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### Impact of on-campus training programme on knowledge level of arecanut growers

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#### Abstract

Training plays an important role in enhancing farmers' knowledge and facilitating the transfer of improved agricultural technologies. The present study was conducted during 2026 to assess the impact of on-campus training on the knowledge level of arecanut growers regarding improved arecanut cultivation practices. The study was conducted by the University of Agricultural Sciences, Mandya, Karnataka, wherein 90 arecanut growers from seven taluks of Mandya district participated in the training programme. Data were collected using a pre-structured interview schedule and a teacher-made knowledge test consisting of 20 items covering improved arecanut cultivation practices. The knowledge level was assessed before and after the training programme, and the data were analysed using frequency, percentage, mean, paired *t*-test and Chi-square test. The findings revealed that the trainees were predominantly middle-aged (54.40%), had medium experience in arecanut cultivation (44.40%), medium family size (47.80%) and small land holdings (38.90%). The overall mean knowledge increased substantially from 34.60 per cent before training to 86.80 per cent after training, resulting in a knowledge gain of 52.20 per cent. The improvement in knowledge was reported to be statistically significant. Chi-square analysis revealed a significant association of knowledge level with education, experience in arecanut cultivation, extension contact, innovativeness, risk orientation and mass media exposure. The study highlights the effectiveness of on-campus training in improving farmers' knowledge and suggests the need for continued follow-up, demonstrations and extension support to facilitate translation of knowledge into increased adoption of improved arecanut cultivation practices.

**Keywords:** Arecanut growers, on-campus training, knowledge gain, improved cultivation practices, agricultural extension, training impact

#### 1. Introduction

Arecanut (*Areca catechu*) is a palm tree species which belongs to the family Arecaceae. The economic produce is the fruit called betelnut or pan supari. It is widely used for masticatory purpose and it is also being used in ayurvedic and traditional veterinary medicines. India is a traditional arecanut- growing country in the world, where the cultivation of arecanut can be traced back to the Vedic periods. Even though India has the large number of native arecanut varieties in its soil. Philippines is the origin of arecanut (Bibi Saleema, *et al.*, 2025). It is emerging as leading commercial crop in south India and North-eastern India. Arecanut is Karnataka's highest value plantation crop, generating Rs. 2 lakh to 5 lakh per acre annually in malnad and coastal districts. Karnataka produces over more than four lakh tonnes of areca annually, with Dakshina Kannada, Shivamogga, Udupi, Uttara Kannada and Hassan districts dominating arecanut production. Areca palm is an important cash crop in these regions. Due to higher returns compared to traditional crops (paddy, ragi, etc.,) and increased access to irrigation, arecanut is spreading to other districts of Karnataka (Anonymous, 2023; Anonymous, 2024; Sumukha P Tamankar, *et al.*, 2026) [1, 2, 11].

Training consists largely of well-organized opportunities for participants to acquire necessary knowledge and skill. It is a part of human growth and development. Training has been referred to as planned instruction to guide behavior. The transfer of modern agricultural practices to the farmers with pre-conceived thought of traditional farming calls for a well-developed and organized training programmes for the farmers. Training is a critical input for quick transfer of technology and a way to improve agriculture and to uplift the socio-economic condition of the farmers. With a view to implement the new agricultural strategy successfully, it is essential to provide production oriented training and education to farmers. The farmer's training fits in very well in the present context of agricultural extension strategy in India and has become significant to influence the agricultural production and development. Realizing the importance of training and education, need-based on campus training are formulated and conducted by various agencies to upgrade the farmers knowledge on improved farm technologies leading to adoption of the same in the field. Evaluation of any training programme organised for the farmers will help to empirically verify the knowledge gain for its further refinement. Hence, the present study was carried out with the following specific

objectives:

1. To know the profile characteristics of trainees
2. To study the impact of training programme on the knowledge level of trainees regarding improved cultivation practices in arecanut
3. To find out the association between the profile characteristics of trainees and their knowledge level.

## 2. Methodology

An one day on-campus training programme was conducted on 24/07/2026 by Directorate of Extension, the University of Agricultural Sciences, Mandya. Ninety arecanut growers from seven taluks of Mandya district in Karnataka state were trained during the occasion at, Coleman Hall, V.C. Farm Mandya. A pre-structured schedule was prepared in consultation with the resources persons/ trainers of the training programme and the same was translated to Kannada language for collecting relevant information from the trainees.

The teacher made test was employed to measure the knowledge level of the trainees on the improved arecanut cultivation practices (As quoted by M. T. Lakshminarayana, *et al.*, 2013) [6]. A set of 20 knowledge items on improved arecanut cultivation practices were present to the trainees. Each correct response was given score of two and the incorrect response carried one score. Minimum score and maximum score one could get 20 and 40, respectively. The raw knowledge score of each trainee was converted into knowledge index as follows;

$$\text{Knowledge index} = \frac{\text{Number of correct response} \times 100}{\text{Total number of knowledge items}}$$

Data on knowledge level of trainees were collected at two phases *i.e.*, training and after training. The present study has made use of before and after with single group (*i.e.* no control group).

Symbolic adoption was worked out by asking the trainees whether they will be adoption the 20 improved arecanut

cultivation practices learnt in the training programme after they return to their villages. Data on symbolic adoption was collected from the trainee after training programme.

12 independent variables namely age, education, experience in arecanut cultivation, family size, land holding, area under arecanut cultivation, annual farm income, social participation, extension contact, innovativeness, risk orientation and mass media exposure were measured using structured schedule with suitable scales.

In the present study, the knowledge level of the trainee was taken dependent variable, while the personal and socio-economic characteristics of the trainees were considered as independent variables to find out the relationship between them. The collected data was scored, tabulated and analysed using frequency, mean zero order, correlation test, multiple regression analysis and path analysis.

## 3. Results and Discussion

### 3.1 Profile characteristics of trainees

The data in respect of the profile characteristics of trainees are presented in Table 1. The findings revealed that a majority of the respondents belonged to the middle-age category (54.40%), followed by old-age (23.40%) and young-age (22.20%) categories. With respect to education, 38.80 per cent of the respondents had completed high school education, followed by PUC (21.10%) and graduate and above (20.10%). About 11.11 per cent had primary education, while 8.89 per cent had middle-school education. Thus, nearly four-fifths of the respondents had education at least up to high school or above.

Regarding experience in arecanut cultivation, 44.40 per cent of the respondents had moderate experience of 10–20 years, while 35.60 per cent had more than 20 years of experience and 20.00 per cent had less than 10 years of experience. In terms of family size, nearly half of the respondents (47.80%) belonged to medium-sized families with 5–8 members, followed by 36.70 per cent having small families of up to four members and only 15.50 per cent had large families with more than eight members.

**Table 1:** Profile characteristics of the trainees (n=90)

| Sl. No. | Profile characteristics            | Category                 | Arecanut growers |       |
|---------|------------------------------------|--------------------------|------------------|-------|
|         |                                    |                          | No.              | %     |
| 1.      | Age                                | Young (< 35 years)       | 20               | 22.20 |
|         |                                    | Middle (36 to 50 years)  | 49               | 54.40 |
|         |                                    | Old (> 50 years)         | 21               | 23.40 |
| 2.      | Education                          | Primary                  | 10               | 11.11 |
|         |                                    | Middle school            | 07               | 8.89  |
|         |                                    | High school              | 35               | 38.80 |
|         |                                    | PUC                      | 19               | 21.10 |
|         |                                    | Graduate and above       | 19               | 20.10 |
| 3.      | Experience in arecanut cultivation | Less (<10.00 years)      | 18               | 20.00 |
|         |                                    | Moderate (10 – 20 years) | 40               | 44.40 |
|         |                                    | More (>20 years)         | 32               | 35.60 |
| 4.      | Family size                        | Small (up to 4 members)  | 33               | 36.70 |
|         |                                    | Medium (5–8 members)     | 43               | 47.80 |
|         |                                    | Large (>8 members)       | 14               | 15.50 |
| 5.      | Land Holding                       | Marginal (<1 ha)         | 24               | 26.70 |
|         |                                    | Small (1–2 ha)           | 35               | 38.90 |
|         |                                    | Semi-medium (2–4 ha)     | 20               | 22.20 |
|         |                                    | Medium (4–10 ha)         | 9                | 10.00 |
|         |                                    | Large (>10 ha)           | 2                | 2.20  |
| 6.      | Area under arecanut cultivation    | Less than 1 ha           | 25               | 27.80 |

|     |                                                      |                                    |    |       |
|-----|------------------------------------------------------|------------------------------------|----|-------|
|     |                                                      | 1–2 ha                             | 37 | 41.10 |
|     |                                                      | 2–4 ha                             | 19 | 21.10 |
|     |                                                      | More than 4 ha                     | 9  | 10.00 |
| 7.  | Annual farm income<br>Mean = 4,49,500<br>SD = 67,429 | Low (<Rs. 3,82,071)                | 24 | 26.70 |
|     |                                                      | Medium (Rs.3,82,071- Rs. 5,16,929) | 43 | 47.80 |
|     |                                                      | High (>Rs. 5,16,929)               | 23 | 25.50 |
| 8.  | Social participation<br>Mean = 7.60<br>SD = 1.14     | Low (<6.46 score)                  | 26 | 28.90 |
|     |                                                      | Medium (6.46–8.74 score)           | 44 | 48.90 |
|     |                                                      | High (>8.74 score)                 | 20 | 22.20 |
| 9.  | Extension contact<br>Mean = 10.68<br>SD = 1.60       | Low (<9.08 score)                  | 25 | 27.80 |
|     |                                                      | Medium (9.08–12.28score)           | 45 | 50.00 |
|     |                                                      | High (>12.28score)                 | 20 | 22.20 |
| 10. | Innovativeness<br>Mean = 9.62<br>SD = 1.44           | Low (<8.18score)                   | 24 | 26.70 |
|     |                                                      | Medium (8.18–11.06score)           | 45 | 50.00 |
|     |                                                      | High (>11.06score)                 | 21 | 23.30 |
| 11. | Risk orientation<br>Mean = 8.68<br>SD = 1.30         | Low (<7.38score)                   | 25 | 27.80 |
|     |                                                      | Medium (7.38–9.98score)            | 44 | 48.90 |
|     |                                                      | High (>9.98score)                  | 21 | 23.30 |
| 12. | Mass media exposure<br>Mean = 7.00<br>SD = 1.05      | Low (<8.05score)                   | 22 | 24.40 |
|     |                                                      | Medium (8.05–9.05score)            | 46 | 51.20 |
|     |                                                      | High (>9.05score)                  | 22 | 24.40 |

With regard to land holding, 38.90 per cent of the respondents were small farmers having 1–2 ha of land, followed by 26.70 per cent who were marginal farmers having less than 1 ha. About 22.20 per cent possessed semi-medium holdings of 2–4 ha, while 10.00 and 2.20 per cent had medium and large landholding, respectively. The distribution of respondents according to area under arecanut cultivation shows that 41.10 per cent had 1–2 ha under arecanut crop, followed by 27.80 per cent having less than 1 ha under arecanut. About 21.10 per cent had 2–4 ha and only 10.00 per cent had more than 4 ha under arecanut crop. Regarding annual farm income, the mean income was ₹4,49,500 with a standard deviation of ₹67,429. Nearly half of the respondents (47.80%) belonged to the medium-income category, with annual farm income ranging from ₹3,82,071 to ₹5,16,929. About 26.70 per cent belonged to the low-income category (less than Rs. 3,82,071/-), whereas 25.50 per cent had high farm income (Rs. 5,16,929 and above).

The findings in respect of social participation revealed that 48.90 per cent of the respondents had a medium level of social participation, followed by 28.90 per cent with low participation and 22.20 per cent with high participation. In respect of extension contact, half of the respondents (50.00%) belonged to the medium category, while 27.80 per cent had low extension contact and 22.20 per cent had high extension contact. The distribution according to innovativeness showed that 50.00 per cent of the respondents had a medium level of innovativeness, followed by 26.70 per cent with low and 23.30 per cent with high level of innovativeness. With respect to risk orientation, 48.90 per cent of the respondents belonged to the medium category, while 27.80 per cent and 23.30 per cent belonged to low and high categories, respectively. Finally, mass media exposure revealed that 51.20 per cent of the respondents had medium exposure, whereas 24.40 per cent each were belonging to low and high exposure category. The findings of this study are in line with the findings of Sanketh, *et al.*, (2019) <sup>[9]</sup>, Pavan, *et al.*, (2024) <sup>[7]</sup>, Chethan Kumar, *et al.*, (2026) <sup>[4]</sup>.

These characteristics suggest that the growers had a reasonable socio-economic and informational base for adopting improved arecanut production technologies.

However, the substantial proportion of respondents falling under the low categories for extension contact, innovativeness, risk orientation and mass media exposure highlights the need for strengthening extension interventions, farmer training, demonstrations, exposure visits, ICT-based advisory services and regular technical guidance to enhance the knowledge level on improved arecanut cultivation practices.

### 3.2 Impact of training on knowledge level of trainees on the improved arecanut cultivation practices

The findings in a Table 2 clearly indicate that the training programme substantially enhanced the knowledge of the trainees across all the selected improved arecanut cultivation practices. Before training, the knowledge level of the trainees across the 20 statements ranged from 29.00 to 42.00 per cent, indicating a relatively low level of awareness about improved arecanut cultivation practices. The highest level of pre-training knowledge was observed for “Training helps improve adoption of scientific technologies” (42.00%), followed by “Harvesting at proper maturity improves quality” (40.00%) and “Application of organic manure improves soil health” (39.00%). In contrast, the lowest knowledge was recorded for “Soil testing should be done before fertilizer application” and “Cocoa can be grown successfully in arecanut gardens”, each accounting for only 29.00 per cent. This suggests that the trainees had some familiarity with general cultivation practices but possessed inadequate knowledge about soil testing, nutrient management and diversified arecanut-based cropping systems.

After training, a remarkable improvement was observed in the knowledge levels for all the practices. The post-training knowledge ranged from 82.00 to 93.00 per cent, indicating that most trainees acquired a high level of knowledge after attending the training programme. The highest knowledge level was recorded for “Training helps improve adoption of scientific technologies” (93.00%), followed by “Application of organic manure improves soil health” and “Intercropping increases farm income”, both with 91.00 per cent knowledge. Knowledge regarding harvesting at proper maturity and

regular field sanitation was also high at 90.00 per cent each. The highest percentage increase in knowledge was observed for “Soil testing should be done before fertilizer application” (57.00%), followed by “Intercropping increases farm income” (55.00%). A gain of 54.00 per cent was recorded for

recommended spacing, balanced fertilizer application, drip irrigation and mulching. These substantial gains suggest that the training was particularly effective in addressing the information gaps that existed among trainees before the programme.

**Table 2:** Impact of training on knowledge level of trainees regarding improved arecanut cultivation practices (n=90)

| Sl. No.      | Knowledge statement                                        | Knowledge (%)   |                |                     |
|--------------|------------------------------------------------------------|-----------------|----------------|---------------------|
|              |                                                            | Before training | After training | Percentage increase |
| 1            | Improved arecanut varieties give higher yield              | 37.00           | 88.00          | 51.00               |
| 2            | Recommended spacing increases productivity                 | 32.00           | 86.00          | 54.00               |
| 3            | Soil testing should be done before fertilizer application  | 29.00           | 86.00          | 57.00               |
| 4            | Application of organic manure improves soil health         | 39.00           | 91.00          | 52.00               |
| 5            | Balanced fertilizer application increases yield            | 35.00           | 89.00          | 54.00               |
| 6            | Drip irrigation improves water-use efficiency              | 33.00           | 87.00          | 54.00               |
| 7            | Mulching conserves soil moisture                           | 31.00           | 85.00          | 54.00               |
| 8            | Intercropping increases farm income                        | 36.00           | 91.00          | 55.00               |
| 9            | Black pepper is a profitable intercrop                     | 35.00           | 86.00          | 51.00               |
| 10           | Banana can be cultivated as an intercrop                   | 33.00           | 85.00          | 52.00               |
| 11           | Cocoa can be grown successfully in arecanut gardens        | 29.00           | 82.00          | 53.00               |
| 12           | Integrated nutrient management improves productivity       | 31.00           | 84.00          | 53.00               |
| 13           | Integrated pest management reduces pesticide use           | 32.00           | 83.00          | 51.00               |
| 14           | Bud rot disease can be managed through preventive measures | 33.00           | 82.00          | 49.00               |
| 15           | Proper drainage prevents root diseases                     | 37.00           | 89.00          | 52.00               |
| 16           | Micronutrient application improves plant growth            | 32.00           | 84.00          | 52.00               |
| 17           | Harvesting at proper maturity improves quality             | 40.00           | 90.00          | 50.00               |
| 18           | Scientific post-harvest practices reduce losses            | 35.00           | 87.00          | 52.00               |
| 19           | Regular field sanitation minimizes pest incidence          | 38.00           | 90.00          | 52.00               |
| 20           | Training helps improve adoption of scientific technologies | 42.00           | 93.00          | 51.00               |
| Overall mean |                                                            | 34.60           | 86.80          | 52.20               |

With respect to varietal selection and spacing, knowledge regarding the use of improved arecanut varieties increased from 37.00 to 88.00 per cent, representing a gain of 51.00 per cent. Similarly, knowledge regarding recommended spacing increased from 32.00 to 86.00 per cent, with a gain of 54.00 per cent. While, knowledge about soil testing increased from 29.00 to 86.00 per cent, recording the highest gain of 57.00 per cent. Further, knowledge regarding organic manure increased from 39.00 to 91.00 per cent, while balanced fertilizer application increased from 35.00 to 89.00 per cent. Knowledge about integrated nutrient management increased from 31.00 to 84.00 per cent, and micronutrient application from 32.00 to 84.00 per cent. The Knowledge about drip irrigation improved from 33.00 to 87.00 per cent, while knowledge about mulching increased from 31.00 to 85.00 per cent.

A substantial improvement was also observed in knowledge about intercropping and crop diversification. Knowledge on intercropping increases farm income increased from 36.00 to 91.00 per cent, similarly, knowledge about black pepper as a profitable intercrop increased from 35.00 to 86.00 per cent, while knowledge regarding banana increased from 33.00 to 85.00 per cent. Knowledge concerning cocoa cultivation in arecanut gardens increased from 29.00 to 82.00 per cent. The training also resulted in improvement in knowledge regarding integrated pest and disease management. Knowledge about integrated pest management increased from 32.00 to 83.00 per cent, with a gain of 51.00 per cent. Similarly, knowledge about preventive management of bud rot disease increased from 33.00 to 82.00 per cent, knowledge regarding proper drainage for preventing root diseases increased from 37.00 to 89.00 per cent. Regarding harvesting

and post-harvest management, knowledge about harvesting at proper maturity increased from 40.00 to 90.00 per cent, knowledge regarding scientific post-harvest practices increased from 35.00 to 87.00 per cent and knowledge about regular field sanitation increased from 38.00 to 90.00 per cent.

The statement “Training helps improve adoption of scientific technologies” recorded the highest post-training knowledge level of 93.00 per cent, compared with 42.00 per cent before training, resulting in a 51.00 per cent increase. This finding reinforces the overall effectiveness of the training programme and indicates that the trainees recognized the importance of capacity building in facilitating the adoption of scientific agricultural technologies. The findings of this study are concurrent with the findings of Mohanraj, *et al.*, (2021)<sup>[5]</sup>, Sujit Sarkar, *et al.*, (2024)<sup>[10]</sup> and Pavan, *et al.*, (2024)<sup>[7]</sup>.

The findings suggests that training programmes can serve as an effective means of bridging knowledge gaps and improving farmers' understanding of recommended technologies. However, knowledge improvement alone may not necessarily result in immediate field-level adoption. Therefore, regular follow-up visits, method demonstrations, field days, farmer-to-farmer extension, provision of technical literature and continuous advisory services should be undertaken to translate the enhanced knowledge into actual and sustained adoption of improved arecanut cultivation practices.

### 3.3 Overall knowledge level of trainees on improved arecanut cultivation practices

Table 3 presents the overall knowledge level of trainees regarding improved arecanut cultivation practices before and

after the training programme. The results clearly indicate a substantial and statistically significant improvement in the knowledge of the trainees following the training. The average pre-test knowledge score was 34.60 per cent, indicating that the trainees possessed a relatively low level of knowledge about improved arecanut cultivation practices before undergoing the training. After completion of the training programme, the average post-test knowledge increased considerably to 86.80 per cent. Thus, the training resulted in an overall knowledge gain of 52.20 per cent. The observed increase in knowledge was tested statistically using the ‘t’ test, and the calculated ‘t’ value was 1.98, which was reported as significant at the one per cent level. This indicates that the difference between the pre-test and post-test knowledge levels was statistically significant and was not merely due to chance. Therefore, the training programme can be considered effective in enhancing the knowledge of trainees regarding improved arecanut cultivation practices. The findings of this study are concurrent with the findings of Mohanraj, *et al.*, (2021) <sup>[5]</sup> and Pavan, *et al.*, (2024) <sup>[7]</sup>. The substantial improvement from 34.60 to 86.80 per cent may be attributed to the systematic presentation of technical information, practical exposure, demonstrations, interaction with experts and clarification of doubts during the training programme. The training appears to have effectively addressed the knowledge gaps related to improved varieties, recommended spacing, soil testing, nutrient management, irrigation, mulching, intercropping, integrated pest and disease management, harvesting and post-harvest practices. The findings also suggest that the trainees were receptive to the technical information imparted during the programme. The high post-test knowledge score indicates that the training was successful not only in introducing improved technologies but also in enhancing the trainees’ understanding of their relevance and application in arecanut cultivation.

**Table 3:** Overall knowledge level of trainees on improved arecanut cultivation practices (n=90)

| Particulars                 | Per cent | ‘t’ value |
|-----------------------------|----------|-----------|
| Average Pre-test Knowledge  | 34.60    | 1.98**    |
| Average Post-test Knowledge | 86.80    |           |
| Knowledge Gain              | 52.20    |           |

\*\* Significant at one per cent level

**3.4 Association between profile characteristics of arecanut growers and their knowledge level on improved cultivation practices**

Table 4 presents the association between the profile characteristics of the trainees and their knowledge level regarding improved arecanut cultivation practices. The Chi-square test was used to determine whether the observed association between each selected characteristic and knowledge level was statistically significant. With four degrees of freedom for each characteristic, the results revealed that education, experience in arecanut cultivation, extension contact, innovativeness, risk orientation and mass media exposure had significant to highly significant associations with the knowledge level, whereas age, family size, land holding, area under arecanut cultivation, annual farm income and social participation of arecanut growers did not show significant association with their knowledge level

on improved cultivation practices. The findings of this study are concurrent with the findings of Mohanraj, *et al.*, (2021) <sup>[5]</sup>, Pavan, *et al.*, (2024) <sup>[7]</sup>, Preeti, *et al.*, (2025) <sup>[8]</sup> and Sumukha P Tamankar, *et al.*, (2026) <sup>[11]</sup>.

**Table 4:** Association between profile characteristics of arecanut growers and their knowledge level on improved cultivation practices (n=90)

| Sl. No. | Personal characteristics           | Degree of freedom | Chi-square test     |
|---------|------------------------------------|-------------------|---------------------|
| 1.      | Age                                | 4                 | 5.612 <sup>NS</sup> |
| 2.      | Education                          | 4                 | 10.113*             |
| 3.      | Experience in arecanut cultivation | 4                 | 9.999*              |
| 4.      | Family size                        | 4                 | 3.033 <sup>NS</sup> |
| 5.      | Land Holding                       | 4                 | 4.450 <sup>NS</sup> |
| 6.      | Area under arecanut cultivation    | 4                 | 1.962 <sup>NS</sup> |
| 7.      | Annual farm income                 | 4                 | 2.022 <sup>NS</sup> |
| 8.      | Social participation               | 4                 | 6.786 <sup>NS</sup> |
| 9.      | Extension contact                  | 4                 | 16.778**            |
| 10.     | Innovativeness                     | 4                 | 12.726*             |
| 11.     | Risk orientation                   | 4                 | 11.668*             |
| 12.     | Mass media exposure                | 4                 | 15.686**            |

NS= Non-significant, \*=Significant at 5%, \*\*= Significant at 1%

**4. Conclusion**

The study demonstrated that on-campus training was effective in enhancing the knowledge of arecanut growers regarding improved cultivation practices, with the overall mean knowledge score increasing from 34.60 per cent before training to 86.80 per cent after training, resulting in a knowledge gain of 52.20 per cent. Education, experience in arecanut cultivation, extension contact, innovativeness, risk orientation and mass media exposure were significantly associated with knowledge, while the other profile characteristics showed no significant association with the improved arecanut cultivation practices. The findings highlight the importance of need-based, practical and continuous training programmes, supported by regular extension contact, demonstrations and agricultural advisories, particularly for growers with limited access to information. As a policy implication, agricultural universities and extension agencies should institutionalize periodic training and post-training follow-up to facilitate translation of knowledge into field-level adoption of improved arecanut cultivation practices.

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