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Challenges in Adopting Value Addition Technologies in Arecanut

R. Bharathi Priyaa [a++*], S. Nazreen Hassan [b#], M. Nirmala Devi [a†], R. Pangayar Selvi [c‡] and S. Selvanayaki [d^]

[a] Department of Agricultural Extension and Rural Sociology, Tamil Nadu Agricultural University, Coimbatore, India.
[b] ICAR-KVK, Kanyakumari, Thirupathisaram, India.
[c] Department of Physical Sciences & IT, AEC & RI, Tamil Nadu Agricultural University, Coimbatore, India.
[d] Department of Agricultural Rural Management, FC & RI, Mettupalayam, India.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The rise of opportunity for stakeholders in the arecanut sector to explore the potential of value-added arecanut products. The arecanut farmers are facing a lack of training on arecanut practices, the improper post-harvest practices deteriorate the quality of nuts that cause the nuts to fetch lower price in the market. They are also not aware of the opportunities for value added arecanut. The knowledge level of post- harvest practices of arecanut is lacking among arecanut growers. The

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[++] *PG Scholar;*
[#] *Associate Professor (Agrl. Extension);*
[†] *Professor;*
[‡] *Associate Professor (Mathematics);*
[^] *Associate Professor(ARM);*
**Corresponding author: E-mail: rbharathipriyaa@gmail.com;*

arecanut farmers sell the raw nuts to the pre-harvest contractors without knowing the opportunities available in arecanut value addition. The contractors in turn they carry out the value addition and sold in the market. The price of the nut is mainly decided by its quality which correlates to post-harvest practices and value addition that plays a major role in arecanut value.The study investigated the challenges encountered by arecanut farmers in adopting value addition technology.The datas were collected among arecanut farmers related to the challenges they face in adopting value addition technology. The ex-post facto research design was employed; several kinds of constraints were gathered through a literature study and expert opinion. They were given in an interview schedule for the farmers to rank accordingly. The acquired data were analyzed, and ranks were assigned based on Rank-Based Quotient percentage.The major challenges faced by the arecanut farmers were Lack of credit (85%), Inadequate knowledge of value addition technology (82.5%), No re-training facilities (81.675), Lack of equipment/facilities (78.33%), Lack of market (74.17%) and Contacting extension agents (56.67%).By overcoming these limitations, arecanut farmers can adopt value addition technology, leading to profit.

Keywords: Challenges; arecanut; value addition technology; farmers; post-harvest.

1. INTRODUCTION

In rural agrarian economies, palm trees offer a plethora of benefits, serving as a versatile resource providing fodder for cattle, edible fruits, building materials, fuels, and fibers. Among the palm species, the Arecanut plant stands tall with its multifarious uses. However, the full potential of the Arecanut and its by-products can be unlocked through value addition, expanding the market and catering to the increasing demand for eco-friendly products on a global scale [1,2]. This article aims to explore the various components of the Arecanut plant and how they can be utilized in crafting a wide range of products, such as flowers, vases, dolls, and decorative showpieces, among others. By tapping into locally available, cost-effective, and eco-friendly resources, farmers can enhance their income and contribute to sustainable practices [3,4].

With the advent of the vibrant e-market and virtual marketplaces in the country, Arecanut-based products can gain significant advantages in reaching a broader customer base. Given the crop's robust growth pattern and long-term viability in certain regions, it is essential to harness its fullest potential, offering farmers increased earnings by maximizing the utilization of Arecanut and its by-products [5-7]. These can be transformed into numerous crafts and utility items, providing both economic benefits and promoting environmental consciousness.

India stands as a global leader in Arecanut production, boasting substantial percentages of both the world's area and output. States like Karnataka, Kerala, Meghalaya, Tamil Nadu, West Bengal, and Assam have emerged as major Arecanut growing regions. Tamil Nadu, specifically Salem district, plays a significant role in this aspect, contributing considerably to the total Arecanut production in the state [8-10].

However, Arecanut farmers face challenges, notably price fluctuations that hinder their ability to forecast independently. Additionally, the lack of transport facilities compels farmers to rely on middlemen for selling their produce, impacting their profits. Furthermore, only a limited number of Arecanut farmers engage in the fermentation process, even though fermented nuts command higher prices due to their value addition [11-14].

To overcome these challenges and enhance economic activities in the region, adding value to different parts of the Arecanut plant, including dry leaf sheaths, dry stems, inner strips of dried mature stems, nuts, and coir, is a viable option. These materials can be utilized to create crafts, as well as serve as raw materials for the furniture and textiles industries. Notably, the demand for eco-friendly products, exemplified by the popularity of Areca leaf disposable plates during gatherings, is gaining momentum in the global market.

By providing hands-on training, especially in Arecanut crafts, farmers' livelihoods can be significantly influenced, opening up new opportunities for income enhancement. This article delves into the intricate challenges faced by farmers in adopting value addition technology

in Arecanut cultivation and emphasizes its potential to boost their income. Through value addition, agricultural products can yield high returns and access untapped markets, making it a worthwhile endeavor for the entire Arecanut industry.

2. METHODOLOGY

The current study focused on farmers who are cultivating arecanut in Salem district, Tamil Nadu, India. Salem district was purposively chosen as the study area due to its prominence in large area under arecanut cultivation, as in Tamil Nadu, Salem district occupies first in area under arecanut cultivation with the annual production of 3445 tons of arecanut. The research process involved two stages. Initially, a list of blocks in salem district under arecanut cultivation was compiled from secondary data sources. From this list, four blocks were purposively selected based on the area under arecanut cultivation where the datas were collected from ADH office in salem district. Subsequently, arecanut farmers were randomly chosen from each block, resulting in a final sample size of 120 farmers. Data collection was carried out through personal interviews using a well-structured interview schedule specifically designed for this study. The data collected were then coded, classified and tabulated. Statistical tools such as Frequency, Percentage and Rank Based Quotient (RBQ) were employed to interpret the findings and draw conclusions. The data collected pertaining to the problems faced by the respondent was quantified in terms of the number of respondents who gave the rank. The ranks apprehended to the various problems as well as the frequency of respondents which are assigned by the respondents is utilized to calculate the Rank Based Quotient (RBQ). The formulas for the calculation of RBQ are as follows:

$$\text{RBQ} = \frac{\sum_{i=1}^{n} (Fi)(n+1-i)}{Nn} \times 100$$

Where,

F_i = Frequency of respondents for i^{th} rank
N = Number of respondents
n = Number of ranks
$\sum_{i=1}^{n}$ = it directs to sum multiple factors.
$\sum_{i=1}^{n} (Fi)(n+1-i) = F_1 \times n + F_2 \times n - 1 + F_3 \times n - 2 \ldots\ldots\ldots F_n \times 1$

3. RESULTS AND DISCUSSION

The findings from Table 1 revealed several challenges faced by farmers in adopting value addition in arecanut. The most significant challenge, ranking first with a percentage of 85, is the lack of credit, indicating that farmers perceive the need for financial support from the government to afford the technology and machinery to adopt value addition technology. Government initiatives to provide subsidies or financial incentives would help alleviate this challenge. This lack of credit makes farmers feel burden financially in adopting value addition technology. The second major challenge, ranking second at 82.5 per cent, inadequate knowledge of value addition technology among arecanut farmers. This challenge make the farmers unaware of the benefits they pertain through this technology. Farmers may need training and support to effectively utilize the value addition technology.

The third challenge, with 87.67 per cent of respondents expressing this concern, is the lack of training facilities to improve their skills in value addition. This should be considered to improve farmers technology (value addition) literacy.

Another challenge identified is the lack of equipment/facilities to farmers, ranking fourth with a percentage of 78.33. This makes the farmers not to adopt value addition technology even if they wish to adopt. Government initiatives to provide subsidies for purchasing equipments would cheer them to start an value addition enterprise.

The fifth challenge, ranking at 74.17 per cent, is the lack of market. Farmers feel uncertain and unsafe about adopting new technologies without the ability to sell their produce in the market. Marketing opportunities should be made aware to them in order to make them adopt the technology without the fear of market unavailability for their produce.

Another challenge, ranking sixth at 56.67 per cent, is contacting extension agents. Farmers require information and guidance tailored to adoption of any new technology. This constraint highlights the need for credible communication channels.

Table 1. Challenges faced by arecanut farmers in adopting value addition technology

S.No.	Challenges	RBQ	Rank
1	Lack of credit	85	1
2	Inadequate knowledge of value addition technology	82.5	2
3	No re-training facilities	81.67	3
4	Lack of equipment/facilities	78.33	4
5	Lack of market	74.17	5
6	Contacting extension agents	56.67	6

4. CONCLUSION

Farmers face various challenges in adopting value addition technology. These challenges encompass a range of issues, including the lack of market, inadequate knowledge of value addition technology, lack of credit, no re-training facilities, lack of equipment/facilities and contacting extension agents.

Addressing these challenges is crucial to enhancing farmers' adoption of value addition technology in arecanut. Arecanut farmers should focus on gaining knowledge on arecanut value addition technology through frequent contact with extension personals. The provision of training programs to improve farmers' skill and knowledge in arecanut value addition technology can significantly enhance their knowledge towards value addition. Fixation of definite market structure for their value added produce would build trust in adopting arecanut value addition technology. Governments to offer subsidies and financial incentives would help alleviate cost-related challenges. By overcoming these constraints, arecanut farmers would adopt value addition technology which helps in boosting their income.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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