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Regional workshop on Horticulture

Insights and Highlights

Prospects of Organic Agriculture and Organic Certification in coconut sector

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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 six State Centres situated in the states of Orissa, West Bengal, Maharashtra, Andhra Pradesh, Gujrat 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

Index

Dear friends,

The global coconut community had joined hands with the International Coconut Community to organize two major events in October 2023, with the objective of harnessing the future prospects and potentials for coconut and its products as the world moves towards sustainable development. The International Seminar on "Harnessing coconut potential for off-setting carbon emission – integrating science and economy for a sustainable future" organized during 12th and 13th October 2023 in Indonesia, discussed on the ways and means to unlock the offsetting potential of the coconut sector globally. The carbon sequestration potential of coconut, modes of incentivizing carbon capture and offsetting carbon credits including the knowledge gaps were discussed. The discussions held by experts aimed at educating the stakeholders including farmers on the agricultural carbon market opportunities globally. The potential of coconut as a zero waste crop and the prospects for converting waste to useful materials also has a role to play in carbon sequestration.

Coconut as a crop is very much suited to intercropping and sustainable modes of cultivation. With major consuming markets moving towards the sustainability angle, the consumption of products, food or non-food, will definitely be in accordance with sustainable modes of production in the years to come. The demand from the charcoal manufacturers for green production systems in shell charcoal is indicative of this shift in the thought process of consumers in the developed world even for non food products.

The International Coconut Oil Conference was also organized during 30th and 31st October 2023 in Indonesia. The US Dietary guidelines calling for limiting foods with saturated fats was the continuation of the negative campaign against saturated fats which started in the 20th century itself. The Conference provided new insights regarding evidence that medium chain fatty acids promote healthy metabolism, the prospects of coconut oil as a potential source of anti-cancer agents, its application in management of diseases like Alzheimers etc. The Conference was a conglomeration of researchers, physicians, doctors, scientists and the stakeholders in coconut comprising of farmers, entrepreneurs, processors and exporters. The conclusive evidences on the nutritional and health attributes of coconut and its products were tabled for the information of the coconut community.

With the demand for healthy and nutritious food products on the rise across the globe and the urgent need to transition to sustainable practices, both events were aptly timed and convened to offer solution and hope to the coconut community. They were successful in unveiling the potentials for sustained income for coconut farmers through carbon credits and taking the scientific evidences on the goodness of coconut to the millions of producers and consumers of coconut across the globe.

Chairman,

Editorial Board

Regional workshop on Horticulture - Insights & Highlights

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Coconut Development Board

The two days Regional Workshop on Horticulture, addressing issues related to horticulture with Southern states, Union Territories, and central agencies, was held in Kochi on 2nd and 3rd November 2023. The two days regional workshop had created a platform for the revival of South Indian Horticulture Sector owing to its huge potential and opportunities. Shri. Priya Ranjan IFoS, Joint Secretary (Mission for Integrated Development of Horticulture), Ministry of Agriculture and Farmers Welfare, Government of India, inaugurated the programme in the presence of Dr. Prabhat Kumar, Horticulture Commissioner and Chief Executive Officer, CDB; Dr. S. K. Singh, Director of the Indian Institute of Horticulture Research and Dr. K. B. Hebbar, Director of CPCRI and Vice Chairman of CDB. The Regional workshop was hosted by Coconut Development Board at Hotel Courtyard Marriott, Kochi.

The Inaugural Session

Shri. Priya Ranjan, JS, MIDH in his inaugural address detailed on the objectives of the workshop and the need for enhancing adoption of the various schemes under MIDH. He stressed on the need for innovation and adoption of modern technologies for the sustained development of the horticulture sector. He emphasised the need to address issues related to climate change, ensuring availability of quality planting material and ensuring remunerative returns to the farmers. He invited project proposals from the states for enhancing the scalability of the various schemes with the participation of progressive farmers.

Dr. Prabhat Kumar, Horticulture Commissioner and CEO CDB, in his keynote address, stressed on the need for integrating food security with nutritional security in the efforts towards achieving the

sustainable development. Horticultural crops have immense potential for carbon sequestration and are more adaptable to climate change. Horticulture sector offers immense prospects for realising the vision of the Hon. Prime Minister in attaining Amrit Kaal by 2047. The potential for utilisation of products and by-products of the horticultural crops and the scope for natural farming need to be explored to the benefit of the horticultural farmers.

Shri. Joseph C F, Advisor, Horticulture, Statistics Division, Department of Agriculture & Farmers Welfare, stated that one-fourth of the Horticulture production in the country comes from the Southern region. The workshop's objective is to formulate region/state-specific plans for the Horticulture sector. He emphasized the need for coordination among states to obtain accurate Horticulture statistics, which play a significant role in calculating the country's GDP from the Horticulture sector.

Dr. K B Hebbar, Director, Central Plantation Crops Research Institute, Kasaragod, and Vice Chairman, Coconut Development Board, highlighted

The book on 'Inspiring stories of successful coconut entrepreneurs' elaborate individuals who have turned their passion for coconuts into thriving businesses. The book deals with the journey of entrepreneurs, who have turned the challenges into opportunities and visions into realities.

The book on 'Success stories in coconut farming' is a compilation of remarkable success stories within the realm of coconut farming. This publication is a testament to the dedication of successful coconut farmers and thriving coconut nurseries across the nation.

Coconut products in Hindi exclusively aim to disseminate information about various value added products of coconut. This book deals with the product specifications and also detailing about the investment to be made under TMoC project of CDB.

The Video film on coconut cultivation in non-traditional area is visualizing the well established coconut garden of CDB, DSP Farm, Chhattisgrah, a non-traditional coconut belt.

In a significant step towards enhancing the productivity of coconut, the Coconut Development Board (CDB) has initiated the first phase of FoCT Call Centre. This initiative will strengthen the bond between the Friends of Coconut Tree (FoCT) palm climbers, coconut farmers, and other stakeholders in coconut sector. The primary objective of Call Centre is to make available immediate service of skilled climbers already trained by CDB for carrying out various activities such as tree climbing, plant protection, harvesting, seed nut procurement etc.

that Regional Workshop serves as a platform for the convergence of scientists, policymakers, and developmental agencies. He pointed out that plantation crops are predominantly grown in the southern region, and there are no substitutes available. However, these crops are currently facing a crisis. He identified several critical issues faced by the Horticulture sector, including (i) Climate Change, which is the most significant challenge, (ii) the limited availability of skilled manpower (with only roughly 8% availability), (iii) the high cost of production, leading to challenges in international competitiveness, and (iv) the minimal processing of perishable goods. He emphasized that when price falls occur, processing does not happen to the required level, contributing to the challenges faced by the sector. Dr. S. K. Singh, Director, IIHR also spoke during the occasion.

Various publications on coconut viz., i) Success stories in coconut farming ii) Inspiring stories of successful entrepreneurs iii) Coconut products (Hindi) and video film on coconut in hindi Coconut crop in non-traditional areas in Chhattisgarh were released on the occasion. The launch of Hello Naariyal – the call centre for Friends of Coconut Tree, the trained manpower for undertaking cultivation and harvesting operations in coconut was also undertaken at the event.

Dr. Hanumathe Gowda, Chief Coconut Development Officer delivered the welcome address and Smt. Deepthi Nair, Director (Marketing), Kochi proposed the vote of thanks.

Delegates from various ICAR institutions and Senior Government officials from the nine southern states/UTs and representatives from the various Centre of Excellence took part in the workshop. Inaugural session was followed by the technical sessions in which representatives of State/Central depts. presented papers related to their sector.

TECHNICAL SESSIONS - DAY 1 (2-11-2023)

Session I: Presentation on Mission for Integrated Development of Horticulture (MIDH)

Shri Kedar Nath Verma, Director (Hort.), presented an overview of the Mission for Integrated Development of Horticulture (MIDH) and its objectives. MIDH aims to promote holistic growth in the horticulture sector through regionally differentiated strategies, incorporating research, technology promotion, extension, post-harvest management, processing, and marketing. The session emphasized urgency on expediting the release of the second installment of funds from MIDH.He expressed concern regarding the weakened status of CoEs, highlighting the need for prompt signing of MoUs and active participation of States. The session declared the upcoming MIDH portal, emphasizing uniformity and incorporation of farmer-based data. The session also highlighted the encouragement for ICAR institutes to focus on problem-based research solutions, which can be expanded to benefit the farming community by state institutions.

Session II: Presentation on Horticulture Statistics

Shri C F Joseph, Adviser, Horticulture Statistics Division, DA&FW highlighted the importance of reliable and timely horticulture data in detail. The session emphasized the significance of accurate data collection, highlighting the impact it has on various aspects, including GDP calculation, policy formulation, and agricultural practices.

The session highlighted the critical role of accurate horticulture data in shaping policies and supporting agricultural industries. The recommendations made during the session will be considered for future data collection initiatives, ensuring a more robust and reliable horticultural database for decision-making.

Session III: National Bamboo Mission

In this session, Shri Sreekanth K.S, Assistant Commissioner, KFRI presented an overview of the National Bamboo Mission, focusing on the various schemes and ongoing initiatives under the mission. He highlighted the crucial role of technical support provided by KFRI (Kerala Forest Research Institute) in implementing the mission's schemes effectively. Shri Sreekanth K.S detailed the schemes implemented under the National Bamboo Mission, emphasizing their significance in promoting bamboo cultivation and utilization. He highlighted the pivotal role played by KFRI in offering technical assistance, ensuring the successful implementation of the mission's objectives.

The presentation provided valuable insights into the National Bamboo Mission's schemes and their current status. The technical expertise provided by KFRI was acknowledged as a crucial factor contributing to the mission's success.

Bamboo Technical support group (BTSG)

In this session, Dr. VB Sreekumar, Principal Scientist from Kerala Forest Research Institute, provided an overview of the Bamboo Technical Support Group's activities, emphasizing their association with the National Bamboo Mission and the initiatives undertaken to support bamboo cultivation and utilization. The session also addressed challenges faced and strategies employed to tackle these issues.

The session highlighted the key activities and initiatives of BTSG including role of KFRI in National Bamboo Mission, online Promotion and launching of website to promote bamboo-related activities, including a directory for nurseries, artisans, and researchers, raw Material Sourcing and Artisan Training, and notable achievements of BTSG. Challenges and strategies of BTSG were explained in detail.

Session IV: National Beekeeping and Honey Mission (NBHM)

Dr. Naveen Kumar Patle, Additional Commissioner (Horti.) & Executive Director, NBHM presented the crucial role of beekeeping in agriculture and horticulture emphasizing its impact on crop pollination and overall agricultural sustainability and economic development. The session highlighted the growing income opportunities for farmers through beekeeping-related products and the significant increase in India's honey export volume and earnings.

The session discussed on Importance of Beekeeping, Export Growth and Potential viz, India, the largest exporter of honey, with mustard honey being a significant export item, primarily to the US and potential to double honey production and export by 2026, leading to significant growth in India's export volume and earnings . Emphasis was given on post-harvest management, including marketing, packaging, and branding, to enhance the overall honey value chain.

Session V: National Horticulture Board

In this session Shri C.P. Gandhi, Deputy Director from the National Horticulture Board (NHB), provided detailed insights into the High Tech Agriculture initiatives and schemes implemented by the NHB. The session highlighted schemes and projects emphasizing scopes in southern states, with particular attention to Karnataka and Tamil Nadu, Nursery Accreditation and Procurement clean plant

programme, and MIDH – Suraksha web portal.

The session shed light on the NHB's initiatives and strategies for promoting high-tech agriculture, ensuring the availability of quality planting material, and facilitating streamlined application processes. The importance of accreditation, traceability, and legal frameworks were stressed with an emphasis on collaborative efforts between NHB and state governments.

Session VI: Schemes of CDB

Dr. Hanumanthe Gowda, Chief Coconut Development Officer, CDB presented its vision, mission, area production statistics, and various schemes implemented. The session also addressed the issues faced by the Board in the coconut industry and outlined the way forward.

The Board's vision focuses on sustainable coconut cultivation, fostering entrepreneurship, ensuring product quality, and promoting coconut-based farming systems for stabilized income.

The mission includes expanding and stabilizing coconut cultivation, rejuvenating existing gardens, quality planting material production, adoption of recommended practices, farm mechanization, organic coconut cultivation, promoting entrepreneurship and facilitating technology adoption and transfer.

This session provided valuable insights into the Board's vision, mission, and initiatives to promote sustainable coconut cultivation and entrepreneurship. The session also addressed critical challenges and proposed solutions to ensure the growth and development of the coconut industry.

Session VII: Directorate of Areca nut and Spices Development

Dr. Homey Cherian, Director , Directorate of Areca nut and Spices Development (DASD) presented an overview of India's significant role in the global spice industry. Emphasizing India's status as the largest producer, consumer, and exporter of spices, the presentation highlighted the diverse agro-climatic regions supporting the growth of 63 out of 109 different spices according to ISO standards. India currently supplies premium spices to over 160 countries,

accounting for 48% of the volume and 43% of the value in the global market.

Session VIII: Cluster Development Programme (CDP)

Shri. Chirag Jain, Consultant MIDH presented an overview of the Cluster Development Programme (CDP) focusing on the significant post-harvest losses in the horticulture sector in India, ranging from 20-44%. He emphasized the need for branding to ensure fair prices for farmers and highlighted the importance of collaboration between farmers and the government.

The presentation emphasized the collaborative efforts required between farmers and the government to achieve the objectives of the CDP. By integrating technology and promoting online processes, the program aims to enhance transparency and accessibility, ensuring effective implementation and successful outcomes.

Session IX: Directorate of Cashewnut and Cocoa Development (DCCD)

Shri Ravindra Kumar, Deputy Director, presented an overview of the ongoing initiatives by the Directorate of Cashew nut and Cocoa Development (DCCD) aimed at enhancing the production and productivity of cashew and cocoa in India. The objective is to meet the demands of domestic consumption and export.

The presentation highlighted the launch of 'Cashew India,' an exclusive Android application tailored for cashew cultivation in 10 states across India, available in 11 languages. The app provides comprehensive information on various aspects such as nursery management, cultivation techniques, plant protection, post-harvest processing, market updates, and e-marketing. Several challenges were identified, including the gap between demand and supply, procurement of inferior planting material, and the need for effective management technologies for pests and diseases.

Session X: Indian Council of Agricultural Research (ICAR)

Dr. Sanjay Kumar Singh, Director of the Indian Institute of Horticultural Research (IIHR), presented an overview of the research initiatives undertaken by seven prestigious ICAR institutes in the southern region of India. These institutes are dedicated to advancing research and development in various domains of horticulture.

Dr. Singh highlighted the key thrust areas of research, including genetic improvement of tropical fruits, vegetables, ornamental, medicinal, spice, and plantation crops to enhance productivity, quality, and resistance to biotic and abiotic stresses. The focus also extended to the development and refinement of production technologies for mandated horticultural crops, appropriate post-harvest management technologies, efficient natural resource management strategies, integrated and sustainable crop health management, and understanding physiological and biochemical mechanisms for improving productivity and quality.

The session included an overview of the new varieties released by these institutes in various categories, such as fruit crops, vegetables, tubers, flowers, plantation crops, cashew, and spices. Dr. Singh shared details about the production technologies standardized by the institutes, research achievements, and products/technologies developed to enhance horticultural practices. Dr. Singh informed about the establishment of Centers of Excellence for protected cultivation and Dragon fruit under the Mission for Integrated Development of Horticulture (MIDH). The session also covered extension activities carried out by these institutes to disseminate knowledge and technologies to farmers and stakeholders.

Session XI: State Horticulture Mission-Kerala

Smt. Bindhu Viveka, Joint Director of Agriculture, Kerala presented a detailed report on the allocation and achievements of the Kerala State Horticulture Mission. The session emphasized the progress made and challenges faced in the implementation of horticultural initiatives within the state. The achievements including the successful establishment of the Center of Excellence (CoE) for vegetables at RARS, Ambalavayal, Wayanad. The completion of the structure and facilitation center was highlighted, showcasing the state's commitment to horticultural development.

Session XII: State Horticulture Mission, Tamil Nadu

Shri. Shiva Subramaniam Samraj presented a comprehensive report on the allocation and

achievements of the Tamil Nadu State Horticulture Mission. The session focused on the progress made and challenges faced in the implementation of horticultural initiatives within the state.

The presentation outlined the methods employed by the Department of Economics and Statistics (DES) in Tamil Nadu for agricultural statistics, particularly focusing on horticultural area and production. While DES handles statistics for 21 crops, additional data on around 150 horticultural crops are collected from grassroots level. Efforts were discussed to expand these statistics through the Crop Estimation Survey. Shri. Samraj highlighted the establishment of Centers of Excellence for cut flowers in Thally and vegetables in Rediyarchathram. These centers are significant steps toward promoting horticultural excellence in Tamil Nadu. The session discussed the Cluster Development Programme for Theni Banana under MSME Dept.Tamil Nadu.

Session XIII: State Horticulture Mission, Goa

Shri. Sandeep B. Fol Dessai presented a detailed report on the progress made in the State Horticulture Mission of Goa. The session primarily focused on the Indo-Israel Centre of Excellence for Vegetables and Flowers, highlighting the upcoming foundation stone laying ceremony planned for December. Additionally, achievements under various schemes of the National Horticulture Mission (NHM) were discussed.

The presentation covered the progress and achievements made under various NHM schemes in Goa, showcasing the state's efforts in horticultural development.

SESSIONS: DAY II (3-11-2023)

Session XIV: State Horticulture Mission, Karnataka

Shri K B Dundi, Additional Director, Presented a detailed report on the progress and achievements of the Karnataka State Horticulture Mission. The session

highlighted the positive impact of various schemes, particularly the MNREGA scheme, on farmers, especially those belonging to SC/ST communities. The achievements under different components of the Mission for Integrated Development of Horticulture (MIDH) were showcased, including projects related to farm ponds, protected cultivation, pack houses, ripening chambers, cold storage units, storage structures for onions, solar tunnel driers, and vending carts. The establishment of Centers of Excellence (CoE) for mango, pomegranate, and vegetables in specific regions was also briefed.

The presentation provided emphasis on promoting the export potential of flower crops by introducing global flower varieties. This initiative aims to increase farmers' income, create employment opportunities, and elevate the state's GDP. The importance of cluster development for flowers was highlighted, focusing on Bengaluru and surrounding areas.

Several challenges were addressed during the session, including the need for revision of MIDH cost norms, an increase in mission management costs, higher subsidies for niche fruit crops, and mandatory farm pond construction for polyhouse beneficiaries. The formation of flower clusters around Bengaluru, a tender coconut cluster in Maddur, grape clusters in Vijayapura basin, and mango clusters in Kolar area were proposed.

Session XV: Karnataka Bamboo Mission

Shri. Ruthren Periyasamy IFoS, presented about the activities of Karnataka Bamboo Mission. He gave emphasis on existing and new infrastructure developments related to bamboo cultivation and crafts. The Medar community in the state is actively engaged in bamboo craft, and efforts have been

made to enhance their skills and facilities. A common facility center with modern machinery has been established in Ramanagara district, supported by the state Department. The session emphasized the ongoing schemes and activities related to bamboo cultivation and its various applications.` The presentation highlighted the existing infrastructure, especially the common facility center in Ramanagara district, equipped with state-of-the-art machinery.

Session XVI: State Horticulture Mission, Andhra Pradesh

Shri. M Venkatesharalu, Additional Director, Andhra Pradesh presented a session on State Horticulture Mission, Andhra Pradesh. He presented

major achievements over the past four years of State Horticulture Mission including the substantial expansion of horticultural areas totaling 2.33 lakh hectares. The session also emphasized the strategic shift from paddy cultivation to horticulture in bore well-irrigated regions. Promotion of exotic fruits and non-traditional crops further underscored the progressive horticultural agenda.

Charioteers in Horticulture Sector at the venue of Regional Workshop

Session XVI: State horticulture Mission , Puducherry

Smt Flossy Manuel, Deputy Director presented an overview of the activities carried out under the Mission for Integrated Development of Horticulture (MIDH) in the Union Territory. The session focused on the various schemes implemented considering Puducherry's limited geographical area. The session briefed on the diverse range of schemes undertaken as part of the MIDH in Puducherry. These initiatives aimed to enhance horticultural practices, improve crop yields, and promote sustainable agriculture in the region.

Session VII: Kerala Bamboo Mission

Shri Van Roy, General Manager, Kerala Bureau of Industrial Promotion/Kerala State Bamboo Mission presented an insightful overview of the Kerala Bamboo Mission during the session. The mission's primary objective is to consolidate scattered resources, promote value addition, and enhance income generation for artisans and craftsmen working in the bamboo sector within the state.

Conclusion

The regional workshop served as a platform for bringing forth new proposals for the horticulture sector. Recommendations and suggestions have been evolved related to each session under the leadership of Shri Priya Ranjan IFos, Joint Secretary, MIDH and Dr. Prabhat Kumar, Horticulture Commissioner, Ministry of Agriculture & Farmers Welfare, Govt of India. The government pledged increased allocations, emphasizing their utilization for the benefit of farmers. It was urged to expedite the submission of MoUs for Centers of Excellence (CoE) and to complete CoE projects at the earliest. During the two day deliberations, serious effort was made to identify the challenges and opportunities in South Indian Horticultural sector.The workshop concluded with a vote of thanks, expressing gratitude for the active participation of all stakeholders and their shared commitment to transforming the horticulture landscape in the region.

Embracing diversification strategies to enhance sustainability:

the case of Gramalakshmi Marketing Producer Company, Kasaragod Kerala

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Introduction

Farmer Producer Organizations, often known as FPOs, have the potential to play a significant role in empowering small and marginal growers to increase the adoption of scientific crop management technology for improved productivity, as well as to increase income and employment prospects through value addition. With assistance from organizations such as the Coconut Development Board, the State Department of Agriculture, and other organizations, a significant number of FPOs have been established in the coconut industry. However, as a result of a wide range of factors, several of these FPOs have either ceased to exist or are finding it difficult to carry on their operations to accomplish their goals. Therefore, it is necessary for the related organizations to implement suitable policies and interventions in order to revive the operations of Farmer Producer Organizations (FPOs) in coconut sector. In addition, it is necessary for the FPOs to expand their businesses and operations while considering the specific circumstances of the local area. They must also build strong and efficient functional linkages with various organizations and agencies in order to sustain their activities. This article focuses on the successful experiences of Gramalakshmi Marketing Producer Company, which operates in Udayapuram, located in Kasaragod District of Kerala state.

The Genesis: Gramalakshmi Farmer's club

The genesis of this farmer collective can be traced back to December 2009, when a farmers' club was registered in the locality where the the majority of the people rely on farming as their primary source

of income. The campaign was spearheaded by Mr. E. J. Joseph, a member of the board of directors of the neighboring Panathady Service Co-operative Bank. Under a NABARD-supported initiative to popularize farmers' clubs, The Gramalakshmi club was established with the assistance of a co-operative bank. Under the leadership of Mr. Joseph, the club supported the local farming community through a variety of activities. This association for farmers had 230 members. The club was incredibly successful in establishing functional links with various public sector agencies in the farm sector, such as development departments and research institutions, in order to execute a series of extension interventions for the benefit of the growers. Gramalakshmi Farmers' Club received financial assistance in the form of a

grant from NABARD in the year 2010 as part of the Rural Mart scheme. This assistance allowed the club to engage in activities that included purchasing agricultural produce from farmers at remunerative rates and selling them quality inputs at prices that were reasonable. The rural mart, located in a rented room at Udayapuram, consistently guaranteed that farmers would receive a price for their agricultural products that was one rupee more than the prevailing rate in the local market. The mart primarily dealt with the sale of rubber, coconut, pepper, turmeric, and other similar commodities. In a similar manner, the company made arrangements to supply farmers with branded organic manure, agricultural implements and machinery such as spades, pick axes, and rubber tapping equipments, as well as agricultural chemicals such as copper sulfate and lime (for the preparation of fungicide), formic acid (for the processing of rubber latex), and so on at reasonable prices. In addition, the farmers' club carried out a range of extension activities. These included promoting poultry rearing among specific households with the

assistance of NABARD, hosting training programs on apiculture, scientific coconut cultivation, integrated nutrient management, and plant protection in paddy and vegetable cultivation. The club also recognized outstanding farmers, organized study tours to agricultural research institutions, provided farmers with seeds and planting materials, held seminars and exhibitions on agriculture, and facilitated organic certification for selected farmers. In 2015, the Gramalakshmi Farmers' Club was honored with the 'Karshaka Mithra award', a prestigious state-level recognition for being the top farmers' club, facilitated by NABARD.

The evolution: Gramalakshmi Marketing Group

Gramalakshmi Marketing Group was formed with selected members of the farmers' club from different areas within the farmers' club's jurisdiction so as to carry out the operations of the farmers' club that were related to the procurement of agricultural produce from farmers and the sales of inputs. Responding to the positive feedback received from the local farming community, the marketing organization made the decision to expand and diversify its activities. In 2017, the group established a pepper processing production facility with the financial assistance of the State Horticulture Mission, Kerala, as part of their efforts to diversify their operations. The group

acquired land in Udayapuram and established a building to house the processing unit. Following that, the group established a curry powder facility consisting of eight distinct spice components, with the assistance of the State Agriculture Department through ATMA, Kasaragod.

The paradigm Shift: Gramalakshmi Marketing Producer Company

The officials of NABARD, particularly the District Development Managers Mr. Gopalan and Mr. Jyothis Jaganath, were impressed by the performance of the farmers club and marketing group. They informed the club office bearers about the advantages of establishing a Farmer Producer Company to increase the income of small-scale farmers. They also discussed the incentives provided by NABARD to support the formation of the producer company. Inspired by this information, Mr. Joseph and his colleagues in the farmers' group initiated the process of forming a Farmer Producer Company. Gramalakshmi Marketing Producer Company was registered in 2016 with 11 promoters, including Mr. E. J. Joseph as the coordinator. Each promoter possessed 10 shares valued at Rs 1000/- per share, which constituted the company's starting capital. The newly established company sustained and strengthened the activities of the marketing group.

Taking into account the difficulties faced by local coconut growers as a result of the low price of coconut in the market, the company established a coconut processing facility for the production and marketing of coconut oil. The coconut processing unit is housed in a new building constructed in a nearby locality and Coconut Development Board is supporting this initiative. Besides the Gramalakshmi Marketing Producer Company has been selected by KERAFED for procuring coconut from farmers during this year. NABARD has supported the company to purchase a van as part of the mobile marketing unit which has helped to strengthen marketing efforts.

The company sells inputs and products through its shop in Udayapuram, as well as through private retail dealers and a mobile marketing unit. Gramalakshmi Marketing Producer Company has been expanding and diversifying its activities and enterprises since its establishment in 2016. Additionally, an increasing number of farmers have become shareholders of the company. Presently, the firm possesses 500 stockholders, together holding a share capital of Rs 8.63 lakh. The annual revenue is amounted to Rs. 94 lakhs. The company's working capital is increased by Rs 25 lakh through the utilization of an overdraft facility obtained from the bank, in addition to the share capital amount.

The company regularly organizes capacity development programs on crop production and value-addition technologies for farmers. These programs are part of the company's extension activities and are conducted in collaboration with ICAR-CPCRI Kasaragod, KVK, College of Agriculture Padannakkad, RARS Pilicode, NABARD, and the Department of Agriculture. In order to enhance diversification efforts, the company intends to establish a facility for the manufacture and sale of organic manure, with technological assistance from ICAR-CPCRI Kasaragod. Furthermore, there are plans to create a nursery unit for the production and distribution of planting materials.

The company's successful functioning is largely attributed to the efficient leadership of Mr. E. J. Joseph as the chairman and the active participation of the director board members. Functional linkages with research and development agencies for drawing support to diversify the activities have also been a key strength of the company.

This does not imply that the company is not confronting any challenges. They face obstacles such as delays and difficulties in obtaining the essential certificates and permissions from local self-governments and other institutions to initiate production and marketing. They also encounter challenges in marketing, particularly when it comes to coconut oil, as local traders tend to prefer cheaper adulterated brands that yield higher profits. In addition, they lack the financial resources to expand the scope of the company by diversifying their operations.

Nevertheless, they maintain a positive outlook, confident in their ability to surmount these challenges through their collaborative endeavors.

Prospects of Organic Agriculture and Organic Certification in coconut sector

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1. Overview of Organic Agriculture and certification

Organic Agriculture and certification have seen an overall development in almost every crop recently due to the increased awareness on environmentally safe and healthy foods. Health-conscious consumers today support the growth of organic agricultural sector. Organic agriculture is the process of developing a viable and sustainable agroecosystem. It is an environment friendly, ecological production system that promotes and enhances biodiversity, biological cycles, and biological activities. It is one of the several approaches for meeting the objectives of sustainable agriculture. According to the International Federation for Organic Agriculture Movement (IFOAM) "Organic agriculture is a production system that sustains the health of soils, and people. It relies on ecological processes, and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation, and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved". Organic Agriculture is the soul of organic farming. US Department of Agriculture (USDA) defines organic farming as 'a system that is designed and maintained to produce agricultural products by the use of methods and substances that maintain the integrity of organic agricultural products until they reach the consumer'. It is based on internationally recognized production standards and certification programs which prohibits the use of almost all synthetic inputs. The certification of organic production system is an important aspect of international trade. According to WHO, global demand for organic food is growing steadily with a compound annual growth rate of 11.60% and the global market is valued around 183.35 billion dollars in 2022.

According to the latest FIBL survey on organic agriculture worldwide, in 2021, around 191countries produced certified organic products, covering 76.4 million hectares of organic agricultural land, including in-conversion areas. It covers only 1.6% of total world's agricultural land. Regions with largest organic agricultural land areas are Australia (35.7 million hectares, almost half the world's organic agricultural land), Europe (17.8 million hectares, 23 percent), Latin America (9.9 million hectares 13 percent), followed by Asia (6.5million hectares, 8.5 percent), Northern America (3.5 million hectares, 4.6 percent) and Africa (2.7 million hectares, 3.5 percent) India's rank 6th in terms of World's Organic Agricultural land and 1st in terms of total number of producers (Source: FIBL & IFOAM Yearbook, 2023). The relatively high success of organic farming in some countries are due to the high awareness on the health problems caused by the consumption of contaminated food products, ill effects of environment degradation and appropriate supports by the government and other organizations at national and international level for promoting it.

2. Status of Organic Agriculture and Certification in India

Many crops such as rice, spices, fruits and vegetables, tea, coffee, cocoa, sugarcane, cashewnut and coconut are now successfully being cultivated under certified organic production system in India. With the growing demand for organic food in the national and international markets, it is becoming necessary to ensure that the agricultural products labeled as "organic" comply with the basic standards of organic production and the entire production process is verified by independent certification agencies. Organic certification become crucial to ensure quality and prevent fraudness. The Certifications develop confidence among consumers about the product genuineness that it complies with organic production standards.

Government of India is promoting organic Agriculture and certification through two major schemes viz; National Programme on Organic Production (NPOP) and Participatory Guarantee System (PGS) India scheme. Besides other programs viz: National Mission for Sustainable Agriculture, Paramparagat Krishi Vikas Yojna (PKVY) and Mission Organic Value Chain Development for Northeast Region (MOVCD-NER) also supports the development of organic agriculture in India.

The Food Safety Standard Authority of India (FSSAI) operationalize the 'Food safety and standard (organic food) regulations 2017'. According to this regulation, all food offered for sale as 'organic food 'must comply with any of the requirements of NPOP or PGS. Besides all organic food products shall comply with the labelling requirements as per the food safety standards (Packaging and Labelling) Regulations 2011, along with NPOP or PGS requirements. Organic food label is to have a certification mark of NPOP or PGS India along with the FSSAI logo and licensee number.

2.1. National Program on Organic Production (NPOP):

The National Program for Organic Production (NPOP) was the first scheme for promoting organic agriculture launched in India in 2001. It grants organic certification through a process of third party certification which involves accreditation of certification bodies, provides standards for organic production, processing and trading and promotion of organic farming, processing and marketing. It also provides national India organic logo and the regulations governing its use. It was brought under

Coconut based multicropping system- high potential for conversion to CBOFS

the preview of Foreign Trade Development and Regulation (FTDR) Act in 2004, wherein it was mandated that no organic products can be exported from India unless they are certified under NPOP. The APEDA, Ministry of Commerce and Industry, Government of India is implementing the program through accredited certification bodies located all over the country. The NPOP standards for production and accreditation system have been recognized by European Commission and Switzerland for unprocessed plant products as equivalent to their country standards. With these recognitions, Indian organic products duly certified by the accredited certification bodies of India are accepted by the importing countries.

As per the latest APEDA statistics (2022-23) total area under organic certification process registered under NPOP is 10.17million ha. This includes 5.39 million ha cultivable area and another 4.78 million ha for wild harvest collection. Among all the states, Madhya Pradesh has covered the largest area under organic certification followed by Rajasthan, Maharashtra, Chhattisgarh, Himachal Pradesh, Jammu & Kashmir, and Karnataka. In Sikkim entire cultivable land (more than 75000 ha) has been converted under organic certification.

India's organic products are being exported to 58 countries. The total volume of exports during 2022-23 was 312800.51 MT. The organic food export realization was around Rs 5525.18 Crore (708.33 million USD). Organic products are exported from India mainly to USA, European Union, Canada, Great Britain, Switzerland, Turkey, Australia, Ecuador, Korea Republic, Vietnam and Japan. An internet based electronic service is offered by APEDA for the stakeholders to facilitate the process of organic certification for export from India.

2.2. Participatory Guarantee System (PGS)

The Government of India launched the Participatory Guarantee System (PGS) in the year 2007. It is mainly aimed at promoting organic farming for the domestic market and products certified under this scheme can be traded in the domestic market only. It allows the farming community to self-certify their organic produce by the participation of stakeholders, including producers and consumers and operates outside the framework of third-party certification whereas NPOP is a third-party certification mainly for export market.

PGS India scheme is implemented by the Ministry of Agriculture and Farmers Welfare, Government of India through National Centre of Organic Farming (NCOF) as its Secretariat. Under this, the certification is carried out by local groups consisting of producers and consumers and is based on trust. The PGS web portal provides market linkage by providing consumers and traders access to all information related to PGS organic system. This certification is only for farmers or communities that can perform as a group. Individual farms or group of farmers with less than five members are not covered under PGS. It is applicable to on farm activities covering crop production, processing, livestock rearing etc. Off farm processing activities, storage, transport and value addition activities by persons/agencies other than the PGS farmers away from the group are not covered under this scheme. A statement as proof of certification, with two separate logo PGS-Green (in conversion)and PGS-Organic (complete organic) is used for sale of products certified under this scheme. A total area of 7.14 lakh hectares land and 11 lakh farmers were covered under PGS-India certification up to 2020-21.

3. Adaptability of coconut holdings to Organic Agriculture and certification

Coconut cultivation is the livelihood for millions of small and marginal farmers in India. It is still managed in traditional manner and there is lot of scope for improving productivity and income of coconut holdings through adoption of organic management. Among the various crops being cultivated under organic farming system in India,coconut is highly suitable for organic farming as it promotes biodiversity, nutrient recycling and other biological activities. Coconut plays an important role in modulating the ecosystem's function and its stability which is one of the basic principles of organic farming. In the present situation when the price of coconut oil is becoming non-competitive with other vegetable oils, organic production of the coconut products viz' tender coconut water, virgin coconut oil, coconut oil and desiccated coconut which are having higher demand in global market appears to be a better option.

3.1. Coconut promotes biodiversity:

Biodiversity plays an important role in altering the ecosystem function and stability and forms one of the basic principles of organic farming. Crop mixing or multi-cropping in coconut holdings has been a very

common practice in coconut. Coconut as a mono-crop at recommended spacing of 7.5m X 7.5m does not fully utilize the basic resources such as soil and sunlight available in the garden. The rooting pattern in coconut is such that only 25 per cent of land area is effectively used. Hence depending upon the growth stage of coconut palms, several other crops can be accommodated in the unutilized area enabling better use of natural resources. Integration of livestock, apiculture, pisciculture along with suitable intercrops in coconut based multi-cropping/farming is ideal for promoting organic agriculture in coconut holdings. Besides, crop mixing/ mixed farming is introduced in coconut holding which provides a congenial condition for the rapid multiplication of microorganism develop in the soil which will help to improve the soil fertility status. The traditional coconut gardens established all along the Western Ghats supports innumerable intercrop mainly spices (black pepper, ginger, turmeric, clove, nutmeg, and cinnamon), vegetables, cocoa and banana. Various annual crops like pulses, oilseeds, flowers, other medicinal and aromatic plants are also grown in coconut growing tracts in the country.

Mixed cropping system with cocoa- for sustainable organic recycling

3.2 Coconut promotes farm nutrient recycling.

Maintaining the health of the soil is recognized as most important factor in organic farming. In coconut, all plant parts are potential organic source of nutrients which can build up soil fertility. By promoting the turn over of organic material with in the coconut holding with intercrops, soil fertility can generally be maintained for successful organic coconut production. It is estimated that one hectare of coconut yields 14 MT of fronts, spathe, husk etc and suitable intercropping with legumes, cover crops, and green manure crops could generate up to 25 MT of green matter. Studies conducted at coconut research stations in India and coconut growing countries reported that adoption of suitable crop mixing enriches coconut land with organic matter and improves soil's micro-climate, thereby enhancing productivity of existing main crops. For example, studies conducted at KAU indicated that organic matter added by cocoa mixed with coconut by way of annual leaf fall is 5.3 tons per ha. Nutrient return by this annual leaf fall is estimated at nitrogen 66.9 Kg, phosphorus 5 Kg, potassium 9.7 Kg, calcium 84.9 Kg and magnesium 40.30 Kg per ha. It also provides 2.5 tons of pod husk which is rich in potassium. Cultivation of leguminous cover crops as green manures in the basins of palms during monsoon for in situ incorporation and this would also help to supply biologically fixed nitrogen and easily decomposable biomass to coconut. Almost all plantations of coconut grown in the country have various inter, mixed cropping / farming systems. Application of tank silt in coconut gardens is a usual practice in certain tracts in Karnataka and Andhra Pradesh for replenishing the nutrients. The practice of using organic mulching in the basins in coconut gardens can reduce moisture stress and increase the water use efficiency. Growing of suitable intercrops under coconut on rotation, recycling of palm and animal residues, proper tillage and water management practices will help to restore and maintain soil fertility. Thus, Coconut Based Organic Farming System (**CBOFS**) promotes optimum use of natural resources in the soil phase and aero phase on a sustainable manner in accordance with the basic principles of organic agriculture.

3.3. Organic manures are important in sustaining soil fertility in coconut holdings:

Continuous application of large quantity of organic manures is required for a perennial crop like coconut to restore the soil fertility and to increase the humus content in soil and continuous supply of plant nutrients. High humus content improves water holding capacity, aeration, structure, microorganism, density, microbiological activities and nutrient retention of soil. It also maintains soil pH and temperature at favorable level to coconut and intercrops. Therefore organic manures are important sources of plant nutrient, which help in sustaining soil fertility and productivity especially for a perennial crop like coconut.

4. Organic Certification procedure

Though the coconut farmers are aware of the advantages of organic farming, there are certain constraints regarding proper awareness on regulations of organic farming, procedure and requirements for certification and inspections and absence of proper marketing arrangements for farm produces. The certification procedure shall include all steps starting from receipt of application and its processing until final certification. To certify a coconut farm, a farmer is required to adopt several new activities, in addition to normal farming operations. The farmer should study the organic standards, which cover in specific detail what is and is not allowed for every aspect of farming, including storage, transport, and sale. The coconut farmers can get organic certification of their holdings with or without intercrops under NPOP or PGS India scheme either as individual or as an Internal Control system (ICS) group certification. Detailed steps and standards and procedure to obtain organic certification of coconut holdings are detailed below:

4.1. Receipt of application:

A farmer intending to get his coconut farm certified under NPOP should apply to the accredited organic Certification Body (CB). List of accredited CBs are available in the APEDA website. A farmer intending to get his coconut farm certified under the PGS India program

should submit application to the nearby regional council authorized under PGS in the prescribed format. Provision for submitting online application is available in the PGS-INDIA website. The documents required for applying are duly filled in application form, copy of PAN card, Annual cropping pattern, Field map, General details of the farm, Soil and water analysis report, land documents and a written annual organic production plan detailing everything from seed to sale. For coconut gardens, the annual Organic crop Production Plan include main as well as intercrops, Practices and procedures to be performed, list of inputs propose to use, source of planting material, description of monitoring practices, description of the management practices and physical barriers established to avoid commingling, nutrient management and pest control activities, harvest methods, storage locations and record keeping system, etc. The application form and other details are available on the website of accredited certification bodies.

4. 2. Scrutiny and registration of application:

The application received along with the required documents are initially reviewed by the CB and field details are verified by the inspectors of accredited certification agency. If it meets all the requirements then the application is considered for registration. For the registration, the farmer must pay a prescribed fee. Once the farm is registered, it must be strictly maintained under organic standard conditions only. A written agreement with clear responsibilities of the farmer and CB should be executed along with the registration. Individual farmers willing to register a field under organic must be the legal owner of the land and there is no limit of area for certification. While the famers as a growers group is registering all the members of the group must be within the same revenue district and there is no restriction on the area for certification. The number of farmers with more than 10 acre of land should be less than 50 per cent of total area of group. The grower group shall consist of a minimum of 25 farmers and maximum of 500 farmers. The Coconut Producers Society (CPS) and Federation of Coconut Producers Societies (CPF) formed in major coconut growing areas in the country can take lead in forming of coconut growers group for Organic Certification with PGS.

4.3. Inspection and evaluation of the farms and documents:

Periodic on-farm inspections are required, with a physical examination of records, and an oral interview. Record keeping in written formats, day-to-day farming and marketing records maintained will be checked.The farmers must have covered all activities like biodiversity conservation and buffer zone. The farmer must be available for inspection at any time. In addition, short-notice or unannounced inspections can be done by the certification body.

4.4. Risk Assessment:

The certification body shall conduct a risk assessment of the farm every year to assess the probable risk due to contamination from neighboring field, non-organic activities of the same field and from other sources. The CB shall have a documented procedure to determine the risk in 3 categories, low, medium, and high, depending on chances of contamination. Based on the probable source of risk of contamination in the location where the farm is situated the CB should identify appropriate criteria to include it in the document for assessment. Maximum efforts shall be taken by the CB and farmer to reduce the risk and to achieve maximum possible benefit from the organic farming system. Description of management practices and physical barriers established to prevent co-mingling and contamination of organic production unit from conventional field shall be an important part of organic production plan.

4.5. Sampling of soil, water, and plant products necessary for residue analysis : If the inspectors doubt that there are any chances of contamination, then he has all the right to collect the soil, water and plant sample. Analysis of plant and soil sample will be done to find out the presence of any chemicals or toxic substance or residues of suspected non organic materials used by the growers.

4.6. Issue of certificate to eligible organic farms:

If the grower has maintained his farm purely under organic condition, during the required conversion period, then an organic crop production certificate will be given to him certifying that he is an organic grower.

4.7. Grant of Logo and its use :

Once the organic production certficate is obtained, the grower should apply for grant of licence for use of logo. CBs are responsible for approving the labels for allowing the use of NPOP Logo. Certification bodies shall grant license to operators for organic logo.

5. Organic standards under NPOP applicable for coconut-based farming system

The National Programme for Organic Production (NPOP) provides for Standards for organic production, systems, criteria, and procedure for accreditation of Certification Bodies, the National India Organic Logo and the regulations governing its use. The standards and procedures are in accordance with other International Standards regulating import and export of organic products.

5.1. Conversion period:

It is the time required for establishment of organic management system and building up soil fertility. It is two years for annuals and biennials before the start of the production cycles and three years for perennials.

The conversion period will be calculated from the date of first inspection of the farmers field by the certification body. For existing coconut plantations, a minimum of three years is required as conversion period for organic cultivation. The entire farm unit has to be converted to organic in a phased manner and the farmer should submit a conversion plan to the certification body while applying for certification. A community approach is suggested for a group of contiguous farms forming a Coconut Producers Society or SHGs. Twelve months reduction can be given to those fields already maintained under organic farming under any other programme like PGS India scheme with production of documentary proof for 3 years. When the requirements prescribed under the standard have been met, for at least 12 months the farmer can sell the product as "produce of organic agriculture in conversion."

5.2. Buffer zone:

Area of three-meter square must be left in border of coconut holding to separate the organic coconut holding from inorganic holding. If the organic coconut holding is in a low region, then there should be a drench dug to avoid entry of polluted water in the form of runoff to organic holding.

5.3. Selection of variety: -

The variety selected for raising new organic coconut plantation must be well adapted to the local agro ecological condition. If seedlings produced from organic source are available, such seedlings should be used for raising new holdings and for under planting / replanting existing holdings. Since availability of seedlings produced from organic certified seed gardens are limited, seedlings from conventional sources not treated with any chemical can be used. The nursery for raising seedlings for organic plot must be separated from conventional nursery, if both the seedlings are produced in the same nursery. Inoculation of *Azospirillum* and Phospho-bacteria results in vigorous seedling growth which will help in better establishment of seedlings. The choice of selecting varieties will not arise in the case of existing coconut plantations. Genetically engineered seeds, transgenic plants or plant material are prohibited.

5.4. Nutrient management:

Organic farming largely relies on on-farm recycling of resources and on-farm management of pests and diseases through crop diversity/crop rotation and preventive practices Under organic farming system enough biodegradable material of microbial, plant or animal origin should be returned to the soil to increase or at least maintain its fertility and the biological activity within it. Based on soil test values, agricultural lime or dolomite can be given as soil amendments. Biodegradable material of microbial, plant or animal origin produced in organic farms should form the basis of the fertilization program. Mineral fertilizers shall only be used in a supplementary role to carbon-based materials. Permission for use shall only be given when other fertility management practices have been optimized. Mineral fertilizers shall be applied in their natural composition and shall not be rendered more soluble by chemical treatment. The certification program may grant exceptions which shall be well justified. These exceptions shall not include mineral fertilizers containing nitrogen. List of products for use in fertilizing and soil conditioning permitted, restricted, and prohibited under organic certification as per NPOP scheme is given as Table 1 .

Table 1

Products for Use in Fertilising and Soil Conditioning

In organic agriculture the maintenance of soil fertility may be achieved through the recycling of organic material whose nutrients are made available to crops through the action of soil micro organisms. Many of these inputs are restricted for use in organic production. In this annex "restricted" means that the conditions and the procedure for use shall be subjected to condition. Factors such as contamination, risk of nutritional imbalances and depletion of natural resources shall be taken into consideration.

Inputs	Conditions for Use
Matter Produced on an Organic Farm Unit	
Farmyard & poultry manure, slurry, cow urine	Permitted
Crop residues and green manure	Permitted
Straw and other mulches	Permitted
Matter Produced Outside the Organic Farm Unit	
Blood meal, meat meal, bone meal and feather meal without preservatives	Restricted
Compost made from any carbon based residues (animal excrement including poultry)	Restricted
Farmyard manure, slurry, cow urine (preferably after control fermentation and/or appropriate dilution) "factory" farming sources not permitted	Restricted

Inputs	Conditions for Use
Fish and fish products without preservatives	Restricted
Guano	Restricted
Human excrement	Prohibited
By-products from the food and textile industries of biodegradable material of microbial, plant or animal origin without any synthetic additives	Restricted
Peat without synthetic additives	Prohibited for soil conditioning
Sawdust, wood shavings, wood provided it comes from untreated wood	Permitted
Seaweed and seaweed products obtained by physical processes extraction with water or aqueous acid and/or alkaline solution	Restricted
Sewage sludge and urban composts from separated sources which are monitored for contamination	Restricted
Straw	Restricted
Vermicasts	Restricted
Animal charcoal	Restricted
Compost and spent mushroom and vermiculate substances	Restricted
Compost from organic household reference	Restricted
Compost from plant residues	Permitted
By products from oil palm, coconut and cocoa (including empty fruit bunch, palm oil mill effluent (pome), cocoa peat and empty cocoa pods)	Restricted
By products of industries processing ingredients from organic agriculture	Restricted
Minerals	
Basic slag	Restricted
Calcareous and magnesium rock	Restricted
Calcified seaweed	Permitted
Calcium chloride	Permitted
Calcium carbonate of natural origin (chalk, limestone, gypsum and phosphate chalk)	Permitted
Mineral potassium with low chlorine content (e.g. sulphate of potash, kainite, sylvinite, patenkali)	Restricted
Natural phosphates (e.g. Rock phosphates)	Restricted
Pulverised rock	Restricted
Sodium chloride	Permitted
Trace elements (Boron, Ferrous, Manganese, Molybdenum, Zinc)	Restricted
Wood ash from untreated wood	Restricted
Potassium sulphate	Restricted
Magnesium sulphate (Epson salt)	Permitted
Gypsum (Calcium sulphate)	Permitted
Silage and silage extract	Permitted excluding Ammonium silage

Inputs	Conditions for Use
Aluminum calcium phosphate	Restricted
Sulphur Restricted Stone meal	Restricted
Clay (bentonite, perlite, zeolite)	Permitted
Microbiological Preparations	
Bacterial preparations (biofertilizers)	Permitted
Biodynamic preparations	Permitted
Plant preparations and botanical extracts	Permitted
Vermiculate Permitted Peat	Permitted

5.5. Pest, Disease and Weed Management including Growth Regulators.

Organic farming systems should be carried out in a way which ensures that losses from pests, diseases and weeds are minimized. Emphasis is given on the use of a balanced use of inter crops and varieties well-adapted to the partial shade in coconut garden. Biopesticide formulations like *trichoderma*, *Metarhiziuim anisopliae*, *Hirsutella Thompsonii*, biological parasitoids for control of Black headed caterpillar, other plant based formulations from neem/Dasaparni extract etc can be used against various pests in coconut. Some biological formulations are meant for restricted use which requires specifc approval from the CB. The use of traps including pheromone traps for control of Rhinoceros beetle and Red palm weevil are also permitted. The list of products for use as plant growth regulating substances and plant protection are also categorized as permitted, restricted and prohibited under organic certification programme (Table 2). Suitable cover crops and intercrops can be selected for controlling the weed growth in coconut farming system.

Table 2

Products for Plant Pest and Disease Control

Certain products are allowed for use in organic agriculture for the control of pests and diseases in plant production. Such products should only be used when absolutely necessary and should be chosen taking the environmental impact into consideration. Many of these products are restricted for use in organic production. In this annex "restricted" means that the conditions and the procedure for use shall be subjected to conditions

Inputs	Conditions for Use
Substances from plant and animal origin	
Azadiracta indica (neem preparations)	Permitted
Neem oil	Restricted
Preparation of rotenone from *Derris elliptica Lonchocarpus, Thephrosia spp*	Restricted
Gelatine	Permitted
Propolis	Restricted
Plant based extracts – garlic, pongamia etc.	Permitted
Preparation on basis of pyrethrins extracted from *Chrysanthemum cinerariaefolium*, containing possibly a synergist *Pyrethrum cinerafolium*	Restricted
Preparation from *Quassia amara*	Restricted
Release of parasite predators of insect pests	Restricted
Preparation from Ryania species	Restricted
Tobacco tea	Prohibited
Natural acids (vinegar)	Restricted

Inputs	Conditions for Use
Lecithin	Restricted
Casein	Permitted
Extract from mushroom (Shitake fungus)	Permitted
Extract from Chlorella	Permitted
Fermented product from *Aspergillus*	Restricted
Sea weeds, sea weed meal, sea weed extracts, sea salt and salty water	Restricted
Minerals	
Chloride of lime/soda	Restricted
Clay (e.g. bentonite, perlite, vermiculite, zeolite)	Permitted
Copper salts / inorganic salts (Bordeaux mix, copper hydroxide, copper oxychloride) used as a fungicide depending upon the crop and under the supervision of accredited Certification Body	Restricted
Mineral powders eg : stone meal	Prohibited
Diatomaceous earth	Restricted
Light mineral oils	Restricted
Permanganate of potash	Restricted
Lime sulphur (calcium polysulphide)	Restricted
Silicates, clay (Bentonite)	Restricted
Sodium bicarbonate	Restricted
Sulphur (as a fungicide, acaricide, repellant)	Restricted
Microorganism used for biological pest control	
Viral preparation (eg. *Granulosis virus, Nuclear Polyhedrosis Virus* etc.	Permitted
Fungal preparations (*Trichoderma spp.)*	Permitted
Bacterial preparations (Bacillus spp)	Permitted
Parasites, Predators and sterilized insects	Permitted
Others	
Carbon dioxide and nitrogen gas	Restricted
Soft soap (potassium soap)	Permitted
Ethyl alcohol	Prohibited
Homeopathic and Ayurvedic preparations	Permitted
Herbal and biodynamic preparations	Permitted
Traps	
Physical methods (Chromatic traps, Mechanical traps, sticky traps and Pheromones	Permitted

5.6.Soil and water conservation and irrigation

Organic farming must encourage irrigation as it plays a major role in deriving full benefits from organic farming. Soil and water conservation during the summer months is another most important management practice recommended for increasing productivity. Application of 200 liters of water once in four days was recommended for irrigating coconut palms as by

basin irrigation method. Adoption of drip irrigation system is important in coconut garden especially in water scarced areas on account of its economics of water and labor use. Sprinkler irrigation was found to be the best suited to coconut based organic inter or mixed cropping systems where the entire surface requires wetting. Moisture conservation methods such as mulching with coconut husk, coir dust, green leaves, dried coconut leaves, etc. in sloppy terrains, trenches filled with coconut husk, half-moon bund, staggered catch pit reinforced with pineapple and growing fodder grass across the slope are proved successful in soil and water conservation techniques. Drought management practices such as husk burial and composted coir pith application were found to increase the nut yield under rain fed conditions.

6. Processing of Organic Coconut

In the certification system under NPOP, scope certificate is generally issued for Production, Processing and Trading. The traceability of the organic ingredients used for production of an organic product (for eg VCO, DC or any value added product) is mandatory in certification programme. The grower groups having sufficient organic produce has to obtain scope certificate in Processing and Trading for value addition and marketing of those products. In order to obtain organic scope certificate in processing, similar set of criteria and well laid down procedures need to be followed in all steps of processing such as sourcing of organic materials, separate drying and storage facilities, processing in separate machineries, packing, labelling, documentation etc. The coconut processing companies that are having organic certification under NPOP has to mandatorily procure the raw materials from those gardens/areas that are organically certified and having valid scope certificate. Thus the grower groups which are certified organic and have valid scope in organic production of coconuts can source their materials for processing units and earn a premium price.

A trademark-India Organic will be granted on the basis of compliance with the National Standards for Organic Production (NSOP) thereby ensuring the genuineness as well as the organic origin of the product. This trade mark will be owned by Govt of India and will be granted to only those exporters, manufacturers and processors whose products are duly certified by the certification bodies. Certification bodies shall approve the labels before granting the license. Logo to be applied in manner as it may be easily visible. The CBs shall be entirely responsible for ensuring the compliance of NPOP at all stages till labeling.

Conclusion

Organic cultivation of coconut based cropping/ farming system under certification will be profitable as there is strong demand for organic coconut products and high value crop mixes like cocoa, spices, suitable fruit crops and vegetables. Organic coconut farming system can be adopted easily in our country in those holdings where it is raised under rainfed condition with out addition of chemicai fertilizers. Since coconut is cultivated by small and marginal farmers they have limited knowledge about the requirement and standards of organic coconut production system. They may face market constraints with respect to premium price for their produce. Hence efforts should be focused on conducting awareness campaign to highlight the benefits of organic farming against conventional farming for creating increased awareness among the farmers and consumers. Efforts are also needed to conduct trainings on organic farming standards and certification system in India to farmers by research and development agencies. Financial support provided by government agencies should be given to farmers without delay to meet the risk and cost of certification. In conclusion in the context of increasing consciousness for sustainability in coconut sector, the best option is adoption of Coconut based Organic Agriculture with intercrops. This is an environment friendly production system that promotes soil health and healthy food.

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Scientific Study on Decreasing Trend of Copra Price in Karnataka

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1. Introduction:

The coconut palm often referred to as the "Tree of Life," holds a special place in the agricultural landscape of Karnataka, India. Karnataka, with its favorable tropical climate and extensive coconut plantations shares 33.8% percent of total production of coconut in India. In 2021-22, area, production and productivity of coconut in Karnataka were 604.23 thousand hectares, 5177.63 million nuts and 8569.00 Nuts/hectare respectively (Directorate of Economics and Statistics, DES). In Karnataka the major coconut producing districts were Tumkur, Chitradurga, Chikmagalur, Mandya, Mysore and Hassan. As regards the total contribution from districts, Tumkur stands first in respect of area (28.88%), whereas in production also Tumkur stands first (28.88%). Dakshina Kannada has high productivity with 11,049 Nuts/ha. Copra is an important by-product of coconut. In India two main types of copra (milling and ball copra) are produced. Milling copra is primarily used for extracting oil, while ball copra is more commonly used in traditional Indian cuisine for its distinct flavor. Karnataka, Kerala and Tamilnadu are the major copra producing states. It is estimated that 40 percent of total coconut production is processed into copra in Karnataka. Copra has been a cornerstone of the state's agricultural economy and a key source of income for countless farmers and traders. However, recent months have witnessed a significant and concerning trend – the steady decline in the price of copra.

2. Current marketing scenario Copra

Price trends in Karnataka during April-2022 to August-2023

The data analysis reveals a consistent and substantial decreasing trend in copra prices in Karnataka over a past few months. This trend has affected various regions of the state and is of paramount concern to stakeholders in the coconut industry. Figure 1 shows the trends in modal price of copra from April-2022 to August-2023 in major

Month	Tiptur	Turuvekere	Arasikere	Gubbi	Huliyar
April. 22	16,748	17,015	16,058	15,125	17,008
May. 22	15,016	15,136	14,202	13,750	13,838
June. 22	13,684	14,122	13,431	13252	12,855
July. 22	14,065	14,475	14,008	14,002	14,594
Aug. 22	13,958	14,230	13,519	13,676	13,869
Sep. 22	13,530	13,845	13,453	13,850	13,234
Oct. 22	13,580	13,741	13,446	13,300	13,457
Nov. 22	12,683	12,577	12,218	11987	12,401
Dec. 22	11,692	11,755	11,686	11,266	11,877
Jan. 23	11,049	11,214	11,035	11,160	10,784
Feb. 23	10,373	10,508	10,385	10,324	10,472
Apr. 23	8,908	9,188	9,081	9,200	8,850
May. 23	9,160	9,343	9,081	9,277	8,970
June.23	8,218	8,409	8,260	8,510	7,789
July.23	8,352	8,725	8,439	8,400	8,425
Aug.23	8,904	9,111	8,890	8,643	9,145

Table-1: Modal price of copra from April-2022 to August-2023 in major markets of Karnataka

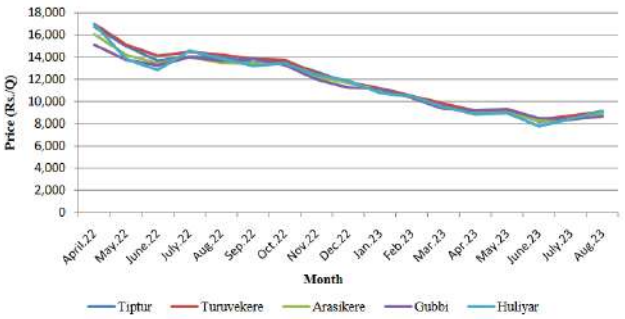


Figure 1: Trends in modal price of copra from April-2022 to August-2023 in major markets of Karnataka

markets of Karnataka. From the graph we can observe that the modal price of copra has decreased continuously from April-2022 to August-2023 *i.e.*, it has reached to 8,600 Rs. /Q– 9,100 Rs. /Q in August 2023, whereas modal price per quintal of copra was 15,000 Rs. /Q –17,000 Rs. /Q in April 2022. Nearly, 40 percent decline in the price has been observed in a span of 17 months.

Figure 2 shows the minimum, maximum and modal price of copra from April-2022 to August-2023 in Tiptur APMC, largest Copra market of Karnataka.

Figure 2: Trends in minimum, maximum and modal price of copra from April-2022 to August-2023 in Tiptur APMC

Downward movement of minimum, maximum and modal price was observed in Tiptur APMC. During April-2022 to August-2023, maximum and minimum price of copra fell nearly 40 percent (from 17,400 Rs. /Q to 10,006 Rs. /Q) and 56 percent (from 15,500 Rs. /Q to 6,800 Rs. /Q) respectively

3. Objectives:

Understanding the causes behind decline in copra price is not only crucial for the livelihoods of coconut farmers but also for the broader agricultural and economic stability of the state. As the area, production, productivity and export-import dynamics are closely linked and play significant roles in determining copra price; this scientific study aims at the following objectives.

• To study area, production, productivity and export dynamics of coconut and copra.

Month	Minimum Price	Maximum Price	Modal Price
April.22	15,500	17,400	16,748
May.22	12,800	17,125	15,016
June.22	12,000	14,650	13,684
July.22	12,100	15,200	14,065
Aug.22	12,800	15,011	13,958
Sep.22	12,500	15,500	13,530
Oct.22	12,000	15,000	13,580
Nov.22	11,000	15,001	12,683
Dec.22	10,600	14,900	11,692
Jan.23	10,000	13,000	11,049
Feb.23	8,600	11,500	10,373
Mar.23	8,000	12,000	9,628
Apr.23	8,000	10,100	8,908
May.23	8,000	10,001	9,160
June.23	6,800	10,000	8,218
July.23	6,800	10,206	8,352
Aug.23	6,800	10,006	8,904

Table-2: Minimum, maximum and modal price of copra from April-2022 to August-2023 in Tiptur APMC Karnataka

Source: Krishimaratavahini.kar.nic.in.

• To investigate and analyze the factors contributing to the decreasing price of copra in Karnataka and suggest measures to address this pressing issue.

4. Research methodology:

To study the causes of decrease in the copra market price, both secondary and primary data was used. Primary data was collected through both telephonic and direct interview from the farmers using unstructured interview method. Telephonic interview was used for farmers of Arasikere and Tiptur taluks and direct interview was conducted in Kadur taluk. Secondary data was collected from krishimaratavahini, Directorate of Economics and Statistics (DES) and DGCI&S (Directorate General of Commercial Intelligence and Statistics) websites.

5. Area, Production and productivity of coconut and copra:

Indian Scenario

Table 3, Fig. 3 and Fig. 4 depicts the area, production and productivity of coconut in India. The data shows that the area and production of coconut was 14,301 '000 tonnes and 2,199'000 hectares respectively in 2020-21 and it decreased to 13,317 '000 tonnes and 2,154 '000 hectares respectively in 2021-22 (6.88 percent and 2.06 percent)

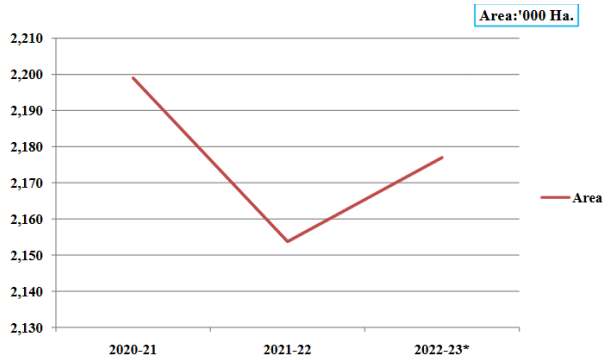


Fig. 3: Area of Coconut in India for the period from 2020-21 to 2022-23

Area: '000 Hectares, Production:'000 Tonnes, Productivity: Nuts/ha.

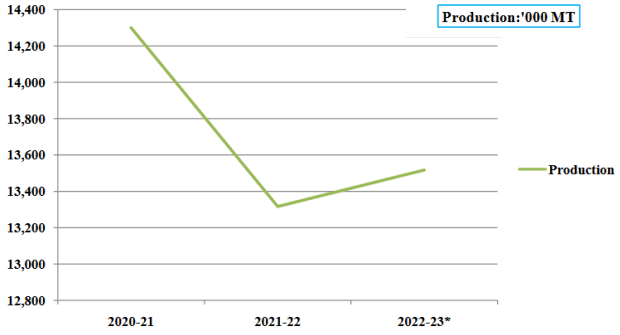


Fig. 4: Production of Coconut in India for the period from 2020-21 to 2022-23

Sl. No.	Year	Area	Production	Productivity
1	2020-21	2,199	14,301	9,430
2	2021-22	2,154	13,317	8,966
3	2022-23*	2,177	13,518	NA

Table 3: All-India Area, Production and Productivity of Coconut

Source: Department of Agriculture and Farmers Welfare, *1st advance estimate
Coconut development Board

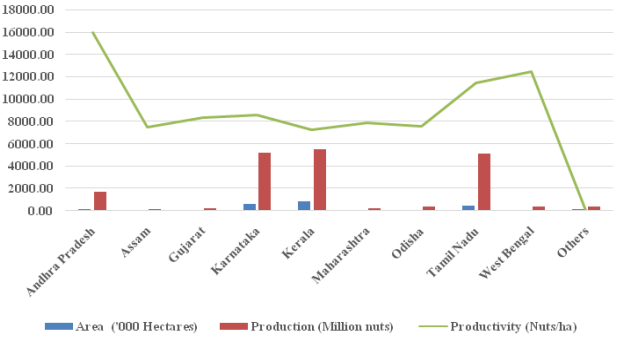


Fig. 5: Area, Production and Productivity of Coconut in major producing states (2021-22)

• Major producing states of Coconut in India

Table 4 and Fig. 5 depicts the major coconut producing states in India and their contribution towards total pool of production of coconut during the period 2021-22. Kerala stands first in respect of area with 765.44 '000 ha. (35.54 %) followed by Karnataka (28.05%), Tamil Nadu (20.72%) and Andhra Pradesh (4.91%), whereas in production Kerala stands first with 5,522.66 million nuts (28.60%) followed by Karnataka (26.81%), Tamil Nadu (26.37%) and Andhra Pradesh (8.75%). Andhra Pradesh has high productivity with 15,964 Nuts/ha.

Sl. No.	States /Union Territories	Area ('000 Hectares)	% share	Production (Million nuts)	% share	Productivity (Nuts/ha)
1	Andhra Pradesh	105.80	4.91	1,689.09	8.75	15,964
2	Assam	21.03	0.98	156.52	0.81	7,444
3	Gujarat	25.60	1.19	212.62	1.10	8,307
4	Karnataka	604.23	28.05	5,177.63	26.81	8,569
5	Kerala	765.44	35.54	5,522.66	28.60	7,215
6	Maharashtra	30.32	1.41	238.45	1.23	7,863
7	Odisha	52.82	2.45	397.57	2.06	7,527
8	Tamil Nadu	446.15	20.72	5,091.83	26.37	11,413
9	West Bengal	32.63	1.52	406.10	2.10	12,447
10	Others	69.73	3.24	417.43	2.16	NA
Total		2153.74		19,309.90		8,966

Table 4: Area, Production and Productivity of Coconut in major Producing States

Source: Coconut Development Board

Sl. No.	Years	Area('000 Hectare)	Production ('000 tonnes)	Productivity (Kg/Hectare)
1	2020-21	2,199	14,301	9,430
2	2021-22	2,154	13,317	8,966
3	2022-23*	2,177	13,518	NA

Table 5: Area, Production and Productivity of Coconut in Karnataka

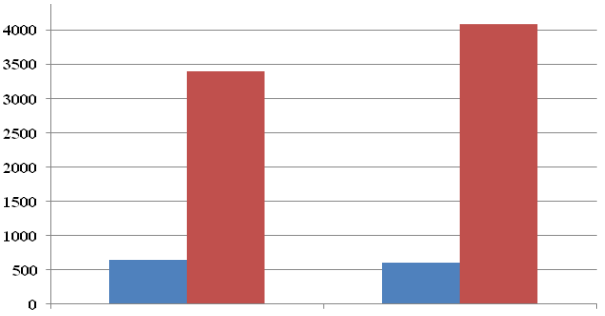


Fig. 6: Area and Production of Coconut in Karnataka for the period from 2020-21 to 2021-22

• Karnataka scenario:

Table 5 and Fig. 6 depict the area, production and productivity of coconut in Karnataka. The data shows that the production of coconut was 3392.08 '000 tonnes in the year 2020-21. It increased to 20.52 percent and reached 4088.00 '000 tonnes in the year 2021-22 (due to increase in productivity of coconut from 5280 Kg/ha to 6767 Kg/ha during 2020-21 to 2021-22).

Major producing district of Coconut in Karnataka:

Table 6 indicates district-wise area, production and productivity of coconut in Karnataka and their contribution towards total pool of production of coconut in 2020-21. In Karnataka the major coconut producing districts were Tumkur, Chitradurga, Chikmagalur, Mandya, Mysore and Hassan.

As regards the total contribution from districts, Tumkur stands first in respect of area (28.91%) followed by Hassan (15.85%), Mandya (10.85%), Chikmagalur (8.37%) and Chitradurga (7.42%), whereas in production Tumkur stands first (26.65%) followed by Mandya (12.20%), Hassan (9.67 %), Chikmagalur (9.51%) and Chitradurga (8.94%).

Copra production in India

The main commercial product from the coconut

Sl. No.	Districts	Area ('000 Ha)	% share	Production (Lakh Nuts)	% share	Productivity
1	Tumkur	178.75	28.91	13123.68	26.65	7342
2	Hassan	98.00	15.85	4759.81	9.67	4857
3	Mandya	67.11	10.85	6009.34	12.20	8955
4	Chikmagalur	51.78	8.37	4684.20	9.51	9046
5	Chitradurga	45.87	7.42	4402.60	8.94	9598
6	Dakshina Kannada	36.86	5.96	2537.95	5.15	6885
7	Ramanagar	30.02	4.85	2306.21	4.68	7683
8	Udupi	26.71	4.32	3476.18	7.06	13016
9	Mysore	22.59	3.65	2627.34	5.34	11629
10	Chamarajanagar	12.57	2.03	1483.88	3.01	11804
11	Shimoga	11.97	1.94	952.85	1.94	7963
12	Davangere	10.90	1.76	867.65	1.76	7963
13	Uttar Kannada	10.49	1.70	835.48	1.70	7963
14	Others	14.75	2.39	1174.61	2.39	NA
	Total	618.36		49241.78		7963

Table 6: Area, Production and Productivity of Coconut in major producing Districts of Karnataka 2020-21

*Source: Department of Agriculture and Farmers Welfare, *3rd advance estimate*

Sl. No.	Years	Export Value (Rs in Crore)	% variation over previous year
1	2020-21	2294.81	30.23
2	2021-22	3236.83	41.05
3	2022-23	3554.23	9.81

Table 7: India's Export Value of Coconut and its Products excluding Coir

Source: Coconut Development Board

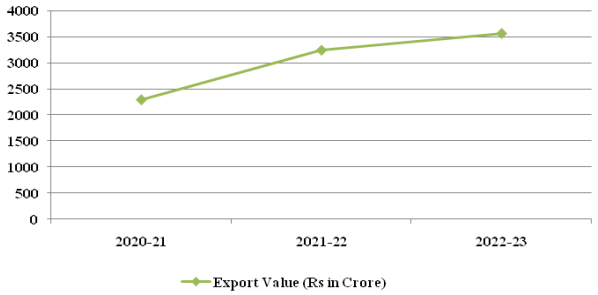


Fig. 7: India's Export Value of Coconut and its Products excluding Coir

palm is copra. Two types of copra, namely the milling and the edible, are made in India. The milling copra is used to extract oil while the edible copra is consumed as a dry fruit. Edible copra is made in the forms of balls and cups. The milling copra production is mainly concentrated in Kerala and Tamil Nadu. Kerala had the largest share accounting for 49.3 percent of total milling copra production in the country during 2020-21, while the share of Tamil Nadu was 43 percent, followed by Karnataka (4.1%). In case of edible copra, Karnataka accounted for 64.9 percent of total production, while Kerala's share was 15.2 percent and Tamil Nadu share was 10.8 percent in 2020-21. In Karnataka, from total coconut production 40 percent of coconut goes to copra production. (Source: Price Policy for Copra, 2022 session)

6. Export dynamics of coconut and its products: Table 7 and Fig. 7 show India's Export Value of Coconut and its Products excluding Coir from 2020-21 to 2022-23. The Export Value of Coconut and its Products has increased significantly from Rs 2294.81 in Crore in 2020-21 to Rs 3554.23 in Crore in 2022-23.

7. Factors affecting decreasing copra price in Karnataka:

The sustained decrease in copra prices in Karnataka is a complex issue with multifaceted causes. After

Sl. No.	Coconut products	Major destinations
1	Activated Carbon	USA, Sri Lanka and Germany
2	Coconut Fresh	UAE, Oman and Qatar
3	Coconut Oil	UAE , Saudi Arabia, USA
4	Coconut Dried	Malaysia, Afghanistan and UAE
5	Copra	Nepal, Hong Kong and USA
6	Desiccated Coconut	UAE, USA and Iran

Table 8: Major destination's of India's exports of coconut products

Source: Directorate General of Commercial Intelligence and Statistics (DGCIS), GOI

taking interview with the farmers and analyzing the secondary data, the study identified agricultural practices, weather-related disruptions, global market dynamics and recent APMC amendment act as the multiple factors that have played a significant role in driving down copra prices in Karnataka.

I. Agricultural Practices:

Over the past decade, many coconut farmers in Karnataka have shifted their agricultural practices due to various factors, which have indirectly led to a decrease in copra prices. Source: *ReMS, GOK*

a) Change in Crop Diversification and neglected Coconut Maintenance:

In response to market demands and government incentives, some coconut farmers in Karnataka have gradually shifted away from traditional coconut monoculture towards diversifying their crops. They have started cultivating cash crops like rubber, areca nut, or oilseeds, which offer higher returns per acre compared to coconut farming. With reduced focus on coconut farming, some farmers have neglected proper maintenance practices for coconut trees. This includes irregular fertilization, inadequate pest control, and suboptimal irrigation, leading to lower coconut yields and quality

b) Aging Coconut Trees: As farmers allocate fewer resources to coconut cultivation, older coconut trees are not being replaced with younger, more productive ones. Older trees produce fewer coconuts and lower-quality copra.

c) Reduced Copra Quality: Due to the lack of attention, the quality of copra produced in Karnataka has deteriorated. This lower quality is less appealing to buyers in both domestic and international markets.

d) Loss of Bargaining Power: With the diversification of their crops, coconut farmers may become less reliant on copra as their primary income source. This reduces their bargaining power in negotiating prices with buyers, who are aware of the farmers' dependence on other crops.

II. Weather-related disruptions:

Copra quality in Karnataka has also been affected by the excessive rainfall events in the previous year. Coconut growing regions of Karnataka has received excess rain in 2022 and a prolonged period of rain has lead to increased moisture levels in the harvested nuts. High moisture content makes copra prone to mold and fungal growth, reducing its shelf life, quality and market value. Some of the respondent farmers have reported that their copra produce have been rejected in the market by traders and processors due to high moisture content that forced them to sell their produce at a lower price than market price, which has lead to financial loss for the farmers.

III. Global market dynamics:

Coconut and copra prices in India have been historically integrated with the coconut oil prices (Jnanadevan, 2018). Coconut oil competes with other oils such as soybean, palm, sunflower, rapeseed etc. in the world market. Therefore, price of copra is influenced by the supply and demand of competing vegetable oils price. Figure 8 depicts the India's vegetable oils import during 2021-22 and 2022-23. India's vegetable oils imports rose by nearly 20% from 8167227.91 metric tonnes in 2021-22 to 9812608.96 metric tonnes in 2022-23. Due to increase in import of vegetable oils, price of vegetable oils has been

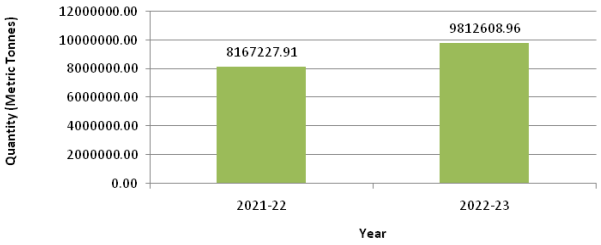


Figure 8: India's vegetable oils import during 2021-22 and 2022-23

decreased. This has partially led to decrease in price of coconut oil and copra in southern states of India.

IV. APMC Amendment Act, 2020: Karnataka has implemented significant changes in its agricultural marketing regulations through the APMC Amendment Act, 2020 resulting in the deregulation of agricultural markets.

This deregulation of markets has resulted in increase in the number of village merchants in the rural areas. Earlier farmers used to sell their copra produce in APMC's through e-tender system, which helped them to get competitive price for their produce. But, due to increase in the number and influence of village merchants farmers used to sell copra to merchants at the farm gate at a less price. The deregulation has introduced price volatility in the copra market. With

multiple buyers and sellers operating independently, copra prices have become more responsive to supply and demand dynamics.

Rajanna, coconut grower (Kallapura village, Kadur taluk) said that "As there is no license to be taken to trade the commodity and exemption from market fee to trade outside APMC, many village merchants have been evolved in the field of coconut and copra trading in rural areas. Farmers were selling coconut and copra at their farm gate to avoid risks, transportation and other expenses but village merchants were making profits by purchasing from farmers at lower price and selling it to other traders. Village merchants were not enforcing strict quality standards, leading to the influx of lower quality copra

Sl. No.	Markets	Arrivals from	Peak Months	Major Destination	Quantity (in quintals)
1	Tiptur	Mandya, Chikkamangaluru, Hassan, Chitradurga, Tumkur, Davangere	Jun-Dec	Uttar Pradesh	1,61,150.00
				Maharashtra	84,034.00
				Rajastan	56,571.00
				Tamil Nadu	62,510.00
2	Arasikere	Arasikere, Chennarayapatna, Kadur,Chikkamangaluru, Huliyar	Aug-Dec	Rajastan	33,929.00
				Bihar	25,171.00
				Maharashtra	26,162.00
				Uttar Pradesh	22,323.00
3	Turuvekere	Arasikere, Chennarayapatna, Huliyar	Jun-Nov	Uttar Pradesh	17,836.00
				Madya Pradesh	8,039.00
				Maharashtra	10,047.00
				Rajastan	1,229.00
4	Gubbi	Arasikere, Chennarayapatna, Kadur,Chikkamangaluru, Huliyar	Aug-Dec	Uttar Pradesh	7,259.00
				Madya Pradesh	3,470.00
				Maharashtra	3,569.00
				Tamil Nadu	1,803.00

Table 9: Copra arrivals and its major export destinations in Karnataka APMC's in 2021-22

Sl. No.	Markets	Arrivals from	Peak Months	Major Destination	Quantity (in quintals)
1	Tiptur	Mandya, Chikkamangaluru, Hassan, Chitradurga, Tumkur, Davangere	Jun-Dec	Uttar Pradesh	1,41,686.00
				Rajastan	48,804.00
				Maharashtra	63,783.00
				Tamil Nadu	71,432.00
2	Arasikere	Arasikere, Chennarayapatna, Kadur,Chikkamangaluru, Huliyar	Aug-Dec	Rajastan	38,059.00
				Uttar Pradesh	31,803.00
				Bihar	25,173.00
				Maharashtra	30,252.00
3	Turuvekere	Arasikere, Chennarayapatna, Huliyar	Jun-Nov	Madya Pradesh	10,102.00
				Uttar Pradesh	9,240.00
				Tamil Nadu	4,240.00
				Maharashtra	4,102.00
4	Gubbi	Arasikere, Chennarayapatna, Kadur,Chikkamangaluru, Huliyar	Aug-Dec	Madya Pradesh	5,162.00
				Uttar Pradesh	4,481.00
				Maharashtra	3,770.00
				Tamil Nadu	617.00

Table 10: Copra arrivals and its major export destinations in Karnataka APMC's in 2022-23

into the market. This can affect the overall reputation and pricing of Karnataka copra".

8. Conclusion:

The challenges faced by the coconut sector in Karnataka are enormous. The reduced profitability due to the increasing cost of cultivation and price volatility has resulted in an alarming situation for the coconut economy in India and Karnataka. Many factors contributed towards decreasing copra price in Karnataka. While diversification may benefit farmers in the short term, it has inadvertently affected the quantity and quality of copra produced in the state, leading to market challenges and declining prices. It's the need of the hour to implement several strategies on the part of government and also from the farmers to protect coconut growers in the state.

9. Suggestions:

To address the declining copra prices in Karnataka, the following recommendations are suggested:

1. Market intelligence and price forecasting: Market intelligence and price forecasting schemes need to be carried out for coconut and coconut products so that it will help the farmers to tide over the price uncertainties.

2. Research and Development: Develop and promote the cultivation of climate-resilient coconut varieties that exhibit tolerance to extreme weather events, such as excessive rainfall or drought.

3. MSP Procurement throughout the year: Copra is not a seasonal crop. The market arrivals patterns in Karnataka were found to be evenly distributed throughout the year and hence the current procurement time period of six months was not sufficient and there is a need to carry out procurement process throughout the year.

4. Crop Insurance: Provide farmers with crop insurance to mitigate the financial risks associated with weather-related disasters.

5. Value addition and Export Promotion: Promoting value addition and exports through formation of FPO's can increase demand for Karnataka's copra and coconut-based products, thereby stabilizing prices.

6. Revising import duty: There is also an urgent need to revise the import duty structure of edible oils.

Corrigendum: ***In the October 2023 issue of Indian Coconut Journal the name of the authour of the article titled "Scientific Study on Decreasing Trend of Copra Price in Karnataka " was printed erroneously. Regret the inconvenience caused***

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 the weather slowly turns dry and at the same time

Spear leaf damage

Inflorescence damage

M anisopliae infected grub

Mass multiplication of M anisopliae

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 (A*leurodicus 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, E*ncarsia 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 income.

Slug caterpillar infested field

Mature caterpillars on palm leaflet

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.

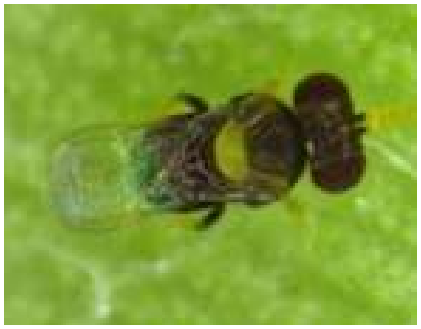
• Application of paste of Trichoderma harzianum talc formulation on the bleeding patches on the trunk was also found effective in preventing the spread of stem bleeding.

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



Encarsia guadeloupae

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 2023

Domestic Price

Coconut Oil

During the month of October 2023, the price of coconut oil opened at Rs. 12900 per quintal at Kochi, Rs. 13100 per quintal at Alappuzha market and Rs. 14000 per quintal at Kozhikode market.

The price of coconut oil closed at Rs.14100 per quintal at Kochi, Rs. 14300 per quintal at Alappuzha market and Rs.15650 per quintal at Kozhikode market with a net gain of Rs. 1200 per quintal at Kochi and Alappuzha market and Rs.1650 per quintal at Kozhikode market and it showed an upward trend during the month.

During the month, the price of coconut oil at Kangayam market opened at Rs. 11000 per quintal and closed at Rs. 12267 per quintal with a net gain of Rs. 1267 per quintal.

Weekly price of coconut oil at major markets Rs/Quintal)				
	Kochi	Alappuzha	Kozhikode	Kangayam
07.10.2023	12900	13100	14000	11000
14.10.2023	13100	13200	14300	11067
21.10.2023	13600	13800	14800	11733
28.10.2023	14000	14100	15300	12333
31.10.2023	14100	14300	15650	12267

Milling copra

During the month, the price of milling copra opened at Rs. 8300 per quintal at Kochi, Rs. 8350 per quintal at Alappuzha and Rs. 8700 per quintal at Kozhikode market.

The prices of milling copra closed at Rs. 9500 per quintal at Kochi market, Rs. 9450 per quintal at Alappuzha market and Rs. 9750 per quintal at Kozhikode market with a net gain of Rs.1200 per quintal at Kochi, Rs. 1100 per quintal at Alappuzha market and Rs.1050 per quintal at Kozhikode market and it shows an upward trend during the month.

During the month, the price of milling copra at Kangayam market opened at Rs.7900 and closed at Rs.8700 with a net gain of Rs. 800 per quintal during the month.

Weekly price of Milling Copra at major markets (Rs/Quintal)				
	Kochi	Alappuzha (Rasi Copra)	Kozhikode	Kangayam
07.10.2023	8300	8350	8700	7900
14.10.2023	8600	8400	9100	7900
21.10.2023	9000	8800	9350	8100
28.10.2023	9400	9250	9600	8600
31.10.2023	9500	9450	9750	8700

Edible copra

During the month the price of Rajpur copra at Kozhikode market opened at Rs. 10500 per quintal expressed a downward trend during second half of the month and closed at Rs. 10300 per quintal with a net loss of Rs. 200 per quintal.

Weekly price of edible copra at Kozhikode market (Rs/Quintal)	
07.10.2023	10500
14.10.2023	10900
21.10.2023	10400
28.10.2023	10400
31.10.2023	10300

Ball copra

The price of ball copra at Tiptur market opened at Rs. 8500 and closed at the same price during the month.

Weekly price of Ball copra at major markets in Karnataka (Rs/Quintal) (Sorce: Krishimarata vahini)	
07.10.2023	8500
14.10.2023	8500
21.10.2023	8500
28.10.2023	8700
31.10.2023	8500

Dry coconut

At Kozhikode market, the price of dry coconut opened at Rs. 11000 per quintal and closed at the same price during the month.

Weekly price of Dry Coconut at Kozhikode market (Rs/Quintal)	
07.10.2023	11000
14.10.2023	11000
21.10.2023	11000
28.10.2023	11000
31.10.2023	11000

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. 23000 per ton and closed at Rs. 28500 per ton with a net gain of Rs.5500 during the month.

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

At Mangalore market in Karnataka, the price of coconut opened Rs. 28000 per ton and closed at Rs.32000 per ton during the month.

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) ##
07.10.2023	13000	23000	20000	28000
14.10.2023	13000	NT	20000	30000
21.10.2023	13000	NT	20000	31000
28.10.2023	13000	27000	20000	32000
31.10.2023	13000	28500	20000	32000

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*
07.10.2023	122	160	192	276
14.10.2023	123	159	207	NT
21.10.2023	123	158	216	NT
28.10.2023	123	169	216	324
				*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*
07.10.2023	1084	1078	NR	1730	1321
14.10.2023	1003	1070	NR	1683	1329
21.10.2023	1070	1077	NR	1692	1409
28.10.2023	1075	1082	NR	1819	1481
					*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
07.10.2023	604	596	958	949
14.10.2023	594	596	980	949
21.10.2023	596	588	939	973
28.10.2023	600	600	948	1033
				*Kangayam

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

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