing Coconut milk beverages and Coconut





It is the policy of So Delicious Dairy Free to exclude all allergens from their products unless they are known constituents of an ingredient and the allergen is declared on the package. State of the art testing procedures with sensitivity to the allergen down to five parts per million (5 ppm) is followed by the company.



Unsweetened vanilla, Cococcino latte, Cococcino mocha, Cococcino latte single-serve and Cococcino mocha single-serve. Three different varieties are produced in Coconut milk holiday beverages; Mint chocolate, Nog and Pumpkin spice.

Dairy free coconut milk frozen desserts are produced in 18 different flavours and categories. They are Cherry amaretto, Chocolate, Chocolate peanut butter swirl, Coconut, Cookie dough (gluten free), Cookies 'n cream, Mint chip, Mocha almond fudge, Turtle trails, Vanilla bean, No sugar added butter pecan, No Sugar Added Chocolate, No sugar added mint chip, No sugar added vanilla bean, Cookies 'N Cream Gluten Free, Cookie Dough Gluten Free, Simply strawberry and Oregon mixed berry. Cocowhip original and Cocowhip light are the two Coconut milk frozen dessert toppings Dairy free desserts produced by So Delicious.

Under Dairy free cultured category, the company is producing 13 varieties of cultured coconut milk with different flavours. Viz. Unsweetened Cultured Coconut Milk, Unsweetened Vanilla, Blueberry Cultured Coconut Milk, Chocolate Cultured Coconut Milk, Passionate Mango Cultured Coconut Milk, Plain Cultured Coconut Milk, Thick and creamy Cultured Coconut Milk, Raspberry

Cultured Coconut Milk, Thick and creamy Cultured Coconut Milk exploding with sweet raspberry flavor, Strawberry Cultured Coconut Milk, Thick and creamy Cultured Coconut Milk with succulent strawberry flavor, Strawberry Banana Cultured Coconut Milk and Vanilla Cultured Coconut Milk. Six varieties of Greek cultured coconut milk are also produced viz. Blueberry Greek Cultured Coconut Milk, Plain Greek Cultured Coconut Milk, Raspberry Greek Cultured Coconut Milk, Strawberry Greek Cultured Coconut Milk and Vanilla Greek Cultured Coconut Milk.

Dairy free creamers are another novel products of So Delicious Dairy free which transform humdrum coffee and tea into a creamy and decadent part of one's morning routine. Soy-free and made using only organic Non-GMO Project Verified coconuts, these are good addition to enhance the morning beverage. Seven different varieties :Original, French Vanilla Quart, Original Quart, Barista Style French Vanilla, Barista Style Original French Vanilla and Hazelnut are produced under this category.

Five different variety Coconut milk frozen desserts sands & bars are also produced by So Delicious Dairy Free. Minis organic simply strawberry bars, Minis organic just java bars, Minis coconut almond bars, Minis no sugar added fudge bars and Minis no sugar added vanilla bars are the various Coconut milk frozen desserts sands & bars

Dairy Free for Cooking are yet other category of products wherein Culinary Coconut Milks in eco-friendly re-sealable containers are produced which are replacements for heavy dairy cream and canned coconut milks. These culinary milks can be added when making curries, creamy soups, or desserts. Original Culinary Coconut Milk and Lite Culinary Coconut Milk are the two varieties produced. ■

source: [www.sodeliciousdairyfree.com](http://www.sodeliciousdairyfree.com)





# Natural & Yummy

**1** 980s was one of the most eventful periods in the history of India. Those who are in their 30s and those who have crossed the age would have hundreds of things to share/many images keep scrolling. But, every Mumbaities or even those who were visiting relatives or who were on a short-term stay in the metro in the 80s, would add one name to the list of great things that has happened in the 80s. And, that is nothing other than the Natural Ice Cream, which opened its first outlet at Juhu, a northwest Mumbai suburb.

The 300-sq-ft ice cream parlour has been, and still is, a favourite place to many. Though they were not selling the bright pink strawberry and bright green pistachio flavors, which were the hits during those times, their natural, fruity flavours like tender coconut, watermelon, Sapodilla (chikoo) and mangoes became a huge hit among Mumbaities. They got fan followers like cricketer Vivian Richards, master chef Sanjeev Kapoor and Bollywood divas like Shilpa Shetty, Esha Deol and Bipasha Basu.

The brand has been making ice creams using only fruits, dry fruits, chocolates, milk and sugar, with no preservatives or stabilizer. With unconventional and unique flavours like tender coconut and sitaphal, Natural is a delight for ice cream lovers. Natural has around 118 parlours across south and west India, selling 19 flavours of ice cream including tender coconut and jackfruit. It also has 116 franchise-run outlets. The franchises may be

many, but the manufacturing hub is just one, located in Kandivali, another Mumbai suburb. Every morning, the super tasty ice creams start their journey in a fleet of trucks from the factory to all the Natural outlets, thus ensuring quality is not compromised.

"Naturals coconut ice cream with hot rashagullas – that's my recommendation to the truly reckless"  
- Bipasha Basu



"Machine-made fruit ice cream needs additional artificial flavours and colouring in the final product. That is something that I fundamentally disagree with," says Chairman, Managing Director and Founder of Natural, R.S. Kamath. These words tell you the secret of the taste behind Naturals ice cream varieties. Kamath says he has experimented with 60 different kinds of fruit.

During off-season, they basically depend on the fruit pulp from the market and process it according to their needs.

Natural brand is on an expansion spree and the beacon is now in the hands of Srinivas, Kamath's son, who was inducted into the business in 2009. Till now, the business has been facing expansion issues as they had only factory which supplies to all the franchisees. But, with Srinivas on board, they are planning to open more shops across the country, which will both manufacture and sell Natural ice creams.

Of all the flavours, the ethereal taste of tender coconut ice cream, which is very creamy and rich in flavor, is the one which is taking its rounds. The magic of the delightful and most irresistible tender coconut



## The Creamy Story

Seasonal fruits are bought in bulk daily from the market, and the extracted pulp is heated, to get rid of unwanted bacteria, and then stored in aluminium-sealed packages. Equally importance is given to the quality of the milk being used. Buffalo milk brought daily to the factory in tankers undergoes elaborate treatment to maintain the prescribed bacteria count, and is then thickened by reducing the water content. The milk is then turned into condensed milk. The condensed milk, fruit puree and ice is then churned together and allows it to get chilled.

ice cream cools you instantly down! The growing demand of tender coconut ice cream shoots up the demand of tender nuts across the country, which is very much a good opportunity for the coconut farmers. Natural is planning to invest around Rs.50 – Rs. 70 crore across north, south and west India over the next five years. If the pan-India sales of Natural are taken into account, it is very evident that there is growing demand for the tender coconut ice cream. This clearly implies that there is ample opportunity for the coconut farmers across the country. ■

# Coconut chips : A healthy non-fried snack food

● M.R.Manikantan, T. Arumuganathan\*,

M. Arivalagan, A.C.Mathew and K.B.Hebbar

PB&PHT Division, ICAR-CPCRI, Kasaragod 671124, Kerala

\* ICAR-Sugarcane Breeding Institute, Coimbatore 641 007, Tamil Nadu



Coconut chips are crunchy, delicious nutritionally rich chips prepared out of 8-9 months matured coconut kernels. The kernels are uniformly sliced into about 0.75mm thickness and osmotically dehydrated with either salt water or sugar syrup. They do not require continuous deep oil frying as other chips.

## Why we need alternate snack foods?

Many of the widely consumed snack foods are high in refined carbohydrates or added sugar and low in nutritional value. Non-diet soft drinks, cookies, candy, pastries, granola bars, chips, pretzels and crackers generally contain more calories and are less satiating than fruits, vegetables, whole grains, nuts and seeds. Consuming too many refined or sugar-rich foods

can cause high blood triglyceride levels while decreasing levels of health-promoting HDL cholesterol and may contribute to inflammation and oxidative stress, according to the American Heart Association.

Researchers in Europe and the United States have found acrylamide in certain foods that were heated to a temperature above 120°C, but not in foods prepared below this temperature. Potato chips and French fries were found to contain 39 to 910 times higher levels of acrylamide compared with other foods. The World Health Organization and the Food and Agriculture Organization of the United Nations stated that the levels of acrylamide in foods pose a “major concern”. Hence, there is an urge to search alternative health promoting snack foods which is devoid of frying. One possible health promoting source of snack

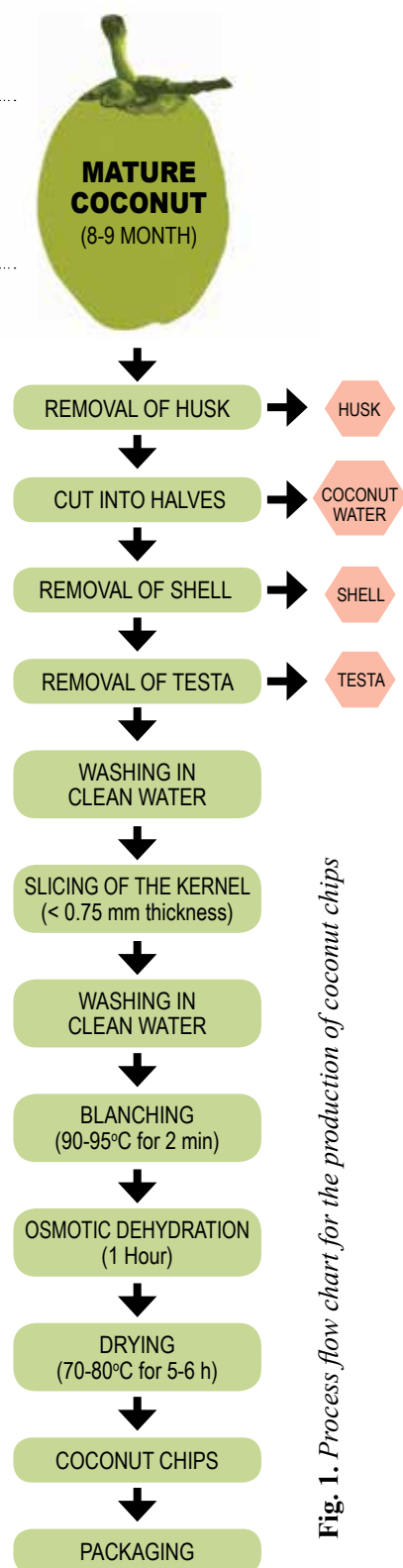


Fig. 1. Process flow chart for the production of coconut chips

food is coconut chips which don't require deep frying

### What makes coconut chips as a healthy alternate snack food?

Coconut has been part of diet and livelihoods in the tropical countries of Asia, the Pacific, South and Central America and Africa for thousands of years. It provides a nutritious source of kernel, water, milk, and oil that has fed and nourished populations around the world for generations. Coconut kernel is a potent source of carbohydrate and rich source of plant protein with appreciable amount of fiber. It is naturally low in digestible carbohydrate, contains no gluten, cheaper than most other nut flours, loaded with health promoting fiber and important nutrients with good taste.

### How to prepare?

Coconut kernels undergo paring, blanching, osmotic dehydration and drying to become ready to eat chips. Frying is not undertaken in coconut chips making process. Using a new method of drying on the basis of osmosis, in which partial dehydration in sliced form is brought about by dipping the fresh kernel in sugar solution followed by hot air drying. This is claimed to result in product with better flavor than freeze drying method at comparatively lesser cost. Hence, the resultant coconut chips give health promoting substances and do not pose any health hazard. Nutritionally superior and medicated coconut chips can also be made by incorporating beet root, carrot, ginger and pepper. Central Plantation Crops Research Institute (CPCRI), a constituent of Indian Council of Agricultural Research (ICAR) and only coconut based research institution, has successfully developed a process protocol and machineries for the production of coconut chips. The CPCRI has already provided training to large

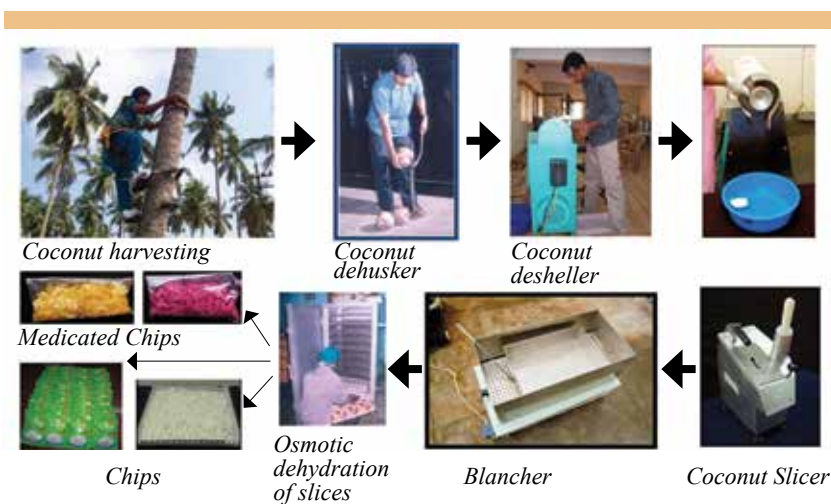


Fig. 2. Process protocol developed for production of coconut chips

number of women entrepreneurs and self help groups in coconut chips making. A few units have started commercial production and there is a good demand for this product in the domestic and international market.

### Process Technology

Freshly harvested 8-9 months old coconut is selected for chips production. The index for selection of the nut is that the nut should be matured enough to be sliced. If it is too tender, slicing and testa removing is not possible. The husk is removed from coconut by manual or mechanical dehusker. The shell is removed by using chisel type tool or shell removing machine. Testa, brown outer layer of coconut kernel is removed by using manual peeler or coconut testa remover. Testa removed coconut is washed in clean water. White kernel is cut into pieces of triangular shape of about three inch size to hold it by hand for easy slicing of the kernel. The slicing of kernel is undertaken in either manual or mechanical slicer. The thickness of the slice should be very thin and should not exceed 0.75 mm. Thoroughly washed coconut slices are put in muslin cloth for blanching and dipped in hot water at 90-95°C for 2 minutes to arrest enzyme activity.

After blanching, the coconut slices are dipped in the osmotic medium for osmotic dehydration for one hour. The osmotic medium differs according to the type of chips. The temperature of the medium should be at room temperature. For the small-scale industry, agitation of the syrup during osmotic dehydration is not required. For large-scale industry, agitation of the syrup during osmotic dehydration is required. The syrup may be stirred every 10-15 minutes.

For the production of sweet coconut chips, 600 g coconut slices are dipped in osmotic medium syrup containing 1 kg cane sugar of commercial grade and 20 g common salt in one litre clean water for one hour. This medium can be reused with the addition of 150 g sugar and 5 g salt for every 600 g coconut slices. Different flavours like vanilla, pineapple, lemon and orange can also be added at 10 ml per litre syrup. For the preparation of medicated chips, ginger essence obtained from 150 g ginger is added along with the normal ingredients. Nutraceutical coconut chips can also be prepared by adding the juice obtained from 600g carrot/beetroot or coconut inflorescence sap (Neera/Kalparasa) with the usual ingredients. By giving natural colour to the sweetened



coconut chips, the nutritional quality in terms of phenolics, antioxidants, and other important nutrients as well as the attractiveness can be improved so that it can flourish in the domestic market. For the preparation of salted spicy chips, osmotic medium containing 30 g common salt in one litre clean water is used. Further, for every additional dipping of 600 g of slices, 10 g salt is added to the salt solution. After drying the slices, required quantity of chilli powder or black pepper powder or white pepper powder is sprinkled to get salted spicy coconut chips. Thus, the product diversification in coconut chips making will enhance the marketability and consumption of coconut chips.

Coconut slices after osmotic dehydration needs to be dried immediately. The slices are taken out from the sugar solution and allowed to drain. After draining out, the slices are spread in a thin layer on filter paper kept inside the trays of a dryer. Solar, electrical, biogas/LPG and biomass fired dryers are used for drying of coconut slices. The osmotic dehydrated coconut slices can be dried in forced hot air electrical dryer at 70-80°C for 5-6 hours.

The coconut chips are hygroscopic in nature. If the relative humidity in the atmosphere is more than 75 percent, it will absorb moisture and lose its crispness. Hence the chips must be packed in the metallised poly film or aluminium foil laminated with LDPE film pouches, which will maintain its flavour and crispness up to six months period without affecting its microbial and biochemical qualities. To avoid the breakage of the chips during transportation, it may be packed as pillow packet using gases like nitrogen or carbon dioxide.

Important steps involved in the production of coconut chips are given in process flow chart (Fig.1).

The protocol and machineries required for the production of coconut

chips is given in the Figure 2.

The nutritional quality of the coconut chips is given in table 1.

**Table 1. Nutritional quality of coconut chips**

Property	Quantity
Moisture (%)	2.17
Total Fat (%)	48.10
Protein (%)	1.24
Total sugar (%)	39.35
Crude Fiber (%)	6.13
Ash (%)	1.36
Total carbohydrate (%)	46.13
Energy (Cal per 100 g)	622

Major part of the fat contains medium chain fatty acids such as lauric acid and capric acid which are beneficial for human health and nutrition. Lauric acid has the additional beneficial function of being formed into monolaurin in the human or animal body. Monolaurin is the antiviral, antibacterial, and antiprotozoal monoglyceride used by the human or animal. Further, it helps in reducing harmful LDL and total cholesterol and increasing beneficial HDL in human body.

### Economic analysis of coconut chips processing

For any entrepreneurship venture, economic analysis needs to be undertaken. ICAR-CPCRI has standardised the process protocol, developed the machineries for processing 250 coconuts per day for coconut chips production and transferred this technology to the aspiring entrepreneurs at nominal technology transfer fee of Rs. 10000. The economic analysis comprised the estimation of fixed cost, variable cost, production cost, profitability projection and break even period for processing of 250 coconuts per day for a period of 300 days in a year. The fixed cost includes manpower, interest on capital loan and working capital, depreciation on machinery and building, administrative

expenses, insurance and sales promotion expenses. The variable cost includes the working capital, expenses on electricity, water and other utilities. The expenditure on raw material and packaging material is taken into account under working capital. During coconut chips production from 75000 coconuts / year, 30000 kg husk, 10000 kg shell, 7500 litres water, and 500 kg testa are obtained.

The additional benefit of selling these co-products is not accounted in this analysis. The coconut chips processing unit shall be located in the vicinity of the coconut growing area to ensure the continuous supply of raw material "coconut". Approximately 2000 square feet land which includes 1000 square feet building area is required. The cost of machineries and equipments for coconut chips production is estimated at 6 lakhs. One supervisor and two skilled labours are required for operation and maintenance of coconut chips unit. Using the above assumptions, the total fixed cost is estimated at 12.06 lakhs. The total variable cost is estimated at 26 lakhs. The unit cost of production is estimated as 8.45 per 25 g packet of coconut chips.

By processing 75,000 nuts / year, entrepreneur can produce 11250 kg coconut chips. By selling coconut chips at the rate of 800/kg, entrepreneur can get a net profit (per year) of Rs. 51,93,500. Additionally by selling the co-products like coconut husk, shell, testa and water, entrepreneur can earn more income. It is concluded that after producing 84832 packets of 25g coconut chips, no profit no loss point will occur after 56 days of functioning of the unit. Thus, coconuts chips based venture can contribute modest increase in the income and livelihood of the entrepreneur. Apart from the profitability, this venture can result into a suitable healthy snack food for children and adults. ■

## Government gives a breather to coconut farmers

The Government of Kerala has issued an order giving directions to the state's excise department for issuing licenses to tap Neera, the unfermented sap from coconut inflorescence to all applicants. Out of the 362 Coconut Producer's Federations registered under the Coconut Development Board (CDB), only 173 federations have got the license to tap Neera so far, says the order issued by the Department of Agriculture on 22<sup>nd</sup> June 2015.

The order also raises the number of coconut palms allocated to the Federations to 5000. Earlier licenses were given to only 1500 palms.

The Neera technician trainings conducted by the Coconut Producer's Societies/Federations should be monitored by CDB, observed the order. A subsidy of Rs.10,000/- per person would be allotted for the Neera technician training. The state Department of Agriculture has to make arrangements to set apart Rs.12 crores in the budget for the trainings conducted by CDB and agencies under Department of Agriculture.



The state budget has set apart an amount of Rs. 10 crore for providing support for plant and machinery to each Coconut Producer's Companies to a maximum extent of 25% of the total project cost or Rs.50 lakh whichever is higher. In order to avail the benefits and the amount allotted CDB has to submit a proposal to the state government

with proper recommendation as per the guidelines. The projects should be credit-linked as back-end subsidy and the proposal should be 25 per cent or less than that of the total cost, says the GO.

The budget has incorporated Rs.10 crore, which would be disbursed through the Kerala Financial Corporation, for providing equity support for the Farmer Producer's Companies to the tune of 25 per cent of the amount raised by the farmers themselves. The GO has also directed the Department of Finance to take necessary steps to set apart Rs. 32 crores for the same.



## TN & Karnataka marches ahead with Neera

Though issuing of licenses to tap Neera in the God's own country has not yet been in the full swing, neighboring states Tamil Nadu and Karnataka, which started their proceedings much later, are approaching the finishing stage at a faster pace. The Tamil Nadu Department of Excise has issued an order, outlining a project for large-scale production of Neera, while the Karnataka government has earmarked funds for Neera production in the state budget. Meanwhile in Kerala, the Rs. 15 crore allotted for Neera production in the previous budget left unutilized. However, through an order issued on June 22<sup>nd</sup> by the Department of Agriculture, Kerala has put an end to the long wait of the coconut farmers by issuing an order to release Rs.32 crore to expand the production of Neera.

Though Tamil Nadu has less land under coconut cultivation than in Kerala, it has achieved far more productivity. Neera production has already started in Coimbatore, Tiruppur, Erode, Madurai and Thanjavur districts. The government of Tamil Nadu is providing subsidies for Neera production.

In Karnataka, Chief Minister Siddaramaiah has

proposed to allow tapping of neera while presenting the budget in March 2015. Tapping of Neera would be allowed only through coconut growers' federation in "limited quantities". Mr. Siddaramaiah said. Required amendments would be made to the Excise Act to allow tapping of neera. "Such a process would help significantly increase the income of coconut growers," said the Chief Minister. Way back in 2007, Karnataka had come up with a draft neera policy but the government had developed a cold feet regarding implementing the same fearing misuse of the same.

Looking at the current pace of progress it can be assumed that the neighboring states Tamil Nadu and Karnataka would march ahead than Kerala and chances are high that Kerala's pioneering efforts in popularizing the soft drink would go unnoticed.

## Horti Sangam Fair 2015, Jharkhand



1. Shri. Radha Mohan Singh, Union Minister for Agriculture in CDB stall, 2. A view of Board's stall in Horti Sangam Fair

Coconut Development Board participated in Horti Sangam Fair 2015 held during 27 - 28 June at Barahi, Hazariganj, Jharkhand. Shri. Radha Mohan Singh, Hon'ble Union Minister for Agriculture inaugurated the two day fair.

In his inaugural address, the minister spoke on the importance of Indian agriculture sector. Dr. Shyamlal, Assistant Director, Coconut Development received the minister in CDB stall.

A Krishi Sanghoshti was also

held as part of the programme wherein experts spoke on various management practices of different crops. Thousands of farmers visited the fair. A keen interest and demand for coconut seedlings was shown by the visitors.

## AP-TEC 2015

Coconut Development Board, State Centre, Hyderabad participated in AP-TEC 2015 organized by Andhra Pradesh Technology Development and Promotion Centre (APTDC) and Confederation of Indian Industry (CII) held at Central Tobacco Research Institute, Rajahmundry, Andhra Pradesh from 5<sup>th</sup> to 7<sup>th</sup> June 2015. The exhibition focused on technologies for modern agriculture to create a platform for knowledge sharing, technology showcase, trading and business to business dialogues and updating the stakeholders with latest developments in the field of agricultural value chain. Dr. D Damodar Reddy, Director, Central Tobacco Research Institute, Rajahmundry inaugurated CDB stall on 5<sup>th</sup> June 2015 in the presence of Shri H. Arun Kumar, IAS District Collector, East Godavari and Shri Vijayakumar, Joint Director of Agriculture,



Boards stall in AP Tech 2015

Andhra Pradesh. Spices Board, CTIRI, Department of Horticulture and Farm machinery manufacturers, Tata Steel Ltd, Mahindra and Mahindra, JCB India Ltd, etc. participated and showcased their products in the exhibition.

The Board exhibited various value added products of coconut like packed neera, packed tender coconut water, packaged coconut milk power, virgin coconut oil, confectionaries, handicrafts from coconut wood and shell etc. Informative posters on

different coconut products, coconut varieties, schemes of the Board and health benefits of coconut products were also showcased. Coconut seedlings from DSP farm, Vegiwada were also sold during the exhibition. Coconut seedlings and bunches of different coconut varieties were also exhibited in Board's stall. The farmers, entrepreneurs, CPS/CPF functionaries, students from various institutions and officials from the Department of Agriculture and Horticulture visited Board's stall.



## 9<sup>th</sup> Asian International Trade & Tourism Expo 2015

Coconut Development Board, participated in 9<sup>th</sup> Asian International Trade and Tourism Expo 2015 organised by CEMS Global, Dhaka, International Convention City at Bashundhara, Dhaka from 10<sup>th</sup> to 14<sup>th</sup> June 2015.

Mr H T Imam, Political Advisor of Hon'ble Prime Minister of Bangladesh inaugurated the expo. Mr Abdul Matlub Ahmad, President, Federation of Bangladesh Chambers of Commerce and Industry and Mr. Humayun Rashid, Acting President of Dhaka Chamber of Commerce and Industry were present on the occasion as special guests. Mr. Imam in his key note address said that there are ample opportunities in increasing trade volume between Bangladesh and India and by joining hands together towards achieving desired developmental goals, both Bangladesh and India can make good advancements. Mr. Imam termed the recent visit of India's Prime Minister to Bangladesh as a milestone of bilateral relations between the friendly countries.

Around 100 exhibitors from 10 countries exhibited their products in the expo. The participating countries were India, Pakistan, Sri Lanka, Singapore, Thailand, Myanmar, Bhutan, Malaysia, Vietnam and the host country, Bangladesh. The exhibitors displayed wide range of products like food and beverages, healthcare products, personal care & beauty products, fashion and accessories, textiles, household products, arts and crafts, consumer electronics, machineries, real estates, tours & travels etc.

Dr A K Nandi, Secretary, Coconut Development Board represented the Board. A wide range of value added coconut products were displayed in Board's stall with the objective of creating awareness and market opportunities. Dr Nandi explained the benefits of VCO, Neera, TCW etc and the convenience of



*Dr. A.K. Nandi, Secretary, CDB in the Board's stall*



*Board's stall in 9th Asian International Trade & Tourism Expo 2015*

other coconut based products like desiccated coconut, coconut milk, coconut milk powder etc to the visitors which helped creating a very high level of interest for such products in Bangladesh. Mr J L Mukherjee from HealthFitz Energy Product Private Limited, Kolkata displayed and distributed samples of coconut oil based baby oil under the brand name, Baby First at the stall which was highly acclaimed by the visitors and a large section of visitors were very keen to buy the product outright from stall. Various other value added coconut

based products like virgin coconut oil, coconut milk, coconut milk powder, VCO based body massage oil, VCO based mouth freshener, coconut oil based hair cream, pure coconut oil (copra based), packaged tender coconut water, coconut chips, spread and syrup made of Neera and activated carbon manufactured by various Indian companies were also displayed in the stall, which evinced keen interest among the visitors. The stall of Coconut Development Board attracted visitors and the public in general were found to be very much impressed by the display of value added coconut products.

It was generally felt that at present there was very little awareness of value added coconut products in Bangladesh. Their knowledge about coconut based products was mostly limited to tender coconut, coconut kernel and copra based coconut oil. After having seen and tested the value added products, people showed good interest when they were explained about various value added coconut products and their benefits. Quality of Indian made coconut products produced under the technologies provided by Coconut Development Board also attracted the visitors.

## CDB conducted entrepreneur's meet at Coimbatore

A meeting of entrepreneurs was organized by Coconut Development Board in association with Department of Agriculture and Tamil Nadu Agriculture University at Rasi Seeds Hall, Tamil Nadu Agriculture University, Coimbatore on 13<sup>th</sup> June 2015. Around 250 people from various departments, Tamil Nadu Agriculture University and potential entrepreneurs participated in the meet. Shri.Rajesh Lakhoni, IAS, Agriculture Production Commissioner, Govt. of Tamil Nadu inaugurated the programme.

Shri.Rajesh Lakhoni, IAS, Agriculture Production Commissioner, Govt. of Tamil Nadu in his inaugural address mentioned that the aim of this meeting is to promote coconut based products and value addition in coconut. He requested Coconut Development Board to give Neera training at Coconut Research Station, Veppankulam and Aliyar Nagar. He also suggested that people from the two Coconut Research Stations can be deputed to CDB Institute of Technology, Vazhakulam to undergo Master technician training. APC also mentioned that there is reduction of allotment of fund for CDB schemes in Tamil Nadu during this year and requested CDB to allot more funds to CDB schemes and to also requested to develop the DSP farm.

Shri. Lunghar Obed, Director, CDB, RO, Chennai in his welcome address informed that the objective of this meeting is introducing new technologies of coconut and he mentioned that Tamil Nadu is having 21% of coconut area in India and the production is 31.3%. Dr.M. Rajendran, IAS, Director of Agriculture, Govt. of Tamil Nadu in his keynote address said that Tamil Nadu is having one third of coconut in India and productivity is also more. He requested CDB for the implementation of Rejuvenation scheme in Tamil Nadu also. He mentioned that Govt. of Tamil Nadu has given 100 acre land for the establishment of DSP farm of Coconut Development Board at Dhali village, Udumalpet and the work is in progress. The inaugural session ended with the vote of thanks by Smt.T. Bala Sudhahari, Deputy Director, CDB, RO, Chennai.

Shri.Rajamanickam, Professor and Head, CRS, Aliyar Nagar was the Panel Moderator of the technical session which followed. He stressed on the medicinal uses of coconut milk and oil. Shri. Hemachandra, Deputy Director, CDB, Kochi briefed about the Technology Mission and value addition on coconut. He has informed that CDB is designated as Export Promotion Council for coconut and coconut products. 316 coconut industries are given assistance by CDB. He pointed out that there are three major problems for the entrepreneurs, ie., loan, technology and machineries. He suggested that if 10 members are interested to undertake



*Inauguration of Entrepreneur's meet*

training on Virgin Coconut oil, Coconut Development Board is ready to give one day training programme. He informed that there are four technologies for Neera, ie.,CPCRI technology, CDB technology, SCMS and KAU Technology.

Smt. Annie Eapen, Chemist, CDB Institute of Technology, Aluva briefed about the Neera Technology and value added products on Neera. She informed that CDB is recommending packed Neera as it is hygienic than raw neera because of microbial infection and mentioned that palm sugar and palm syrup are very good for diabetic patients. Shri. Manickavelu, MD, KVIC and Smt.A. Kamalam, MD, Coimbatore and Erode Jaggery Co-operative Marketing Federation, Kunnathur spoke on the guidelines for the issue of Neera licence. Dr.M. Rajendran, IAS, Director of Agriculture cleared the doubts of entrepreneurs about neera tapping in Tamil Nadu.

Shri. Suresh Kumar, Teakrafts Ltd, Coimbatore briefed about the machineries on desiccated coconut. He informed that packaged desiccated coconut powder can be kept with a shelf life of six months. Shri.S. Nedunchezian, Alpha Lavel, Kochi briefed about the separator machineries for mature coconut water, coconut milk, virgin coconut oil, neera etc. Shri.C.V. Muralidharan, H & G Technomark Inc, Kochi briefed about the machineries for the separation of virgin coconut oil. Shri.C.M. Kamaraj briefed about the export related details and he mentioned that North India is the best place to sell tender coconut and desiccated coconut powder.

Shri.J. Vanangamudi, Head Canara Bank, MSME Felicitation Centre, Coimbatore briefed about the details of loan facilities available with Nationalized Banks. Shri. Shanmuga Siva, Project Manager, District Industries Centre, Coimbatore briefed about the schemes of District Industries Centre. Shri. Balasubramaniam, Chief Manager, Federal Bank Ltd, Coimbatore briefed about the loans and schemes available in Federal Bank. Shri.K.

Nagarajan, Deputy General Manager, Karur Vysya Bank, Tirupur briefed about various schemes of the bank.

During the meeting, Shri. Kalaiselvan briefed about the virgin coconut oil manufactured by Farm Pact Coconut Product Pvt. Ltd., Pattukkottai. He informed that the virgin coconut oil produced by M/s. Farm Pact Coconut Product, Pattukkottai contains 50.3% lauric acid whereas mother's milk contains 46% lauric acid. He requested the entrepreneurs that before starting any unit, one should thoroughly know about the technology in detail on the product. Shri.A. Satyan, SPKS Enrich Products, Pollachi briefed about the desiccated coconut powder manufacturing. Shri. Jayanthan, United Carbon Solutions

Ltd., Kangeyam briefed on the manufacturing of shell charcoal and activated carbon. He further told that, the coconut shell which was wasted earlier is now used for making activated carbon. The participants requested CDB to give wide publicity on the medicinal uses of coconut milk and coconut oil through media.

An exhibition was also organized as part of the programme wherein Thirukochi, Kaipuzha, and Palakkad Coconut Producer Companies, CIT Vazhakulam and Tamil Nadu Palm Development Board displayed their products. Neera and value added products from neera were also displayed in the exhibition. Smt. T. Bala Sudhahari, Deputy Director, CDB, RO, Chennai proposed a vote of thanks.



## Retirement

Shri. K.P. Antony, retired from the service of Coconut Development Board. He joined the Board on 29<sup>th</sup> July 1986

## Kalparasa launched at Goa



*Dr. N.K. Krishna Kumar, Deputy Director General (Hort. Sci.), ICAR launching Kalparasa*

'Kalparasa' a fresh, hygienic and unfermented energy drink from coconut inflorescence was launched for its collection and sale in Goa recently. Shri Krishna Plantations, Goa signed a memorandum of Agreement with ICAR-Central Plantation Crops Research Institute (CPCRI) for its collection using Coco-sap chiller technology and the fresh unfermented juice will be sold in resorts and local markets.

It is devoid of preservatives and other additives. Launching the drink Dr. N.K. Krishna Kumar, Deputy Director General (Hort. Sci.), ICAR in a function jointly organized by CPCRI, Kasaragod and Krishna Enterprises, Goa emphasized that

Kalparasa is a perfect natural drink and could be an alternative to aerated drinks. The richness of its nutrients and other phytochemicals like minerals, amino acids, vitamins and antioxidants makes it not only an ideal health drink but also could be a best sport drink. He handed over the bottled kalparasa named as Nanukalparasa to the Chairman of Nanu Enterprises. Mr. Crisna (Bhau) Naik. Shri Pravas Naik M.D., M/S Krishna Plantations Pvt. Ltd. welcomed the dignitaries and assured that "Nanukalparasa" will be made available in the local markets of Goa very soon.

Dr. P. Chowdappa, Director, CPCRI, Kasaragod gave a detailed

account of innovations made in Kalparasa collection, its quality standards, value addition, marketing and financial benefits. He said that switching to kalparasa tapping provides multiple advantages to the economy, environment, farmer and consumer. Tapping the tree for Kalparasa will be at least ten times more profitable than allowing the plants to produce nuts. Mr. Orlando Rodrigues, Director of Agriculture released a technical bulletin on 'Kalprasa- Collection and Value addition' published by CPCRI, Kasargod. He appreciated the new innovation in collection and marketing and mooted the idea of formation of federations in Goa as it exists in other states.

Dr. N.P. Singh, Director, Central Coastal Agriculture Research Institute, Goa offered felicitation Dr. K.B. Hebbar, Head, PB&PHT Division, CPCRI, Kasaragod demonstrated the collection of Kalparasa using Coo-sap chiller. The meeting was attended by farmers, entrepreneurs and academicians.



## Senior Officers Meeting of Coconut Development Board held

A meeting of the senior officers of the Coconut Development Board was held on 1<sup>st</sup> and 2<sup>nd</sup> June 2015 at Kochi to review the activities and achievements of the Board in different states during the financial year 2014-15 and the action plan for 2015-16. Shri T.K. Jose, IAS, Chairman chaired the meeting.

Shri T.K. Jose, IAS, Chairman in his introductory remarks spoke on the structural changes in coconut sector through the formation of Farmer Producer Organizations in major coconut growing states. The formation of three tier system of FPOs has helped the Board to reach the grass root level. The implementation of Board's programmes through FPOs has resulted in better implementation and facilitates convergence with other schemes. For better implementation of CDB schemes, FPOs need to be formed in other coconut



*Senior officers meeting in progress*

growing states viz. Maharashtra, Odisha, West Bengal, Goa etc. Chairman called upon senior officers develop and demonstrate leadership and interact more with State agencies. Shri Sugata Ghose, CCDO appraised the meeting about the major activities of the Board during last financial year and action plan of CDB during the current year 2015-16. Shri A.K. Nandi, Secretary, briefed the financial and administrative status of the Board

and requested all unit offices to carry out the activities with prudence and sincerity for the betterment of coconut farming community. Officers from respective unit offices presented their achievement and target for the current year.

The meeting was also attended by Shri. Rajeev P George, Dr. T.I. Mathewkutty and Shri. Lungar Obed Directors, Deputy Directors and other senior officers of the Board of the Board.

## CDB Farms will initiate research activities

A review meeting of the Farm Managers and Assistant Directors of nine DSP Farms under Coconut Development Board held at Kochi on 8<sup>th</sup> and 9<sup>th</sup> June 2015 decided to initiate research activities. The DSP farms will initiate various research programs like comparative study of coconut seedlings' vigour in different sowing methods (Tall and Dwarf), effect of irrigation and mulching in growth characteristics of coconut seedlings in nursery (Tall and Dwarf), varietal performance of different cultivars under various climatic conditions in DSP farms, effect of inter cropping with perennial crops and green manure crops in coconut gardens etc.

Concrete efforts will be made to bring in changes in research through DSP Farms of the Board. Shri Rajeev P George, Director welcomed the officers and Shri



*Shri T. K. Jose, IAS, Chairman, CDB addressing officers*

Sugata Ghose, CCDO made the introductory remarks. Shri P. Sabareenathan, Finance Officer in his presentation spoke on the need for an online software for accounting and maintaining inventory of the unit offices and farm. Dr Remany Gopalakrishnan, Consultant spoke on the need for research in CDB DSP Farms. Assistant Directors/Farm Managers presented the status of the respective farms. In the concluding remarks

Shri T.K. Jose, IAS, Chairman said that the primary aim of CDB farms should be the production of quality planting material, improving production and productivity of coconut in the country and enhancing production of hybrid seedlings.

Shri Sugata Ghose, CCDO called upon the officers to transform CDB's DSP farms to model demonstration farms. Shri Pramod P. Kurian, Assistant Director, proposed a vote of thanks.

# Market Review May 2015

## Highlights

- The prices of milling copra and coconut oil expressed a steady downward trend in major markets in the country during May, 2015.
- The international price of coconut oil and copra expressed a slight improved trend during May, 2015 compared to previous month.

The month of May 2015 witnessed a steady downward trend in prices of coconut, copra and coconut oil at all important markets in the country.

## Coconut Oil

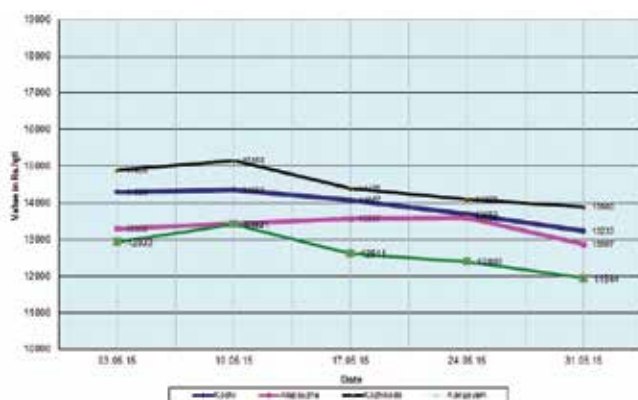
The price of coconut oil which opened at Rs.14300 per quintal at Kochi market, declined to Rs.14200/- on 6<sup>th</sup> May, expressed a steady downward trend and closed at Rs.13100/- with a net loss of Rs.1200 per quintal. The price of coconut oil at Alappuzha market opened at Rs.13300 per quintal, improved to Rs.13500/- on 5<sup>th</sup>, to Rs.13600 on 13<sup>th</sup> and ruled steady till 23<sup>rd</sup>. The price declined to Rs.12900/- on 25<sup>th</sup> and closed at Rs.12700/- with a net loss of Rs.600 per quintal. The price of coconut oil which opened at Kozhikode market at Rs.14900/- per quintal, expressed a declined trend and reached Rs.14400/- per quintal on 8<sup>th</sup> and thereafter ruled steady till 18<sup>th</sup>. The price declined to Rs.14300/- on 19<sup>th</sup>, expressed a steady declined trend and closed at Rs.13900/- per quintal with a net loss of Rs.1000

per quintal. The monthly average price of Rs.13812/- per quintal at Kochi market and Rs.14288/- per quintal at Kozhikode market were about four and six percent lower than that of the previous month and about 12 percent less than that of the corresponding month last year in the respective markets. The monthly average price of Rs.13372/- per quintal at Alappuzha market was marginally lower than that of the previous month and about 15 percent less than that of the corresponding month last year. The monthly average price of Rs.12444/- per quintal at Kangayam market in Tamil Nadu was seven percent lower than that of the previous month and about 17 percent lower than that of the corresponding month last year.

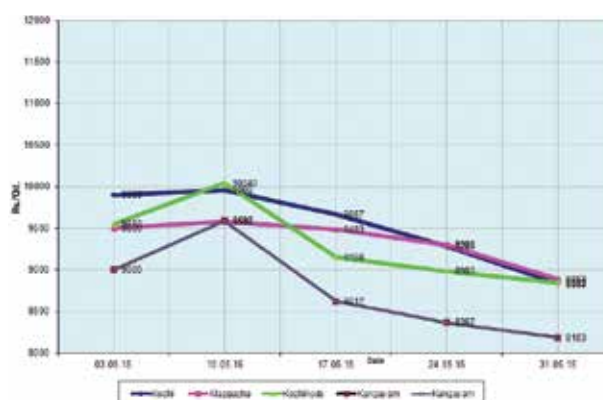
## Milling Copra

The price of FAQ copra which opened at Rs.9900 per quintal at Kochi Market, declined to Rs.9800/- on 6<sup>th</sup> and thereafter expressed a steady downward trend and closed at Rs.8700/- with a net loss of Rs.1200 per quintal. The price of Rasi copra

at Alappuzha market opened at Rs.9500 per quintal improved to Rs.9650/- on 5<sup>th</sup> and ruled steady till 12<sup>th</sup>. On 13<sup>th</sup>, price declined to Rs.9400/- and further to Rs.9200/- on 21<sup>st</sup> and thereafter expressed a downward trend and closed at Rs.8800/- with a net loss of Rs.700 per quintal. The price of office pass copra at Kozhikode market opened at Rs.9550/- per quintal declined to Rs.9450/- on 5<sup>th</sup> and thereafter expressed a downward trend and closed at Rs.8800/- with a net loss of Rs.750/- per quintal. The monthly average price of Rs.9412/- per quintal at Kochi market and Rs.9090/- per quintal at Kozhikode market were six and 10 percent lower than that of the previous month and about 16 and 17 percent lower than that of the corresponding month last year in the respective markets. The monthly average price of Rs.9330/- per quintal at Alappuzha market was marginally lower than that of the previous month and about 13 percent lower than that of corresponding month last year. The monthly average price



Price behaviour of coconut oil during May 2015



Price behaviour of copra during May 2015

of milling copra of Rs.8515/- per quintal at Kangayam market in Tamil Nadu was 12 percent lower than that of the previous month and about 20 percent lower than that of the corresponding month last year. The monthly average price of milling copra at Ambajipeta market in Andhra Pradesh was Rs.8742/- per quintal and the prices were marginally lower than that of the previous month as well as that of the corresponding month last year.

## Edible Copra

The monthly average price of Rajapur copra at Kozhikode market at Rs.14282/- per quintal, was marginally lower than that of the previous month and that of corresponding month last year.

## Ball Copra

The monthly average price of ball copra at Kozhikode market at Rs.12726/- per quintal, was marginally lower than that of the previous month and about six percent lower than that of the corresponding month last year.

The monthly average price of ball copra at Tiptur APMC market in Karnataka was Rs.13139/- per quintal. This was marginally lower than that of the previous month and about seven percent higher than that of the corresponding month last year. The monthly average price of ball copra at Arsikere APMC market

in Karnataka was Rs.12417/- per quintal, which was about six percent higher than that of previous month and about four percent higher than that of corresponding month last year.

## Dry Coconut

The monthly average price of Rs.10744/- per thousand nuts of dry coconuts at Kozhikode market was about nine percent lower than that of the previous month and about 19 percent higher than that of corresponding month last year.

## Coconut

The monthly average price of partially dehusked coconut at Nedumangad market was Rs.16000/- per thousand nuts, was same as that of the previous month and about nine percent higher than that of the corresponding month last year.

The monthly average price of partially dehusked coconut at Arisekere APMC market in Karnataka was Rs.13365/- per thousand nuts, was marginally lower than that of the previous month.

The monthly average price of partially dehusked coconut at Bangalore APMC market in Karnataka was Rs.17327/- per thousand nuts, was nine percent higher than that of the previous month. The monthly average price of Grade-1 quality partially dehusked coconut at Mangalore APMC market

was Rs.17577/- per thousand nuts, was about marginally lower than that of the previous month and about 32 percent higher than that of the corresponding month last year.

## Tender coconut

The monthly average price of tender coconut at Maduur APMC market in Karnataka was Rs.10365/- per thousand nuts, was marginally less than that of the previous month and about 22 percent higher than that of the corresponding month last year.

## International

The International monthly average price of coconut oil at Philippines (C.I.F. Rotterdam) market was US \$ 1081 per MT. This was four percent higher than that of previous month and 27 percent lower than that of corresponding month last year. The monthly average price of US\$745 per MT of copra was about five percent higher than that of the previous month and about 24 percent lower than that of the corresponding month last year.

The domestic price of coconut oil during the month of May 2015 in Philippines was US\$1051 per MT and in Indonesia the price was US\$1080 per MT. The international price of Palm oil was US\$649 per MT, Palm kernel oil (RBD) US\$978 MT and Soybean oil US\$711 per MT respectively during the month of May 2015. ■

## Prices of coconut oil , copra and coconut at various marketing centres during May 2015

Date	Coconut Oil (₹/Qtl)				Milling Copra (₹/Qtl)					Edible Copra (₹/Qtl)	Ball Copra (₹/Qtl)				Dry Coconut	Coco- nut	Partially dehusked Coconut		
	Kochi	Alappu- zha	Kozhi- kode	Kan- gayam	"Kochi (FAQ)"	Alappu- zha (Rasi Copra)	Kozhi- kode	Kan- gayam	Ambaji- peta	Kozhi- kode	Kozhi- kode	Tiptur	Ban- glore	Ar- sikere	Kozhi- kode	Nedu- man- gad	Ar- sikere	Ban- glore	Mangalore (Grade-1)
	(₹/1000 nuts)																		
03.05.15	14300	13300	14900	12933	9900	9500	9550	9000	8500	14200	12500	12850	16300	12300	11000	16000	13200	17000	18000
10.05.15	14360	13433	15160	13421	9960	9580	10040	9592	8917	14460	12963	13065	15600	11331	12093	16000	14100	15417	18000
17.05.15	14067	13567	14400	12611	9667	9483	9150	8617	9450	14258	12683	13117	16250	11874	10733	16000	13200	17500	18000
24.05.15	13683	13600	14100	12400	9283	9300	8983	8367	8500	14342	12800	13192	17000	12351	10767	16000	13333	17083	17167
31.05.15	13233	12867	13900	11944	8833	8883	8842	8183	8267	14417	12958	13245	17000	12706	10700	16000	12907	17000	17000
<b>Average</b>	<b>13929</b>	<b>13353</b>	<b>14492</b>	<b>12662</b>	<b>9529</b>	<b>9349</b>	<b>9313</b>	<b>8752</b>	<b>8727</b>	<b>14335</b>	<b>12781</b>	<b>13094</b>	<b>16430</b>	<b>12112</b>	<b>11059</b>	<b>16000</b>	<b>13348</b>	<b>16800</b>	<b>17633</b>

Source: Kochi: Cochin Oil Merchants Association and Chamber of Commerce, Kochi - 2, Kozhikode: The Mathrubhumi daily  
Alappuzha: The Malayala Manorama daily, Arsikere : APMC, Arsikere  
Price quoted for office pass copra at Kozhikode and Rasi copra at Alappuzha markets.



# Monthly Operations- July



**Andaman & Nicobar Islands:** Open basins around palms of a radius of 2m from the base of the palm. Apply 25 to 50 kg of cattle manure or compost and 10-20 kg of ash per tree and cover the basins with soil. Remove the weeds in the nursery.

**Andhra Pradesh :** Continue manure application if not done during June. Plant seedlings in the main field. As a prophylactic measure against the infestation of rhinoceros beetle, fill the youngest three leaf axils with a mixture of 250g powdered marrotti/ neem cake with equal volume of sand or place naphthalene balls(12g/palm) and cover them with sand thrice a year. If the attack of the mite is noticed, spray neem oil - garlic – soap emulsion 2 percent (20 ml neem oil + 20 g garlic emulsion + 5 g soap in 1 litre water) or commercial botanical pesticides containing azadirachtin 0.004 per cent @ 4ml per litre on bunches, especially on the perianth region of buttons and affected nuts or root feed neem formulations containing azadirachtin 5 per cent @ 7.5 ml with equal quantity of water.

**Assam :** Do not allow rain water to accumulate in the pits of transplanted seedlings. Clean the crowns of the palms. If stem bleeding disease is noticed, (1) remove the affected tissues of the stem and apply 5 percent calixin on the wound. When this is dry apply warm coal tar (2) root feed the affected palm with 5 ml calixin in 100 ml water per palm at quarterly intervals (3) apply 5 kg neem cake per palm per year along with the organic manure during the post monsoon period (4) regulate field

regime by providing proper drainage during rains and irrigating the palms during summer. If bud rot disease is noticed, remove and clean the infected tissues and apply Bordeaux paste on the affected portion. The treated portion should be given a protective covering to prevent washing out of the paste during rains. Spray the neighbouring plants with one percent bordeaux mixture. Adopt plant protection measures when the weather is clear. Remove the weeds from the nursery.

**Bihar / Madhya Pradesh/ Chhattisgarh :** Provide proper drainage. Do not allow rain water to accumulate for a long time in the pits. Transplant selected good quality seedlings in the already prepared and half filled pits. Drench the basins of transplanted seedlings with 0.05 percent chlorpyrifos twice at 20 to 25 days interval against the attack of termites. Apply 2 kg bone meal or single superphosphate in the pit before planting. Open the basins around the palm of a radius of 2m upto a depth of 15-20 cm, and apply manures and fertilizers and cover with soil.

During this month apply 30-50 kg farmyard manure/ compost per palm in the basin before the application of fertilizers. In irrigated and well maintained gardens apply the fertilizers @ 275g of urea, 500g single super phosphate and 500g muriate of potash. In rain fed gardens apply the first dose (1/3 of the recommended dose) of fertilizers i.e. 250g urea, 350g single superphosphate and 400 g muriate of potash, per adult palm and cover with soil. The gaps caused by the death of seedlings (previous

year's planting) should be filled up, preferably with polybag seedlings. Similarly, remove all unhealthy and defective seedlings and replant with healthy seedlings. Check the palms for bud rot. If bud rot is found, remove the affected parts and apply bordeaux paste. Spray the neighbouring palms/ seedlings with 1 per cent bordeaux mixture.

**Karnataka :** Open circular basins around the palm, of a radius of 2m. Take appropriate control measures if attacks of rhinoceros beetle and red palm weevil are noticed. Keep the garden free of weeds. Give a prophylactic spray with 1 per cent bordeaux mixture if not given during the last month. Seedlings can be planted during this month. If the attack of the mite is noticed, spray neem oil - garlic – soap emulsion 2 percent (20 ml neem oil + 20g garlic emulsion + 5g soap in 1 litre water) or commercial botanical pesticides containing azadirachtin 0.004 per cent @ 4ml per litre on bunches, especially on the perianth region of buttons and affected nuts or root feed neem formulations containing azadirachtin 5 per cent @ 7.5 ml with equal quantity of water.

**Kerala/Lakshadweep :** Open basins around the palms, of a radius of 2 m and fill them with green manure cuttings or green leaves @ 25kg per palm or bulky organic manures like cowdung, compost, etc.@ 50kg per adult palm and close the basins partially, if not done in June. Clean the pits in which seedlings have been planted. Search the crowns of trees for rhinoceros beetle, red palm weevil and also for bud rot disease. Take steps to check them. Clean the crown of the palm. If the attack of the mite is noticed, spray neem oil - garlic - soap emulsion 2 percent (20 ml neem oil + 20g garlic emulsion + 5g soap in 1 litre water) or commercial botanical pesticides containing azadirachtin 0.004 per cent @ 4ml per litre on bunches, especially on the perianth region of buttons and affected nuts or root feed neem formulations containing azadirachtin 5 per cent @ 7.5 ml with equal quantity of water. Remove the weeds from the nursery.



**Maharashtra/ Goa/ Gujarat :** Bury husk in trenches between palms with concave side up. A prophylactic spray with 1 per cent bordeaux mixture may be given against fungal diseases.

**Orissa :** As a prophylactic measure against the infestation of rhinoceros beetle, fill the youngest three leaf axils with a mixture of 250g powdered marotti/ neem cake with equal volume of sand or place naphthalene balls(12g/palm) and cover them with sand thrice a year. Hook out the rhinoceros beetles. Manure vegetables and other crops. Give a prophylactic spray with 1 per cent bordeaux mixture against fungal diseases.

**Tamil Nadu/ Puducherry :** Open basins around the palms. Keep the garden free of weeds. Give the palms a prophylactic spray with one per cent bordeaux mixture to prevent bud rot and other fungal diseases. Apply the first dose of fertilizers i.e. 300g urea, 500g single superphosphate and 500 g muriate of potash per adult palm if not applied during last month. Search for rhinoceros beetle on the crowns of the palms with the beetle hook and kill the beetles. As a prophylactic measure against the infestation of rhinoceros beetle, fill the youngest three leaf axils with a mixture of 250g powdered marotti/ neem cake with equal volume of sand or place naphthalene balls (12g/ palm) and cover them with sand thrice a year. Planting of seedlings in the main field can be done during this month. Search palms affected by Thanjavur wilt and take appropriate management practices. If the attack of the mite is noticed, spray neem oil - garlic - soap emulsion 2 percent (20 ml neem oil + 20g garlic emulsion + 5g soap in 1 litre water) or commercial botanical pesticides containing azadirachtin 0.004 per cent @ 4ml per litre on bunches, especially on the perianth region of buttons and affected nuts or root feed neem formulations containing azadirachtin 5 per cent @ 7.5 ml with equal quantity of water.

**Tripura :** Basin around the palm should be cleaned by removing the weeds. Green manure crops sown in May if any, should be ploughed and incorporated during the month. As a prophylactic measure against the infestation of rhinoceros beetle, fill the youngest three leaf axils with a mixture of 250g powdered marotti/ neem cake with equal volume of sand or place naphthalene balls(12g/ palm) and cover them with sand thrice a year. Collected seed nuts may be sown in seed beds without delay by taking advantage of the rain.

**West Bengal :** Apply green manure at the rate of 25 kg per palm. Keep the garden free of weeds. Start planting of seedlings in the main field. A prophylactic spray of 1 percent bordeaux mixture against fungal diseases may be given. ■