Vol.LXV No. 5 November - 2022 Pages-40 Price: Rs.6

Indian Coconut Journal

Global Coconut Community converges at Kuala Lumpur

Farmer Producer Organizations – Prospects and Challenges

INDIAN
COCONUT
JOURNAL

Vol. LXV No.5
November - 2022
Kochi - 11

Publisher
COCONUT DEVELOPMENT BOARD
Ministry of Agriculture and Farmer's Welfare,
Department of Agriculture, Government of India
Kera Bhavan, Kochi - 682 011, India

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

SUBSCRIPTION

Annual	Rs. 60.00
Single Copy	Rs. 6.00
Institutes / Libraries	
Annual	Rs. 200.00
Single Copy	Rs. 20.00

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

Coconut Development Board

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

Functions

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

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

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

Index

Message

Dear Readers,

The 27th United Nations Climate Change Conference, commonly called Conference of the Parties of the UNFCCC (COP 27) convened in Sharm El Sheikh, Egypt during 6-18 November, 2022 concluded on a positive note. An important step towards justice was taken by establishing a loss and damage fund, especially for those on the frontlines who did so little to cause the crisis – we are facing a burning planet. The ambition to keep the 1.5 degree limit alive and to pull humanity back from the climate cliff is retained. COP27 resulted in countries delivering a package of decisions to cut green house gas emissions and adapt to the inevitable impacts of climate change, as well as boosting the support of finance, technology and capacity building needed by developing countries. It was a time for the countries and the civil society to realize that we have lots of homework to do and little time.

The 50th International COCOTECH Conference and Exhibition was also organized (coinciding with COP 27) during 7-11 November, 2022 at the Kuala Lumpur, Malaysia, by the International Coconut Community and the Government of Malaysia in collaboration on the theme " Climate change adaptation and mitigation strategy for a resilient and sustainable coconut agro- industry". The Conference provided a platform for policy makers, researchers, scientists, progressive farmers, entrepreneurs and other stakeholders to share the recent developments in technology and expertise and also spark creative ideas for the sustainable development of the sector in the wake of the climate crisis. The Conference concluded with the recommendations for a campaign to promote greater appreciation of the magnitude and potential irreversibility of climate change and the threats and dynamics of extreme climate change impacts for coconut production. It also called for immediate action to identify the causes of vulnerability, sources of climate resilience, climate change adaptation and mitigation management interventions and comprehensive standards and policy tools that may assist and accelerate resilience against climate change. The papers presented on various models related to climate change adaptation and resilience, efforts for a sustainable coconut charter and coconut platform, use of Internet of Things and Artificial Intelligence in coconut sector thereby ensuring effective usage of natural resources, eco-friendly products from various parts of coconut palm, clinical studies on health attributes of coconut products etc were educative and informative for replication and adaptation in member countries.

At a time when world over the community is concerned about the ill effects of climate and the resilience and adaptation mechanisms to tide over the ill effects, we are blessed that our crop coconut is suited for sustainable cultivation with contributions to the carbon sink through its biomass, products which are eco-friendly and sustainable and a sector which sustains millions of smallholder farmers with livelihood security and social security.

Editor

Farmer Producer Organizations
Prospects and Challenges

Deepthi Nair S,
Deputy Director, CDB, Kochi-11

Introduction

There has been concentrated efforts on the part of the Government of India to empower the farmers, especially small and marginal farmers, thereby equipping them to realize remunerative returns. Various farmer friendly schemes were being introduced during the last five years towards attaining this objective like Doubling Farmers Incomes, Formation of 10,000 Farmer Producer Organisations etc. The efforts have been to consolidate and aggregate the small and marginal farmers, to facilitate them to undertake primary processing, post harvest handling and value addition in an effective manner thereby leading to realization of a greater share of the consumer rupee. Support, both managerial and financial, is extended to the FPOs through institutions with experience in the area, so that viable farmer organizations could be established in the production areas itself. Fair, steady and remunerative returns to the farmers not only provides him livelihood security, but also enhances his standard of living, generates rural employment thereby contributing to social security too. Thus efforts in this regard have a manifold influence on the community as a whole and contributes to attaining the Sustainable Development Goals targeted globally.

Farmer Collectives in coconut sector

Formation of farmer collectives was undertaken by the Board in a three tier manner since 2009-10. The Coconut Development Board has been implementing various schemes for the integrated development of coconut cultivation and industry in the country since 1981. This includes schemes aimed at increase in production and productivity of coconut through scientific management of coconut gardens viz., Area Expansion Programme, Integrated Farming for Productivity enhancement, Replanting and Rejuvenation, establishment of Nucleus Seed Garden, establishment of small coconut nurseries for production of quality planting material etc. The flagship scheme Technology Mission on Coconut facilitated and supported development of technology, demonstration of technology and adoption of technologies for both pest and disease management and processing and product diversification. Through the various diversified schemes aimed at integrated development of the coconut sector in the country, the Board was successful in increasing area, improving production and productivity of coconut and the country emerging as a global leader in coconut production.

Inspite of the concerted efforts, the constraints in the sector appeared in rotation, mainly owing to the unfavourable environmental conditions that impacted sustainable production and productivity. The sector was affected by pest and disease outbreaks with varying intensities of attack, in accordance with the changes in agroclimatic conditions, mainly rainfall, temperature and humidity. The impact of climate change causing cyclones, typhoons, heavy rainfall, drought etc affected the sector drastically since coconut was a crop mostly growing in the coastal areas, though it has made inroads into the mainland in non-traditional belts. The incidence of invasive pests created havoc due to the absence of natural enemies and natural management situations. On the economic side, price volatility in the domestic

and export markets, reduced price realization, increasing expenses, low marketable produce, competing edible oils etc reduced remunerability of coconut cultivation. The predominance of small and marginal farmers was the most handicapping factor for sustained development of the sector. Being a national level commodity Board, there were hindrances in reaching to the grass root level farmers. The need for a community approach was felt in enabling better implementation of schemes with success in achieving outputs and outcomes foreseen. The situation necessitated in aggregation of farmers which the Board started pursuing for the betterment of the sector.

Farmer Collectives – The Genesis

The formation of farmer collectives in the coconut sector was initiated as an effective way for implementation of developmental schemes through collectivization of the small and marginal coconut farmers who were scattered. The aggregation of farmers on a low scale started with the introduction of the cluster programme in 2005-06. The aim was to implement developmental schemes in a focused area approach through farmer clusters. Each cluster was formed with a minimum area of around 25 hectares and schemes for enhancing production and productivity were implemented through the clusters. This resulted in a group approach in scientific management of coconut gardens, community based management of pests and diseases, collective purchase of inputs and its application thereby reducing the expenses of the small and marginal farmers. The impact of the scheme was also manifold and the cluster mode of implementation was continued.

During 2009-10, the Board felt that the clusters had the potential to be converted into a legal entity which could act a special purpose vehicle for implementation of not only CDB schemes but also of other developmental organisations/ divisions in the country. It is with this intention that the conversion of the existing cluster to Coconut Producers Societies(CPS) and the formation of new societies were facilitated by the Board. The CPS were conceptualized as charitable societies and the minimum number of palms needed for a farmer to become a member was 10 palms. This was decided on the understanding that only farmers with a minimum marketable surplus need the collective functioning of a CPS. Around 40-100 small and marginal farmers with around 4000-6000 palms constituted a CPS. The formation of CPS were intensified from 2011-12 onwards and collectives were formed in almost all major coconut growing districts of Kerala. The functional areas and activities of CPS included regular meetings, discussions and planning of activities, collective purchase of inputs, group cultivation operations, collective harvesting, produce aggregation etc.

Further during 2012-13, when the price of coconut and copra crashed, the concept was extended to form a federation of the CPS leading to the Coconut Producers Federation (CPF). The CPF were also conceptualized as charitable societies with around 10-20 CPS and nearly one lakh palms. The formation of federations were fruitful during the period in supporting the farmers in realizing the benefits of procurement of copra at the Minimum Support Price under the Price Support Scheme. The functional areas and activities of CPF included production of quality planting materials, primary processing, collective marketing, etc.

The introduction of the formation of Coconut

Producer Company(CPC) as the Apex organization followed through with the introduction of the Farmer Producer Company as a private limited company under the Indian Companies Act by the Government of India. The functional areas and activities of CPC included processing and value addition, branding, marketing and export.

Positive Impact and prospects of farmer collectives

The institutionalization of farmer collectives in a three tier manner has had a positive impact on the sector, though the visibility of the same were at times hindered by the immediate issues they faced. The consolidation and aggregation of coconut farmers created a strong institution which could carry governmental schemes to the real beneficiary. There was community ownership of the collectives and they were open to implementation of all programmes which could be beneficial, not only to the farmer but also to the society and the environment. In the current agricultural situation where there is a global crisis owing to climate change in which agriculture can play a major role in building resilience, the vision of Government of India to promote natural farming, the urgency in sustainable means of food production etc – there is potential for streamlining of all these activities through farmer collectives in an efficient and effective manner.

• The farmer collectives have proved to be an excellent vehicle for the implementation of developmental schemes in coconut. It ensures that the benefits of the schemes reach the small holder grass root level farmers within a short time. The Board was able to implement schemes and facilitate support of over Rs. 200 crores to the coconut farmers within a span of 4-5 years, mostly concentrating on enhancement of production and productivity, processing and product diversification and marketing.

• The collectives can be developed as a means to promote sustainable resource use, be it implementation of area expansion programmes, good agricultural practices moving towards sustainable production, mother palm identification, quality seednuts, hybridization programmes, organic production and certification, reduction of costs, enhanced returns, retail outlets, livelihood security and social security to all stakeholders of coconut sector.

• Collectives are an effective means for transfer of technology, extension programmes, demonstrations, training and capacity building programmes on cultivation, processing, coconut based convenience foods etc.

• Farmer collectives were recognized as a special purpose vehicle for scheme implementation. The CPFs were recognized as state level procurement agencies for procurement of copra at MSP by LSGI.

• The procurement of green coconut by Department of Agriculture in Kerala is mostly through the farmer collectives. Primary processing to copra was also undertaken by the collectives.

• Research organisations like CPCRI have implemented decentralised nursery programmes, mother palm identification etc through the farmer collectives.

• Supply of seedlings is also coordinated through collectives by the State machinery.

• Supply of by-products like coconut husk was also undertaken to Coirfed through the collectives.

• Processing and value addition was undertaken through the farmer collectives with establishment of infrastructure for copra dryers in 34 units, neera processing in 11 units, coconut oil production in 7 units, one virgin coconut oil unit, one desiccated coconut unit, one coconut water unit and one flavoured coconut juice unit.

• Cost management could be facilitated through small scale processing by farmer groups, women entrepreneurship through self help groups, aggregation and collective marketing by farmers, post harvest handling and primary processing grading at farm level

• Quality management could be facilitated through training for entrepreneurship development, skilled manpower development for processing, testing facility for coconut products, harnessing technical and financial assistance by other Government agencies and quality certification

• Risk assurance through crop insurance could be facilitated through farmer collectives.

The list of activities that could be undertaken through the collectives is endless, but convergence of activities and collaboration of various institutions working for the development of the agricultural sector, right from research institutions, developmental organizations, local self government institutions, other organizations (both governmental and non-governmental) is very much important to emerge successful.

Challenges faced by collectives

Formation of farmer producer organizations itself is a major building exercise, but once formed, the farmer collectives face many types of challenges throughout their journey. By tackling the challenges, the collectives gain confidence in their way forward. There is equal chance of being demotivated if they stumble on issues. The members feel that once they have initiated the activity, then the issues are resolved. But issues emerge on a day to day basis. The constraints faced can be organizational or financial and it could occur during the pre-formation stage or post formation stage. Often during the facilitating period when farmer producer organizations are formed, the challenges that are likely to follow at each and every stage of development are many times not discussed or ignored leading to total dilemma on part of the farmer leaders when constraints pop up one after the other. The challenges faced by the farmer collectives are different in the pre-formation stage and in the post formation stage. They also vary from organizational issues to financial issues.

Pre-formation stage :Organisational issues

• During the pre-formation stage, mobilization of farmers is the major hurdle. It is a herculean task to convince the farmers on the prospects of collectives and make a cohesive group.

• Scarcity of leaders – it is very much essential to have leaders from among the coconut farmers who will be able to mobilise the local farmers. Often young people are scarcely to be found offering themselves to take the lead role.

• Diversity of the group with diverse interests – the cultural, social, political, religious differences among the diverse group will definitely impact on the formation and all through the functioning

• Lack of vision : Even with series of managerial trainings and capacity building programmes for executive committee members/Director Board members of farmer collectives, facilitated with the support of reputed management institutes, it takes time to form a vision for the collective. Only a vision cemented in the members over time has clarity. Often in order to cope up with the momentum foreseen in formation of collectives, the activities are fast forwarded before the members realize their vision. This affects the sustainability of the institution.

• Managerial issues occur constantly on a day to day basis in the preformation stage. They have to be tackled taking into account the sensitivity of the issue, but in a democratic manner.

• Expectation is more on receipt of subsidies rather than developing efficient forward and backward integration and establishing strong farmer institutions.

Pre-formation stage : Financial issues

• Mobilisation of equity is the major hurdle. It is very difficult to convince farmers with tangible benefits that are expected to be realized in the future, that too in a crop like coconut with highly volatile prices. The leaders have to face the brunt of the constraint while mobilizing equity.

• Lack of access to credit : Even with lots of credit facilities introduced, the collectives feel a lack of access to credit.

• Credit is non friendly to Farmer Producer Organisations : Though a number of schemes are prevalent, their friendliness to farmer collectives is to be studied. When farmer producer companies are treated on par with a private limited company, the constraints before them turn from a mole to a mountain.

• Delays in release of subsidies : Subsidy delayed is equivalent to subsidy denied. With the amount of paper work and official formalities necessary as part of process for enabling subsidy, there is usually a delay in the release of subsidy. This affects the financial balance of the collective and adds to its burden through mounting interest rates and outstanding dues.

Post formation stage :Organisational issues

• Maintaining cohesivity : The collectives are formed with immense hopes and faith for a better future with reduced costs and increased returns. But realization of the same comes with time and the path is full of potholes. During this time, maintaining cohesivity of the diversified group is a challenge, especially for the leaders or office bearers

• Lack of ownership : With time, the ownership of the functioning of a collective falls on the heads of a few leaders and an opposition emerges, always ready to comment and criticize. Positive criticism helps the organization to grow, but when it is predominantly negative, it affects the morale of the leaders.

• Transparency issues : There should be transparency in all decisions and transactions in a farmer collective. A single incident may contribute to loss of trust and faith and regaining the same is almost impossible.

• Managerial issues : All members of the collective have to be treated on par by the management. Also management should be impartial with no sectoral interests impacting decisions, But with a highly heterogenous group, chances for such situations is enormous and the life of the farmer collective depends on how effectively they tackle issues in a democratic manner.

• Lack of expertise in business management: Expertise in running commercial operations comes with experience, that too in a hard way. Any amount of training will not be able to compensate the experience. Government schemes provide support for engaging professionals in the day to day management of the commercial operations. With such engagements for short periods of 2-3 years, the level of ownership is found to be less, which ultimately affects the farmer organization.

• Competition with products of other firms : Established multinational firms and private firms may be producing the same products and the farmer collectives have to compete with them. While such firms buy raw materials at a reduced cost, farmer organisations purchase at a reasonable price ensuring better returns to the member farmers. This hinders them by competing with other established firms who will announce various offers to attract the consumers. Also competition between farmer organizations is also on the vogue which cripples them.

• Collapse of supply chain :The collectives had suffered immensely during the pandemic period with disruption of the supply chains built with years of hard work, loss of market access developed and collapse of systems. Continuous production of commodities through the commercial activity initiated is very much important to retain the supply chain developed. For instance, a farmer organization which is processing 50 MT of coconut oil on a monthly basis will have developed assured buyers for the same. Any slack in activity resulting in less production will not only lead to loss of buyers but also tarnish the reputation of the farmer organization

• Decision making in business activities : Being a collective of a heterogenic group, decision making is sensitive and involves more parties unlike a proprietary firm.

Post formation stage : Financial issues

• Shortage of working capital : This is a major challenge faced by all farmer organisations. A farmer entity processing 10,000 nuts per day needs a minimum of Rs. 1.5 lakhs per day for raw material procurement in order to make payment to the farmers. If the entity is working 3 days a week, the monthly need for working capital for effecting the payments to the member farmers is itself amounting to around Rs. 20 lakhs. Being a farmer entity it has to pay the farmers within a reasonable time. The returns from sales proceeds may come at a later date and the farmer entity needs working capital to roll on the activities.

• Escalation in project costs : The farmer entities usually work on a shoe string budget and cannot afford to overspend. Many a time, the project costs are subject to escalation, owing to many reasons, which affect the functioning even before initiation.

• Equity and term loan : In case of most farmer entities, the equity collected, the term loan taken, the Venture capital assistance obtained etc are all invested in infrastructure required for undertaking the activity be it processing or marketing or export. They are always short of funds and this affects decision making.

• Sensitivity of prices – both raw material and finished product, owing to volatility in the former case and competition in the latter greatly impact the functioning of the entity.

• Credit payments form a major marketing challenge. While efforts are directed to identify, develop and consolidate markets for their products, the collectives are faced with the hidden expenses involved starting from vendor registration to the final credit payment. Even distribution of samples for creating market awareness and achieving market access is a burden for the farmer organisations.

• Managerial expenditure : The farmer collectives usually are formed with much pomp and glory and

Horticulture value chain summit at Maharashtra

Coconut Development Board participated in Horticulture value chain summit organized by the Ministry of Agriculture and Farmers Welfare, Government of India and Vamnicom, Pune on 1st November 2022 at Pune, Maharashtra. During the occasion M/s. Global Coconut Farmers Producer Company Limited, Palladam, Tamil Nadu an FPO in coconut sector received Award for "Valuable Contribution for Excellence in Horticulture" under crop coconut from Shri. Narendra Singh Tomar, Hon'ble Union Minister for Agriculture and Family Welfare, Government of India. GCFPCL is the first Farmer Producer Organization introduced coconut neera in tetra pack with the shelf life of more than 6 months.

expectations. The enthusiasm in getting things done may divert attention from management of expenditure. Also the diversified and heterogenic group may also unknowingly or knowingly lead to increased expenses which could be avoided. All this, unless identified and rectified in time, will develop in reduced accountability and transparency, leading to dissent and loss of trust by member farmers.

• Statutory formalities : A farmer Producer Company is on par with any other private limited company and has to fulfil many statutory formalities every year, on time. If farmer organisations do not have access to support from experts who know the process and procedures, they are liable to face issues of penalties and fines, sometimes even legal action.

Way forward

Based on the experiences in working with farmer organisations, a few suggestions are enumerated below to support them in the way forward :

• Convergence with developmental programmes – Recognise FPOs in Government schemes.

• Farmer collectives should become the vehicle for implementation of schemes – maximum access to reach the grass root level farmers

• Schemes should be continuous - extended through different Ministries, with inclusion of yearly programmes in accordance with the need of the collective and the stage of growth of the collective.

• Customised loan products for FPOs.

• Front end subsidy in lieu of back end subsidy

• Common processing facility – initiatives that could be undertaken at the level of State Governments

• Common branding facility - initiatives that could be undertaken at the level of State Governments

• Treated on par with co-operatives and give priority in government procurement

• Favourable environment for marketing of products of farmer companies – purchase of oil by Marketing Federations/ inclusion in PDS etc

• Annual meetings – continuous assessment – identify bottlenecks and proper networking

Conclusion

The World Food Day theme this year was "Leave NO ONE behind" which called for providing food for all. The farmers are toiling day after day to produce food for all. There is no doubt that farmer organisations will be able to work towards the inclusive development of the farmers. But they need support and handholding and need to be treated as privileged social entities working for a noble cause. They should be supported through their challenges, not for their sake, but for the sake of mankind since they provide us food. Initiatives are to be introduced during varying levels of development of the farmer companies by the various institutions involved in a collaborative manner to script success. ■

Redefining the coconut sector

Scenario analysis and policy perspectives

Jayasekhar. S and Thamban. C,
ICAR-Central Plantation Crops Research Institute, Kasaragod

Introduction

The plantation sector of the country, especially the coconut sector, is unique in its production systems and value chains. Besides, coconut farming provides adequate interspaces for the intercropping of seasonal crops and thus ensures food security to a great extent. Nevertheless, in India, the coconut sector has been continuously facing the problems of lack of investment and depressed yields and is in great need of modernization. Their total coverage is comparatively less, and they are mostly confined to small holdings. However, the sector, dominated by millions of small and marginal farmers and mainly confined to economically and ecologically vulnerable regions, plays a crucial role as far as the issue of sustainability is concerned. In the present context, the major challenge is to develop an equitable and sustainable coconut economy, ensuring inclusive growth along with international competitiveness. The Indian coconut sector has the inherent strengths of varied agro-climatic conditions, huge domestic demand, the highest productivity, strong research and development, and the transfer of technology systems (Jayasekhar and Hughes, 2018). So far, the sector has not effectively utilised the possible linkages between them for increasing production and marketing efficiencies. The small holder perspective in research needs to be emphasised in coconuts, considering the structure of operational holdings in this sector. Technologies appropriate for small holdings need to be developed for faster and wider technology adoption in the sector. The synergy from the developmental efforts of the various institutions that exist for specific purposes and crops needs to be channelled through better institutional linkages and a cross-disciplinary approach to address common challenges in the sector. Inclusive growth and sustainability of the coconut economy could be achieved through the integrated development of scientific adoptions in cultivation and industry, coupled with a stable market.

Production scenario

According to the latest production statistics brought out by the ICC, the coconut production in the World is estimated at 67,698 million nuts from an area of 12.56 million ha (ICC 2021). The world productivity of coconut stands at 5397 nuts/ha (Table 1). Notably, the World's area and production of coconuts are skewed by and large, wherein 70 per

Table 1. Area, production and productivity of coconut in the World					
Country	Area ('000ha)	% share	Production (million nuts)	% share	Productivity (nuts/ha)
Indonesia	3413	27.2	13994	20.7	4120
The Philippines	3652	29.1	14491	21.4	3969
India	2173	17.3	20309	30.0	9346
Sri Lanka	444	3.5	3086	4.6	6623
Brazil	216	1.7	2331	3.4	11923
Papua New Guinea	221	1.8	1483	2.2	6709
Thailand	124	1.0	645	1.0	4859
Others	2325	18.5	11359	16.8	5195
Total	12568	100.0	67698	100.0	5397
Source: ICC (2021): Statistical year book-2019					

cent of the total area and production is concentrated in India, Indonesia, and the Philippines. India is the largest producer of coconuts, with a share of 30 per cent of the total production. In terms of productivity, India is much ahead of the major coconut producers' with an average yield of 9346 nuts/ha.

In India, coconuts contributed about Rs 10,707 crore in crop output in 2020–21, and the coconut industry directly or indirectly employs about 12 million people. Coconut is a major plantation crop in the coastal regions of Kerala, Tamil Nadu, Karnataka, and Andhra Pradesh. These top-four producers accounted for 90 per cent of total production and about 89.5 per cent of total production acreage in the country in the year 2020–21 (Table 2). Other important coconut producing states in the country include West Bengal, Odisha, Gujarat, Maharashtra, Assam, and Bihar, which account for nearly eight per cent of production. Among the four major coconut-growing states, Andhra Pradesh had the highest productivity (13969 nuts/ha), followed by Tamil Nadu with 12280 nuts per hectare. The productivity of the crops varies widely among the coconut growing zones. Kerala, which accounts for the largest share in production in the country, had an average productivity of 9175 nuts per hectare in 2020–21, marginally lower than the all-India yield of 9345 nuts per hectare. The productivity level in Karnataka (6892 nuts/ha) was significantly lower than the all-India average and that of other major producers. On the other hand, several regions have productivity levels that are more than 50% higher than the national average. Several biotic and abiotic factors that affect coconut productivity have been found. However, the extreme weather that the country has seen in the past is a major cause for concern.

Table 2. State-wise Statistics: Coconut					
State/UT'S	Area ('000 Ha)	% share	Production (million nuts)	% share	Productivity (nuts/ha)
Tamil Nadu	437.57	20.1	5373.21	26.5	12280
Karnataka	624.03	28.7	4300.69	21.2	6892
Kerala	760.78	35.0	6980.30	34.4	9175
Andhra Pradesh	111.38	5.2	1555.82	7.7	13969
Others	221.40	11.0	1718.96	10.3	---
All India	2173.28	100.00	20308.70	100.00	9345
Source: Horticulture Division, Dept. of Agriculture & Cooperation, Ministry of Agriculture & Farmers Welfare, Government of India.					

Coconut is predominantly cultivated on small and marginal holdings. These tiny, fragmented holdings suffer from socio-economic and bio-physical resource limitations. They are unable to effectively utilise the potential of available technologies for generating sufficient income to meet the family's requirements. Presently, coconut growers are more exposed to economic risks and uncertainties owing to the high degree of price fluctuations. It is to be noted that the area under coconut has remained stagnant at around 2.1 million hectares since 2011–12, with minor inter-year fluctuations.

Coconut production and yield have been fluctuating in cycles of two years due to climatic and biological reasons. Overall, coconut production has increased at an annual growth rate of 3.3 per cent between 2001 and 2020. The growth in coconut production was largely attributed to an improvement in yield, reflecting the concerted efforts on coconut

research, especially the popularisation of improved varieties.

International trade aspects

In the coconut sector, to cope with market fluctuations, there is a need for product diversification and by-product utilization. India, of late, has been making a concerted effort to penetrate its products in the high-value export segments. According to the data of the Directorate General of Commercial Intelligence and Statistics (DGCIS), the value of exports of coconut products (excluding coir and coir products) significantly increased by about 30.2 % from Rs. 1,762 crore in 2019–2000 to Rs. 2,295 crore in 2020–2111, while imports decreased by about 5.3 per cent from Rs. 1,196 crore to Rs. 1,132 crore during the same period. Total exports of coconut and coconut products have increased at compound annual growth rate of 2.7 per cent over the last five years but with large inter-year variations. India holds an important position in the global exports of activated carbon. Activated carbon accounted for 66 per cent of total exports of coconut products, followed by coconut oil refined (11%), coconut fresh (8%), coconut dried (5%), copra (1.4%), shell charcoal (1.4%) and desiccated coconut (1.2%). As per the Coir Board, exports of coir and coir products increased significantly from Rs. 2,758 crore in 2019-20 to Rs. 3,779 crore in 2020-21, which is an increase of 37 per cent. The major coir products exported are coir pith (49%), tufted mats (21%), and coir fibre (17%). Exports of coir and coir products have increased at compound annual growth rate of 13.4 per cent over the last five years.

India's imports of coconut and coconut products have been on an upward trajectory in recent years, increasing from Rs. 495.5 crore in 2016–17 to Rs. 1,196.1 crore in 2019–20. However, in 2020–21, these imports declined by 5.3 per cent to Rs. 1,132.5 crore. With respect to the composition of imports of coconut products, copra oil cake accounted for 45.7 per cent of the total value of coconut products imported by India in 2020–21, followed by imports of activated carbon (34.3%) and copra (8.5%). (Table3:

The commodity trade matrix for India's country wise exports of coconut and coconut products (Table 3) reveals that the UAE and Middle East are the major export destinations of India's coconut products, where more than 85 per cent of fresh coconuts and about 80 per cent of coconut oil are exported. India's exports of desiccated coconuts (DC) found to be diversified across different export destinations.

Table 3. Commodity trade matrix (exports): From India to other countries (export share in %)

Country	Coconut (Fresh)	Coconut (Dried)	Coconut (endo-carp)	Oil (re-fined)	DC	Shell charcoal
UAE	55.5	1.4	9.9	50.2	18.2	1.8
ME (others)*	30.1		--	27.2	15.7	2.6
EU	6.8	4.7	--	--	8.6	38.9
Malaysia	--	43.7	--	--	--	--
Afghanistan	--	40.1	--	--	--	--
USA	--	2.1	36.3	2.4	10.0	1.5
Vietnam	--	--	17.2	5.2	5.3	--
Nepal	--	--	13.4	3.2	10.2	--
Canada	--	--	8.0	--	3.3	--
Singapore	--	--	4.9	--	--	--
Sri Lanka	--	--	--	--	--	43.5
Others	7.7	8.0	10.4	11.9	28.6	11.7
Total(Rs Lakh)	16059.2	11922.7	3202.5	14003.5	1176.7	3462.1

** Other Middle East countries*

--Nil/Meager to be accounted

Sourced from Department of Commerce, Export Import Data Bank (Tradestat, 2021)

Policy impediments

For the past two decades, the plantation sector in India has been confronting a commodity crisis, arguably an offshoot of ongoing trade liberalization. The regional trade agreements such as the ASEAN-India Free Trade Agreement (AIFTA) have made the crisis even worse due to the adverse policy framework in the form of phased tariff reduction and the fixation of import tariffs at extremely low levels. In this context, it would be erroneous to view the coconut sector in isolation because the trade and tariff decisions on competing crops as well as edible oils in general would directly affect the coconut sector as well. In the tariff reduction schedule for the special products according to the AIFTA, the reduction commitment for palm oil (an immediate substitute for coconut oil) is notable. The unprecedented growth rate in palm oil imports in recent times is also a matter of concern in view of the domestic prices of coconuts. The possibility of lowering the existing tariff structure for special products in the forthcoming review meetings of AIFTA is also bothersome.

With the ongoing liberalisation process across the world, the proliferation of regional free trade agreements (RTAs) has become inevitable. There will be a differential impact of such trade agreements on different sectors, and it is important to safeguard the plantation sector in general and the coconut sector in particular in the forthcoming RTAs. In view

of this, it is imperative to conduct studies on the challenges faced by the coconut sector at micro and macro levels to bring out plausible strategic action plans for sectoral reorientation. It is also crucial to envisage appropriate policy options with regard to the trade and tariff structures of the coconut sector and to ensure such sectoral details are appropriately represented in the national and international dialogues.

It is always better to have a floating import duty structure on edible oils, so that the tariffs can be adjusted in relation to the international prices of edible oils to stabilise the domestic price fluctuations. But in the case of palm oil in India, the import duty was always hovering around five per cent, irrespective of the international price movements. The country's domestic price scenario (and movements) of coconut oil had been negatively impacted by the flawed tariff fixation of such a pattern. Therefore, it is vital to regulate the edible oil tariff structure, so that the state machinery can adopt flexible policy options to control the price fluctuations of coconut oil.

In general, the farmer prefers to sell fresh coconut when the price is attractive, as he receives a remunerative sum in his hand immediately and can get rid of processing and transportation charges. On the other hand, if the prices of copra and oil are good, farmers would rather do at least primary-level processing, which would increase copra production at the farm level. Therefore, the MSP for copra fixed at higher levels would certainly influence and act as an incentive for the primary value addition in coconut. It should be structured in such a way that the MSP provides an incentive for processing to coconut farmers when compared to selling fresh coconut. Other pertinent factors in this context of discussion are the lack of effectiveness and efficiency in copra procurement by the agencies and inadequate infrastructural facilities for the storage of copra. The regional trade agreements have compelled the fixation of import tariffs at an extremely low level (especially for palm oil, the major competitor for coconut oil) and have made the commodity price in India more vulnerable, which in turn affected the production as well. It is also noteworthy that the primary processing of coconuts into copra is not done by many farmers, and they sell fresh coconut. Therefore, a large share of farmers do not benefit from the market intervention by the government in the form of MSP. As a result, the desired influence of MSP on market price regulation is not realised in the case of coconut.

Future strategies

The strategy for revitalising coconut sector in the country needs to revolve around interventions for ensuring adequate care and management of coconut palms in the existing gardens to enhance productivity. Systematic coconut based cropping/farming system as a strategy to make coconut farming economically viable in small holdings needs to be highlighted.

At the policy level, it is always better to have a floating import duty structure on edible oils, so that the tariffs can be adjusted in relation to the international prices of edible oils to stabilise the domestic price fluctuations. The flawed tariff fixation system had detrimentally affected the domestic price scenario (and movements) of coconut oil in the country. Regulating the edible oil tariff structure allows the state to implement several policy alternatives to limit coconut oil price variations

Satellite micro-level procurement hubs (connected to big hubs at the district/region level) for both raw coconuts and copra should be established, utilising the existing three-tier FPO system in coconuts, with an autonomous council comprised of representatives from Krishi Bhavan, cooperatives, and CPSs responsible and accountable for efficient procurement.

It is essential to identify and prioritise value chains and strengthen the most viable ones. For instance, the desiccated coconut (DC) industry in the country is a vibrant sector. The growth rate in exports of DC powder for the last five years stands at a stupendous 26.8 per cent. India has a huge chance to increase its share of the global market for DC by making sure the products meet the quality and safety standards for a high-value market.

Measures are to be taken to support the value chain by strengthening the e-marketing platform that ensures the virtual interface between consumer and producer and a robust data analytics system that ensures market intelligence. More online marketing platforms need to be created. The e-auction platforms, with modifications, seek to link farmers directly to the traders by removing the need for physical samples at the auction centre and providing means for digital image-based samples to the traders. This can enable farmers to trade from their homes or through farmer collectives.

A regional trade agreement among major plantation crop producing countries should be facilitated at the policy level.The modalities for such a commodity-specific trade agreement should be

Study Visit of Parliamentary Committee on Office of Profit at Kochi

Parliamentary Committee on Office of Profit headed by Shri.SatyaPal Singh, MP(Loksabha), Baghpat Constituency, UP and Members of the committee Shri.ShyamSingh Yadav, MP(Loksabha), Jaunpur Constituency, UP and Ms.Dola Sen, MP(Rajyasabha) from West Bengal made a study visit to Kochi and held discussions withsenior officials of Coconut Development Board, Coffee Board, National Shipping Board, Agriculture and Processed Food Products Export Development Authority andGovernment of Kerala on 10th November 2022. Dr. N. Vijayalakshmi, IAS, CEO, Coconut Development Board, Dr.K.G. Jagadeesha, IAS, CEO, Coffee Board, Dr.Malini V Shankar, Chairperson, National Shipping Board and Shri.R.Ravindra, General Manager, Agriculture and Processed Food Products Export Development Authority interacted with the committee. Dr.V.P. Joy IAS, Chief Secretary along with Dr. Raju Narayana Swamy IAS, Principal Secretary, Parliamentary Affairs and Shri.Hari Nair, Secretary (Law) represented Government of Kerala in the deliberations.

worked out with utmost care, wherein we should end up in a win-win situation. In this respect, we need to thoroughly analyse the existing tariff structure of each country on the specified plantation crops, and an unbiased tariff reduction schedule should be proposed. It is also essential to consider the existing tariff structure of close substitutes/competing products of each country, thereby arriving at a consensus.

Conclusion

Presently, coconut growers are more exposed to economic risks and uncertainties owing to the high degree of price fluctuations. To improve the future prospects of a sustainable coconut sector, it is critical to wean the sector off its reliance on coconut oil and increase production of diverse value-added products. Further, to ensure the livelihood security of those dependent on the sector, it is of paramount importance to strengthen the value chain of the coconut through appropriate forward and backward integration of the chain. Relatively low proportions of family labour participation in farming and the consequently higher share of the wage labour component in the cost of production render coconut farming costly and debilitate its competitiveness. The inherent rigidities in the cost structure make it difficult to adjust when prices fall, indicating that farmers will refrain from coconut cultivation unless and until they find the enterprise profitable. Keeping abreast of the race in productivity alone cannot guarantee success or even survival in an activity exposed to unmediated global competition. It is imperative to think beyond the periphery of production and productivity, especially when a wide range of other issues plague the coconut sector. Finally, it is imperative to re-calibrate 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.

References

Jayasekhar. S and Hughes, S. A. 2018. Sectoral equations of sustainability: Narrative of plantation sector in India. Journal of Plantation Crops, 2018, 46(3): 210-217

Trade Stat, 2021. EXIM Online Trade Database, Department of Commerce, Export Import Data Bank, https://tradestat.commerce.gov.in/eidb/default.asp.

Coconut Development Board.2021.https:// coconutboard.nic.in/. Ministry of Agriculture & Farmers Welfare, Govt. of India.

Govt. of India. 2019. Horticultural statistics at a glance 2018. Government of India

Ministry of Agriculture & Farmers' Welfare, Horticulture Statistics Division, 490 p

ICC.2021. Coconut Statistical Yearbook 2019. International Coconut Community, Jakarta Indonesia 217p

Groundnut Intercropping in Coconut Gardens

Nutrition to soil and society

Anithakumari.P#, Jithin Shaju*, Anju Krishnan^ and Kalpanamol K.^

Principal Scientist#, * SRF and ^ FFP Field Staff, ICAR Central Plantation Crops Research Institute, Regional Station, Krishnapuram P.O., Kayamkulam

Mentoring the ability of nature for maximizing ecosystem services could lead to mitigate climate changes challenges, reduction of risks and moving to food security. Traditional agroforestry systems like coconut based homesteads (CBH) may appear as complex and highly diversified merging short term and long term ecological benefits ensuring sustainable farm outputs around the home. Mutually supporting system components can reduce external inputs reflecting the wisdom and experiential learning of farmers. Coconut is cultivated mostly in tropics and Kerala is represented as the 'land of coconuts' and this palm is the nucleus of homesteads wherein the other components or crops are planned to go with coconut palms, even in small, marginal and submarginal land holdings wherein coconut is being grown in a contiguous manner in thousands of homesteads. The major challenges at present is to increase the production per unit area as far as possible integrating traditional and modern knowledge sources sustaining the natural resource usage including precious land.

Several field studies in tropical countries proved that there are multiple benefits to farmers through adopting intercropping, both with perennial and annual crops. The reduced risk of crop failure especially in rapid changes in climate in rainfed areas, effective use of water, nutrients, labour and soil, low dependence on external inputs and reduction in incidence of pests/diseases and weeds are the major benefits of intercropping. Including newer crops and better varieties add to the basket of benefits, further without doubt.

Groundnut in coconut gardens - potential intercrop

Groundnut also known as peanut, is a native of South America, and as early as in 1500 BCE it was cultivated in Peru and the Incas savoured roasted seeds as well its oil also. With the spread of the crop to Europe, an oil mill was started in 1800 in Spain and in 19th century West Africa became the major source of export of peanut. Presently groundnut is a major crop cultivated across the world and in Asia is cultivating more than 12 million hectares contributing to 44 percent of worldwide area under cultivation.

Intercropping of annual and perennial crops

in coconut gardens is an age-old tested practice providing sustainable output in resource efficient manner. In Onattukara region of Alappuzha district, Kerala State marked with sandy loam soil, sesamum is the geo tagged crop proved with its uniqueness in quality and suitability, popular as a third crop in paddy fields. Groundnut was not cultivated in these areas at present and Participatory Rural Appraisal (PRA) indicated that horse gram, finger millet and groundnut were cultivated in 1940s as intercrops in coconut gardens and in paddy fields as third crop. Hence in the ICAR CPCRI Farmer FIRST Program (FFP) we had focus group discussions with farmers and agreed to introduce groundnut (*Arachis hypogaea L.*), for assessing the suitability and potential in the region as an intercrop in coconut gardens which is an important legume and oilseed. Several research reports showed that groundnut produced around similar yield per plant in intercropped and sole crop, which added to the confidence for adoption as intercrop in coconut gardens. Groundnut can supplement soil as an important nitrogen source through biological nitrogen fixation and component of human nutrition and food security. The residues are also excellent fodder for livestock and can be incorporated in soils for organic content build up. Hence the intervention of groundnut as intercrop in coconut gardens were taken up with the following objectives:

- Participatory assessment of suitability and feasibility of groundnut intercropping in coconut gardens
- Building awareness on multiple uses of groundnut crop in integrated farming systems (IFS)
- Case study on the income generation and social perceptions

Participatory Assessment of groundnut as coconut intercrop

In the FFP, seeds of groundnut variety (G2 52), 50 percent cost of chemical fertilizers based on soil testing for the demonstration in 24 hectares area was the initial intervention under the Crop Module, in Pathiyoor panchayath at first in 2019-20 and Devikulangara panchayath during 2020-21, properly supported with in the field need based training programs. Five training programs were organized in the panchayaths wherein 128 farmers participated. The training curriculum included groundnut varieties, agronomic practices, land preparation, need based crop protection, harvesting and post harvest operations. Incidence of pests and diseases were meagre and leaf spot disease noted in the initial phase itself could be effectively managed with bio agents. None of the farmers were aware of any practices and they were very keen and motivated for growing a good crop.

ICAR - CPCRI FFP intervention panchayaths (Pathiyoor and Devikulangara)

The introduction of groundnut (Var. G2 52 of University of Agricultural Sciences (UAS), Dharwad) as an intercrop in coconut gardens in the FFP panchayath established that groundnut is a highly suitable intercrop in coconut gardens. G2 52 was reported to be resistant to late leaf blight and rust diseases which causes yield and crop loss in farmers fields. This variety reported to have potential pod yield of 3315 kg per ha and evolved as mutant line.

Farmer's criteria	High yield	Animal Feed	Soil replen-ishing	Home con-sumption
Higher yield		Y	Y	Y
Animal feed			Y	Y
Soil replenishing				Y
Home consumption				

The above table indicated that high yield of the variety was ranked first, followed with home consumption in the second rank. Utilization for animal feed came in the third rank and soil replenishing in the fourth rank. Farmers put on weightage for the high yielding character and suitability for home consumption, especially for children and old age family members as a cheap and dependable protein source from the homesteads. As an animal feed also farmers are rating its alternate usage for livestock in the integrated farming system in homesteads. In view of the increasing cost of chemical fertilizers

legume crops are cheap, easily accessible, and natural sources of nutrients for soil enriching.

Participating farmers recorded groundnut cultivation as one of the potential intercrop in coconut gardens.

• Short duration and leguminous crop with lush growth as intercrop in coconut gardens

• Market demand in higher quantities as fresh product, graded and processed products

• Scope for multiple crop combinations such as finger millet- groundnut, Sesamum- groundnut, tapioca – groundnut etc in the coconut gardens

• Onattukara sandy loam soil tracts are suitable for an economically feasible intercrop with groundnut in coconut gardens for additional income

Package of practice for groundnut

Groundnut is grown best in sandy loam and loam soil. Main season for cultivation is May - June to September – October under rainfed condition and January to May under irrigated condition. Groundnut is propagated by seeds. The quantity of kernels needed ranges from 40 kg/ acre for pure crop to 16 kg/ acre for intercrop. The crop can be cultivated as a floor crop in coconut gardens, as an intercrop with tapioca and as a catch crop after second crop paddy with irrigation.

• Plough the field three or four times into a fine tilth.

• Sow the seeds by dibbling in ploughed furrows at a spacing of 15 cm x 15 cm.

• For seed treatment the rhizobial culture is recommended (200 g rhizobium is needed for one acre).

• Lime or dolomite @ 3-6 kg per/cent has to be applied depending upon soil acidity.

• Followed by adding organic manure @ 80 kg per cent.

• The fertilizer dose needed is 87 g Urea, 1665 g Rock Phosphate & 500 g Muriate of Potash (MOP) respectively for a cent.

• The entire quantity of fertilizers should be applied as basal dressing and incorporate well into the soil.

• Apply lime @ 4 – 6 kg per cent at the time of flowering.

• This should be followed by earthing up operation. Earthing up provides medium for peg development.

• Irrigate the crop once in 7 days.

• Weed the crop 10 – 15 days after germination of seed by light hoeing. Do not disturb the soil after 45 days of sowing.

Multiple uses of groundnut crop in IFS

Groundnut is a good source of protein, essential fatty acids, calories, vitamins and minerals providing general health benefits. Substantial dietary shifts is essential for transforming to balanced diets by 2050 and role of access and consumption of nuts, fruits, legumes and vegetables are very important. Groundnut dietary protein provides 46 percent of recommended daily allowance (RDA) and dietary fibre, along with potassium, sodium, calcium, manganese, iron and zinc and rich in biologically active compounds. The green residues of the ground nut are rich source of fodder catering to protein rich substitute for livestock and poultry common in coconut based IFS. Feed cost is ranked as the most prioritized constraint in profitable milk production by the livestock (IFS) farmers of ICAR CPCRI FFP in PRA exercise conducted during 2016 (Pre FFP). Hence quality fodder (crop residues) attains importance in their livelihood. FFP introduced fodder grass varieties and CO 3, CO 5, Susthira and Super Napier are being adopted by farmers now. At the same time, FFP also introduced new intercrops which can be utilized as fodder such as finger millet, pulses and groundnut, because these fodder sources are available during summer months as green fodder and aids hay making, providing much relief to the small farmers. The leafiness, thin stem and pest/disease resistance are preferred by farmers for getting quality green fodder or for hay making.

Participatory experimentation or On Farm Trails (OFT) are needed for validating the quantity, quality and use of groundnut as fodder crop and the storage techniques. Sale of groundnut crop residues to IFS farmers can be evolved as a new venture supported

with needed knowledge on technologies and skills. Demonstration of dual-purpose groundnut varieties also need to be undertaken with farmers participation for additional income and generating on farm inputs for taking this crop forward as a multipurpose intercrop in the coconut-based cropping/farming systems.

Converging social programs and human resources enabling women group farmers

Women group farmers were inspired from the experiences they derived from group level farming and adoption of scientific cultivation practices based on FFP training programmes, properly supported with advisory and extension support. Converging MGNREGS meaningfully for doubling women farmers income through scientific and technology based farming lead to systematic inculcation of purposeful interventions, doubling MGNREGS wages of women farmers and labour days and emergence of socially strengthened women farmers in rural panchayaths. Due to climate changes and other setbacks due to pest and diseases, farmers were much demotivated with conventional crops which united them to try HYV new remunerative crops of short duration converting consolidated coconut gardens to fallow free areas through institutional support and participatory interventions. The most critical factor for selecting groundnut was its short duration and the availability of suitable land in selected wards. A total of 28 women farmers groups were involved in the program and worked tasting conviction and confidence. The success motivated them to continue the cultivation of groundnut and other crops in ensuing seasons. Innovative strategies for coconut based intercropping in all wards became the new challenge and goal for food security and income generation. The development of scientific aspirations and group level coordination along with the unique facilitation and partnership of ICAR CPCRI, Regional Station, Kayamkulam became the most successful outcome through this Farmer FIRST initiative.

The behaviour changes among the women farmers was the conviction about the critical importance of improved varieties in cultivation and they strongly determined on adoption of HYV of intercrops in coconut gardens. This was the clarity of the experiential learning on the performance of high yielding varieties they gained during the ICAR CPCRI, Farmer FIRST Program interventions during the period 2016 to 2022. The experiential learning lessons were the stark improvement in the total yield and farm income, low pests and disease expenses and reduction in cost of cultivation due to the convergence with social support projects of Government of India. Another noted outcome was the customer acceptance and access to the source known production of farm produces, locally available green fodder, pesticide free produces, participation and constant field presence of research institution for the farming communities.

Mutually benefit for the women farmers, society and soil, is what intercropping coconut gardens with groundnut earned the farmers. Convergence with MGNREGS for initial labour component of making uncultivated areas back for cultivation, consolidation of coconut gardens contiguously for area wide demonstration and participatory assessment of suitability of the crop/variety and technical/advisory support from ICAR CPCRI FFP and department of Agriculture (Krishibhavan in panchayath level) motivated women farmers groups in scientific cultivation and realizing almost potential yield. Investment of human resources and money shared by the groups laid the foundation of a good start, of this new intercrop in the panchayath. The yield obtained was 10.5 times of the seeds sown ie., from one kilogram of groundnut seed 10.5 kilograms of yield were obtained. From each ward 350 to 450 kg of fresh ground was harvested and marketed @Rs. 130 per kilogram. The number of pods per plant ranged from 60 to 120 indicating the yield potential of G2 52 groundnut variety of UAS, Dharwad in the sandy loam soil and climatic condition of Devikulangara and Pathiyoor panchayaths of Alappuzha district which is in the coastal zone.

The participatory evaluation and implementation of this intervention also proved the feasibility and suitability of groundnut as intercrops in coconut gardens in the root (wilt) diseased tract of coastal district of Alappuzha, Kerala State. ■

Kalpa Vajra, a new coconut variety for the root (wilt) disease prevalent tract

Regi J. Thomas, M. Shareefa, Merin Babu, P.M. Jacob and R.V. Nair
ICAR-CPCRI Regional Station, Kayamkulam,
Krishnapuram P.O., Alappuzha-690533, Kerala

Kalpa Vajra is an improved West Coast Tall variety developed by ICAR-CPCRI and it is recommended for the root (wilt) disease prevalent tract. It was recommended for release during the Annual Group Meeting of All India Coordinated Research Project (Palms) held at ICAR-CPCRI, Kasaragod during 16-18th September 2022. ICAR-CPCRI had earlier released three coconut varieties for the root (wilt) disease prevalent tract (Table 1). Kalparaksha was notified and released by Central Variety Release Committee (CVRC) during 2008 and Kalpasree and Kalpa Sankara were notified and released by CVRC during 2012. It is after a gap of ten years, ICAR-CPCRI is recommending a coconut variety specifically for the root (wilt) disease prevalent tract. Since this variety was recommended for release during the platinum jubilee anniversary of ICAR-CPCRI, Regional Station Kayamkulam, it was aptly named Kalpa Vajra.

Table 1. Details of coconut varieties released by ICAR-CPCRI for the root (wilt) disease prevalent tract

Variety	Year of release	Average yield (nuts/ palm/yr)	Copra content (grams/ nut)	Remarks
Kalparaksha	2008	88	185.2	Semi-tall variety
Kalpasree	2012	90	96.3	Dwarf variety
Kalpa Sankara	2012	84	169.5	Semi-tall hybrid

Development of variety

Kalpa Vajra variety of coconut was produced by crossing high yielding and root (wilt) disease-free West Coast Tall (WCT) palms. The parental palms for crossing were selected from the farmer's plots located in 'hotspots' of root (wilt) disease after serological testing. The objective for developing Kalpa Vajra coconut variety was to develop a resistant/ tolerant coconut variety with high yield and superior nut quality suitable for cultivation in root (wilt) disease prevalent tract.

Criteria for selecting parental West Coast Tall (WCT) palms

a. Parental palms should yield 80 or more nuts per palm per year.

b. Palms should be regular bearers and absolutely free from all diseases and pests.

c. Palms should be more than 35 years old and surrounded by palms of which at least 80% are affected by the root (wilt) disease, in an endemic area.

d. Tall mother palms should have typical WCT characters.

e. Palms should be negative in their reaction to the root (wilt) antiserum and the serological tests are to be repeated every year

Features of Kalpa Vajra variety

Kalpa Vajra belongs to tall coconut type with a circular crown and has a prominent bole. The palm attains a height of around 5.60 meters by 15 years of age. It is a late bearing type and the age at first bearing is around 72 months (six years). It bears brown/green coloured nuts which are oval in shape. The fruit weighs 1350 grams and the dehusked nut weight is 725 grams, with copra content of 216 grams and 68% oil content. The quantity of tender nut water is 370 ml and is sweet to taste. Morphological features of Kalpa Vajra were superior compared to the parental WCT palms.

Nut Yield and reaction to root (wilt) disease

Kalpa Vajra gives superior yield under rainfed conditions in farmer's plots in the root (wilt) disease prevalent tract compared to unselected WCT progenies. At ICAR-CPCRI, Regional Station, Kayamkulam, forty seven percent of palms picked up root (wilt) disease based on observations recorded 20 years after planting. It also recorded a four year average yield of 80 nuts/palm/year. The healthy palms gave on an average 158 nuts/palm/year and the diseased palms gave an average yield of 65 nuts/palm/year. Hence, it was categorized as tolerant to root (wilt) disease taking into account the disease incidence and average nut yield.

In addition, a total of 390 Kalpa Vajra progenies planted at Demonstration cum Seed Production (DSP) Farm, Coconut Development Board, Neriamangalam during 1996-98 have recorded root (wilt) disease incidence only to the tune of less than 20% and yielded on an average 94 nuts/palm/year, twenty three years after planting. Many progressive farmers who have planted Kalpa Vajra seedlings during 1995-2000 have good opinion about its performance with regard to nut characters and yield and also regarding its reaction to root (wilt) disease.

Action plan for producing Kalpa Vajra seedlings:

Nearly 50 parental palms were identified inside ICAR-CPCRI, Kayamkulam campus and approximately 1500 Kalpa Vajra seedlings can be produced per year from the selected parental palms. In addition, ICAR-CPCRI has launched a programme 'Technology enabled participatory coconut hybrid seedling approach' in three panchayats viz., Pathiyoor, Devikulangara (Alappuzha District) and Oachira (Kollam District) in a farmer participatory mode. The programme aims at production of elite West Coast Tall seedlings and Kalpa Vajra seedlings using the innovative modified ground pollination technique developed by ICAR-CPCRI. As a part of the programme, a total of 150 WCT parental palms will be selected after serological testing for WCT X WCT crossing programme. It is expected that 4000-4500 Kalpa Vajra seedlings can be produced through the farmer participatory programme.

Modified ground pollination was recommended for technology commercialization during the 50th Institute Research Council meeting of ICAR-CPCRI held during 25-29th July 2022. The modified ground pollination technique developed by ICAR-CPCRI was tested and validated at three locations of ICAR-CPCRI (Kasaragod, Kayamkulam and Kidu) and two AICRP on Palms Centres (Aliyarnagar-Tamilnadu and Ratnagiri-Maharashtra). The major advantages of the technique is reduction in cost of hybrid seed nut production to the tune of 50% as dependence on skilled climber is limited just for emasculation, bagging and bag removal since the pollen application (for modified ground pollination) is managed from the ground itself. Modified ground pollination resulted in an average fruit setting 25% and was comparable to the setting observed upon normal assisted pollination in coconut. ■

*Regi Jacob Thomas, M. Shareefa, * R. V. Nair,*P. M. Jacob, R.D. Iyer, M. Sasikala, P. K. Koshy, M. K. Nair,Merin Babu, M.P. Govindankutty, N.G. Pillai, N. Srinivasan, M.K. Rajesh, K. Devakumar, Anitha Karun and S. Kalavathi scientists of CPCRI have contributed equally for the development of the variety.*

Global Coconut Community converges at Kuala Lumpur

Dr. B Hanumanthe Gowda, Chief Coconut Development Officer &
Deepthi Nair S, Deputy Director
CDB, Kochi -11

The Coconut Community across the globe went on a coconut sojourn in Kuala Lumpur where the 50th International Cocotech Conference and exhibition was organized during 7-11 November 2022. The theme of the Cocotech Conference was "Climate Change Adaptation and Mitigation Strategy for a Resilient and Sustainable Coconut Agroindustry" and it coincided with the COP27 conference being organized the same time in Egypt. The coconut community was also walking hand in hand, with the rest of the world in discussing and deliberating on the ways and means to tackle climate change and the various adaptation and mitigation strategies that could be implemented in coconut plantations. Plenipotentiary delegates, policy makers, senior Government officials, researchers, scientists, development officers, progressive farmers, exporters, entrepreneurs, equipment manufacturers and other stakeholders from different parts of the world participated in the Conference. The Conference saw growing interest in coconut from across the globe with over 400 registered participants from 47 countries participating at the event. Around 40 exhibitors from 7 countries displayed products at the exhibition. The Ministry of Agriculture and Food Industries(MAFI) of Malaysia were at the forefront, joining hands with the International Coconut Community in making the Conference a memorable experience for all coconut lovers.

Inaugural session

The International Coconut Community(ICC) led by the Executive Director, Dr. Jelfina C. Alouw and MAFI, Malaysia led by the Secretary General, Dato' Haslina Binti Abdul Hamid coordinated the conduct of the event. Secretary General MAFI, in her welcome address, expressed her sincere appreciation to all the participants for having come over to Malaysia to

attend the event in person. DR. Viliami Toalei Manu, Chairman ICC and the Chief Executive Officer of the Ministry of Agriculture, Food and Forests, Tonga also welcomed the delegates and the stakeholders to the five day Conference. The introduction to the Conference was presented by ICC Executive Director, Dr. Jelfina C. Alouw. The 50th Cocotech Conference and the Exhibition organized alongside were officially inaugurated by YB. Datuk Seri Haji Ahmad Bin Hamzah, Deputy Minister I, MAFI, Government of Malaysia. The Associate Minister of Agriculture and Fisheries of the Government of Samoa, Hon. Maiava Fuimaono Tito Asafo graced the occasion. The Quarterly market bulletin of ICC was also launched at the occasion.

The Cocotech Conference comprised of eight major sessions with 44 speakers from across the globe delivering their presentations and sharing technologies and ideas on different aspects of coconut cultivation and industry. Apart from this there was a parallel session with 11 speakers comprising of young scientists, researchers, start ups and experts with innovative technology with prospective application in the coconut sector.

▶ *Session 1 : Policy coherence to climate change solutions for a resilient and sustainable coconut agro-industry and farmer's livelihood.*

The session was an opportunity for understanding the policies followed in different countries with respect to climate change adaptation, mitigation and resilience. The discussions generally stressed on the need for cultivars to suit to biotic and abiotic stresses, the need for moving the organic way, application of digital analytics, coconut based farming systems, water management etc. The improved method of planting in typhoon prone areas with three palms arranged in equilateral triangle spaced at 2m spacing and 12m between groups of three palms was found to be a model developed by Philippines which was always prone to typhoons and cyclones. On the processing side, the thrust was for Zero waste, development of environment friendly and healthier alternatives with coconut products and non-food product diversification. The initiatives undertaken by India towards development of a resilient and sustainable coconut industry were presented.

Asia region is the world's most disaster prone region as presented by the delegate from UNESCAP and hence the highest adaptation costs are also for Pacific SIDS and South Asia which are coconut cultivating areas. The priority in climate change resilience should be on making water resources management more resilient, finding nature based solutions and putting multi hazard assessment and early warning systems in place. The application of remote sensing for coconut mapping was discussed by the UNESCAP personnel and it was informed that with their high spatial and temporal resolutions, Sentinel -1 radar and Sentinel-2 optical satellite data offer unprecedented capabilities to map coconut plantations using cloud computing platforms like Google earth Engine.

The establishment of a Sustainable Coconut Platform presented by USAID called USAID Green Invest Asia provided the participants information on participation of international agencies in emission reductions, access to finance and support a transition to climate resilient net zero economies and financial systems. Sustainable Coconut Round Table and the Sustainable Coconut Charter is expected to bring in companies committed to the development of a responsible and sustainable coconut supply chain that contributes to increase farmer's incomes and improving livelihoods, enhancing supply chain traceability and preventing deforestation and mitigate climate change. The next meeting of the Sustainable Coconut Round Table will be held in Manila, Philippines in November itself with increased commitment and participation of private sector in developing a sustainable coconut sector across the globe.

The private sector speakers included representatives from big groups like Sambu group and Linaco emphasized that there should be synchronization of the roles of coconut farmers, processors, market and government for successfully transition into more climate friendly production of coconut and its processed products. Change will result only with a collaborative approach.

▶ *Session 2 : Promoting the development of green exports of coconut products*

The global coconut product market is expected to grow at a CAGR of 12.5% over the forecast period from 2020-2026 and the coconut water segment could witness the fastest growth at 23.8%. The demand for coconut water as a rehydration drink, nutritional drink and a substitute for sugar rich and carbonated beverages is on the rise. This factor coupled with the emergence of super foods which adults are more interested in to consume and the phenomenon of 3D food printing for nutraceutical delivery through 3D printed oleogels is opening up potential options for the coconut sector. Virgin Coconut Oil, Coconut sugar, coconut milk, coconut cream etc offer much prospects in the changing global scenario. It is predicted that the demand for coconut oil is expected to increase at 4.3% CAGR, Virgin Coconut Oil by 10.04% CAGR and MCT oil by 10.4% CAGR(Grand View Research 2020). Utilisation of non thermal technology in processing like high pressure processing, power ultrasound, ultraviolet treatment, pulsed light technology, pulsed electric field, oscillating magnetic field, irradiation, cold plasma bubbling in Neera etc will prove beneficial in ensuring quality of product.

Water management involving water recycling, effective clean up operations with water alternatives, improved process design through modern science like supercritical fluid were some ideas presented that could greatly conserve the water resource. The urgent need for strategies at policy level, farmer level, processing centres, small enterprise level etc was stressed by the speakers for facilitating green exports. The climate and income smart initiatives of ITC in the Caribbean island countries as part of Alliances for Coconut Industry Development in the Caribbean, concept of adding value at the origin itself, utilizing waste(circular economy), promoting adapted green financing/green deals etc provided a glimpse of community driven action for development of the sector in the region.

The concept of Smart Agriculture using IoT and Artificial Intelligence through the patented technology GroTro, an autonomous precision farming technology was presented which provided solutions to ground water depletion, shrinking arable land, soil infertility etc. Soil, water and ambient properties are sensed and activities automated thus reducing labour dependency.

The machinery and equipments in coconut processing were also presented by T&I Global Ltd, India

▶ *Session 3 : Agronomic adaptations strategies to climate change*

Innovative techniques in coconut cultivation including SMART irrigation system with IoT for increased production and quality seedlings at Pagoh Agriculture Center, Johor, options for digitization of coconut plantation management, pencil drip irrigation in polybag seedlings for improved water use efficiency, Automated fertigation and irrigation systems controlled by weather station etc were presented.

Carbon sequestration in coconut is an area where intensified activity is to be concentrated to support the farmer, nature and the green economy. The application of good agricultural practices adopted in United Plantations was presented; the cultivars propagated include Camma, Maca, Mata and Aromatic Green Dwarf. The recommendation presented to undertake replanting once in 25 years revealed the manner in which commercial cultivation of coconut is undertaken by United Plantations. Clearing of old stand of coconut is undertaken with a zero burning policy. The MATAG hybrids were shown to yield as high as 35635/nuts/ha/year during the 8th year of production. The parents Taganan Tall yielded 25362 nuts/ha and MYD/MRD yielded 30583

nuts/ha over a 20 year mean. Estimated commercial life span of MATAG was 27 years. The plantation which had over 1200 hectares of MATAG recorded an annual yield of 44 million nuts. The experiences of Thaipure Company in Thailand in the processing of coconut products was also presented

▶ *Session 4 : The new Integrated Pest Management paradigm for emerging threats of pests and diseases of coconut*

With the emerging threats in pest and diseases owing to climate change, different models were presented to tackle the issues and manage the attack. They included conservation biological control, botanicals, crop pluralism, building host plant resistance, refining technology of mode of delivery of bioagents, molecular detection, digital devices for detection, surveillance by unmanned aerial vehicle and other IT related methods. The extension approach of CABI through Plantwise was found effective in addressing problems of farmers through the Global Plant wise Knowledge bank and establishment of plant clinics, training of plant doctors thereby losing less food and feeding more.

Application of IT technologies for use friendly digitalized information access was also discussed. Pacific island countries and territories expressed their concern over variants of Guam haplotype of rhinoceros beetle.

▶ *Session 5 : Genetic adaptations Strategies to climate change*

Application of OMICS strategies for coconut improvement, conventional breeding for drought tolerance, potential of artificial intelligence to improve resilience of coconut production systems, emerging prospects of genome editing etc were presented. The potential for integrating the five G's – Germplasm, Genome, Genes, Genetic Engineering and Gene Editing for crop improvement was discussed in detail. Coconut breeding programmes in member countries for resistance to pests and diseases, natural calamities like windstorm, hurricanes, prolonged drought, were also presented. Potential for multiplying selected tolerant genotypes through tissue culture was explored.

▶ *Session 6 : Development of innovative products to address climate change, non-renewable energy and non-degradable products*

The innovative products out of various parts of coconut palm including husk, shell, and even coconut fronds were presented. Coir and coir products have immense applications in various fields – agrotech, buildtech, clothtech, geotech, hometech, chemical industry, mechanical engineering, meditech, mobiltech, environment protection, packtech, pro tech and sporttech. Increased utilization of charcoal briquettes will reduce deforestation to a large extent. Coir fibre based automotive parts are used in high end cars and automotives. Cocodiesel is a viable option with refined technology of production. Use of coconut plant parts like fallen leaves for single use straws, stirrers, planters boxes etc offer eco-friendly biodegradable products contributing to environmental sustainability. It not only saves burning of coconut waste leading to emissions but also reduces plastic pollution. It is zero cost raw material with high scalability. Pens are also made using fallen coconut leaves.

Exploring potential for use of various plant parts of coconut for innovative products is the need of the hour since the world is in the search for alternatives for various products in daily use which contribute to global warming and climate change. Renewable energy forms, alternatives for fossil fuels, plastic, wood etc from coconut can contribute directly and indirectly to reducing emission of green house gases.

▶ *Session 7 : Sustainable conservation and utilization of coconut genetic resources and their impact to climate change mitigation and adaptation for the economic development of the countries*

With the increasing demand for coconut, need for development of varieties to suit the various demands from the market has attained higher significance. Germplasm conservation is crucial in facilitating development of improved cultivars. Also with emergence of new and invasive pests and diseases in coconut, it is highly essential to conserve the traditional varieties and maintain them for need in crop improvement. The germplasm conservation

undertaken in the International Coconut Genebanks(ICG) established in different zones need to be strengthened and exchange facilitated for development of the coconut sector. These include the ICG for South East Asia in Indonesia, ICG for South Asia and the Middle east in India, ICG for the South Pacific in Papua New Guinea, ICG for Africa and Indian Ocean in Ivory Coast and ICG for Latin America and Caribbean in Brazil. The activities of COGENT in germplasm conservation was also presented and discussed. Strategies for germplasm collection, preservation and utilisation of the genetic resources for high value and emerging products were presented by the coconut growing countries. The status of rapid multiplication techniques and somatic embryogenesis studies undertaken across the globe by reputed institutions were placed on the table and discussed. The technique for clonal propagation of coconut using axillary invitro shoots by Alliance, status of micropropagation through plumule rachilla, challenges in cryopreservation were presented which invigorated the participants with renewed potential for success in rapid propagation.

▶ *Session 8 : Role of coconut products in enhancing public health and disease prevention*

The health and medicinal attributes of coconut is being the prime discussion point across the globe and the need for conclusive scientific evidence is crucial. CR Fabian Dayrit spearheaded the discussion with an overview of the clinical studies undertaken in coconut, the dispute regarding the goodness of coconut oil, health benefits of coconut sugar etc and emphasized on the need to prove the connect between coconut and health. The evidences on role of coconut oil in plaque control, gingivitis, its antimicrobial, anti-bacterial and antifungal efficacies etc proved that coconut oil can be a healthy adjuvant in oral hygiene maintenance, could be an alternative for mouth washes. Oil pulling with coconut oil not only reduces risk factors for oral diseases, but also enhances immunity against progression of diseases in the oral cavity. The prospects for coconut sugar was also discussed. The case study of Oshin Organics was encouraging and motivating for potential entrepreneurs.

▶ *Session 9 : Parallel Session :*

Parallel sessions on two topics, Agricultural Adaptation to climate change impacts in coconut and Promoting climate resilient coconut based farming systems were organized. Young scientists, researchers and start ups presented their innovative ideas towards the cause of climate change which included agronomic practices, pest and disease management, production of biochar from coconut husk for improving soil fertility, climate resilient farmers field school curriculum in the Philippines, biocontrol for invasive pests like rugose spiraling whitefly using natural enemies, parasites and predators, crystallized coconut sugar and robotic tapping device for coconut sap.

Field visit

The Cocotech Conference also provided an opportunity for field visit to Jorok Agriculture Centre in Johor which had the IoT based smart irrigation system in management of coconut nurseries and Linaco manufacturing (M) Sdn Bhd, Johar which manufactures coconut water, milk, milk powder and a variety of products.

Conclusion

The Cocotech proved to be an ideal platform for stakeholders in the coconut sector for collaboration and sharing, for building alliances between farmers, processors, scientists and entrepreneurs and for bilateral and multilateral partnerships between nations. The Community worked in unison for the five days of the Conference; technologies presented were discussed and deliberated during the interactions; young brains collaborating with the experienced elderly; innovations being reviewed and modifications and fine-tuning suggested; all working together for the noble cause of elevating the coconut industry as a Sunshine industry and developing it to a resilient and sustainable agroindustry. ■

Union Agriculture Ministry is open to taking pro-farmer changes in PMFB

In response to the recent climate crisis and rapid technological advances, Union Ministry of Agriculture and Farmers Welfare is open to taking pro-farmer changes in Pradhan Mantri Fasal Bima Yojana (PMFBY) Secretary, Agriculture and Farmers Welfare, Shri Manoj Ahuja said, since farming is exposed directly to such climatic catastrophes, it is important and critical to protect the vulnerable farming community of the country from the vagaries of nature. As a result, demand for crop insurance is likely to increase and therefore we need much more emphasis on crop and other forms of rural/ agricultural insurance products to provide sufficient insurance protection to the farmers in India.

Shri Ahuja pointed out that after the introduction of PMFBY in 2016, the scheme brought in comprehensive coverage of all the crops and perils, from the pre-sowing to post harvest period which was not included in previous schemes of National Agricultural Insurance Scheme(NAIS) and Modified NAIS. He said, several new fundamental features were also added during its revision in 2018, such as increasing the crop loss intimation period for farmers from 48 hours to 72 hours, keeping in mind that damage signatures disappear or are lost in case of localized calamities after 72 hours. Similarly, post its revamp in 2020, the scheme added voluntary enrolment and inclusion of add on cover for wildlife attack, to make the scheme even more farmer friendly.

Shri Ahuja said, PMFBY has been facilitating adaptation of Crop Insurance, while addressing several challenges on the way and pointed out that the major changes made in the Revamped Scheme were giving more flexibility to States for coverage of risks under the Scheme and making the Scheme Voluntary for all farmers to meet the long-standing demand of the farmers.

He also clarified that some States have opted out of the Scheme primarily due to inability to pay their state share of premium subsidy due to financial constraints, and it must be noted that post resolution of their issues, Andhra Pradesh joined back the scheme from July 2022 onwards and it is expected that the other states are also considering to join the scheme to provide comprehensive coverage to their respective farmers. It is pertinent to note that most of the States have opted for Compensation Models in place of PMFBY, that do not provide same comprehensive risk coverage to farmers as PMFBY.

Shri Ahuja said, in era of Rapid Innovations, Digitisation and Technology are playing a significant role in scaling up the reach and operations of PMFBY with precision agriculture. Union of agri-tech and rural insurance can be the magic formula for financial inclusion, enabling a trust in the scheme. Recently introduced Weather Information and Network Data Systems (WINDS), Yield Estimation System based on Technology (YES-Tech), Collection of Real Time Observations and Photographs of Crops (CROPIC) are some of the key steps taken under the scheme to bring in more efficiency and transparency. To address farmer grievances in real time, an integrated help line system is under beta testing in Chhattisgarh.

Dwelling in detail about the contribution of Centre and State in the premium, Shri Ahuja pointed out that in the last 6 years, only Rs 25,186 crores have been paid by farmers wherein Rs 1,25,662 crores have been paid to the farmers against their claims, with Central and State Governments bearing most of the premium under the scheme. It is to be noted that the acceptability of the scheme has increased amongst the farmers in last 6 years, with share of non-loanee farmers, marginalized farmers and small farmers increasing by 282% since the initiation of the scheme in 2016, the Secretary added.

Shri Ahuja also pointed out that World Economic Forum's Global Risk Report 2022 categorise Extreme Weather Risk as 2nd largest risk over next 10 years period and such sudden shifts in weather patterns are capable of adversely impacting our country, where the responsibility to feed world's 2nd highest population lies solely on the shoulders of the agriculture community. It therefore becomes imminent to provide a safety net to the farmers to protect their financial position and encourage them to continue farming and ensue food security for not only the country but for the world as well. ■

Source: PIB

Krishi Mela 2022

Coconut Development Board, DSP Farm, Kondagaon, Chhattisgarh participated in Krishi Mela and Agri Exhibition 2022 held from 11th to 13th November 2022 at Police Ground, Morena, Madhya Pradesh. Shri. Narendra Singh Tomar, Hon'ble Union Agriculture Minister visited the Board's Stall. Board displayed various informative posters on Board's schemes and on the goodness of coconut. Manufacturers of various value added products viz tender coconut water, virgin coconut oil, chips etc also participated in the fair under Board's banner.

Capacity development programme for scheduled tribe farmers

A special collaborative capacity development programme on "Enhancing Income and Employment Opportunities through Coconut Based Farming Systems and Enterprises" was conducted with financial support from Coconut Development Board, Kochi with the objective to enhance the knowledge and skill of scheduled tribe farmers on various aspects of Coconut Based Farming Systems and Enterprises to enhance income and employment opportunities. The programme was conducted as a collaborative programme involving ICAR-Central Plantation Crops Research Institute, Kasaragod and Krishibhavan, Kottiyoor. The programmes were organised in two batches, at Kottiyoor on 6th October and at Koonampalla on 7th October 2022.

The capacity development programme at Kottiyoor was inaugurated by Shri Roy Nambudakam, President, Kottiyoor grama panchayat. In his inaugural address Shri Roy highlighted the need for conducting capacity development programmes to benefit scheduled tribe farmers to equip them with know-how on various avenues for income and employment generation in coconut sector.

The programme at Kooonampalla was inaugurated by Shri Thomas P. C., Member, Kottiyoor grama panchayat. In his inaugural address Shri Thomas highlighted the need for making available good quality coconut seedlings for planting in the homestead gardens of scheduled tribe farmers located in the Koonampalla scheduled tribe colony in the hilly terrains of Kottiyoor gramapanchayat.

Dr Thamban. C and Dr. A. C. Mathew, Principal Scientists, ICAR-CPCRI Kasaragod and Mr P. J.Vinod, Agricultural Officer, Kottiyoor Krishibhavan handled different topics.

India International Trade Fair, 2022

Coconut Development Board participated in the 41st edition of India International Trade fair (IITF) held from 14th to 27th November 2022 at Pragati Maidan, New Delhi. Coconut delicacies like packed tender coconut water, coconut milk powder and coconut milk, coconut chips, desiccated coconut, virgin coconut oil, neera, coconut flour, coconut paste, Nata De Coco etc from the renowned coconut products manufacturers like Kera Tech, Agricoles, Madhura Agro Process Pvt Ltd, KKR Extractions Pvt Ltd, Vepuri Agro Products, Anjarakkandy Farmers Service Cooperative Bank, Nata Nutrico, Mezhukkattil Mills, Mala Kumari Verma, KLF Nirmal Industries, Habit Wellness, RUBCO, Global Coconut Farmers Producer Company, Holista Tranzworld Pvt Ltd were exhibited in the Board's pavilion. The theme of the fair was "Vocal for Local, Local to Global".

Horticulture Value Chain Summit

Coconut Development Board participated in Horticulture Value Chain Summit organized by the Ministry of Agriculture and Farmers Welfare, Government of India and Vamnicom, Pune on 1st November 2022 at Pune, Maharashtra. M/s. Global Coconut Farmers Producer Company Limited (GCFPCL), Palladam, Tamil Nadu received the award for "Valuable Contribution for Excellence in Horticulture" under the crop coconut from Shri. Narendra Singh Tomar, Hon'ble Union Minister for Agriculture and Family Welfare, Government of India. GCFPCL is the first Farmer Producer Organization which introduced coconut neera - branded as Thenneera in tetra pack with the shelf life of more than six months.

National Level Review Meeting of CDB

To review the progress of implementation of CDB schemes during 2022-23, a National Level Review Meeting under the chairmanship of Dr. N. Vijaya Lakshmi IAS, CEO, CDB was held during 27th & 28th October 2022 at CDB, Kochi, in hybrid mode. The officers and staff took part in the meeting.

Dr. B. Hanumanthe Gowda, CCDO in his welcome address called upon the officers to work earnestly for achieving the targets and also for bringing in reforms and new initiatives in the activities of the Board. Dr. Prabhat Kumar, Horticulture Commissioner, Govt. of India who further spoke during the occasion urged all the officers to chalk out strategies for holistic development of coconut sector focusing on potential areas/ cultivars considering the inter-state variabilities in productivity; establishment of demonstration plots/ awareness programmes for IPM and linking the knowledge with the farmers; establishing quality sources for seedlings; encouraging the value addition, etc.

On observing the status of implementation presented in the meeting, Dr. N. Vijaya Lakshmi IAS, CEO, urged on the need for formulating an action plan for implementation of schemes and thereby utilizing the entire budgetary provision allotted for the Board during the current financial year.

The State wise/ Scheme wise presentations on the status of implementation, action plan, modifications proposed, issues, etc. were made by the officers of the Board.

Training programme on advances in plant protection in coconut

As part of the CDB supported project on "Front Line Demonstration of Bio-Intensive integrated Pest Management Strategies against Coconut White grub Leucopholis coneophora Burmeisteri" a training programme was conducted for extension personnel on "Advances in plant protection in coconut" on 11th November 2022 at ICAR- CPCRI Kasargod. Dr. K B Hebbar, Director i/c ICAR- CPCRI inaugurated the proramme.

In the technical session Dr. C. Thamban, Principal Scientist briefed on 'Incidence and intensity of pest and disease incidence in coconut with special reference to Kasaragod District'. Extension strategies to be adopted with focus on community action

to enhance field level adoption of IPM and IDM in coconut.

Dr P. S. Parthibha, Scientist spoke on "Advancements in insect pest management in coconut" detailing the latest innovations and technologies of pest management and also about invasive pests and their management.

The session on 'Recent trends in disease management in coconut' was handled by Dr. Daliyamol, Scientist (Plant pathology) in which latest developments in integrated management of diseases of coconut were discussed. Based on the request from the participants newly emerging leaf spot disease of arecanut and its adhoc management strategies were also discussed in the session on coconut diseases. Technologies for mass multiplication of Trichoderma and production of trichoderma coir pith cake were also discussed thoroughly during the session.

Visits to entomology / pathology laboratories, vermicompost production unit, Agro Processing Centre and visit to experimental plots in the institute farm was done as part of the training programme. A field demonstration on 'Root feeding technique for the management of pest/disease of coconut' was also conducted. 51 extension personnel from State Department of Agriculture, Kasaragod District attended the one day training programme.

ICAR-CPCRI joins hands with KVK-Lakshadweep to empower FPOs through capacity building

With the objective of empowering the FPOs, ICAR-CPCRI in association with KVK, organized a capacity building on sustainable production and value addition of coconut from 17th to 19th October, 2022 at Kavaratti CDB. Dr. Anitha Karun, Director, ICAR-CPCRI inaugurated the programme and Mr. Musunad, President, Kavaratti Island Coconut Producers Cooperative Society Ltd. Presided over. Dr. Anitha Karun in her inaugural address spoke on the special interest taken by ICAR-CPCRI in association with the KVK in Lakshadweep islands for promoting best practices for the sustainable coconut production and value addition through processing. The capacity building programme was attended by 30 participants including the members and board of directors of FPO.

The technical sessions handled by CPCRI Scientists, Dr. C. Thamban, Dr. A.C. Mathew, Dr. P. Subramanian and Dr. M.R. Manikantan focused on techniques of collective marketing, quality copra making, techniques for improving coconut production, value addition and processing of coconuts and other technical aspects for empowering the FPO in providing Agricultural Extension Advisory Services (AEAS). The derived business plans of the FPO were also finalized.

The valedictory session of the capacity building programme had a presentation on the feasibility of copra making and its cost of cultivation by the FPO. The session was attended by Mr. Sujeesh Mon, Manager, SBI, Scientists of ICAR-CPCRI, members of FPO and farmers. The programme was coordinated by Dr. P. N. Ananth, Head, KVK, Dr. Abdul Gafoor, SMS of KVK and Dr. Mohammed Koya, Scientist.

Cultivation Practices for Coconut - December

Collection and storage of seednuts

From the identified mother palms seed nuts should be carefully harvested and properly stored to prevent drying of nut water. Wherever the ground surface is hard, harvested bunch should be lowered to the ground using a rope.

Nursery management

Irrigation has to be provided to the seedlings in the nursery. Weeding has to be done wherever necessary. Mulching with coconut leaves or dried grass or live mulch by raising green manure crops can be done in the nursery. If termite infestation is noted in the nursery drenching with chlorpyriphos (2ml chlorpyriphos in one litre of water) should be done. Spraying of water on the lower surface of leaves of seedlings can be done against spiralling white fly attack. Remove five month old ungerminated seed nuts and dead sprouts from the nursery.

Fertilizer application

• For irrigated coconut palms one fourth of the recommended dose of chemical fertilizers can be given during December.

• Drip fertigation, wherever feasible, may be continued in coconut gardens as per the monthly schedule.

• Apply 100 g of Borax in coconut palm basin wherever Boron deficiency is observed.

• Apply 500 g Magnesium sulphate per palm in the basin wherever yellowing of coconut leaves is observed due to Magnesium deficiency.

▶ *Mulching and intercultivation*

• Mulching of palm basins can be undertaken if not done earlier. Fallen dried coconut leaves available in coconut gardens can be used for mulching.

• Level down the soil mounds piled up earlier in the coconut garden.

▶ *Shading*

• Shade has to be provided for the newly planted and young coconut seedlings.

▶ *Irrigation*

• Regular irrigation can be started in coconut gardens during December.

• Clean the irrigation channels if irrigation water is guided to the palm basin through channels.

• If basin irrigation method is adopted, provide irrigation once in four days @ 200 litres per palm.

• Drip irrigation is the ideal method of irrigation for coconut. The number of dripping points should be six for sandy soils and four for other soil types. Depending on the evaporation rate, quantity of water to be provided through drip irrigation system in different coconut growing tracts can be decided. In Kerala 30-35 litres and in Tamil Nadu and Karnataka 35-45 litres of water is sufficient per palm per day through drip irrigation system.

• Seedlings can be given irrigation either through drip or basin method. If drip method is adopted, provide irrigation @ 10 litres of water per seedling per day. If other methods like basin method is adopted 60 litres per seedling once in four days is sufficient.

• Irrigation can be started to negate the effect of low temperature in the non-traditional areas like Bihar, Chattisgarh, Madhya Pradesh and North eastern states. Also ensure thick mulch in the palm basin to regulate the soil temperature in such areas.

▶ *Drainage*

• Provide adequate drainage in coconut gardens in localities having drainage problems.

Pest and disease management

The receding phase of North-East monsoon is one of the hallmarks of December month, wherein

Spear leaf damage

Inflorescence damage

M anisopliae infected grub

Mass multiplication of M anisopliae

the weather slowly turns dry and at the same time become cool with the opening up of winter season. Cool and dry period triggers pest occurrence in the perennial system including coconut plantations.

Wetness coinciding monsoon showers could diminish pest incidence, whereas advent of winter (December) opens out pest prevalence as well as subdues disease causing pathogens, and therefore strict vigilance and sustained scouting should become more focussed for timely pest and disease diagnosis and management. Regarding common and perennial diseases such as leaf rot, stem bleeding and basal stem rot persists during this period for which adequate health restoration is the key for the palms to withstand the pressure incited by them and avoid further deterioration.

The cosmopolitan insect pests viz., rhinoceros beetle and red palm weevil, as well as incidences of slug caterpillar, rugose spiralling whitefly, coreid bug and rodents could emerge and take an upper hand during this period in endemic zones.

▶ *Rhinoceros beetle (Oryctes rhinoceros)*

In the post-flood fury, Kerala witnessed habitat destruction of breeding grounds of rhinoceros beetle (Oryctes rhinoceros) which could suppress the damage potential of the pest in adult palms. Being a ubiquitous cum cosmopolitan pest, incidence of rhinoceros beetle is invariably observed in all seasons and the juvenile palms are extensively damaged. Coconut seedlings planted during May-June should be customarily shielded from pest incursion during this period. More than 0.5% natural incidence of Oryctes rhinoceros nudivirus (OrNV) was recorded in Peninsular India and therefore the OrNV-insensitive Coconut Rhinoceros Beetle-Guam (CRB-G) strain is not prevalent in our country, as this strain is taking a great toll in South-East Asian region causing great concern among International community making extensive damage.

Management

• Prophylactic treatment of top most three leaf axils with either botanical cake [Neem cake /marotti cake / pongam cake (250 g)] admixed with equal volume of sand or placement of 12 g naphthalene balls covered with sand.

• Routine palm scrutiny during morning hours along with brushing of teeth and hooking out the beetle from the infested site reduces the floating pest population.

• Shielding the spear leaf area of juvenile palms with fish net could effectively entangle alighting rhinoceros beetles and placement of perforated sachets containing 3 g chlorantraniliprole /fipronil on top most three leaf axils evade pest incursion.

• Dairy farmers could treat the manure pits with green muscardine fungus, Metarhizium anisopliae @ 5 x 1011 /m3 to induce epizootics on the developing grubs of rhinoceros beetle. Area-wide farmer-participatory approach in technology adoption could reduce the pest incidence very effectively and forms an eco-friendly approach in pest suppression.

• Incorporation of the weed plant, Clerodendron infortunatum in to the breeding pits caused hormonal irregularities resulting in morphogenetic transformational aberration in the immature stages of the pest.

▶ *Red palm weevil (Rhynchophorus ferrugineus)*

Reduction in the incidences of rhinoceros beetle, would subsequently suppress the invasive potential of the killer pest, viz., the red palm weevil, which needs an injury for the weevils to orient towards the palm cue and lay eggs. Dwarf genotypes and palms aged between 5-15 years are relatively more susceptible. All life stages of the pest were noticed inside the infested palms. Being a fatal enemy of palms, 1% action threshold has been fixed.

Adults weevils

Crown entry

Toppling of palm

Management

• Avoiding palm injury is very critical to disorient the gravid weevils away from the field and therefore leave out at least one metre from palm trunk when petioles are cut.

• Crop geometry and correct spacing is very crucial to reduce pest attack.

• Timely and targeted spot application of imidacloprid 0.002% (1 ml per litre of water) or indoxocarb 0.04% (2.5 ml per litre of water) on infested palms would kill the feeding grubs and induces recovery of palms by putting forth new spear leaf.

• Crop-habitat diversification (Ecological Bio-engineering) through coconut based cropping system strategy inciting defenders and pollinators would diffuse the palm-linked volatile cues and encouraged pest suppression. Diversified cropping system reduced pest incidence than mono-cropping.

▶ *Slug caterpillars (Darna nararia)*

Emergence of slug caterpillar, Darna nararia is East Godavari district, Andhra Pradesh and Tumkur, Karnataka could happen as this period is quite conducive for the population build up especially on coconut palms planted along the river beds and brackish water zones. Several hundreds of caterpillars would congregate and feed from under surface of palm leaflets, causing glistening spots and in synergy with grey leaf blight disease complete scorching of leaflets could be observed. In severe cases, complete defoliation was realized and only midribs will be spared. High temperature and cool weather could be one of the triggering factors.

Management

• Complete destruction of affected palm leaflets with caterpillar at early stages of infestation should be made immediately so that the pest build up is suppressed. Care should be taken as the caterpillars cause extreme itching when contacted with human skin due to the presence of poisonous scoli.

• Establishment of light traps and spraying Bacillus thuringiensis 5 g/litre was found effective along with inundative biological control using the eulophid larval parasitoid, Pediobius imbrues.

▶ *Rugose Spiralling Whitefly (Aleurodicus rugioperculatus)*

This period could also witness the establishment of the invasive rugose spiralling whitefly (Aleurodicus rugioperculatus) in new areas as well as re-emergence in already reported areas. Presence of whitefly colonies on the under surface of palm leaflets and appearance of black coloured sooty mould deposits on the upper surface of palm leaflets are characteristic visual symptoms of pest attack. In severe cases, advancement in senescence and drying of old leaflets was observed. Leaflets, petioles and nuts were also attacked by the whitefly pest and a wide array of host plants including banana, bird of paradise, Heliconia sp. were also reported.

Management

• In juvenile palms, spraying of water with jet speed could dislodge the whitefly and reduce the feeding as well as breeding potential of the pest.

• No insecticide should be used as this causes resurgence of the pest and complete kill of the natural aphelinid parasitoid, Encarsia guadeloupae.

• Installation of yellow sticky traps and conservatory biological control using E. guadeloupae could reduce the pest incidence by 70% and enhance parasitism by 80%.

• Habitat preservation of the sooty mould scavenger beetle, Leiochrinus nilgirianus could eat away all the sooty moulds deposited on palm leaflets and cleanse them reviving the photosynthetic efficiency of palms.

Close monitoring and systematic scrutiny of palms for timely detection of pests are critical to execute the correct approaches in pest suppression and reduce crop loss to double

Slug caterpillar infested field

Mature caterpillars on palm leaflet

income.

Leaf rot disease (*Colletotrichum gloeosporioides, Exserohilum rostratum*)

It is commonly observed on palms affected by root (wilt) disease wherein foliar necrosis of terminal spear leaf and adjacent leaves are registered. The disease prominently noticed in the post-monsoon phase during the month of December. Affected leaves turn necrotic and are not detachable from the palm and remain intact. This disease could be initially observed as minute lesions which later enlarge, coalesce and cause extensive rotting affecting the photosynthetic efficiency of palms. The disease is endemic to root (wilt) affected regions of Southern Kerala

Management

• Need based pruning and destruction of affected spear leaf and other adjacent leaves in the terminal region.

• Spot application of hexaconazole 2 ml in 300 ml water on the affected spear leaf region.

Stem bleeding (Thielaviopsis (*Ceratocystis) paradoxa*)

This disease is mostly confined in the acid soils of Kerala and becomes quite explicit during the period. Conspicuous exudation of reddish-brown gummy fluid is visible on the trunk which turns black on drying. It could be observed initially as small bleeding patch along the longitudinal crack, which later coalesce and form extensive lesion. The tissues underneath show tremendous discoloration and decay subsequently. In advanced stage of infection, outer whorls of leaves turns yellow, dry and shed prematurely affecting the overall health of the palm. Invasion by scolytid beetles such as Diocalandra and Xyleborus would further weaken the stem.

Management

• Avoid burning of trash and palm residues near the trunk to avoid trunk/root injury

• Adequate irrigation and adoption of soil and water conservation measures is advised.

• Application of 5 kg of neem cake enriched with Trichoderma harzianum and soil test based nutrition.

• Application of paste of Trichoderma harzianum talc formulation on the bleeding patches on the trunk was also found effective in preventing the spread of stem bleeding.

Basal stem rot disease (*Ganoderma spp.*)

It is a destructive disease observed in all coconut growing regions and found very severe in soils with higher pH and moisture stress condition. The pathogen invades the root system during early stages of infection that are not visibly noticed. This disease is very severe in areas of Thanjavur, Tamil Nadu parts of East Godavari, Andhra Pradesh and Arsikara, Karanataka. The outer whorl of leaves turn yellowish, then gradually become brown and droop from their point of attachment and hang vertically downwards to form a skirt around the trunk apex.

In course of time, the apex of the trunk shows tapering with the advancement of the disease, and bleeding symptoms may appear on the bole region. At the base of the stem a characteristic reddish brown discoloration develops, accompanied by the exudation of a brown viscous gummy substance. These brownish patches may extend up to one metre from ground level. Sometimes fruiting bodies (basidiocarp) of the pathogen develop from the affected trunk.

Colony of rugose spiralling whitefly

Encarsiaguadeloupae

Sooty mould scavenging beetle

Leaf rot disease in juvenile palm

Basal stem rot disease

Bracket fungus

Management

• Avoid burning of trash and palm residues near the trunk to avoid trunk/root injury

• Removal of dead palms and palms in advanced stage of the disease as well as destruction of the boles and root bits of the diseased palms to remove disease inoculums.

• Isolation of neighboring healthy palms, by digging isolation trenches (60 cm deep and 30 cm wide) around the affected palm (1.2 m away from the base of the trunk).

• Application of neem cake (5 kg) fortified with Trichoderma harzianum (CPTD 28) talc formulation (50 g) per palm per year at six monthly intervals reduced the disease intensity.

• Root feeding of hexaconazole @ 2% (100 ml solution per palm) and soil drenching with 0.2 % hexaconazole or with 40 l of 1% Bordeaux mixture in the coconut basin are recommended

Hence, sustained monitoring and prophylactic treatments would suppress the damage potential of pest and disease and suitable health management strategies need to be adopted at the appropriate time.

Abnormal nut fall

Unusual and incessant rainfall during the past few months induced severe setbacks in the nutrient uptake by palms mainly due to leaching away of nutrients. Water logging and improper root respiration is noticed in most gardens as well. Furthermore, abnormal nut fall was also observed in many coconut gardens in Kerala caused by a complex of nut pests and diseases in this rainy phase. This period also coincides the lean phase of nut setting in palm bunches. Nut pests include coconut eriophyid mite (Aceria guerreronis) and the coreid bug (Paradasynus rostratus) and fungal pathogens (Phytophthora palmivora and Lasiodiplodia theobromae). Mites feeding on meristematic tissues would invariably incite and aggravate fungal infections. A holistic management strategy is therefore recommended to tackle this issue

Management

• Dig out drainage channels in water logged areas and scrap off the alluvium deposited in palm basin after cessation of rainfall to promote aeration.

• Nutrient supplementation based on immediate soil analysis.

• Crown cleaning and prophylactic leaf axil filling with neem cake admixed with sand

• Spray neem oil 2% (20 ml per litre) on bunches after pollination to check mite and coreid bug incidence and 1% Bordeaux mixture to reduce fungal infections. ■

Market Review – October 2022

Domestic Price

Coconut Oil

During the month of October 2022, the price of coconut oil opened at Rs. 13300 per quintal at Kochi and Rs. 13500 per quintal at Alappuzha market and Rs. 13800 per quintal at Kozhikode market.

The prices of coconut oil closed at Rs. 13400 per quintal at Kochi market and Alappuzha market and Rs. 13700 per quintal at Kozhikode market with a net gain of Rs. 100 per quintal at Kochi market and a net loss of Rs. 100 per quintal at Alappuzha and Kozhikode market.

During the month, the price of coconut oil at Kangayam market opened at Rs. 10533 per quintal and closed at Rs. 10800 per quintal with a net gain of Rs. 267 per quintal.

Weekly price of coconut oil at major markets Rs/Quintal)				
	Kochi	Alappuzha	Kozhikode	Kangayam
01.10.2022	13300	13500	13800	10533
08.10.2022	13300	13300	13600	10533
15.10.2022	13300	13300	13600	10667
22.10.2022	13300	13300	13600	10733
29.10.2022	13400	13400	13700	10733
31.10.2022	13400	13400	13700	10800

Milling copra

During the month, the price of milling copra opened at Rs.7600 per quintal at Kochi and Rs.7650 per quintal at Alappuzha and Rs.7900 per quintal at Kozhikode market.

The prices of milling copra closed at Rs. 7700 per quintal at Kochi market, Rs. 7650 per quintal at Alappuzha market and Rs. 8200 per quintal at Kozhikode market with a net gain of Rs.100 at Kochi market and Rs. 300 per quintal at Kozhikode market.

*NR-Not reported

During the month, the price of milling copra at Kangayam market opened at Rs.7400 and closed at Rs. 7450 per quintal with a net gain of Rs. 40 per quintal.

Weekly price of Milling Copra at major markets (Rs/Quintal)				
	Kochi	Alappuzha	Kozhikode	Kangayam
01.10.2022	7600	7650	7900	7400
08.10.2022	7600	7550	7800	7400
15.10.2022	7600	7550	8000	7300
22.10.2022	7600	7550	8000	7400
29.10.2022	7700	7650	8150	7400
31.10.2022	7700	7650	8200	7450

Edible copra

During the month the price of Rajpur copra at Kozhikode market opened at Rs. 13500 per quintal and closed at Rs. 13300 per quintal with a net loss of Rs. 200 per quintal.

Weekly price of edible copra at Kozhikode market (Rs/Quintal)	
01.10.2022	13500
08.10.2022	13200
15.10.2022	13200
22.10.2022	13100
29.10.2022	13200
31.10.2022	13300

Ball copra

The price of ball copra at Tiptur market opened at Rs. 14000 per quintal and closed at Rs.13500 per quintal with a net loss of Rs.500 per quintal.

Weekly price of Ball copra at major markets in Karnataka (Rs/Quintal) (Sorce: Krishimarata vahini)	
01.10.2022	14000
08.10.2022	14000
15.10.2022	13500
22.10.2022	13700
29.10.2022	13700
31.10.2022	13500

Dry coconut

At Kozhikode market, the price of dry coconut opened and at Rs. 10750 per quintal and closed at the same price during the month.

Weekly price of Dry Coconut at Kozhikode market (Rs/Quintal)	
01.10.2022	10750
08.10.2022	10750
15.10.2022	10750
22.10.2022	10750
29.10.2022	10750
31.10.2022	10750

Coconut

At Nedumangad market in Kerala, the price of coconut opened at Rs. 13000 per thousand nuts and closed at the same price during the month.

At Pollachi market in Tamilnadu, the price of coconut opened Rs. 21500 per ton and closed at Rs. 21000 per ton with a net loss of Rs.500 per ton during the month.

At Bangalore market in Karnataka, the price of coconut opened at Rs. 20000 per thousand nuts and closed at the same price during the month.

At Mangalore market in Karnataka, the price of coconut opened Rs. 23000 per ton and closed at Rs. 26000 per ton during the month with a net gain of Rs. 3000 per ton.

Weekly price of coconut at major markets				
	Nedumangad (Rs./1000 coconuts)#	Pollachi (Rs./MT) ##	Bangalore Grade-1 coconut,(Rs./ 1000 coconuts) ##	Mangalore Black coconut (1 tonne) ##
01.10.2022	13000	21500	20000	23000
08.10.2022	13000	21000	20000	23000
15.10.2022	13000	21000	20000	23000
22.10.2022	13000	21000	20000	26000
29.10.2022	13000	21000	20000	26000
31.10.2022	13000	21000	20000	26000

International price

Coconut

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

Weekly price of dehusked coconut with water				
Date	Domestic Price (US$/MT)			
	Philippines	Indonesia	Srilanka	India*
01.10.2022	130	144	161	261
08.10.2022	130	144	163	255
15.10.2022	128	143	163	255
22.10.2022	128	128	171	255
29.10.2022	129	129	180	255
				*Pollachi market

Coconut Oil

International price and domestic price of coconut oil at different international/ domestic markets are 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	Sri lanka	India*
01.10.2022	1081	NR	NR	1660	1285
08.10.2022	1121	NR	NR	1598	1285
15.10.2022	1095	1101	NR	1680	1295
22.10.2022	1095	1105	NR	1500	1303
29.10.2022	1075	1129	NR	1679	1303
					*Kangayam

Copra

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

Weekly International price of copra in major copra producing countries				
Date	Domestic Price (US$/MT)			
	Philippines	Indonesia	Srilanka	India* * Kangayam
01.10.2022	588	495	840	898
08.10.2022	590	499	861	898
15.10.2022	606	478	867	886
22.10.2022	615	504	908	898
29.10.2022	628	536	963	898
				* Kangayam

#(Source: Epaper,Kerala Kaumudi), ##(Source: Star market bulletin)

Coconut Development Board

Dr. N. VIjayalakshmi IAS
Chief Executive Officer : 0484-2375216

Dr. B. Hanumanthe Gowda
Chief Coconut Development Officer : 0484-2375999

Shri. R. Madhu
Secretary : 0484-2377737

Government of India,
Ministry of Agriculture and Farmer's Welfare
P.B. No.1012, Kera Bhavan, SRV Road,
Kochi – 682 011, Kerala, India.
Email : kochi.cdb@gov.in
Website: https://www.coconutboard.gov.in
Office:0484-2376265, 2377267,
PABX : 2377266, 2376553, Fax:91 484-2377902

Regional Offices

KARNATAKA
Director, Regional Office, Coconut Development Board, Hulimavu, Bannerghatta Road (Beside Horticulture Farm, Govt. of Karnataka), Bangalore South Taluk, Bangalore - 560 076 Karnataka. Ph: (080) 26593750, 26593743 Fax: 080-26594768
E-mail: ro-bnglr@coconutboard.gov.in

ASSAM
Director, Regional Office, Coconut Development Board, Housefed Complex (Sixth Floor), Wireless Basistha Road, Last Gate, Dispur, Guwahati - 781 006. Assam.
Ph: (0361) 2220632
Fax: (0361) 2229794
E-mail: ro-guwahati@coconutboard.gov.in

TAMILNADU
Director, Regional Office, Coconut Development Board. No. 47, F1, Dr. Ramasami Salai K.K.Nagar, Chennai - 600 078
Ph: 044-23662684, 23663685
E-mail: ro-chennai@coconutboard.gov.in

BIHAR
Director, Regional Office, Phulwari Road, Jagdev path, Phulwari Road, Patna - 800 014, Bihar,
Phone: 0612-29720200
Email- ro-patna@coconutboard.gov.in

State Centres

ANDAMAN & NICOBAR ISLANDS
Dy. Director, State Centre, Coconut Development Board, House MB No.54, Gurudwara Lane, Near Head Post Office, Opp. BSNL Quarters, Port Blair - 744 101, South Andaman. Ph: (03192) 233918
E-mail: sc-andaman@coconutboard.gov.in

ANDHRA PRADESH
Dy. Director, State Centre, Coconut Development Board, D.No.4-123, Rajula Bazar Ramavarappadu PO, New Zilla Parishad High School, Vijayawada - 521108, Krishna District, Andhra Pradesh Telefax: 0866 2972723
E-mail: sc-vijayawada@coconutboard.gov.in

MAHARASHTRA
Dy. Director, State Centre, Coconut Development Board,Flat No. 203, 2nd Floor, Eucalyptus Building, Ghodbundar, Thane West - 400 610. Maharashtra.
Ph: 022-65100106
E-mail: sc-thane@coconutboard.gov.in

ODISHA
Dy. Director, State Centre, Coconut Development Board, Pitapally, Kumarbasta PO, District Khurda - 752 055 Odisha. Ph: 8280067723,
E-mail: sc-pitapalli@coconutboard.gov.in

WEST BENGAL
Dy. Director, State Centre, Coconut Development Board, DA-94 - Sector - I, Salt Lake City, Kolkata - 700 064. West Bengal, Ph: (033) 23599674
Fax: (033) 23599674
E-mail: sc-kolkata@coconutboard.gov.in

GUJARAT
State Centre, Junagadh, B-Wing, 1st Floor, Bahumali Bhavan, State Highway 31, Duruvesh Nagar, Shashikunj, Junagadh, Gujarat, 362001
Ph: 02852990230

Market Development cum Information Centre
Asst. Director, Market Development cum Information Centre, Coconut Development Board, 120, Hargobind Enclave, New Delhi - 110 092.
Ph: (011) 22377805 Fax: (011) 22377806
E-mail:mdic-delhi@coconutboard.gov.in

CDB Institute of Technology (CIT), Technology Development Centre and Quality Testing Laboratory,
Dy. Director, Technology Development Centre, Quality Testing Laboratory and CIT, Coconut Development Board, Keenpuram, South Vazhakkulam, Aluva, Ernakulam District. Pin - 683 105. Kerala. Ph: (0484) 2679680
Email: cit-aluva@coconutboard.gov.in

Field Office Thiruvananthapuram
Coconut Development Board, Agricultural Urban Wholesale Market (World Market), Anayara PO, Thiruvananthapuram. Pin 695 029 Kerala Ph: 0471 2741006
E-mail: fo-tvprm@coconutboard.gov.in

Demonstration-cum-Seed Production (DSP) Farms

ANDHRA PRADESH, Asst. Director, DSP Farm, Coconut Development Board, Vegivada (Village) P.O, Tadikalapudi (Via), W. Godavari (Dist.) Andhra Pradesh - 534 452. Ph: 8331869886, E-mail: f-vegiwada@coconutboard.gov.in

ASSAM- Farm Manager, DSP Farm, Coconut Development Board, Abhayapuri, Bongaigoan, Assam - 783 384. Ph: 9957694242 Email: f-abhayapuri@coconutboard.gov.in

KARNATAKA - Farm Manager, DSP Farm, Coconut Development Board, Loksara P.O., Mandya District, Karnataka - 571 478 Ph: 08232 298015 E-mail: f-mandya@coconutboard.gov.in

KERALA - Asst. Director, DSP Farm, Coconut Development Board, Neriamangalam, Kerala Pin-686 693. Ph: (0485) 2554240 E-mail: f-neriamangalam@coconutboard.gov.in

ODISHA - Farm Manager, DSP Farm, Coconut Development Board, At Pitapally, Post Kumarbasta,District Khurda - 752 055, Odisha. Ph:8280067723, E-mail: f-pitapalli@coconutboard.gov.in

BIHAR - Farm Manager, DSP Farm, Coconut Development Board, P.O. Singheshwar - 852 128, Madhepura District, Bihar. Ph: (06476) 283015 E-mail: f-madhepura@coconutboard.gov.in

CHATTISGARH - Asst. Director, DSP Farm, Coconut Development Board, Kondagaon - 494 226, Bastar District, Chhattisgarh. Ph: (07786) 242443 Fax: (07786) 242443 E-mail: f-kondagaon@coconutboard.gov.in

MAHARASHTRA - Farm Manager DSP Farm, Coconut Development Board, Dapoli Village, Satpati PO, Palghar District, Pin - 401405, Maharashtra. Ph: (02525) 256090 Mob:07767948448 & 7776940774 E-mail: f-palghar@coconutboard.gov.in

TAMIL NADU - Farm Manager DSP Farm, Coconut Development Board, Dhali, Thirumoorthy Nagar PO, Udumalpet, Tamil Nadu 642 112 Ph: (04252) 265430 Email: f-dhali@coconutboard.gov.in

TRIPURA - Farm Manager, DSP Farm, Coconut Development Board, Hichachera, Sakbari PO, Via: Jolaibari, Sabroom, SouthTripura, Tripura Pin:799141 Ph: 03823263059 Email: f-hitchachara@coconutboard.gov.in

WEST BENGAL -Farm Manager, DSP Farm, Coconut Development Board, Fulia,1st Floor, Near SBI Bank, Fulia Branch, NH-34, PO Belemath, Fulia, Nadia, West Bengal, 741402. Phone: 03473-234002, E-mail- f-fulia@coconutboard.gov.in

November 2022
Vol. LXV No.5
Price: Rs.6

Registered No.KL/EKM/721/2021-23
Licence No. KL/CR/EKM/WPP-18/2021-23
Licensed to Post Without Prepayment
RNI No. 3032/1957

INDIAN COCONUT JOURNAL
Date of Publication - 28/11/2022

Printed and Published by Mini Mathew on behalf of Coconut Development Board, Printed at M/s KBPS, Kakkanad, Kochi-30 and Published at Coconut Development Board, Govt. of India, Ministry of Agriculture and Farmer's Welfare, Kera Bhavan, Kochi-11, Editor: Deepthi Nair S