



Adoption Level of Farmers Regarding Cultivation Practices of Areca Nut in Chikmagalur District, Karnataka, India

Pavan. M. K^{a*}, A. K. Singh^a and P. V. Sachin^b

^a Department of Extension Education, Institute of Agricultural Sciences, BHU, Varanasi-221005, India.

^b Department of Agricultural Extension Education, CoA, UAS, Dharwad-580005, Karnataka, 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 study examined the adoption of cultivation practices of areca nut in Chikmagalur district of Karnataka state during the year 2018-19. Chikmagalur is one of the largest and traditional areca nut-producing districts of Karnataka. Two taluks were selected in chikmagalur district based on the highest area under cultivation and the total sample size was 100. Seventeen items were considered to form a table to know the adoption of individual recommended practices by farmers concerning areca nut cultivation. Further to classify the overall adoption of areca nut growers recommended cultivation practices were grouped in to three major categories low, medium and high. The findings of the study revealed that, regarding the overall adoption of farmers about the cultivation of areca nut, less than half (43.00%) of the respondents were found in the medium adoption category, followed by 31.00 per-cent of respondents were found in high adoption category and more than one fourth (26.00%) of respondents were found in low adoption category regarding the adoption of individual recommended cultivation practices by areca nut growers.

*Corresponding author: E-mail: pavanmk102@gmail.com;

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Keywords: Areca nut; adoption; cultivation and practices.

1. INTRODUCTION

Agriculture has an inseparable relation with India and it has become the livelihood of the majority of farmers it feeds the entire nation. It's an un-detachable part of our culture, in agriculture plantation crops are a major contributor to the Indian economy they create lots of jobs and they are high-value cash crops and play an important role in the national economy. That areca nut is one of the important commercial plantation crops in India and other countries. India is considered a leading country in production as well as consumption. Majorly six states contributed India to holding the first place in production, those states are Karnataka, Kerala, Assam, Meghalaya, Tamil Nadu, and West Bengal [1].

Areca nut is produced, processed, and consumed in two types. White chali type of areca nut is prepared from ripened fruits and it is done by plucking matured ripened fruits and sundried for 1-2 months to reduce the moisture level by less than 10 % and then de-husking of outer husk and marketed which is used for making of the pan by panwalas. Red-boiled type areca nut is prepared from green matured fruits it is done by de-husking off the outer husk, after adding a dyeing agent boiling in hot water and sundried for 5-6 days to reducing moisture and improving color contents of nuts, then grading and marketing is done. Graded nuts are used in the making of Pan Masala and Gutka in value-added packs. Kammardi et al. [1].

India ranks first in both area (48.00%) and production (54.00%) of areca nut. Other countries, that produce areca nut in the world, are Indonesia (15.00% in area and 10.00% in production), China (5.00% in area and 8.00% in production) and Bangladesh (20.00% in area and 9% in production), Myanmar (6.50% in area and 11.00% in production), Thailand (2.00% in area and 3.00% in production). The share of Sri Lanka, in total production and area of areca nut in the world, is less than 3 per-cent. In the case of Malaysia, Maldives, and Kenya as per this source are very negligible. The world productivity of areca nut is 13390 kg/ha. India's productivity is more than the world average of 15.89 tons/ha [2] FAOSTAT.

As per the National Horticulture Board and Ministry of Agriculture, GOI, DAC&FW [3]. The area and production of areca nut have been

continuously increasing in India since 1991-92 with a compound annual growth rate of 3.6 and 4.1 per-cent respectively. The area under areca nut has increased to 4.66 lakh hectares in 2016-2017 which is almost twice that of the area prevailing in 1991-92 (2.2 lakh hectares). Production of areca nut during 2015-16 was 7.30 lakh MT which was around three times produced during 1991-92 (2.5 lakh MT). The main areca nut-growing states in the country are Karnataka and Kerala which together account for 80 per-cent of both area and production in the country. Assam, Meghalaya, West-Bengal, Tripura, and Tamil Nadu are other minor areca nut-producing states in India.

2. MATERIALS AND METHODS

Chikmagalur district of Karnataka state was selected for study during the year 2018-19 as Chikmagalur is popular in areca nut farming, areca-based enterprises and familiarity of the researcher with the study area. Koppa and Sringeri were 2 taluks selected among 7 taluks of the Chikmagalur district, because of their highest area and production as well as providing best soil and weather conditions for areca cultivation and these talukas are considered traditional areca nut growing areas. Based on information from the Assistant horticulture officer of the horticulture department of Sringeri and Koppa taluks, a list of 5 villages in both taluks was selected. As a result a total of 10 villages and from each village 10 respondents were selected randomly for the study of knowledge and adoption of areca nut cultivation. Thus, the total respondents were 100.

The "Ex-post-facto" research design was employed in the investigation as the phenomenon has already occurred and the design was considered appropriate. A well-planned structured interview schedule was developed by communicating with a specialist in areca nut, referring to the appropriate literature, and referring Package of the Practice of areca nut by the University of Horticultural Sciences, Bagalkot, The study was based on primary data which was collected through an interview schedule in an informal environment.

Adoption refers to the adoption of cultivation practices of areca nut by farmers as recommended in the package of practices of the University of Horticultural Sciences, Bagalkot. The method used by Sengupta [4] was followed

to quantifying the adoption level of the farmers concerning areca nut cultivation practices. There are Seventeen (17) recommended practices that are taken from the package of practices. Each question is evaluated and given one score for adoption and no score was given for non-adoption of the practice followed [5].

List 1. Adoption level wise score

Adoption level	Score
Adoption	1
Non-adoption	0

The maximum score was given as 17 and the minimum score was 0. Obtained total summated score from each respondent was categorized into three groups by calculating the mean value (X) and standard deviation (SD) as measures of a check.

List 2. Adoption Category wise score

Adoption Category	Score
Low	Less than (Mean – 0.425 SD)
Medium	Between (Mean + 0.425 SD)
High	More than (Mean + 0.425 SD)

3. RESULTS AND DISCUSSION

3.1 Adoption of Individual Recommended Practices by Farmers

The result from Table 1 furnishes the brief details of individual adoption levels as per the package of practices. The results reveal that, nearly three-fourths (73.00 %) of farmers had the correct adoption of practice concerning recommended soil for cultivation of areca nut. The reason might be that farmers had good knowledge about soil management and they knew that areca nut is a perennial crop and needs good soil conditions for long duration up to 30 years and high rainfall patterns in the Chikmagalur district it needs deep, well-drained soils with low water table and allows good drainage facility in the rainy season and it helps to maintain good water holding capacity in the summer season and drainage management in rainy season [6,7].

In the context of variety selection farmers had complete adoption (100.00%) it is due to the

success of the Thirthahalli variety, for the last 50 years in Malenadu region and this variety thrives best in extreme conditions like high rainfall and low water availability conditions with high pest and disease resistant capacity due to its popularity of variety with good yield even in bad weather conditions and most of the farmers aware of the variety in the district. While, as high as 77.00 per-cent of the farmers correctly adopted transplanting in a suitable recommended season according to the package of practices because the seedlings will die due to high rainfall and the growth of seedlings stunts due to high water logging conditions in early monsoon season if transplant is delayed [8,9].

Regarding the stage of seedling, nearly four fifth (78.00 %) of farmers adopting right stage of 12 to 18-month-old healthy seedlings from the nursery, because farmers are good at selection and seedlings are very well for the new field and easily acclimatize to different conditions. While more than three-fifth (62.00 %) of farmers maintain accurate spacing in the orchard because of medium knowledge of spacing and farmers avoid wasting excess of the area in the orchard due to high spacing. Some farmers follow their measurement and most of them do not know the relation of spacing in growth as a result medium range of adoption of spacing is seen. 55.00 per-cent of the growers adopted the accurate pit size for transplantation, the probable reason may be the growers might have thought the practices like recommended pit size as not much contributing to the main yield and they are planting in approximate pit size based on land conditions [10].

While more than three-fifth (68.00 %) of the growers adopted the recommended quantity of FYM as per the package of practice. A potential reason may be because of its importance in soil health and yield. In the case of chemical fertilizers, 60.00 per-cent of farmers had adopted the recommended dose of chemical fertilizers. The reason might be its direct impact on production and productivity and the rest 40.00 farmers apply at irregular doses due to the non-availability of chemical fertilizer and high cost in peak periods. 87.00 per-cent of farmers adopt proper drainage practices in an orchard because the district receives the highest rainfall and it needs to be removed regularly otherwise it affects on plant growth and the waterlogging condition is harmful to plants, so it needs to remove water through proper drainage practices [11,12].

Table 1. Adoption of individual recommended practices by farmers

SI. No	Recommended practices	Adoption	
		Frequency	Percentage
1.	Suitable Soil	73	73.00
2.	Recommended variety	100	100.00
3.	Suitable season	77	77.00
4.	Stage of seedlings	78	78.00
5.	Recommended spacing	62	62.00
6.	Pit size	55	55.00
7.	FYM rate	68	68.00
8.	Chemical fertilizer rate	60	60.00
9.	Drainage	87	87.00
10.	Irrigation frequency	88	88.00
11.	Intercrops	66	66.00
12.	Mixed crops	69	69.00
13.	Shading trees	54	54.00
14.	Areca nut pest	59	59.00
15.	Areca nut disease	91	91.00
16.	Harvest stages	78	78.00
17.	Processing methods	87	87.00

(n=100)

Table 2. The overall Adoption of areca nut growers about recommended cultivation practices

SI. No.	Adoption Categories	Frequency	Percentage
1.	Low (< 11.834)	26	26.00
2.	Medium (11.834 – 13.245)	43	43.00
3.	High (> 13.245)	31	31.00
Total		100	100.00
Mean=12.54			
S.D=1.660			

Note: S.D = Standard Deviation

In the case of providing and maintaining a timely interval of irrigation, the large majority (88.00 %) of farmers adopted recommended intervals, the reason might be the high availability of water in this region and plants need high water requirement for growth it has a positive effect on yield so the majority of farmer adopted regular irrigation to plants. 66.00 per-cent of farmers adopt recommended intercrops in the main orchard, because they give good income at initial days because areca nut starts yielding from 6th year onwards so these intercrops are easily cultivable because of wide spacing of areca nut and give good income to farmers. 69.00 per-cent of farmers adopted the right mixed crops like spices and it doesn't need any extra care and area for cultivation they fetch a high price in the market and the farmer gets additional income very easily. 54.00 per-cent of farmers growing and adopting suitable recommended shading trees in the orchard, as areca nut needs shading in initial years and growing of timber value crops also gives good income to farmers but 46.00 per-

cent of farmers not adopted because of their orchard is besides forest area and no need for shading plants [13].

While, less than three-fifth (59.00 %) of areca nut growers have adopted the proper recommended chemicals for the control of pests, because of less knowledge about the pest and controlling measures. They are not considered pests seriously in causing economic damage. In the case of the adoption of individual disease control measures, the large majority (91.00%) of farmers adopted the proper methods and chemicals for controlling the disease. The reason high rainfall it's insistent that the attack of *Phytophthora infestans* fungi causing major economic loss, invariable of attack farmers spraying Bordeaux mixture 3 to 4 times in the month of June to September. More than a fourth (78.00 %) of farmers adopted proper stages of harvesting, as harvesting done in 3 to 4 stages according to maturity in October to January months but 22.00 per-cent of farmers not adopt because of the non-availability of fruit

pluckers which is considered as very skillful and difficult job. More than four-fifth (87.00 %) of farmers adopted the recommended processing method of fruits because methods like de-husking, cutting, boiling, drying, grading, and packing are very essential. So farmers at high rate adopted each stage to get high prices in the market [14].

3.2 Overall Adoption of Areca Nut Growers about Recommended Cultivation Practices

The conclusion from Table 2 reported that-, more than two-fifths (43.00%) of farmers had a medium adoption level on the cultivation practices of areca nut, followed by 31.00 per-cent and 26.00 per-cent respondents were found in high and low adoption categories respectively. The possible reasons may be because more farmers were found to have medium and high extension participation and also their varying degrees of organizational participation and involvement in extension programs like demonstrations, field days, field visits, Krishimela, exhibitions, group meetings, trainings and study tour make them familiar about the new practices and also it boosts confidence in farmers to adopt these new practices with confidence might be the possible reason to have good adoption level of cultivation of areca nut.

4. CONCLUSION

It was reported from the study the highest percent of farmers were medium and low adopters of the cultivation of areca nut. This research explained that high capital requirements, high labor problems in the present year, low income in the initial year and high rainfall cause major yield loss so there is a need to immediately identify and solve the problem with expert systems and good service provider with cost-effective at a needy time it helps to adopt more practices effectively.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Kammardi TP, Ranganath L, Ashok Kumar HA. Areca nut economy at the crossroads. Fifth Report on the Special Scheme on Cost of Cultivation of Areca nut in Karnataka. Bengaluru, Karnataka: Department of Agricultural Economics, University of Agricultural Sciences; 2012.
2. Anonymous. FAOSTAT World production of Areca nut; 2017.
3. Anonymous. Horticultural statistics at a glance, Government of India, Ministry of agriculture and farmers welfare, Department of Agriculture, co-operation & farmers welfare Horticulture statistics division; 2017.
4. Sengupta T. A simple adoption scale for selection of farmers for high yielding varieties program on rice. Indian Journal of Extension. Education, New Delhi. 1967;3: 107-115.
5. Venkata Reddy I, Wakle PK, Koshti NR, Tingrae AS. Extent Adoption and Utilization of Sources of Information in Recommended Chilli Production Technology. International Journal of Current Microbiology and Applied Sciences. 2018;7(2):3220–3227.
6. Basvaraj P, Sadaqath S, Binkadakatti JS. Extent of adoption level of medicinal and aromatic plants growers in Karnataka. Agriculture Update. 2011;6(2):68-72.
7. Bennur AK, Manjula N, Manjunath L, Sontakke PP. Adoption of banana farming practices and constraints of growers in Gulbarga district of Karnataka. International Journal of Farm Sciences. 2015;5(1):210-213.
8. Modi D, Bheemappa A, Manjunath L, Hegde RV, Havaladar YN. Entrepreneurial characteristics of mango growers and their constraints in adoption of post-harvest management practices in mango. Karnataka Journal of Agricultural Sciences. 2013;26(3):384-387.
9. Rathod GV, Salame SP, Deokate N. Knowledge and adoption of improved cultivation practices by sugarcane growers. International Journal of Chemical Studies. 2018;6(6):653–654.
10. Thippeswamy R, Sadaqath S, Manjunath L, Hirevenkanagoudar LV. A Study on Knowledge and Extent of Adoption of Plant Protection Measures in Coconut Crop. Karnataka Journal of Agricultural Sciences. 2008;21(3):412–415.

11. Babanna J. Information source constancy and training needs of farmers in arecanut cultivation under Tungabhadra command area in Shimoga district. M.Sc. (Agri.) Thesis, Univ. Agric. Sci., Bangalore (India); 2002.
12. Bachhal GS, Chahal PK, Kumar P. A survey based study on the Farmers adoption level of Strawberry cultivation technology in Haryana, India. Journal of Applied and Natural Science. 2018;10(3): 986-989.
13. Mehta BM, Madhuri S. Characteristic and adoption behavior of mango growers in Valsad district of Gujarat. Agriculture Update. 2012;7(1/2):37-41.
14. Jaganathan D. Analysis of Organic Farming Practices in Arecanut (*Areca catechu* L.) in South India. Journal of Community Mobilization and Sustainable Development. 2016;11(2):206-214.

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