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Constraints faced by coconut growers in coconut based farming systems of Kerala and Maharashtra

[1]Parvathy Sasidharan, [2]Enis Jimmy, [3]Swati Jagdale and [4]Salpriya Seby

[1]Ph.D. Scholar, Department of Extension Education, College of Agriculture, DBSKKV, Dapoli, Maharashtra, India

[2]PG Scholar, Department of Agricultural Economics, College of Agriculture, DBSKKV, Dapoli, Maharashtra, India

[3]Ph.D. Scholar, Department of Extension Education, College of Agriculture, DBSKKV, Dapoli, Maharashtra, India

[4]Ph.D. Scholar, Department of Agricultural Extension, College of Agriculture, KAU, Thrissur, Kerala, India

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Corresponding Author: Parvathy Sasidharan

Abstract

Coconut cultivation forms a crucial part of the agricultural economy in India, particularly in states like Kerala and Maharashtra. This study investigates the constraints encountered by coconut growers in these states, focusing on five dimensions: production, input, economic, extension, and marketing constraints. An ex-post facto research design was employed, covering 240 farmers across 24 villages in Kerala and Maharashtra. Data collection involved survey and ranking the severity of constraints using a five-point scale. Kendall's coefficient of concordance demonstrated strong agreement among respondents in ranking these constraints, with significant values of 0.628 for Kerala and 0.822 for Maharashtra. Input constraints were particularly prominent in Kerala, while economic constraints ranked higher in Maharashtra. Extension challenges, including limited training and weak integration among agencies, were common across both states. Marketing constraints, though less severe, pointed to inefficiencies in delivery systems and limited access to innovative opportunities. The findings underscore the need for targeted interventions tailored to the specific needs of each state.

Keywords: Coconut cultivation, coconut farming systems, constraints in agriculture

Introduction

Coconut cultivation plays a significant role in the agricultural economy of India, particularly in states like Kerala and Maharashtra, where it supports the livelihoods of a substantial number of farmers. As a versatile crop, coconuts contribute to food security, employment, and industrial inputs, making it a cornerstone of the rural economy. However, despite its economic importance, the cultivation and management of coconut-based farming systems face numerous constraints that hinder productivity and profitability.

The challenges associated with coconut farming are diverse and encompass input procurement, production processes, economic factors, extension services, and marketing dynamics. Each of these dimensions introduces specific difficulties that vary in severity depending on regional, environmental, and socioeconomic conditions. For instance, fragmented landholdings in Kerala and limited access to credit in Maharashtra create unique challenges for growers in these states. Understanding these constraints in depth is essential to devise effective strategies for improving coconut farming practices and the livelihoods of those dependent on them.

This research focuses on identifying and analysing the constraints faced by coconut growers in Kerala and Maharashtra. The study investigates the perceived severity of various challenges across five dimensions. The findings aim to provide a comprehensive understanding of the issues impacting coconut-based farming systems and offer insights for policymakers and agricultural stakeholders to address these challenges effectively.

Materials and Methods

The present study was conducted in Kerala and Konkan region of Maharashtra. The study used ex-post facto research design as it had examined the event and variables of the study after they had happened. Two districts with the highest area and production of coconut in both states were selected for the study. Based on that, Kozhikode and Malappuram districts from Kerala and Sindhudurg and Ratnagiri districts from Maharashtra were selected. Two blocks, *viz*., Balussery and Koduvally from Kozhikode district and Kuttipuram and Perinthalmanna blocks from Malappuram district were selected based on the highest area and production of coconut with respect to total area in Kerala. From the state of Maharashtra, Ratnagiri and Guhagar tehsil of Ratnagiri district and Kudal and Sawantwadi tehsil of Sindhudurg district were also selected based on the same criteria. Three villages with highest area of coconut were selected randomly from each block and tahsil constituting a total of 24 villages. List of villages in each block and tahsil is given below in table 1. A farming

system is said to be coconut based if more than 50 per cent of annual income from the same is obtained from coconut and its by-products. Based on that, a list of coconut farmers was prepared for each of the 24 villages. From each village, 10 respondents were selected with orchard size more than fifty coconut trees from each village. This constituted an overall sample size of 240 coconut farmers.

Table 1: List of villages selected for the study

State	District	Block/Tahsil	Villages
Kerala	Kozhikode	Balussery	Panangad
			Koorachundu
			Atholi
		Koduvally	Kodencherry
			Puthuppady
			Thiruvambadi
	Malappuram	Kuttipuram	Kuttipuram
			Marakkara
			Athavanad
		Perinthalmanna	Aliparamb
			Angadipuram
			Pulamanthol
Maharashtra	Ratnagiri	Ratnagiri	Kotawade
			Malgund
			Warawde
		Guhagar	Hedwi
			Palshet
			Narawan
	Sindhudurg	Kudal	Pawashi
			Bambarde
			Anav
		Sawantwadi	Madkhol
			Asaniye
			Madure

Constraints were operationally defined as the difficulties faced by coconut growers in the management of coconut-based farming systems. Major constraints faced by coconut farmers in Kerala and Maharashtra were identified from review of literature, local enquiries and observations during the pilot study. These constraints were categorized under five dimensions as follows:

- Input constraints
- Production constraints
- Economic constraints
- Extension constraints
- Marketing constraints

The degree of severity of the constraints as perceived by the respondents under each of the above categories was measured on a five-point continuum, *viz.* 'Most severe', 'severe', 'medium', 'less severe' and 'least severe' with scores 5, 4, 3, 2 and 1 respectively. Mean scores of the respondents for each category were calculated. Later constraints were ranked and the coefficient of concordance was measured to check whether there existed agreement among the respondents to rank the constraints according to their severity.

Kendall coefficient of concordance was used to determine the association among k sets of rankings. Here the test was used to find the concordance among the constraints faced by coconut growers in the management of coconut-based farming systems in Kerala and Maharashtra. It assessed the agreement between different respondents in ranking the constraint dimension. Kendall's W usually ranges from 0 to 1. Zero shows no agreement between the respondents and one shows perfect agreement.

Results and Discussion

After identifying the constraints, the mean score for each dimension was found out. They were ranked in descending order of their mean score for each respondent and Kendall's coefficient of concordance was found to check whether there existed an agreement among the respondents to rank these constraints. The results are shown below in table 2.

Table 2: Test statistics for Kendall's coefficient of concordance of the constraints faced by coconut growers in Kerala and Maharashtra

	Kerala	Maharashtra
N	120	120
Kendall's W	.628	.822
Chi-Square	301.278	442.597
Df	4	4
Asymp. sig.	.000	.000

Kendall's W usually ranges from 0 to 1. Zero shows no agreement between the respondents and one shows perfect agreement. From the test statistics given in Table, Kendall's W seem to be .628 for Kerala and .822 for Maharashtra, which was significant at 1 per cent level of significance. This showed that there existed strong agreement among the respondents in ranking the constraint dimension according to the severity perceived by them as given in table 2. The mean ranks obtained for each constraint dimension with their rank, based on their severity is shown below in table 3.

Table 3: Mean rank and rank of the constraint dimensions for Kerala and Maharashtra

Sl no	Constraint dimension	Kerala		Maharashtra	
		Mean rank	Rank	Mean rank	Rank
1	Input constraint	3.05	2	1.10	5
2	Production constraint	4.90	1	4.89	1
3	Economic constraint	2.62	4	4.11	2
4	Extension constraint	2.97	3	2.64	3
5	Marketing constraint	1.47	5	2.26	4

Production constraints were ranked as the most severe in both Kerala and Maharashtra because they directly affected the yield and health of coconut palms, which is the foundation of a farmer's income. Production constraints like lack of irrigation facility, incidence of pest and diseases. incidence of nutrient deficiency symptoms, low organic content of soil, delay in application of fertilizers due to heavy rainfall and lack of harvesting technologies. Reddy and Arun (2011) [2] in their study on promoting Coconut-Based Agro-Ecosystem and Efficient Product Utilisation for augmenting on-farm income, improving quality of environment and conserving natural resources identified that, main factors responsible for the decrease in area and production of coconut are the spread of mite infestation, debilitating root wilt disease, intermittent drought and inability of the coconut farmers to develop necessary irrigation infrastructure due to the small and fragmented nature of holdings and soil nutrient depletion.

Input constraints were ranked second in Kerala and it seemed to be the least severe constraint Maharashtra. Kerala's coconut cultivation is often in fragmented holdings, where farmers own small and scattered plots of land. Small-scale farming makes it more difficult to procure inputs like fertilizers, quality seeds, or pesticides in bulk, which raises costs. The availability of inputs in remote areas may be limited, leading to supply-chain bottlenecks, and this becomes a severe constraint for farmers who may not have easy access to markets. The cost of agricultural inputs in Kerala is relatively higher due to transportation costs, taxes, and intermediaries, all of which contribute to input constraints. In contrast, Maharashtra's agricultural sector has more access to large-scale farming practices, which helps in the bulk procurement of inputs. Farmers in Maharashtra may find it easier to buy inputs at lower costs due to economies of scale

Extension constraints rank third in the order of severity for both states. This is attributed to the lack of extension interventions and integration among various agencies in both Kerala and Maharashtra. Lack of training in cultivation and management at the field level and inadequate timely information on demand and supply forces existing in the market seemed to be the major constraints faced by coconut growers involved in coconut based farming systems. Thampan and Remani (2010) [3] also reported in their study on farmer participatory study crucial for evolving appropriate R&D policy in coconut sector that low level of knowledge and technical guidance as important constraints faced by majority of coconut growers.

Economic constraints seemed to be less severe in Kerala compared to Maharashtra where it is the second most severe constraint. This might be because of the lack of awareness among the farmers in Maharashtra regarding policy support from government, non-availability of credit and subsidies and lack of incentives for farmers. Mathew (2009) [1] also reported in his study on dynamism returns to coconut farming that, besides reduction in yield, the income from coconut also declined due to the lack of scale of economy in operation and market exploitation.

Marketing constraints seemed to be less severe in both states. This is because the farmers in both Kerala and Maharashtra used to sell their major produce in local markets irrespective of the money they were getting. They want to invest the income obtained through this for the succeeding farm activities. Therefore, irrespective of enquiring about advanced marketing opportunities, they follow the same procedure. This might be also due to the lack of efficient delivery systems in the states which failed to provide information on innovative marketing opportunities to farmers. Reddy and Arun (2011) [2] in their study on promoting Coconut-Based Agro-Ecosystem and Efficient Product Utilisation for augmenting on-farm income, improving quality of environment and conserving natural resources also identified market fluctuation and lack of community participation as major constraints faced by coconut growers.

Conclusion

The study on constraints faced by coconut growers in coconut-based farming systems in Kerala and Maharashtra highlights significant challenges across five key dimensions: production, input, economic, extension, and marketing. Production constraints emerged as the most severe in both states, primarily due to issues such as lack of irrigation facilities, pest infestations, nutrient deficiencies, and the unavailability of modern harvesting technologies. These directly impact the yield and health of coconut palms, which form the backbone of the growers' livelihoods. Input constraints were more prominent in Kerala, where fragmented landholdings and logistical challenges in procuring agricultural inputs exacerbate costs. In contrast, economic constraints ranked higher in Maharashtra, pointing to gaps in policy awareness, credit availability, and farmer incentives. Extension constraints were a common issue in both states, indicating the need for better integration of agencies, timely dissemination of information, and training programs to address field-level challenges. Marketing constraints, though less severe, underscore the need for improved delivery systems and innovative marketing opportunities to enhance profitability. This study underscores the necessity for state-specific interventions to address these constraints. In Kerala, efforts should focus on improving access to inputs and addressing the challenges posed by fragmented farming. In Maharashtra, economic support mechanisms and better credit facilities are essential. For both states, strengthening extension services and exploring advanced marketing strategies can further empower coconut growers. Addressing these constraints holistically will enhance productivity, sustainability, and the overall livelihood of coconut farmers in these regions.

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