

Message from the Chairman's Desk 04

India to become the global leader in
coconut production and productivity 06

Regional Office of Coconut Development Board to be opened in
Chhattisgarh: Shri.Brijmohan Agrawal 08

Is Coconut Oil A Poison? 14
Dr. Bruce Fife

Why Coconut farmers need to be mobilized to benefit from viable
markets through Economies of Scale 20
Remany Gopalakrishnan

Evolving a sustainable coconut sector in Kerala: Prospects & Perspectives 25
Thamban C and Jayasekhar S

News 30

Cultural practices in Coconut Garden 34

Market Review 36



Message from the Chairman's Desk




Dear friends,

The global coconut sector welcomed the month of September with the World Coconut Day Celebrations in commemoration of the foundation day of the Asian and Pacific Coconut Community, an inter governmental organization under the UN-ESCAP. As you all are aware, India is one among the founder members of APCC and is dedicated and devoted to the growth of this sector. This year, as part of the concerted efforts of the Board to expand coconut cultivation in the non-traditional areas, World Coconut Day celebrations were organized in Raipur, the capital of Chhattisgarh. The occasion was graced by a host of dignitaries and was marked by the presence of over 500 coconut farmers from the length and breadth of the country.

The agricultural scenario is developing fast across the globe with increased application of advances in information technology. In a world facing the threats of climate change, population growth and food security, innovative technological solutions to farming become important. The latest addition to this is the application of Artificial Intelligence in agriculture. Artificial Intelligence could emerge beneficial in soil and crop monitoring, crop protection, harvesting, predictive analytics – to name a few. Effective communication systems are also needed for efficient transmission of weather parameters, crop information, market arrivals and prices to equip farmers to take better informed decisions. Application of Artificial Intelligence in coconut farming will prove beneficial for small and marginal farmers in bridling the problems bedeviling this sector.

The month of September also witnessed the slow recovery of the agriculture sector in the state of Kerala from the recently hit flood situation that caused huge loss to mankind, infrastructure and agriculture. The state witnessed an ever time record of 237.87 cm rain which is 64% more than the normal rainfall. Coconut farms were found to survive the flood situation in many places, in comparison to other crops, except in the case of dwarf palms in some areas. The Board shares the sorrow and misery of the people of the state and joins in their efforts in rebuilding the sector. Needless to say, the losses are beyond imagination and the lessons from the deluge are myriad. The washing off of the top soil has resulted in the loss of the fertile layer, the inundation of land with polluted water and the high possibility for outbreak of fungal diseases





especially bud rot in coconut. Water being a very essential input for productivity in coconut, the recurrence of the drought situation in 2018 as a result of the El Nino effect, as predicted by meteorologists is a challenge that the sector has to face in the near future. Adequate water harvesting mechanisms have to be undertaken during the North East monsoon period for collection of water and for enriching the underground aquifers. The Board exhorts farmers to adopt appropriate crop management practices in post flood situations and to take care of the existing palms with special emphasis on soil and crop health.

We also need to be cautious and be prepared in future for such calamities and challenges in the wake of the changing global climate. It may be recalled that when the city of Tokyo was devastated by strong storms and massive flooding caused damage to large portions of the city, planners were perplexed to find new ways to protect Tokyo from heavy rains. Normally, the simplest solution would be to build a reservoir, but since it was not possible to build a reservoir in a city twice as dense as New York, it was decided to build it underground. The Metropolitan Area Outer Underground Discharge Channel, the world's largest underground flood water diversion system and the Furukawa Underground Regulating Reservoir were made which constitute Tokyo's network of underground water storage facilities. These reservoirs have dramatically reduced the flooding and damage caused by heavy rain storms. As Tokyo continues to adapt to changing weather patterns, it is likely that these systems will continue to play a key role in protecting the city for many years to come. These are good models that can be emulated with due adaptability vis-a-vis the geographical and physical conditions on the ground.

As Prof. Aromar Revi pointed out in his classic article in the Economic and Political Weekly, "Systemic failures have deep roots that cannot be explained by sweeping generalizations like failure to respect nature or plan adequately We need to delve deeper to uncover the driving forces that seem to have captured us in a vicious and negative downward spiral..... The system would need to be redefined so that a shock could ripple through the landscape without bringing the entire system to a halt. For this we need scientific probabilistic assessment of multiple short, medium and long term risks on a neighbourhood by neighbourhood basis..... This will need a strong series of interventions which will require political courage and administrative competence to execute..... Else business as usual will only bring more dramatic disruptions, nay loss of life and property in future..... The choice before the country, its residents and establishments is clear."

The history of mankind is one of losses and recapture. We know that a sudden resurrection from such a severe breakdown is easier said than done. But let us put our hearts and souls together to rise from the ashes through innovative and effective strategies in the agriculture sector. Let me assure you that the Coconut Development Board will always be on the farmers side in rejuvenating the sector.

With best wishes

Dr. Raju Narayana Swamy IAS
Chairman



India to become the global leader in coconut production and productivity

Message of Shri Radha Mohan Singh, Honourable Minister for Agriculture and Farmers' Welfare, Government of India on the 20th World Coconut Day 2018 celebrations.

Coconut palm the 'Kalpavriksha' is Nature's great boon to the healthy and wealthy life of mankind. Coconut is known to have been cultivated for thousands of years in our country. Coconut is an inevitable part of our culture and tradition, religious and social practices, folk lore, food and drink. In folklores coconut is the fruit which provides nutrition, it is our heritage and our legacy. The tree is mankind's true friend and a symbol of national integration.

Every year 2nd September is celebrated as World Coconut Day to commemorate the formation day of Asian Pacific Coconut Community (APCC). APCC is an intergovernmental organization of 18 member countries mandated to promote, coordinate and harmonize coconut developmental activities of the Asian Pacific region to achieve maximum economic development. India is one of the founder members of APCC. In India, World Coconut Day is celebrated every year under the aegis of Coconut Development Board in various coconut growing states across the country. The theme announced by APCC for this year's World Coconut Day is Coconut for Good Health, Wealth & Wellness.

India stands first in global coconut production and productivity. The annual coconut production of India is 2437.80 crore coconuts and the productivity is 11616 coconuts per hectare. The crop is cultivated in 20.98 lakh hectare. The crop contributes Rs.3,41,00 crore to GDP annually. More than one crore people depend on this crop for their livelihood.

National Horticulture Mission is implementing various aspirational schemes for the integrated

development of coconut in the country and through these schemes farmers throughout the country get updated on scientific coconut cultivation, product processing, marketing and export.

For the implementation of Horticulture Mission programmes, an amount of Rs. 61.47 crore and Rs. 89.23 crores was allocated during 2016-17 and 2017-18 respectively in the state of Chhattisgarh. An amount of Rs. 205 crore is provisionally allocated for implementing Horticulture Mission programmes in 2018-19 and an amount of Rs. 57 crore 50 lakhs is already released for the same.

Coconut occupies an area of 1270 ha in Chhattisgarh and about 1.02 crore coconuts are produced with a productivity of 7992 nuts per ha. Sukhma, Dantewada, Bijapur, Bastar, Kondagaon, Narayanpur, Durg, Kanker, Dhamtari, Raipur are the few districts in which coconut is cultivated in the State. Since 1985-86, the Board has been implementing various development Schemes in the unified Madhya Pradesh with major thrust for expanding the area under coconut. Besides this, programmes like integrated farming, Technology Mission on Coconut, formation of Farmer Producer Organizations, skill development programmes, FoCT, Coconut palm and Kera Suraksha Insurance schemes, extension, publicity and market promotion activities are undertaken for the coconut productivity improvement in the state.

Under Kera Suraksha Insurance Scheme all the trainees from the first day of training will be covered under insurance scheme and the premium during the first year will be fully borne by the central government under 'Kera Suraksha Insurance

Scheme' which provides insurance coverage to the coconut tree climbers @ Rs.2 lakh. The annual premium of the policy is only Rs. 94.40 (including GST) of which Rs. 71.40 is borne by the Board and Rs. 23 is contributed by the coconut tree climbers. The scheme is implemented in all coconut growing states.

Coconut Development Board has made significant contribution for the remarkable achievements made in the coconut industry in the country. Coconut farmers can be led to prosperity only through value addition of coconut. For this Coconut Development Board is implementing the Technology Mission on Coconut programme under which 480 coconut processing units are established which is having the capacity to process 274 crore coconuts per year.

After the Narendra Modi Government has sworn in, Board has taken up many new initiatives for the development of coconut in the country and I have got the opportunity to be closely associated with this sector. It is worth mentioning that 9633 Coconut Producer Societies, 740 Coconut Producer Federations and 67 Coconut Producer Companies are established in the country. I hope that all the schemes of the Board will be implemented through these farmer collectives and the farmers will assert their right over the processing, marketing and import of coconut products.

Coconut Development Board has made laudable achievements under its skill development programmes in coconut sector viz. Friends of Coconut Tree (FoCT) Training Programme and the Neera Technician training programme and has given training to more than 60998 FoCTs and 2637 Neera Technicians.

Board through its various sponsored research programmes could bring before the world the goodness of not only coconut oil but also tender coconut and other coconut products. Now we know that coconut oil is having medium chain fatty acids which is disease resistant and heart friendly and virgin coconut oil can prevent premature ageing. Research has proved that Virgin coconut oil is effective in curing diabetes, cancer and Alzheimer disease. I request all of you to kindly take on this sacred fruit which is the identity of our tradition and culture and let us enjoy the innumerable benefits of this fruit for the wellness of our families.

I am happy to inform the coconut farmers, that Government of India has increased the Minimum Support Price of Milling Copra from Rs. 6500 per

Quintal to Rs. 7511 per Quintal and for Ball copra from Rs 6785 per Quintal to Rs.7757 per Quintal for 2018 season.

Besides this, Government of India has declared up to 5% incentive in the export value (FOB) in its new Foreign Trade Policy for 2015-20 for the promotion of coconut product export. Further, as the price of the coconut products are becoming highly competitive, a quantum leap in the export of coconut products is expected in the near future. During the year 2013-14, the country has exported coconut products approximately worth Rs. 1156 crore whereas in 2017-18 the export value has increased to Rs 1764 Crore. The total quantity of coconut oil exported to European countries during the year 2017-18 is 355.57 MT.

The schemes and other activities of the Board are being undertaken in the State through Board's Demonstration cum Seed Production Farm located in Kondagaon. DSP Farm of the Board is producing One lakh good quality coconut seedlings annually for meeting the seedling requirement of the farmers of the state. Under the Nursery and production related activities undertaken in the state, Board has covered around 800 ha in the State. Under the Integrated Farming for Productivity Improvement programme, around 50 ha demonstration plots have been developed so far and 60 organic manure units are established in the State with the assistance of the Board. Coconut Development Board is implementing the Friends of Coconut Tree programme in association with State Agricultural University, State Horticulture Dept and Rama Krishna Mutt in the State. So far more than 400 FoCTs are trained under the programme. An amount of Rs 45.55 lakhs is expended for the Area Expansion Programme in Chhattisgarh from 2001-02 to 2013-14 and an amount of Rs. One Crore 25 lakhs 90 thousand is expended for the same during 2014-15 to 2017-18. I am confident that the farmers of Chhattisgarh will avail the benefits of the schemes implemented by the Board in the State and will take forward the coconut cultivation and industry in the state for their better Health, Wealth and Wellness.

I hope that Coconut Development Board will leave no stone unturned to fulfill the dreams of the farmers and beneficiaries through its whole hearted efforts. Our nation will become the global leader in not only the production and productivity of coconut but also in processing and export and the boundless goodness of coconut will emerge before the world.

Jai Hind

Coconut Development Board to extend its activities in Chhattisgarh: **Shri.Brijmohan Agrawal**

Coconut Development Board celebrated World Coconut Day 2018 on the theme 'Coconut for Good Health, Wealth & Wellness' on 2nd September 2018 at Indira Gandhi Krishi Vishwavidyalaya Raipur, Chhattisgarh. Since Shri.Radha Mohan Singh, Hon'ble Union Agriculture Minister could not attend the meeting, Shri. Brijmohan Agrawal, Hon'ble Agriculture Minister, Chhattisgarh inaugurated the programme by lighting the traditional lamp.

Shri Brijmohan Agrawal, Hon'ble Agriculture Minister while delivering the inaugural address told that if coconut farming is promoted in Bastar area naxalism can be rooted out from this area. State government will provide land in Raipur district to set up an office of Coconut Development Board so that the implementation of Board's schemes can be done more effectively. He further opined that a minimum of 25,000 hectare land can be brought under coconut cultivation in Chattisgarh state. He said that CDB's activities in the state may be gained momentum so that the state can be emerged as a top producer of coconut in the National scenario. He further added that coconut can play a significant role in providing better life for the under privileged section.

While delivering the presidential address, Shri. Ramesh Bais, Hon'ble MP, Raipur said that there is better scope for increasing coconut production and productivity and area under coconut in the state and this will open up new avenues to increase the income of farmers. Dr Patil further told that in Bastar a vast stretch of land, nearly about 25,000 hectares, has been found as suitable for coconut production,



but the farming presently covers 1500 hectares. The average production per tree is 90 nuts and this is encouraging. Some of the plants are yielding from 250 to 350 nuts and research is going on.

Dr. D.K.Marothia, Member, State Planning Commission and Shri. Sunil Kumar Kujur IAS, Additional Chief Secretary and Agriculture Production Commissioner, Chhattisgarh Government spoke during the occasion. Dr.Raju Narayana Swami IAS, Chairman, Coconut Development Board in his welcome address informed that that there is a bright future for the Indian coconut industry. Coconut Development Board proposes to undertake various programmes for the sustainable development of the coconut sector like increasing production and productivity of coconut by upgrading Demonstration cum Seed Production [DSP] farms to Centre of Excellence , Model Village Programme by DSP farm, Water Conservation in coconut gardens, Use of non-



Shri. Narendra Kumar Pandey IRS, Director, Department of Horticulture and Farm Forestry delivered vote of thanks.

Inaugural session was followed by a technical session. The technical session was chaired by Dr.P.Chowdappa, Director, CPCRI, Kasargodu. In the technical session. Dr.K.Rajamanickam, Professor, Coconut Research Station, Tamil Nadu Agriculture University spoke on the theme of the world coconut day, Coconut for good health, Wealth and Wellness. Dr.P.K.Salam, Scientist and In-Charge of AICRP on Palms, Jagadapur made a presentation on Production Technology of Coconut in Chhattisgarh. Shri. Vishnukant Chaturvedi, Joint Director, Horticulture spoke about Intercropping of Horticulture Crops in Coconut Garden and the Assistance Provided by the Department of Horticulture, Govt. of Chhattisgarh. Smt. Jayasree A., Development Officer, CDB made a presentation on the Schemes of the Board.

Publications of the Board as well as AICRP on Palms, Jagadapur were released by the Hon'ble Agriculture Minister of Chhattisgarh during the occasion. An exhibition on coconut was also arranged in connection with the programme and the Minister inaugurated the exhibition. Coconut Development Board, Department of Horticulture and Farm Forestry, Chhattisgarh Government, Indira Gandhi Agriculture University, All India Coordinated Research on Palms and several coconut product manufacturers participated in the exhibition. Around 500 farmers and entrepreneurs from coconut producing states across the country attended the programme. ■



conventional energy in coconut cultivation and Promotion of coconut cultivation in North East. For promoting Processing and value addition Board envisages to establish Agro Park exclusively for Tender coconut water, popularization of processed products of coconut in the North East, Interface with Ayurveda and Research Studies on medicinal and health attributes of coconut products. Creating marketing tie-ups with institutional retail chains, strengthening of Consortium of Coconut Producer Companies and conduct of Seminar and Workshops for promotion of cultivation and processing of coconut are the other immediate agendas of the Board



WORLD COCONUT DAY 2nd September 2018





**WORLD
COCONUT
DAY** 2nd September 2018



Technical Session



Stalls of coconut entrepreneurs





Participant coconut product manufactures in the coconut product expo

1. **M/S. Keratech Coconut Oil Manufacturing Company (P) Ltd**, 1/332 B, P.O. Engandiyur, Trichur. Ph. 0487-229415, 2296393
E Mail: Info@Keratechindia.Com, Products : VCO and based products, coconut chips
2. **M/S. Yogic Foods Pvt. Ltd**, U-101, Anupam Appartment, East Arjun Nagar, Delhi – 110 032,
Ph: 08800227742, 09810595214, Yogicfoods@Yahoo.Com, Product : TCW
3. **Dinesh Foods Dinesh Bhavan**, Payyambalam, Kannur- 670 001, India, DineshLtd@Gmail.Com, Ph: 0497 2701699
Product : Coconut Milk , VCO, DC, Coconut Chips, Fortified coconut milk cream, Hair oil, Baby oil, Coconut oil
4. **M/S Nata Nutrico Coconut Food Products**, Mundapuram, Narath Post, Kannur Dist, Kerala – 670 601, Ph: 9895198315, 94495058315
Natanutrico@Gmail.Com, Product : Nata de Coco, honey etc
5. **Vijayanagar Biotech Ltd.**, 403, 4th Floor, Vijaya Jyothi Arcade, Opp. Nahi Office, Hanumanthawaka, Visakhapatnam – 530 040. Andhra Pradesh Ph: 8912731634, Info@Vfnpl.Com Products: various value added products
6. **Marico**, Subi, Ph: 9626262085, subin@maricoindia.Net Product : Coconut Oil
7. **NGO Products** nitinpawangoyal@yahoo.com Product : Various coconut products
8. **Vepuri Agro Products** , Gudiwada road, Vijayawada, Andhrapradesh
9. **Nikhunj Bihari**, Patna, Bihar, Coconut Handicrafts
10. **Sakthi Coconut Products**, Unit No. 9/2, Sakthi Industrial Estate Udumalpet Road, Pollachi-642003, Tamil Nadu, India . Phone: 04259-236053, 09842251234, sakthicoco@sakthicoco.com, sakthifibreproducts@vsnl.net sh_v- www.sakthi-coir.com



Is Coconut Oil A Poison?

Dr. Bruce Fife , Coconut Research Center

Coconut oil is poisonous, so claims Karin Michels, PhD, a part-time professor at Harvard TH Chan School of Public Health. Her comments given in a talk at the University of Freiburg, Germany, sparked a media frenzy with headlines such as, “Coconut Oil is Pure Poison Harvard Professor Claims” appearing in newspapers and on the internet. What makes Dr. Michels an authority on coconut oil? She is not a physician, or a nutritionist, or even a biologist. Her PhD is in biostatistics. Her specialty is statistics—manipulating numbers—not the study of diet or fats and oils. From her profile on the Harvard website, it appears she has never published any studies on saturated fat, let alone on coconut oil. Her comments were not based on any of her own published research, but were simply her opinion based on old, outdated theories about saturated fats. Michels calls coconut oil “pure poison,” saying it was “one of the worst foods you can eat” because it is full of saturated fat, and “saturated fatty acids can clog your arteries.” She adds that “there is no study that proves significant health benefits of coconut oil.” Dr. Michels makes three general claims: 1) saturated fats cause heart disease, 2) coconut oil is a poison and one of the worst foods we could eat, and 3) there are no studies that show any health benefits to coconut oil. Let’s look at what the science actually says about each of these statements. There has never been a study published that has been able to show that saturated fats or coconut oil cause heart disease. The diet-heart disease hypothesis that has been popular for the past 6 decades basically states that heart disease

is caused by high cholesterol. Many studies have shown that some saturated fats can raise blood cholesterol, and therefore it has to be assumed that eating too much saturated fat can promote or even cause heart disease. Researchers have been trying to prove this hypothesis for over a half a century without success. In fact, many studies have seriously challenged this hypothesis and serious researchers have now moved on to studying new, more likely, causes for heart disease. Cholesterol is no longer considered the evil villain as it was once portrayed. There are many types of cholesterol, some good and some potentially harmful. Saturated fats, and in particular coconut oil, have been shown to raise HDL, the good cholesterol, that has been shown to protect against heart disease. The ratio of total cholesterol to HDL cholesterol is considered one of the most accurate and reliable indicators of heart disease risk. Coconut oil raises HDL, which lowers the cholesterol ratio, thus lowering the risk of heart disease¹. It is apparent that Dr. Michels has not kept up with the current science on coconut oil or fats and oils in general. Earlier this year researchers at the University of Cambridge School of Clinical Medicine published a study on the relationship between coconut oil and heart disease risk. The researchers compared the effects of coconut oil with butter and olive oil. Butter was chosen to represent a commonly used highly saturated animal fat and extra virgin olive oil was chosen as it is generally regarded as one of, if not the healthiest of fats. The study involved 96 participants who were assigned to consume 50 mg (about 3

tablespoons) of one of each of the three oils daily for 4 weeks as a part of their ordinary diet. The researchers found that coconut oil dramatically raises the protective HDL cholesterol without affecting the LDL or so-called bad cholesterol. Coconut oil lowered the cholesterol ratio, and the risk of heart disease, more than either of the other two fats, indicating that it is even more heart-friendly than extra virgin olive oil². In recent years numerous studies have exonerated saturated fat as a cause of heart disease and put to rest the outdated diet-heart disease hypothesis. Last year the Lancet, one of the most prestigious medical journals in the world, published a study involving a team of 37 researchers from 18 countries. They gathered data on 135,000 subjects to evaluate heart disease risk in relation to fat intake. They discovered that fat consumption protected against heart disease and increased lifespan. Those people who cut back on fats, including saturated fat, had far shorter lives than those who ate coconut oil, butter, cheese, and meats. Consuming high levels of all fats, cut early death rates by up to 23 percent. The researchers stated that they found no correlation between saturated fat consumption and cardiovascular disease and that current dietary restrictions on saturated fat should be revised³. This isn't the only study in recent years that has called for a revision on the recommendation to restrict saturated fats. A study published in the American Journal of Clinical Nutrition a year earlier investigated whether dietary saturated fat was associated with ischemic heart disease. The study involved 35,597 participants. The researchers also concluded that high saturated fat intake was not associated with increased risk of ischemic heart disease⁴. In 2010 a groundbreaking study was published clearly showing that saturated fats do not cause heart disease. The study published in the American Journal of Clinical Nutrition analyzed all the previous studies with data for dietary saturated fat intakes and the risk of cardiovascular disease. This meta-analysis combined the data from 21 previously published studies, involving over 347,000 subjects. The study showed that there was no connection between saturated fat consumption and heart disease. Those people who ate the greatest amount of saturated fat were no more likely to suffer a heart attack or stroke than those who ate the least. No matter how much saturated fat one ate, the incidence of heart disease was not affected. This was the most complete review of the medical research on saturated fat ever done up to this time⁵. Four years later, a different group of

researchers from Cambridge University published another meta-analysis. This time the researchers combined the data from 72 previously published studies involving more than 600,000 participants from 18 countries. The researchers basically combined all the highest quality studies on fats and diet that had been done for the past several decades and analyzed them together. The results confirmed the previous meta-analysis—there is no connection between saturated fat intake and heart disease⁶. The studies are clear, neither saturated fat nor coconut oil cause or even promote heart disease. Because they raise good HDL cholesterol and lower the cholesterol ratio, if anything, they help to protect against it. Coconut Oil Is a Poison and One of the Worst Foods We Could Eat Dr. Michels calls coconut oil a “pure poison.” She claims it is not just a poison, but a “pure” poison; the connotation is, that it is extremely dangerous at even the smallest dosage. What is a poison? According to the English Oxford Living Dictionary, poison is defined as, “A substance that is capable of causing the illness or death of a living organism when introduced or absorbed.” Does coconut oil fit this definition? Not hardly. Coconut oil has been a major part of the diet of millions of people for thousands of years. In all that time it has never been known to cause any illness or kill anyone. On the contrary, there are many plants that are poisonous such as hemlock, belladonna (deadly nightshade), and death cap mushrooms. Consuming any of them, even in small amounts, will bring about sudden illness and quick death. Coconut oil, on the other hand, can be consumed daily in relatively large quantities without any ill effect. I know some people who consume as much as 12 tablespoons (180 ml) a day and are in excellent health. According to the United States Food and Drug Administration (FDA) coconut oil is perfectly harmless. It is included among the FDA's exclusive GRAS (Generally Regarded as Safe) list of food substances. To be included on this list requires rigorous testing to confirm that the item is safe. Coconut oil is given a GRAS classification of “1,” which is the highest or safest category within the GRAS list. According to the FDA this means that all available studies and historical data have shown that there is “no evidence” that shows or even “suggests” that coconut oil is harmful in any way⁷. It is ironic that Dr. Michels calls coconut oil a poison, because it has proven to be not only harmless, but highly effective in saving the lives of people who have ingested actual poisons. The medical literature has described numerous instances in which coconut oil

has been used in hospital settings as an antidote to otherwise fatal poisonings. For instance, the use of coconut oil has become a routine practice in some hospitals in the treatment of aluminum phosphide poisoning⁸. Aluminum phosphide is a common poison used for rodent control. There is no other known antidote and poisonings are almost always fatal unless treated with coconut oil. Using coconut oil to nullify the effects of poisons is not that unusual. Researchers have known for many years about the detoxifying properties of coconut oil. Numerous animal studies have shown that coconut oil blocks the deleterious effects of a number of different chemical toxins. Coconut oil has been shown to alleviate the effects of at least 36 known toxins ranging from industrial solvents to aflatoxin⁹. Calling coconut oil a pure poison only illustrates Dr. Michels' lack of knowledge about coconut oil, which makes anything she says about it totally unreliable. There Are No Studies That Show Any Health Benefits to Coconut Oil One of the most common arguments given in an attempt to discredit coconut oil is to claim that there is no evidence proving coconut oil has any health benefits. When a doctor or professor makes this statement, he or she is inferring that there are no studies to support the use of coconut oil as a healthy fat. They are counting on the listener to take their word on this simply because they are considered an expert. In reality, what they are doing is exposing their own ignorance and lack of knowledge on the subject. When someone makes this type of statement it means they have not bothered to make even the slightest effort to find the facts. If they had, they would have found an abundance of information and research on coconut oil describing its many health benefits. Currently, there are over 10,000 studies on coconut oil listed in the medical literature. Most of these studies can be easily accessed on the internet.

If you go to my website, www.coconutresearchcenter.org and look under the heading "Medical Research," you will find a listing of hundreds of studies. Here you will find references to an abundance of published studies showing the therapeutic or beneficial effects of coconut oil on cardiovascular health, immune function, cancer, diabetes, liver and kidney health, digestive function, weight management, and much more. To say that there is no evidence for the health benefits of coconut oil is totally wrong and indicates that the speaker is either woefully ignorant, too lazy to do any research, or lying. If you want to know the truth about saturated fats and coconut oil you should not listen to professors who have no idea what they are talking about, instead listen to researchers who have actually researched the topic. One of the reasons why Dr. Michels' comments received such notoriety is because of her association with Harvard. Being a Harvard professor gives a person some air of authority. However, there are other Harvard professors who are far more qualified than Dr. Michels on this subject, who have studied and published works on the health effects of coconut oil. One group of Harvard researchers that includes George L. Blackburn, MD, PhD, Edward Mascioli, MD, and Vigan K. Babayan, PhD state, "Coconut oil has an important medical role to play in nutrition, metabolism, and health care. Indeed, properly formulated and utilized, coconut oil may be the preferred vegetable oil in our diet and the special hospital foods used promoting patient recovery." These researchers made this statement after having spent years studying the health effects of coconut oil and other fats. Their comments hold far more authority than a biostatistician who apparently has never even bothered to do even an internet search on the subject. ■

Source: <https://www.apccsec.org/>

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**Horticulture Commissioner and Former Chairman, CDB refutes
the statement of the Harvard Professor - Coconut oil is pure poison.**

**भारत सरकार
कृषि एवं किसान कल्याण मंत्रालय
कृषि, सहकारिता एवं किसान कल्याण विभाग
कृषि भवन, नई दिल्ली-110001**



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DO No.:1-1/2018-HC

Dated: the 28th Aug., 2018

Dear Dr. Williams,

Published on Jul 10, 2018 posted on YouTube in the talk, titled 'Coconut Oil and other Nutritional Errors,' professor Karen Michels (the director of the Institute for Prevention and Tumor Epidemiology at the University of Freiburg and a professor at the Harvard TH Chan School of Public Health) described coconut oil as "pure poison" and "one of the worst foods you can eat". She made some controversial comments concerning coconut oil in her lecture. Additionally, the comment function under this video is disabled. This made me to write to you directly to safeguard the Indian coconut farmers. In India, the coconut sector plays a significant role in poverty alleviation and employment generation especially among the weaker sections of the society. The Industry provides livelihood to about more than 12 million farm families. In India, Coconut has a tradition dating back several thousands of years and is unique in being revered as the "Tree of Life".

Contrary to the claims that there is no study showing significant health benefits to coconut oil consumption, mere googling pulled out 1,91,00,000 general results and 4,11,000 scholarly articles indicating the benefits of using coconut oil. Dr. Michels' statements are unsubstantiated and inconsiderate. Moreover there is no evidence that Coconut oil consumption is linked to heart disease, inflammatory diseases and rather, contemporary studies have shown that coconut oil is healthy.

Based on the evidence based scientific studies, I can put forth the top 10 health benefits of coconut oil. 1. Improves memory and brain function 2. Boost and regulate our metabolism 3. Help in detoxification - removal of toxic materials that have accumulated in the body. 4. Strengthens the immune system. 5. Anti - microbial and anti - fungal property. 6. Prevents gum disease and tooth decay (oil pulling) 7. An effective moisturizer on all types of skin 8. improves skin issues 9. Effective deep cleansing and make-up remove and 10. Helps in healthy growth of hair and gives hair a shiny quality

The diet that is right for us is the diet of our ancestors over millions of years rather than the diet advice of organisation run by paid shills. If someone wants to stir up controversy among those natural health lovers, try calling coconut oil "pure poison" and that is what has happened. I hope that you will take corrective measures by retracting the statement and come out clean by accepting the circumstances that compelled her for the negative statements against the revered crop of billions.

With kind regards,

Yours Sincerely,


(Dr. BNS Murthy)

To. Dr. Michelle A. Williams, ScD, Dean of the Faculty , Harvard T.H Chan School of Public Health Kresge Building, 10th Floor, 677 Huntington Avenue Boston MA 02115, USA **Copy to Dr. Karin Michael, Adjunct Professor of Epidemiology, Harvard T.H. Chan School of Public Health Boston MA 02115, US**

Harvard University disowns the statemet of Dr. Karin Michael

Dear Dr. Murthy,

Thank you for your correspondence. We are aware of media coverage of Dr. Michels giving a talk in which she mentioned coconut oil. Media reports have referred to Dr. Michels as a "Harvard professor." This is misleading. She has an appointment as an adjunct professor, which she retains because she will be mentoring a student. In any case, it is our

policy not to comment on the research or individual comments of faculty associated with the School in any manner as they are speaking on behalf of themselves and their research findings and not on behalf of the institution. We believe this policy is critical to maintaining an environment that supports the free expression of ideas and encourages debate.

Dear Dr. Williams,

Thank you very much for your reply to my earlier email exhorting to retract the controversial statement made by Dr. Karin Michel calling Coconut oil as PURE POISON. While, appreciating the policy of the University not to comment on the research and individual comments made by faculty associated with the School, I conclude the situation fortifies using name of the prestigious University to contradict time tested and well documented evidence based research findings of the benefits of using Coconut and its products for ulterior gains.

I am happy that Harvard University finally disowned the imprudent statement made by Dr. Karin Michel calling it as individual's (speaking on behalf of of herself; a thorough Google Scholar bibliographic search brings out absolute zero research articles in her name to testify the claims) and not of the Institution. This move will keep the sanctity and the image of the Harvard University at highest level as I have perceived.

With high regards.

Dr. Murthy Horticulture Commissioner DAC &FW,
Govt Of India New Delhi.

Coconut Oil – It's a Functional food and not Poison

Dr.C.Mohankumar, Director, SCMS Institute of Bioscience & Biotechnology,Cochin

Dear Prof. Karin Michel

This is a clarification for your recent controversial claim, coconut oil as poison in human body. As the professor of Harvard, an international reputed Institute, your comment on coconut oil seems biased and it creates great anguish and despair among the scientists who were involved in coconut research especially on the chemical characteristics of coconut oil. With respect to the lipid profile of coconut oil at molecular level, your statement was purely unscientific and absurd. We are wondering about real source of this false remark on coconut oil. As you know confusion is worse than death.

The passion for maintaining good health is a privilege of every human being. So all of them are very specific in selecting foods. In other words food as medicine has been identified as a vision of modern pharmaceuticals and nutraceuticals. In the tropical belt of this planet, coconut palms are growing more than 90 countries in an area of 12 million hectares approximately. As an oleaginous crop, the lipid profile of coconut oil is unique and specific compared to all other vegetable oils globally. Hence its nutritional and therapeutic properties deserve special attention at industrial scale.

Based on key hypothesis put forward by Dr. Ancel Key in 1960s, and the moral support by American Heart Association (AHA), majority of the clinical doctors have considered as a dictum that saturated fats are the prime factor of cholesterol synthesis. Thus Key hypothesis happened to be a strong evidence for generalizing the role of saturated fats in cholesterol formation. Perhaps this upper hand gained for Keys formula in the clinical therapy decades back, still remains as a nightmare for suppressing the quality

of coconut oil. Today the involvement of saturated fats in cholesterol synthesis is a frozen concept because the molecular size of the fatty acids, fats are digested and metabolized differently. So the story relates to coconut fat has something different to say to the public.

Of course coconut oil has saturated fats but all saturated fats are not involved in cholesterol synthesis. As per the classical concept, fats involve in the lipid metabolism through fatty acids and they are the building blocks of triglycerides for the formation of Cholesterol. But all the saturated fatty acids, released in the body are not engaged in Triglyceride (TGA) and Cholesterol (CHL) synthesis. Only long chain saturated fatty acids (LCFA) were the substrates for TGA & CHL formation and in coconut oil it is less than 30% in which Myristic acid- C14 is almost 18%. Since coconut oil is rich in medium chain fatty acids (MCFA) i.e. C6 to C12, and they are not processed by the body in the same manner as LCFA like palmitic and stearic (C16 & C18). Normally LCFA taken in to the body must be mixed with bile released from the gall bladder before it can be broken down. In coconut oil MCFA comes to the level of 65%. During the digestion, MCFAs go directly to the liver which biochemically converts to ketones by bypassing bile. The liver immediately releases the ketones to the blood stream as a fuel substituting glucose. The pathway of developing ketones from MCFA in coconut oil is one of the main reasons for substantiating the therapeutic value of coconut oil for curing Alzheimer's disease. So the earlier concept of saturated fats in CHL synthesis did not match with the chemistry of coconut oil which remains unique from all other vegetable oils.

Why Coconut farmers need to be mobilized to benefit from viable markets through Economies of Scale



Dr. Remany Gopalakrishnan

Former Director i/c, Coconut Development Board, Government of India and Chief Executive Officer, Onattukara Coconut Producer Company Ltd, Alappuzha District, Kerala, India *

Onattukara Coconut Producer Company Ltd (OCPCL) is a role model of farmers aggregation successfully oriented to benefit from viable markets through economies of scale. Located in Alappuzha district of Kerala, it is one among the 29 Coconut Producer Companies presently functioning under the Companies Act in India. Being a daring and challenging initiative of small and marginal coconut farmers, it aims at the welfare of more than 25000 farmers of the area, of whom, 4000 are share holders. The company is encouraging the coconut farmers to move towards value added coconut products and linking them to the markets, thus supporting the endeavor of realizing consistent and higher income for the farmers. The Company has started a coconut oil processing plant with annual processing capacity of 3000 MT of copra. The venture is financially supported by Government of India through Coconut Development Board and Small Farmers Agribusiness Consortium (SFAC) as well as Government of Kerala. It is in the 3rd year of establishment and second year of production of coconut oil. The product is sold under the brand name "Onattukara Pure Coconut Oil" which penetrated the domestic markets and about to reach the export market. Different value added coconut products are also manufactured and marketed by the Company. The Company is procuring raw material for all these products from member

farmers by paying remunerative and attractive prices to their produce by avoiding the middle men. All FPOs in the country are collectively working together by forming a Consortium of Coconut Producer Companies. Thus Coconut sector in India is on the threshold of a significant transformation. The outlook for the region therefore looks bright. A systematic growth is expected to continue on the background of aggregation of farmers and the resultant benefits flowing across the small and marginal families. This better position will sustain and other developing countries shall emulate the model for overall growth of the industry as well as for the social and economic upliftment of farming community at global level. Many coconut growing countries have started emulating the idea of forming Farmer Producer Organizations to benefit from viable markets through economies of scale. The unattended countries should also emulate the idea and the strategy to make a network of Farmers' Organizations at Asian and Pacific region. APCC can be the nodal organization for coordination and follow up. Emphasis can be bestowed on their potential role in poverty alleviation.

1. Introduction

One salient feature of Indian agricultural sector is the fragmentation of land and over 80% of lands are coming under the category of small and marginal

The plight of Gods Own Country remembered in Cocotech Global Meet



Dr. B.N.S Murthy

The Berkeley Hotel, Pratunam, Bangkok, Thailand was home to participants from 30 countries who were thronged from different parts of the world for witnessing the 48th Cocotech Conference and Exhibition of Asia Pacific Coconut Community (APCC), the intergovernmental organization committed for coconut. The Conference was hosted from 20-24 August, 2018, and Cocotech is an occasion totally dedicated for the 'Gods Own Fruit' Kalpavriksha, reverently admired by the humanity.

The 'Gods Own Country', Kerala, was suffering from severe unprecedented flood when the weeklong Conference was deliberating the issues, problems and prospects of Coconut in the present scenario through 52 expert presentations spread out in 12 Sessions. Kerala became a watery hell with the July-August flood with death toll of 483 human lives, huge number of domesticated animals and immeasurable loss to the agricultural and other sectors which was estimated at around Rs. 20,000 Crore by the State Government.

The unprecedented flood and resultant calamities of Kerala were reverberated in different presentations; maybe it was a coincidence that the theme of the Conference was touched on 'Sustainable development through Climate Smart Agriculture'. In the first Session itself, while presenting 'Experience of Indian Coconut Industry in relation to utilizing climate Smart Agriculture practices to increase resiliency to climate change effect', Dr. B.N.S Murthy, the Horticulture Commissioner of Government of India, who was till recently holding the additional charge of Chairman, Coconut Development Board, recalled that the Conference was held at a juncture where one of the premier coconut growing states in India, Kerala was facing the threat of climate change. He added that not only the rise in temperature is considered as the after effect of climate change but the reverse phenomenon too is sounded so, as is being faced by the Gods own Country. Kerala, the tiny land strip, in the southern tip of India contributes lions' share of 36 % of area and 37 % of production of India, notwithstanding the fact that its contribution was once surpassed 60 %. India enjoys the prime position in coconut production in the world by sharing 38 % (APCC Statistical Year Book 2016).



Dr. P. Chowdappa

This Cocotech recorded the ever largest participation of 450 registered participants from over 30 countries. The Conference was concluded by several salient and salutary decisions and resolutions on which we can pin hopes for evolving solutions for many issues and apprehensions booming out in various sectors including the health sector. Scientists, medical doctors, industrialists, Farmer Groups, exporters and media persons found place among the resource speakers / presenters category. Participants shared concern on the video circulated amidst, of

Dr. Karin Michels, an epidemiologist at Harvard TH Chan School of Public Health, in which coconut was referred as 'one of the worst foods one can eat', and the forum vehemently opposed and further resolved to fight against the negative propaganda through concerted campaign. The August Body also took note of the resolutions and study results covered in the two International Conferences on Coconut Oil (ICCO), organized under the auspices of APCC.

The Exhibition which showcased value added coconut products by Government and non-government agencies had given colors and added value to the Conference which was inaugurated by H.E. Mr. Luck Wajananawat, Deputy Minister of Agriculture and Cooperatives, Thailand. The audience was welcomed by Dr. Suwit Chaikiattiyos, Director General, Department of Agriculture, Thailand and a Conference response proposed by Hon. Richard Maru, MP, and Minister for National Planning and Monitoring, Papua New Guinea. Mr. Uron N. Salum, Executive Director of APCC along with his full fledged team took control over the whole programme and concluded it in a meticulous manner after a one day field trip arranged for the participants on the last day of the Conference.



Dr. Remany Gopalakrishnan

size. Small holding size limits the scale of operation and poses limited scope for a successful farming. Therefore mobilization of farmers has been mooted as a novel idea in many agricultural crops in different forms like group farming, cluster farming, contract farming etc. All the forms share the same idea of standing together for reaping individual benefit through empowerment and experience sharing. Such groups practice and build their capacity to collectively leverage their production and marketing strength.

Coconut is a small holder crop and 98% of the holding size fall below 2 Ha at national level and in State like Kerala, 98% of holdings is in the category of 0.2 ha. Vast majority of coconut farmers in other developing countries also constitute under small holders category. They generally face several constraints due to the small size of operation. Small holdings possess inherent limitations and they do not produce enough food to support the family. These limitations include the inability to create a scale of economies, low bargaining power owing to small marketable surplus, scarcity of capital, lack of market access, lack of knowledge and information, market imperfections, and poor infrastructure and communications. The practice of mobilization farmers into a community as a mode of strengthening and empowering has come to the rescue of overcoming these limitations.

2. Genesis of Farmer Producer Organizations (FPOs) in Coconut Sector.

To address the constraints in the small size of

operation and the inability in reaping profit from miniscule farm size, a new thought was mooted among the coconut farming community all over India in recent times. Group approach was thought of in production, pest & disease management, post harvest handling, processing and marketing, collective purchase of inputs, farm implements, maintaining labour bank, etc. Aggregation of produce, and sharing benefits from increased bargaining power and better remunerative prices were the additional advantages envisaged. By way of integrating small producers and processors in their different groupings into modern value chains, many innovative approaches and strategies were possible for farmer groups for promoting competitive business models in agriculture. The mobilization of farmer groups enable farmers to enhance productivity through efficient cost effective and sustainable resource use and get back higher returns for their produce through collective action. Much emphasis has been placed on its potential role in poverty alleviation.

3. Coconut Development Board, the forerunner in forming Farmer Groups

The fact that coconut farmers in the country were highly unorganized and unable to pool their tiny marketable surplus of produce, and that the middlemen were so active in the sale of their produce leaving the farmers with no bargaining power, Coconut Development Board initiated the formation of Farmer Producer Organizations (FPO) in 2010 by collectivization of farmers with the objective of socio economic development of farmers

through productivity improvement, cost reduction, efficient aggregation of produce, processing for value addition, better by-product utilization and efficient marketing of the produce. Forming cluster groups and involving them in implementation of development programmes was, however, initiated early in 2005. Coconut Farmer Producer Organization started with a three tier structure consisting of Coconut Producer Society (CPS), Coconut Producer Federation (CPF) and Coconut Producer Company (CPC). Farmer Producer Organization provided a platform for the overall empowerment of farming community. There are at present 9633 CPS, 740 CPF and 67 CPCs functioning in the country. The formation of FPOs aimed at providing a fair, steady and reasonable income to farmers by organizing the small and marginal coconut farmers through farmer collectives.

Subsequent to the steps initiated by the Coconut Board, Government of India issued a National policy and process guidelines for formation of Farmer Produce Organizations (FPOs). This set of guidelines had ignited the initiatives and the formation of FPOs gained momentum. The vision envisaged under the FPO is to build a prosperous and sustainable agricultural sector by promoting and supporting member owned producer organizations. Its Mission, on the other hand, is to promote economically viable democratic and self governing FPOs, to provide support for their promotion by qualified and experienced resource institutions. Essential features of FPOs are that these are the group of producers for farm and non - farm activities, and are registered bodies and legal entities and work for the benefit of member producers. The concept was to mainstream the idea of promoting and strengthening member based institutions of farmers. The FPOs organize collection, processing, storage and marketing of their members' produces in high value markets at an optimal price. Such organized activities reduce transaction cost as well. Ownership of FPO is with its members and it is considered as an organization of the producers by the producers and for the producers.

The FPOs formed in India are in the path of addressing the challenges of integrating small producers and processors in their different groupings into modern value chains, many innovative approaches and strategies are being piloted for promoting competitive business models in agriculture. This endeavor of aggregation of farmers



will continue in other parts of the country too for bringing the coconut farmers of pan-India under one umbrella.

4. Advantages of Farmer Collectives vis-a-vis Market Penetration

The primary goal of mobilizing farmers is to link small holders to markets. The solitary farmer is at the mercy of middlemen while trying to market their produce. The concept of FPO therefore thrusts on collectivization of producers especially small and marginal farmers to form an effective alliance to collectively address many challenges of agriculture such as improved access to investment, technology, inputs and markets. Government of India identified FPOs as the most appropriate institutional form around which the mobilization of farmers is to be made for building their capacity to collectively leverage their production and marketing strength. With the changes in the organization of marketing channels, new challenges for small and marginal farmers have been crept in. In this environment of greater instability and competition, collective activity can serve to enhance farmers' competitiveness and increase their advantage in emerging market opportunities. Aggregation offers scope for centralized infrastructure for better post harvest handling, processing and value addition. It also offers better options for small scale value addition owing to the bulk quantities and remove hurdles in farmers' access to the market both as buyers and sellers. Thus the process of backward and forward institutional networking among the stakeholders is taken place in the mobilized farmer groups.

5. How does the principle of Economies of Scale work out in Farmers Collectives?

Economies of Scale refer to the competitive advantage that large entities have over smaller

entities. For eg, the cost of production is less when many units are combined to produce at once. Farmer collectives provide economies of scale over independent farmers. Cost of production in coconut farming and processing becomes less in groups than in the isolated single units. Procurement of seeds, fertilizers, inter cultivation, harvesting, post harvest processing and ultimately marketing of products run profitably in collectives. The cost per unit of the material is lowered in larger production centres by procuring raw material in bulk. It results in low packing cost, transportation cost, labour costs and above all the enthusiasm and energy are shared among the individuals than in isolation. In an organization of farmer groups both internal and external economies of scale are controlled and managed, as it has got technical and managerial economies of scale as well as external support from Government and other entities. It facilitates next generation who are not interested to enter into agriculture but can think and work collectively in entrepreneurship. It can also bring out an attitudinal change in small and marginal farmers when working in groups.

6. History of Onattukara Coconut Producer Company - Reaping benefit in viable Marketing through Economies of Scale

Onattukara Coconut Producer Company Ltd (OCPCL) is located in Alappuzha district of Kerala. It is one among the 29 Companies presently registered under the initiative of Coconut Development Board, Government of India. Being a direful and challenging initiative of small and marginal coconut farmers, the Company aims at the welfare of more than 25000 farmers in the area, of whom, 4000 are share holders. The company is striving hard to encourage coconut farmers to move towards value added coconut products, thus supporting the endeavor of realizing consistent and higher income to the farmers. The concept of three tier farmers' collectives has been adopted in this Farmers collectives also. Under the ambit of Onattukara Company there are 235 Coconut Producer Societies and 21 Coconut Producer Federations which together work as a cohesive group.

The Company has established a coconut oil processing plant with an annual processing capacity of 3000 MT copra which in turn yields around 1900 MT coconut oil and 960 MT oil cake. The Company has invested nearly Rs.500 lakhs for the establishment of the plant. The venture is financially

supported by Government of India through Coconut Development Board and Small Farmers Agribusiness Consortium as well as Government of Kerala. Since its formal inauguration and launching of first product in 2017, the unit manufactured and marketed more than 130 MT of coconut oil under the brand name 'Onattukara' Global brand of Pure Coconut Oil'. The Plant is all set to utilize its full production capacity when the Company attained the second year of establishment. The Company catalyses the activities of its farmer groups while they are undertaking farm and on-farm activities like coconut nursery raising, establishment of organic manure units, establishment of modern copra dryers, coconut chips making units etc. They do purchase of seeds, procurement of fertilizers, broadcasting, harvesting, collection and sale in groups which ease their financial and physical burden. The Company is procuring raw material for all these products from member farmers by paying remunerative and attractive prices for their produce. This has evoked overwhelming enthusiasm among the farmers rather than going in isolation. The shareholders and other farmers are thus being benefitted by getting better price for coconut by avoiding the middle men. The creation of a sustained market has helped these farmers to receive their returns on time.

The Company, with the help of cohesive member farmers, has established indigenous markets for all the products manufactured. The products range include edible coconut oil, coconut milk oil, coconut chips, coconut chutney, desiccated coconut, fried and grated coconut, coconut cookies, burfi, squash and so on. The Company is marketing coconut neera products also. The firm is planning to move on to export of coconut products as well, for which all quality certification formalities are being fulfilled. Considering the wide acceptance of the products, the Company is confident about the successful marketing of its products both in the domestic and international markets. Without compromising the quality of the product, the company is trying to capture the niche markets for all edible and non-edible products.

7. Way Forward

All FPOs in the country are collectively working together by forming a Consortium of Coconut Producer Companies. Thus Coconut sector in India is on the threshold of a significant transformation. The outlook for the region therefore looks bright.

A systematic growth is expected to continue on the background of aggregation of farmers and the resultant benefits flowing across the small and marginal families. This better position will sustain and other developing countries shall emulate the model for overall growth of the industry as well as for the social and economic upliftment of farming community at global level. Many coconut growing countries have started emulating the idea of forming Farmer Producer Organizations to benefit from viable markets through economies of scale. The unattended countries should also emulate the idea to make a network of Farmers' Organizations at Asian and Pacific region. APCC can be the nodal organization for coordination and follow up. Emphasis can be bestowed on their potential role in poverty alleviation. There is a need to synchronize the stakeholders including the state and central governments, financial institutions, peoples representatives etc to popularize the concept. Farmer Groups, with the help of research institutions and development agencies, can gain more knowledge about production and processing technologies, crop loans, financial institutions, and new ways of creating market linkages. By joining hands the farmers gain a renewed sense of confidence and strength. They will gain strength to break the chain of middlemen and traders who were exploiting them.

A collective entity represents a tool for small farmers to get organized and to reap benefits not only from aggregation but also from the linkage to high value markets. Such Group is professionally managed to ensure economic viability and to prevent political leverage. Ultimately the success of the Collectives will depend on the commitment of member farmers. The integrity and quality of the leadership, its acceptance within the community as well as the market environment are the most crucial factors for the success of the Farmer collectives. It must be economically beneficial to the participating farmers to market their produce. The FPOs are very much beneficial to improve the value chain of agricultural produce and thereby proved to be in getting good prices for their produce. Farmer Groups are promising new models for coconut farmers who eye for a better future for the coconut sector. A systematic growth is expected to continue on the background of aggregation of farmers and the resultant benefits will be flowing across the small and marginal families. Concerted efforts need to be taken to sustain this bright outlook.

8. Conclusion

Small size of agricultural holding limits the scale of operation and it poses limited scope for a successful farming. Mobilization of farmers has been mooted as a novel idea in many parts of the world to work together and reap the benefits. Such groups practice and build their capacity to collectively leverage their production and marketing strength. Coconut is a small holders' crop and 98% of holding size in India is below 2 Ha at national level and in State like Kerala, 98% is in the category of 0.2 ha. The constraints of farming in small holdings include the inability to create a scale of economies, low bargaining power owing to small marketable surplus, scarcity of capital, lack of market access, lack of knowledge and information, market imperfections, and poor infrastructure and communication. Coconut Development Board initiated the formation of Farmer Producer Organization (FPO) in 2011 by collectivization of farmers with the objective of socio economic development of farmers through productivity improvement, cost reduction, efficient aggregation of produce, processing for value addition, better by-product utilization and efficient marketing of the produce. It also aimed at providing a fair, steady and reasonable income to farmers by organizing the small and marginal coconut farmers through farmer collectives. The primary goal of mobilizing farmers is to link small holders to markets. Many coconut growing countries have started emulating the idea of forming Farmer Producer Organizations to benefit from viable markets through economies of scale. There is a need to synchronize the stakeholders including the state and central governments, financial institutions, peoples' representatives etc to popularize the concept. The FPOs are very much beneficial to improve the value chain of agricultural produce and thereby proved to be in getting good prices for their produce. Farmers collectives are promising new models for coconut farmers who eye for a better future for the coconut sector. APCC can be the nodal organization for coordination and follow up in setting up Farmer Producer Organizations by mobilizing farmers. Emphasis can be bestowed on their potential role in poverty alleviation. Emphasis also needs to be given to popularize the advantages of mobilizing the farmers to benefit from viable markets through economies of scale to tide over the inherent difficulties of working in isolation. ■
Paper presented by Dr. Remany Gopalakrishnan in 48th Cocotech Conference & Exhibition at Bangkok from 20-24 August, 2018.

Evolving a sustainable coconut sector in Kerala: Prospects & Perspectives

Thamban C and Jayasekhar S

ICAR-Central Plantation Crops Research Institute, Kasaragod

Introduction

Coconut sector plays a vital role in the agrarian economy of Kerala, besides its unique place in the socio-cultural fabric of the region. It was always considered as the symbol of rural prosperity and for many years Kerala ranked first in both area and production of coconut in the country. The coconut sector contributes around 15% of total agricultural GDP of Kerala, thus inextricably linked to the agricultural economy of the state. It is estimated that there are about 3.5 million holdings and at least 5 million people depend on this crop directly or indirectly for their employment and livelihood. However, Kerala, the 'land of coconut' is gradually losing its supremacy in coconut production scenario of the country. In the year 1990, Kerala accounted for 57 per cent area and 47 per cent production of coconut in the country. However, Kerala's share in area as well as production of coconut has been declining over time. During 2016-17 Kerala accounted for only 37 per cent area and 31 per cent production in the country with 7448 million coconuts 770 thousand hectares. Though productivity of coconut in Kerala state has increased to 9664 nuts/ha in 2017 the state is still below the national average (11481 nuts/ha), which is a matter of concern. Better technology integration is essential for enhancing the efficiency of coconut sector. Systematic research in coconut in India, which celebrated 100 years of service to the coconut farming community during 2016, has resulted in substantial number of viable technologies for enhancing income from coconut farming. These include high yielding hybrids and improved varieties, coconut based multiple cropping and integrated farming system models, agrotechniques for higher productivity including nutrient management, irrigation and water management, integrated pest/disease management and value addition through product diversification. However, the field level adoption of improved coconut technologies is not at a satisfactory level owing to various techno-

socio-economic reasons. Hence, redemption of the traditional coconut farming and reorientation towards profitable ventures is becoming a necessity. As indicated in the approach paper for 13th five year plan by the State Planning Board, Govt. of Kerala, it is essential that urgent steps are taken to substantially increase income from coconut farming so as to achieve income enhancement in agriculture sector.

Sectoral challenges in a nutshell

Constraints such as high level of market fluctuation/price crash in coconut, changes in the demographic characteristics of coconut growers with a shift towards absentee landlordism, predominance of senile and unproductive palms, predominance of small and marginal holdings, over populated stands of both coconut and other trees in the homesteads, low level of adoption of crop management practices resulting in low productivity, depletion of natural resources in coconut gardens and soil related constraints, inadequate irrigation facilities, lack of availability of quality planting materials, lack of skilled labour and high wage rate, crop loss due to incidence of various pests and diseases, low level of product diversification etc. adversely affects coconut farming in the state, and as such coconut has become a neglected crop. Hence, appropriate research, extension and policy interventions are to be formulated and implemented to enable coconut growers to alleviate these constraints and steer the sector towards achieving the goal of sustainability.

Strategies for sustainable development

Effective strategies and congenial policy environment are needed to improve efficiency of coconut sector in the state.

Rehabilitation in a phased manner

The foremost strategy for improving the coconut production in Kerala is the massive cutting and removal of senile and disease affected coconut

palms which are beyond recovery, removal of over aged palms; regulating the palm density and replanting with high yielding planting materials along with adoption of suitable agro-management practices in farmer participatory cluster mode. Replacing old palms will require enormous quantity of seedlings. Hence, urgent action should be initiated for replanting such seed gardens with parental lines of new and improved varieties recommended for the respective regions. Further, to increase the capacity for hybrid seedling production, a decentralized production mechanism is to be envisaged by maintaining a centralized pollen storage and supply mechanism. In Kerala, on an average 28-30 lakh coconut seedlings are required annually. But the public sector institutions including State Department of Agriculture, CDB, CPCRI and KAU put together could supply only about 10 lakh seedlings per year, revealing a huge gap between demand and supply. The major constraint in enhancing production under public sector is the limited number of mother palms available with them. Many seed gardens established are facing various problems that have resulted in further reduction in number of palms. Rejuvenation of these seed gardens by planting mother palms of newly released varieties requires immediate attention. Since most of the existing seed gardens in Kerala have been established more than 25 years back, the existing mother palms in such seed gardens are nearing senility. Hence, urgent action should be initiated for replanting such seed gardens with parental lines of new and improved varieties recommended for the respective regions. Further, to increase the capacity for hybrid seedling production, a farmer participatory decentralized production mechanism is to be envisaged by maintaining a centralized pollen storage and supply mechanism. The three tier Farmer Producer Organisation system of Coconut Producer Society-Coconut Producer Federation- Coconut Producer Company facilitated by CDB can play a significant role in the decentralised coconut seedling production programmes. ICAR-CPCRI is currently implementing two pilot projects funded by State Department of Agriculture viz., 'Technology support for coconut hybridization/production of semi tall varieties' and 'Production and distribution of dwarf/semi tall varieties of quality planting materials' which focus on utilisation of elite mother palms available in farmers' gardens and decentralised participatory approach for production and distribution of coconut seedlings. It is also necessary to ensure quality control in the

production and distribution of coconut seedlings to prevent unscrupulous elements exploiting coconut growers. Hence, it is important that an appropriate nursery accreditation mechanism is established and accreditation made mandatory for all coconut nurseries. The desired ratio of coconut palm population of tall/dwarf/hybrid varieties in farmers' gardens i.e about 75 per cent tall and remaining 25 per cent dwarf and hybrids put together needs to be emphasized and accordingly appropriate short term and long term strategies are to be formulated and implemented for production and distribution of coconut seedlings.

Role of system approach in sustainability

The strategy for revitalising coconut sector in Kerala needs to revolve around interventions for ensuring adequate care and management of coconut palms in the existing gardens to enhance productivity and income. CPCRI has developed many coconut based multiple cropping and integrated farming system models which are more efficient in utilising the basic natural resources and realise more income compared to monocropping of coconut. A coconut based mixed farming system comprising coconut, pepper, banana, crossbred cows, poultry birds, goat, and pisciculture has proved to generate returns up to three times higher than that of coconut monocrop. In addition to the economic benefits, the systems ensure food and nutritional security coupled with sustainability and environmental services. In Kerala, the average size of coconut holding is only 0.2 ha and income from such tiny holdings can't meet the diverse needs of farm families. Hence, systematic coconut based cropping/farming system as a strategy to make coconut farming economically viable in small holdings needs to be highlighted. Implementation of development schemes to popularise coconut based cropping/farming systems is highly relevant since coconut growers in Kerala are currently more exposed to economic risks and uncertainties owing to the high degree of price fluctuations.

Enhancing productivity and income through technology integration

Increasing productivity and reducing cost of cultivation through better utilisation of crop management technologies in the existing coconut gardens is another important strategy to be implemented for enhancing income from coconut farming. The study on fertility of soils of Kerala has revealed that soil related constraints viz., very

strong soil acidity, extensive deficiency of secondary nutrients calcium and magnesium and wide spread deficiency of micro-nutrient boron are among the important factors for low productivity of coconut in the state. Hence, it is important that interventions are implemented for improving soil health status in coconut gardens through soil test based nutrient management. The technology for vermicomposting of coconut leaves as part of on-farm organic matter recycling in coconut gardens is very relevant in the context of growing awareness about organic farming/eco-friendly farming in Kerala. Coconut gardens of one hectare area can generate up to eight tonnes of leaf biomass residues every year which can be utilised for vermicompost production. The coconut leaf vermicompost can also meet 50% of the nitrogen requirement of coconut palms grown in one hectare area, saving expenditure on inorganic fertilizer. Basin management with green manure legumes is another approach for enhancing the availability of organic manure.

Drip irrigation is the ideal method of irrigation for coconut. Hence, schemes to promote adoption of drip irrigation in coconut gardens assumes much significance, especially 'more crop per drop' is the strategy accepted worldwide for sustainable crop production. It is also important to implement schemes to promote adoption of soil and water conservation and water harvesting in coconut gardens for enhancing coconut productivity. There was 19 per cent improvement in yield of coconut due to the implementation of various interventions related to soil and water conservation under the Farmer Participatory Action Research Programme (FPARP) implemented by CPCRI with the support of Ministry of Water Resources in selected localities of Kasaragod district.

Crop loss due to incidence of pests and diseases is one of the major constraints experienced by coconut growers in Kerala. CPCRI has developed a number of viable technologies on palm health management amalgamating integrated pest and disease management with nutritional care of the palm. However, due to various reasons the field level adoption of technologies recommended for the integrated pest management (IPM) and integrated disease management (IDM) of coconut is very low and as such crop loss due to incidence of pests and diseases continues to incur huge economic loss for the coconut growers. The technical feasibility and economic viability of IPM/IDM technologies were successfully demonstrated in farmers' field

at different localities under various action research projects implemented by ICAR-CPCRI ensuring active involvement of coconut farmers and other stakeholders. Community/group approaches ensuring active participation of farmers are needed for the effective implementation of integrated pest/disease management in coconut. Hence, interventions are to be implemented to promote community approach and farmers' participation to enhance adoption of IPM/IDM in coconut. A project on technology support for plant protection campaign in coconut is being currently implemented by CPCRI with the financial support of State Department of Agriculture, Government of Kerala. It is important to ensure the participation of coconut palm climbers in the implementation of technology transfer programmes on IPM/IDM in coconut. Besides, involvement of Coconut Producer Societies, Agro Service Centres and rural youth trained under Friends of Coconut Trees (FoCT) programme of CDB is to be ensured for the effective implementation of schemes on plant protection in coconut under the decentralised planning programme by Local Self Governments.

Upgrading the value chain

Technological research has been successful in evolving appropriate processing technologies for the profitable utilization of products and by-products of the coconut palm including tender nut, coconut kernel, coconut water, coconut wood, shell and leaves. To cope with the market fluctuations, there is a need for product diversification and by-product utilization. Encouraging more entrepreneurs in coconut sector by establishing 'Coconut Parks' for organized processing for value addition will help coconut farmers to de-link the over dependence on coconut oil in determining coconut price. In the case of Kerala, there is tremendous potential for the development of coconut sector especially in view of the investment friendly ambience due to the organized coconut farmer groups. The synergy of these farmer producer organisations can be effectively channelized for harnessing the potential for production and marketing of coconut value added products. The formation of coconut parks will indubitably provide new impetus to the Kerala coconut industry by ensuring income enhancement of the farmers and other stakeholders.

Policy interventions in trade

Competitiveness of coconut oil compared to palm

oil in the domestic market gets adversely affected and the excessive import of palm oil had frequently triggered price crash in coconut. There is a need to recalibrate the import duty structure and it is essential that within the framework of permissible limits the tariff rates for the import of palm oil, both crude and refined palm oil are enhanced to protect the interests of coconut growers. The copra procurement system should be in such a fashion that the Minimum Support Price (MSP) ensures an incentive for processing to the coconut farmers when compared with that of selling fresh coconut. More than half (about 58 per cent) of the total cost of production of coconut in Kerala goes to labour charges. This shows the higher per unit labour charges prevailing in Kerala, which can be attributed to higher labour demand and higher cost of labour in Kerala. In addition, lack of availability of sufficient skilled labourers for harvesting of coconut leading to higher cost of cultivation of coconut in Kerala. Currently, wage rate prevailing in Kerala is around Rs. 700 per day, which is one of the highest costs prevailing for agricultural labour in India. Cost of production of copra has been estimated as Rs. 84/kg, and adding 20 percent margin to this, the MSP should be at least Rs. 100/kg. On the other hand the MSP fixed for the current season (2017-18) is only Rs.75.00/kg of copra, which is certainly inadequate to support the coconut farmer. Other pertinent factors in this context of discussion are lack of effectiveness and efficiency in copra procurement by the agencies and inadequate infrastructural facilities for the storage of copra. In order to create an impact in the market and for the benefits of MSP to reach the genuine coconut farmers, adequate quantity of copra should be procured. The studies on pattern of distribution of annual yield of coconut indicates that the number of nuts harvested varied from harvest to harvest and 60 per cent of the production of a coconut palm is harvested during the peak production period (the first six months of the calendar year), and hence a stable price during these periods is of utmost importance for achieving profitability in coconut based farming system. Hence, the copra procurement scheme should be designed keeping view of this important aspect of coconut production in the country. In view of the ineffective procurement of copra and raw coconuts in the state, it is suggested to establish block level/panchayat level hubs with forward and backward integration along with unit level collection centres under the supervision of CPS networks. Such a mechanism would facilitate the coconut/copra procurement to

a great extend. It is of paramount importance to provide the mechanism to reflect trade concerns of Kerala in the forthcoming Free Trade Agreements (FTAs) including Regional Comprehensive Economic Partnership (RPEC).

Promoting group approach

In Kerala, coconut is predominantly cultivated in small and marginal holdings. The income generated from coconut farming in small and marginal holdings does not provide enough for meeting the requirements of farm families. Technology options for enhancing income from coconut farming in such poor rural communities do exist, but not fully realised in field situation. The fragmented holdings do not render themselves viable for the optimum utilization of resources and the adoption of improved technologies by the cultivators. To augment the productivity and income of such small and marginal holdings it is suggested to have group management of resources, which helps to overcome the inherent weaknesses of the fragmented holdings. Various agencies, including Coconut Development Board and State Department of Agriculture, have thus facilitated farmer producer organisations to promote group approaches for implementing coconut development interventions. Kerala has about 7220 Coconut Producers' Societies (CPS), 464 Coconut Producer Federations (CPFs) and 29 coconut producer companies (CPCs) already registered with CDB, besides the FPOs of coconut growers facilitated by State Department of Agriculture as part of implementing 'Keragramam' project. The FPOs in coconut sector are to be supported and strengthened to enable them to mobilise group action for implementing various interventions to improve coconut sector. Many a times it is observed that the FPOs are unable to organise any meaningful activities with group approach, instead act as intermediaries facilitating distribution of incentives under schemes implemented by governmental agencies. The biggest challenge in Kerala context is to enhance productivity through adoption of crop management technologies in a substantial number of coconut orchards (which are almost neglected) owned by 'absentee landlords' whose primary source of income is not coconut farming. Policies and programmes to facilitate revival of such coconut holdings needs community action at grass root level with the support of governmental agencies. The FPOs can play a role in linking trained skilled palm climbers and coconut farmers by promoting labour

Coconut Development Board awarded Rajbhasha Kirti Puraskar



Dr. Raju Narayana Swamy IAS, Chairman, Coconut Development Board receiving the Rajbhasha Kirti Puraskar from Honourable Vice President of India Shri. Venkaiah Naidu. Shri. Rajnath Singh, Minister of Home Affairs, Shri. Kiran Rijiju and Shri. Hansraj Ahir, Ministers of State for Home Affairs are also seen.

Coconut Development Board has been awarded Rajbhasha Kirti Puraskar 2017-18 (3rd position) for the excellent implementation of Official Language Policy amongst the offices in the Non Hindi speaking areas. Dr. Raju Narayana Swamy IAS, Chairman, Coconut Development Board received the Puraskar from Shri. Venkaiah Naidu, Honourable Vice President of India at a function held on 14th September 2018 at Vigyan Bhawan, New Delhi. Shri. Rajnath Singh, Minister of Home Affairs presided over the function. Shri. Kiran Rijiju and Shri. Hansraj Ahir, Ministers of State for Home Affairs and other dignitaries were present on the occasion.

Coconut Development Board observed Hindi Fortnight 2018

Coconut Development Board observed Hindi Fortnight from 14th to 28th September 2018. Shri. Saradindu Das, Chief Coconut Development Officer, CDB inaugurated the Hindi Fortnight Celebration on 14th September 2018 at the Head Quarters of the Board at Kochi. Officers and staff of the Board attended the programme. Various competitions were conducted for the employees of the Board as part of the programme.



bank concept under decentralized people's planning by LSGs to address the problem of shortage of labour and high wage rate.

Coordination

Many research, development and extension agencies are functioning in the state for the betterment of coconut sector, apart from the vast network of FPOs facilitated by governmental agencies. However, lack of coordination between these agencies adversely affects the effectiveness of implementation of coconut development initiatives in the state. Hence, it would be ideal if a mechanism is established to coordinate the functioning of these agencies for synergising the efforts for enhancing the efficiency of coconut sector. Coconut Mission chaired by the state Agriculture Minister, envisaged to be constituted to integrate and coordinate various coconut development bodies, research institutions

and FPOs in coconut sector in the state is a welcome move in this direction.

Conclusion

Coconut sector in Kerala state is confronted by many challenges. But there are opportunities to combat and conquer the obstacles and steer the sector to a profitable, vibrant and sustainable road map. Concerted efforts by various research, development and extension agencies, active participation of coconut growers along with a congenial policy environment are needed for the effective implementation of interventions for the sustainable development of coconut sector in the state. ■

(This article is prepared based on the paper presented in the Coconut Farmers' Meet held at Kozhikode on 25th July 2018)

CDB celebrated World Coconut Day across the country

CDB, RO, Chennai

CDB, Regional Office, Chennai celebrated World Coconut Day on 2nd September 2018 at Pattukottai, Thanjavur District.

Thiru.R.Vaithiyalingam, Hon'ble Member of Parliament in his inaugural address called upon the coconut farmers to maintain the coconut garden in a scientific manner in spacing and fertilizer application recommended by the Tamil Nadu Agricultural University. Further he stressed that the farmers may not only concentrate in production but also on value addition of coconut so as to get maximum return per unit area.

Thiru. R. Doraikannu, Hon'ble Minister for Agriculture, Government of Tamil Nadu during his address spoke on Neera and Neera products. The govt. of Tamil Nadu has issued Neera tapping license to Tamil Nadu Coconut Producers Company registered and recommended by Coconut Development Board. As on date three companies are having Neera license issued by the Government of Tamilnadu.

Thiru.K.Parasurarnan, Hon'ble Member of Parliament and Thiru.A.Justin, Joint Director of Agriculture also spoke on the occasion. Thiru.A.Annadurai.IAS, District Collector, Thanjavur, in his address stressed on the need for planting atleast one coconut seedling in each household. Thiru C V Sekar, MLA,Pattukottai requested the farmers of Thanjavur district to avail the benefits of various schemes of Coconut Development Board.

More than 450 coconut farmers from Thanjavur and different districts of Tamil Nadu attended the function. Shri.R.Kalaiselvan, former Vice Chairman, CDB & Chairman, East Coast CPCL Pattukkottai delivered the welcome address. Thiru.Rajeev Bushan Prasad, Director, Coconut Development Board, Regional Office, Chennai proposed vote of thanks.

The inaugural session was followed by a technical session which was chaired by Dr. H Hameed Khan, Former Project coordinator (Palms) CPCRI, and co chaired by Dr. V Murugappan, Former Director (SCMS), TNAU, and Thiru. Rajeev Bushan Prasad, Director, CDB, Regional Office, Chennai. Dr.S.Arulraj, Former Director, IOPR and Co-opted Member, CDB spoke on the benefits of coconut cultivation.

Dr.A Karthikeyan, Professor and Head, TNAU, Veppankulam spoke on the package of practices to be followed in coconut garden., followed by Dr. R Marimuthu, Professor, CRS, TNAU, Veppankulam who spoke on coconut Nursery Management, hybridization and moisture conservation in coconut. Dr.V.G.Mathirajan, Asst.Professor, CRS, TNAU' Veppankulam spoke on Plant Protection in Coconut, and Thiru.A.Jeyapandi, Deputy Director, Marketing, CDB spoke on the Formation of FPOs and value addition in coconut.



CDB, SC, Kolkotta

CDB State Centre Kolkatta celebrated World Coconut Day 2018 by organizing a workshop on coconut cultivation at Sarada Hall,Ramakrishna Mission Kolkata in association with Sasya Shyamala KVK, Narendrapur on 2nd September 2018. Swami Sarvalokananda Maharaj, Secretary, Ramakrishna Mission Ashrama presided over the programme and Dr. Tapash Dasgupta, Dean, Ramakrishna Mission Vivekananda Educational and Research Institute was the chief guest of the session. Dr. A.K Nandi, State Coordinator(ATMA), Kolkata, Dr. Manas Ghosh, Principal, ATC & Director, SAMETI, RKM Asharma, Narendrapur, Dr. Narayan Chandra Sahu, Sr. Scientist and Head, SS KVK, Naredrapur, & Shri Hrishikesh Khanra, Dy. Director (Hort.), Barasat were also present at the inaugural session.

Shri Khokan Debnath, Deputy Director , CDB in his welcome address elaborated on the importance of the celebration of World Coconut Day.

In his presidential address, Swami Sarvalokananda Maharaj, appreciated the role of Coconut



Development Board in the development of coconut cultivation and industry in the state. He expressed his happiness on implementation of various CDB schemes in the state for the upliftment of the socio economic condition of the coconut farmers.

Dr. Tapash Dasgupta, Dean, Ramakrishna Mission Vivekananda Educational and Research Institute, Narendrapur called upon the farmers to avail the assistance of the Board for improving the income from coconut cultivation in the state. He also requested to establish coconut based industries in the state for producing different coconut products and byproducts for increasing the income of farmers.

Dr. A.K Nandi, State Coordinator(ATMA), Kolkata spoke on the production of good quality coconut seedlings at DSP Farm, Fulia, Shantipur, to meet the huge demand of the farmers. Dr. Manas Ghosh, Principal, ATC & Director, SAMETI, RKM Asharma, Narendrapur advised the farming community to take up coconut cultivation in the state and increase the area of coconut so that various coconut by-products units can be established in West Bengal in the coming years. Shri Hrishikesh Khanra, Deputy Director of Horticulture spoke on the occasion and advised the farmers to avail the assistance of the department of FPI & horticulture for improving the income from horticulture crops in the state.

More than 400 people including scientist from the KVKs and department officials attended the function. Inaugural Session was followed by technical session chaired by Dr Narayan Chandra Sahu, Scientist, KVK, Narendrapur. Sri Khokan Debnath, Deputy Director spoke on the formation of Coconut Producers Society, Coconut Producers Federations & Coconut Producers Company in West Bengal and different schemes being implemented in the state.

CDB, SC, Vijayawada

Coconut Development Board, Vijayawada organized the World Coconut Day-2018 Celebration

on 2nd September at Ichhapuram, Srikakulam District in association with Department of Horticulture, Andhra Pradesh, Dr. Y.S. R. Horticultural University & M/s Chicof CPC, Srikakulam. Shri. Chiranjiv Choudhary IFS, Commissioner of Horticulture, AP, inaugurated the programme Dr. B. Ashok Babu, Hon'ble MLA, Ichhapuram presided over the function and Shri. K. Dhanunjaya Reddy, IAS, District Collector, Srikakulam was the guest of honour. Shri. P. Lakshmana Prasad, Assistant Director of Horticulture, Tekkli, Srikakulam, Dr. J. Dilip Babu, Director of Research, Dr. Y.S.R. Horticultural University, Dr. G. Ramanandam, Principal Scientist(Horti & Head), and Dr.N.B.V. Chalapathi Rao Senior Scientist (Entomology) HRS, Ambajipeta, Dr. P. Madhavi Latha Scientist (Agro) & Head, HRS, Anakapalli and Shri A.V. Jamadagni, the Project Director and all of CPCs Chairmans participated in the programme.



A special issue of Bharatiya Kobbari Patrika and Telugu leaflet on CDB schemes was released as part of the programme.. HRS , Ambajipetta also released one leaflet on Scientific Management Practices in coconut for getting higher yield. Inaugural session was followed by technical session. Dr. G. Ramanandam, Principal Scientist (Horti & Head), and Dr.N.B.V. Chalapathi Rao, Senior Scientist (Entomology) HRS, Ambajipeta. Dr. P. Madhavi Latha Scientist (Agro) & Head, HRS, Anakapalli made presentation on Scientific Coconut Cultivation & Major Diseases, Pests and its management". Dr. J. Dilip Babu, Director of Research, Dr. Y.S.R. Horticultural University chaired the technical session. More than 200 farmers representing various FPOs, Senior officials from Department of Horticulture & Senior Scientists from Dr. Y. S. R Horticultural University attended the meeting.

Shri. M.K. Singh, Assistant Director, DSP Farm, Coconut Development Board, welcomed the gathering and Shri. Johar Khan, Chairman M/s Chicof CPC, Srikakulam proposed a formal vote of thanks for the meeting.

An exhibition was also arranged as part of the programme. CDB displayed coconut based value added products, food products, handicrafts, Neera products like neera chocolates, biscuits, jaggery, honey, squash etc, various posters on FPO, FoCT & Neera Technician training etc in the stall.

CDB, SC, Thane

Coconut Development Board, State Centre and DSP Farm Palghar celebrated World Coconut Day on 2nd September-2018 at Barister NathPai Auditorium at Sawantawdi in association with Department of Agriculture, Govt. of Maharashtra and District Coconut Growers Association, Sindhudurg.



Shri. Deepak Kesarkar, Hon'ble Minister of State for Home, Planning and Finance, Govt. of Maharashtra inaugurated the programme in the presence of Shri. Pramod P. Kurian, Deputy Director i/c, Coconut Development Board, State Centre, Thane, Shri. Suresh Gawas, President, District Coconut Growers Association, Sindhudurg, Dr. Dilip Nagavekar, Ex-Head Regional Coconut Research Station, Bhatye, Ratnagiri, Maharashtra and Shri. Ramanand Shirodkar, Treasurer, District Coconut Growers Association Sindhudurg.

Shri. Deepak Kesarkar, Hon'ble Minister of State for Home, Planning and Finance, Govt. of Maharashtra in his inaugural address advised the farmers about formation of cluster, Farmer Producer Societies and Farmer Produce Organization in Sindhudurg District for the benefit of the coconut farmers. He also emphasized the scope for expansion of area under coconut by establishing small Coconut Nursery in Sindhudurg and on the need to extend training programmes on processing of coconut in this region.

Shri. Pramod P. Kurian, Deputy Director i/c CDB State Centre, Thane welcomed the gathering and spoke on the Coconut Development Board activities in the state and background for world coconut day

celebration. Shri. Suresh Gawas, President, District Coconut Growers Association, Sindhudurg in his speech requested to enhance implementation of Coconut Development Boards Schemes in Konkan Region with the support of State Agriculture Department. Shri. Ramanand Shirodkar, Treasurer, District Coconut Growers Association Sindhudurg during his speech emphasized the need for promoting organic cultivation of Coconut in Sindhudurg District for preserving the nutritional status of the soil.

A Technical Session was also organized in which Dr. Dilip Nagavekar, Agronomist, Ex-Head Regional Coconut Research Station, Bhatye, Ratnagiri, Maharashtra spoke on Scientific Coconut Cultivation Technology in Maharashtra. Shri. Sharad S. Aglawe, Field Officer, CDB, State Centre, Thane spoke on Coconut Development Board Schemes and answered queries of the farmers. Shri. Ranjit Sawant, Secretary, District Coconut Growers Association Sindhudurg proposed vote of thanks.

CDB, SC, Andaman & Nicobar Islands

World Coconut Day was celebrated at ICAR-CIARI (Central Island Agricultural Research Institute) with Entrepreneurship Development Programme (EDP) on coconut value addition, in collaboration with Coconut Development Board (Kochi), ICAR-CPCRI (Kasaragod, Kerala), National Horticulture Board (Gurugram), Department of Agriculture (A & N Administration), NBARD at its Garacharma Research complex under the theme 'Wealth through Value Addition' on 3rd September, 2018



Speaking on the occasion, the chief guest DR. T. Janakiram, Asst. Director. General (Hort.), ICAR, New Delhi enlisted the various measures taken by ICAR in uplifting the farmer's livelihood. He expressed happiness over the implementation of coconut programme at CIARI which is occupying more than 40% the agriculture land area of A & N Islands.

Dr. A. Kundu, Director ICAR-CIARI in his presidential address gave an over view of the R & D

Karnataka



activities of the Institute, highlighted the genesis and need for the EDP on coconut, which is the outcome of the interactive committee meeting with A & N Administration.

Dr. G. S. Pandey, Director, Incharge, Dept. of Agriculture, A & N Administration in his address spoke on the facilitation of the programme. Dr. B. A. Jerard, Head, Division of Horticulture & Forestry briefed about the World Coconut Day and the organization of Entrepreneurship Development Programme (EDP) on value addition of coconut. More than 150 participants including government officials, entrepreneurs, farmers, students from all the three Districts of the Islands participated in the programme.

CDB, SC, Bhubaneswar

Coconut Development Board, State Centre and DSP farm, Pitapally, Odisha celebrated World Coconut Day Bhubaneswar on 2nd September 2018. Dri. Bijay Ketan Upadhyaya, IAS, Director of Horticulture, Directorate of Horticulture, Government of Odisha was the Chief Guest. Dr. P.C. Lenka Prof. (Retd.) OUAT, Bhubaneswar presided over. Dr. Biswanath Rath, Member CDB attended the programme as special guest. Dr. G.C. Acharya, Head, Central Horticultural Experiment Station, Bhubaneswar and Shri. R.C. Das, Additional Director, Directorate of Horticulture, Govt. of Odisha were the Guests of Honour. In the inaugural address, Dr. Bijay Ketan Upadhyaya, IAS, Director of Horticulture spoke on the importance of market oriented coconut cultivation in major coconut belts of Odisha and about the Importance of value addition in coconut. Dr. G.C. Acharya, Head CHES briefed on the importance of intercropping with horticulture crops in the coconut garden for the increasing the farm income from unit area. Dr. Biswanath Rath, Member CDB spoke on the prospects of coconut cultivation in Odisha and

**Assam**

on the means to increase the production and productivity of coconut in Odisha. Dr. Rajat Kumar Pal, Deputy Director, Coconut Development Board spoke on the importance of World Coconut Day. More than 150 participants including Departmental officials and coconut farmers from different districts of Odisha participated in the function. Dr. P.C. Lenka Prof (Retd) OUAT, Bhubaneswar, and Shri. R.C. Das, Additional Director, Directorate of Horticulture also spoke during the occasion. An exhibition of coconut products and a technical session was also held as part of the programme.

Cultural practices in Coconut Garden - October

Manuring

Under irrigated conditions, one fourth of the recommended dose of chemical fertilizers can be applied if not given during September. For the coconut seedlings planted during June, first application of chemical fertilizers (one tenth of general recommendation ie 100 g urea, 200 g MOP and 200g rock phosphate) can be given. Under irrigated conditions the chemical fertilizers can be applied in four splits. It is always recommended to apply chemical fertilizers based on the soil test results rather than going by the general recommendations. Wherever Boron deficiency is noticed 100 g Borax may be applied in the basin. For coconut palms showing yellowing of leaves due to Magnesium deficiency, 0.5 kg of magnesium sulphate can be applied in the basins along with other fertilizers.

Green manuring

Regions benefitted by north east monsoon like Tamil Nadu, sowing of green manure crops like Sunhemp *Crotalaria juncea* or Daincha (*Sesbania aculeate*) or Cow pea (*Vigna unguiculata*) or Wild Indigo (*Tephrosia purpurea*) can be done. In the interspace of coconut gardens under monocropping the following seed rate of green manure seeds is recommended. Sunhemp – 20 kg/ha, Daincha – 30 kg/ha, Cow pea -25 kg/ha and Wild Indigo – 15 kg/ha

If intercrops are grown, seeds of green manure crops can be sown in the coconut basin of 1.8 m radius. For Cow pea and Daincha seed rate per basin is 100g while for other green manure crops 75 g seeds can be sown per basin.

Intercultural operations

Ploughing/digging of interspace is to be undertaken to keep the plantation free of weeds if not done during September. Care should be taken to avoid injury to coconut palm while ploughing.

Nursery management

In localities of Tamil Nadu, which are mostly benefitted by North- East monsoon, sowing of seednuts can be taken up. Weeding should be done in the nursery. Five month old ungerminated nuts and dead sprouts

should be removed from the nursery. Mulching with coconut leaves or dried grass or live mulch by raising green manure crops can be done in the nursery. Irrigation has to be given for seedlings

Mulching

Mulching of palm basins can be undertaken if not done during September. Fallen dried coconut leaves available in the coconut garden can be used for mulching.

Plant protection

Integrated Pest Management

Rhinoceros beetle

Adopt mechanical method of control by extracting beetles with beetle hooks, without causing further injury to the growing point of the palm. The top most leaf axils may be filled with powdered neem cake/ marotti cake (*Hydrocarpus* sp/ *pongamia*) @ 250 g + fine sand (250g) per palm as a prophylactic measure. Filling the innermost three leaf axils with 4 g each of naphthalene balls covered with sand (12 g/palm) for juvenile palms. Placement of two perforated sachets containing chlorantraniliprole a.i. 0.4% (5 g) or fipronil (3 g) or one botanical cake (2 g) developed by ICAR-CPCRI. Incorporation of the biomass of weed plant *Clerodendron infortunatum* Linn. in the cow dung/compost pit. The breeding sites may be treated with green muscardine fungus (*Metarhizium anisopliae*)

Red Palm Weevil

Avoid causing injury to the palms, as they would attract the weevil to lay eggs. Mechanical injury if any, caused should be treated with coal tar. While cutting fronds, petiole to a length of 120 cm is to be left on the trunk to prevent the entry of weevils into the trunk. Removal and burning of palm at advanced stage of infestation would aid in destruction of various stages of the pest harboured in the trunk. Prophylactic leaf axil filling suggested for rhinoceros beetle is very essential as this pest pave way for red palm weevil. If damage occurs in the crown, the damaged tissue has to be removed and insecticide suspension, imidacloprid (0.02%) @1 ml/L of water may be poured in. In case of entry of weevil through

the trunk, the hole in trunk may be plugged with cement/tar and the top most hole is made slanting with the aid of an auger and the insecticide solution is poured through this hole with funnel

Eriophyid mite

Spraying on the terminal five pollinated coconut bunches with neem oil garlic soap mixture @ 2 per cent concentration (neem oil 200 ml, soap 50 g and garlic 200 g mixed in 10 litres of water) or spraying neem formulations containing 1 per cent azadirachtin @ 4 ml per litre of water

or spraying palm oil (200 ml) and sulphur (5g) emulsion in 800 ml of water. Root feeding azadirachtin 10,000ppm @ 10 ml + 10 ml water is also effective. Along with the recommended dose of manures and fertilizers, 5 kg neem cake should be applied

Coreid bug

Spraying of neem oil-soap emulsion (0.5%) on the pollinated bunches. The emulsion can be prepared by adding 5 ml neem oil and 8 g bar soap in one litre water.

Rugose Spiralling Whitefly

No chemical insecticide should be sprayed on leaves. Application of 1% starch solution on leaflets to flake out the sooty moulds. In severe case, spray neem oil 0.5% and no insecticide is recommended. Installation of yellow sticky traps on the palm trunk to trap adult whiteflies. Encourage build up of parasitoids (*Encarsia guadeloupae*) and re-introduce parasitized pupae to emerging zones of whitefly outbreak. *In situ* habitat conservation of the sooty mould scavenger beetle, *Leiochrinus nilgirianus*

Integrated Disease Management

Bud rot

Remove the infected tissues of the spindle completely. Two or three healthy leaves adjacent to the spindle may have to be removed, if necessary, for easy removal of all rotten portions and thorough cleaning. After removing the affected tissues apply 10% Bordeaux paste and cover the wound with a polythene sheet to prevent entry of rain water. The protective covering has to be retained till normal shoot emerges. Destroy the infected tissues removed by burning or deep burying in the soil, Spray 1% Bordeaux mixture to the surrounding palms

Stem bleeding

Avoid burning of trashes near the tree trunk, Avoid injury to the tree trunk. The affected tissues should



be completely removed using a chisel and smear the wound with 5% hexaconazole (5 ml in 100 ml of water) and drench the basins @ 25 lit. of 0.1% solution. Smearing paste of talc based formulation of *Trichoderma harzianum* on the bleeding patches on the stem (The paste can be prepared by adding 50 g of *Trichoderma* formulation in 25 ml of water). Soil application of *Trichoderma harzianum* enriched neem cake @ 5kg per palm and adopt recommended irrigation/moisture conservation practices.

Leaf rot

Remove rotten portion of the spindle leaf and 2-3 successive leaves and pour fungicide solution containing 2 ml hexaconazole 5 EC in 300 ml water/palm or talc based formulation of *Pseudomonas fluorescens* or *Bacillus subtilis* @ 50 g in 500 ml water/palm into the well around the base of the spindle leaf. Undertake prophylactic measures to prevent rhinoceros beetle attack

Basal Stem Rot/Ganoderma wilt

Removal of dead palms, palms in advanced stages of the disease and destruction of the bole and root bits of these palms. Isolation of diseased palms from healthy palms by digging isolation trenches of 2 feet depth and one feet width around the basin. Avoiding flood irrigation or ploughing in infected gardens to prevent spread of the inoculum. Addition of 50 kg of farmyard manure or green leaves per palm per year. Application of *Trichoderma harzianum* enriched neem cake @ 5 kg per palm and irrigating the palm once in 4 days and mulching around the basin. Raising banana as intercrop wherever is possible. Root feeding of hexaconazole @ 2% (100 ml solution per palm) or soil drenching with 0.2% hexaconazole / 1 % Bordeaux mixture @ 40 litre solution per palm. ■

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Market review – August 2018

Domestic price

Coconut Oil

During August 2018 the price of coconut oil opened at Rs.18300 per quintal at Kochi and Alappuzha market and Rs.18800 per quintal at Kozhikode market. During the month, price of coconut oil at all three markets expressed a downward trend during the first fortnight and thereafter expresses an upward trend.

The price of coconut oil closed at Rs.17800 per quintal at Kochi and Alappuzha market and Rs.18700 per quintal at Kozhikode market with a net loss of Rs.500 per quintal at Kochi and Alappuzha market and Rs.100 per quintal at Kozhikode market.

The price of coconut oil at Kangayam market in Tamilnadu, which opened at Rs.16000 per quintal, expressed a mixed trend and closed at Rs.15333 per quintal with a net loss of Rs.667 per quintal.

Weekly price of coconut oil at major markets Rs/Quintal)				
	Kochi	Alappuzha	Kozhikode	Kangayam
01.08.2018	18300	18300	18800	16000
05.08.2018	18100	18100	18700	15667
12.08.2018	17300	17400	18000	15000
19.08.2018	17000	17000	18200	15133
26.08.2018	17600	17600	18550	16000
31.08.2018	17800	17800	18700	15333



Milling copra

During the month, the price of milling copra opened at Rs.11900 per quintal at Kochi, Rs.11800 per quintal at Alappuzha market and Rs.11900 per quintal at Kozhikode market. During the month, price of milling copra at all three markets expressed a downward trend during the first fortnight and thereafter expresses an upward trend.

The prices closed at Rs.11550 at Kochi market, Rs.11500 at Alappuzha market and Rs.11550 at Kozhikode markets with a net loss of Rs.350 per quintal at Kochi and Rs. 300 per quintal at Alappuzha market and Rs.350 per quintal at Kozhikode market.

At Kangayam market in Tamilnadu, the prices opened at Rs. 10500 per quintal and closed at same price.

Weekly price of Milling Copra at major markets (Rs/Quintal)				
	Kochi	Alappuzha (Rasi Copra)	Kozhikode	Kangayam
01.08.2018	11900	11800	11900	10500
05.08.2018	11800	11650	11750	10500
12.08.2018	11250	11350	11100	10000
19.08.2018	11100	11100	11250	10100
26.08.2018	11450	11400	11500	10600
31.08.2018	11550	11500	11550	10500

Edible copra

The price of Rajapur copra at Kozhikode market which opened at Rs. 18000 per quintal, expressed a fluctuating trend during the month and closed at Rs.19500 per quintal with a net gain of RS.1500 per quintal.

Weekly price of edible copra at Kozhikode market (Rs/Quintal)	
01.08.2018	18000
05.08.2018	18500
12.08.2018	18000
19.08.2018	19000
26.08.2018	19600
31.08.2018	19500

Ball copra

The price of ball copra at Tiptur market which opened at Rs.16900 per quintal expressed a mixed trend during the month and closed at Rs.16500 per quintal with a loss of Rs.400 per quintal.



Weekly price of Ball copra at major markets in Karnataka (Rs/Quintal)	
	Tiptur
01.08.2018	16900
05.08.2018	16900
12.08.2018	16500
19.08.2018	16300
26.08.2018	16500
31.08.2018	16500

Dry coconut

At Kozhikode market, the price of dry coconut opened at Rs.9950 per quintal and ruled at the same price till last week and by the fag end of the month price increased slightly to Rs.9960 per quintal.



Weekly price of Dry Coconut at Kozhikode market (Rs/Quintal)	
01.08.2018	9950
05.08.2018	9950
12.08.2018	9950
19.08.2018	9950
26.08.2018	9950
31.08.2018	9960



Coconut

At Nedumangad market the price of partially dehusked coconut opened at Rs.17000 per thousand and ruled at the same price throughout the month. At Pollachi market in Tamil Nadu, the price of coconut opened at Rs.13000 per thousand nuts, slumped slightly during the first fortnight and thereafter expressed an upward trend. At Bangalore APMC, the price of partially dehusked coconut opened at Rs. 19000 and closed at Rs. 24000 per thousand nuts during the month. At Mangalore APMC market the price of partially dehusked coconut of grade-I quality opened at Rs.25000 per thousand nuts and ruled at the same price during the month.

Weekly price of coconut at major markets (Rs /1000 coconuts)				
	Neduman-gad	Pollachi	Banglore	Mangalore (Grade-1)
01.08.2018	17000	13000	19000	25000
05.08.2018	17000	13000	21000	25000
12.08.2018	17000	12000	22000	25000
19.08.2018	17000	12000	24000	25000
26.08.2018	17000	13000	24000	25000
31.08.2018	17000	13000	24000	25000

International price

Coconut oil

The international price of coconut oil expressed a slight upward trend during the month. However domestic price of coconut oil in Philippines and Indonesia expressed a mixed trend during the period. The price of coconut oil quoted at different international/ domestic markets is given below.

Weekly price of coconut oil in major coconut oil producing countries				
	International Price(US\$/MT)	Domestic Price(US\$/MT)		
	Philippines/ Indonesia (CIF Europe)	Philippines	Indonesia	India*
04.08.2018	893	880	882	2255
11.08.2018	903	850	853	2159
18.08.2018	905	880	878	2179
25.08.2018	928	883	883	2303

* Kangayam



Coconut

The domestic price of copra at Philippines, Indonesia and India expressed a mixed trend during the month whereas price of copra in Srilanka expressed a slight upward trend. The price of copra quoted at different domestic markets is given below.

Weekly price of dehusked coconut with water				
Date	Domestic Price (US\$/MT)			
	Philippines	Indonesia	Srilanka	India*
04.08.2018	554	456	1233	1512
11.08.2018	539	465	1233	1440
18.08.2018	551	452	1233	1454
25.08.2018	558	451	1217	1526

*Pollachi market

Copra

The price of coconut quoted at different domestic markets in Philippines, Indonesia, Srilanka and India are given below.

Weekly price of copra in major copra producing countries				
	Domestic Price(US\$/MT)			
	Philippines	Indonesia	Srilanka	India*
04.08.2018	125	128	284	410
11.08.2018	125	127	284	389
18.08.2018	125	128	192	396
25.08.2018	124	128	199	432

* Kangayam

