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### An assessment of coconut growers' knowledge of improved production technologies in South Goa, Goa

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#### Abstract

The present study assessed the knowledge level of coconut growers in South Goa district using a structured questionnaire administered through face-to-face interviews. A total of 120 coconut growers were selected following an appropriate sampling procedure. Results revealed that 75.00 per cent of respondents possessed a medium level of knowledge, followed by low (14.10%) and high (10.90%) levels. Higher knowledge was observed in practices such as propagation, pit size, weeding, rejuvenation, mulching, spacing, and harvesting, while gaps existed in soil testing, irrigation, nutrient management, plant protection, and high-density planting. Education, income, information sources, and social factors showed significant positive associations with knowledge.

**Keywords:** Knowledge, coconut, improved technology, farmers, South Goa, Goa

#### 1. Introduction

Globally, coconut cultivation is concentrated in tropical regions, with the Philippines, Indonesia, and India being the leading producers. Although India ranks third in terms of area under cultivation (2.19 million hectares), it stands out in production efficiency, recording 20.73 million tonnes with the highest productivity of 9,430 nuts per hectare. The Philippines and Indonesia follow with lower productivity levels despite larger cultivation areas. Within India, Karnataka leads in coconut production with 6,151.00 thousand million tonnes, followed closely by Tamil Nadu with 6,091.98 thousand million tonnes. (Coconut Development Board, 2023) (1). Agricultural extension systems play a critical role in disseminating improved technologies; however, variations in farmers' knowledge levels persist due to differences in access to information, education, farm size, experience, and exposure to extension services. Assessing the knowledge level of coconut growers regarding improved production technologies is therefore essential for identifying knowledge gaps and formulating need-based extension strategies. In this context, the present study focuses on knowledge assessment of improved coconut production technology among coconut growers in south Goa.

#### 2. Materials and Methods

The locale of the study was selected using purposive

sampling, and South Goa district was identified as the area of investigation. Further, one taluka was purposively selected from the district based on the relevance of the study objectives. From the selected taluka, ten villages were chosen purposively due to the predominance of the target farming population. Subsequently, a representative sample of 120 farmers was selected from these villages using an appropriate sampling procedure to ensure adequate representation and reliability of the findings.

#### 3. Results and Discussion

The selected coconut growers were surveyed using a pre-tested structured interview schedule to elicit information on their socio-economic status. Data were collected through personal interviews with the respondents and subsequently analysed to ascertain their socio-economic characteristics as well as their knowledge on improved production technology.

The results depicted in Table 1 indicate that a significant proportion of respondents (47.50%) were categorized under the middle-age group (36–55 years). Regarding to educational status, 42.50% of the respondents had completed education up to the high school level, indicating a moderate level of formal education among the coconut growers, which may influence their understanding and adoption of improved cultivation practices. The family composition data showed that most respondents (70.00%)

resided in nuclear families. In relation to coconut cultivation area, 45.83% of the respondents owned medium-sized plantations. Irrigation practices indicated that wells were the major source of irrigation for 55.83% of the respondents. Income analysis demonstrated that nearly half of the

respondents (49.17%) belonged to the medium-income group with an annual income ranging from Rs. 1–2 lakh. Furthermore, half of the respondents (50.00%) exhibited a medium level of utilization of information sources and mass media.

**Table 1:** Socio Economic Profile of The Respondent.

| Sr.no | Variables                            | Frequency | Percentage |
|-------|--------------------------------------|-----------|------------|
| 1     | <b>Age</b>                           |           |            |
|       | Young                                | 15        | 12.50      |
|       | Middle                               | 57        | 47.50      |
|       | Old                                  | 48        | 40.00      |
| 2     | <b>Education</b>                     |           |            |
|       | Illiterate                           | 5         | 4.16       |
|       | Primary school                       | 9         | 7.50       |
|       | High school                          | 51        | 42.50      |
|       | Intermediate                         | 36        | 30.00      |
|       | Graduation                           | 19        | 15.84      |
| 3     | <b>Family size</b>                   |           |            |
|       | Nuclear                              | 84        | 70.00      |
|       | Joint                                | 36        | 30.00      |
| 4     | <b>Area under coconut production</b> |           |            |
|       | small                                | 33        | 27.5       |
|       | Medium                               | 55        | 45.83      |
|       | Large                                | 32        | 26.67      |
| 5     | <b>Source of irrigation</b>          |           |            |
|       | Canal                                | 6         | 5.00       |
|       | Dam                                  | 9         | 7.50       |
|       | Well                                 | 38        | 31.67      |
|       | River                                | 67        | 55.83      |
| 6     | <b>Annual income</b>                 |           |            |
|       | Low                                  | 47        | 39.16      |
|       | Medium                               | 59        | 49.17      |
|       | High                                 | 14        | 11.67      |
| 7     | <b>Source of information</b>         |           |            |
|       | Low                                  | 40        | 33.34      |
|       | Medium                               | 60        | 50.00      |
|       | High                                 | 20        | 15.67      |
| 8     | <b>Social participation</b>          |           |            |
|       | No membership                        | 38        | 31.70      |
|       | One membership                       | 60        | 50.00      |
|       | More than one membership             | 22        | 18.33      |
| 9     | <b>Mass media exposure</b>           |           |            |
|       | Low                                  | 38        | 31.70      |
|       | Medium                               | 60        | 50.00      |
|       | High                                 | 22        | 18.33      |
| 10    | <b>Risk orientation</b>              |           |            |
|       | Low                                  | 5         | 4.17       |
|       | Medium                               | 41        | 34.17      |
|       | High                                 | 74        | 61.60      |
| 11    | <b>Economic motivation</b>           |           |            |
|       | Low                                  | 25        | 20.90      |
|       | Medium                               | 60        | 50.00      |
|       | High                                 | 35        | 29.16      |

### 3.1 Knowledge of coconut Growers

The primary objective of the study was to systematically assess the knowledge level of coconut growers regarding improved production technologies. Such an assessment is essential for identifying existing technological and knowledge gaps and for designing need-based and effective extension interventions. The results of the analysis are presented in Table 2.

The data presented in Table 2 reveal that coconut growers

possessed relatively higher levels of knowledge regarding several recommended practices, including propagation through seeds, pit size, weeding, rejuvenation of existing plants, mulching, plant spacing, and harvesting, as indicated by a greater proportion of fully correct responses. Conversely, comparatively lower levels of knowledge were observed in practices related to soil testing, irrigation management, application of farmyard manure (FYM), use of chemical fertilizers, application of insecticides and

pesticides, and high-density planting. In these areas, a substantial proportion of respondents provided partially correct or incorrect responses. These findings clearly indicate the existence of practice-specific knowledge gaps among coconut growers,

particularly in the domains of nutrient management and plant protection. Addressing these gaps through focused and targeted extension efforts is therefore crucial for enhancing knowledge of improved coconut production technologies.

**Table 2:** Knowledge of the respondents on improved production technology of coconut

| Sr. No. | Statement                                                        | Knowledge Level |       |                   |       |             |           |
|---------|------------------------------------------------------------------|-----------------|-------|-------------------|-------|-------------|-----------|
|         |                                                                  | Fully correct   |       | Partially correct |       | Not correct |           |
|         |                                                                  | F               | %     | F                 | %     | f           | %         |
| 1.      | Name of the variety used for plantation                          | 98              | 81.66 | 12                | 10.00 | 10          | 8.34      |
| 2.      | Soil type for cultivating coconut light sandy soil to heavy soil | 52              | 43.33 | 28                | 23.33 | 40          | 33.34     |
| 3.      | Soil testing                                                     | 38              | 31.67 | 27                | 22.50 | 55          | 45.84     |
| 4.      | Propagation through seeds                                        | 120             | 85    | 16                | 13.33 | 2           | 1.67      |
| 5.      | Plant spacing (7.5×7.5m)                                         | 88              | 73.33 | 18                | 15.00 | 14          | 11.67     |
| 6.      | Pit size(1×1×1m)                                                 | 106             | 83.33 | 8                 | 6.67  | 6           | 5.00      |
| 7.      | Planting time (June- July, December- January)                    | 72              | 60.00 | 18                | 15.00 | 30          | 25.00     |
| 8.      | Irrigation                                                       | 42              | 35.00 | 48                | 40.00 | 30          | 25.00     |
| 9.      | Application of FYM                                               | 48              | 40.00 | 18                | 15.00 | 54          | 45.00     |
| 10.     | Use of chemical fertilizer                                       | 12              | 10.00 | 16                | 13.34 | 92          | 76.67     |
| 11.     | Use of insecticides/ pesticides                                  | 9               | 7.50  | 13                | 10.83 | 98          | 81.63.337 |

### 3.2 Overall Knowledge Level of Coconut Growers

Further, the overall knowledge level of coconut growers regarding improved production technology of coconut is presented in Table 2.1. The results revealed that most of the respondents (75.00%) belonged to the medium knowledge category, followed by 14.10 per cent and 10.90 per cent of respondents falling under the low and high knowledge categories, respectively. This distribution suggests that while most coconut growers possess a moderate level of knowledge, there remains considerable scope for enhancing their understanding of improved production technologies through need-based and targeted extension interventions.

**Table 2.1:** Distribution of coconut growers according to their overall knowledge level

| Sr. No. | Category | Frequency | Percentage |
|---------|----------|-----------|------------|
| 1       | Low      | 17        | 14.10      |
| 2       | Medium   | 90        | 75.00      |
| 3       | High     | 13        | 10.90      |
|         | Total    | 120       | 100.00     |

### 3.3 Relationship between Profile Characteristics of Coconut Growers and Their Knowledge of Improved Production Technology

The data presented in Table 3 reveal the relationship between selected profile characteristics of coconut growers and their knowledge of improved production technology of coconut. The analysis indicates that education ( $r = 0.182$ ), source of irrigation ( $r = 0.224$ ), annual income ( $r = 0.211$ ), source of information ( $r = 0.199$ ), social participation ( $r = 0.216$ ), and risk orientation ( $r = 0.205$ ) were positively and significantly correlated with knowledge at the 0.05 per cent level of probability. This suggests that growers possessing higher educational status, better access to irrigation facilities, higher income, greater exposure to information sources, active social participation, and a higher level of risk orientation tended to have better knowledge of improve.

**Table 3:** Relationship between profiles of coconut growers with knowledge

| Sr. No. | Independent variable  | Correlation coefficient(r) |
|---------|-----------------------|----------------------------|
| 1.      | Age                   | -0.193*                    |
| 2.      | Education             | 0.182*                     |
| 3.      | Family size           | -0.141NS                   |
| 4.      | Area under coconut    | 0.361**                    |
| 5.      | Source of irrigation  | 0.224*                     |
| 6.      | Annual income         | 0.211*                     |
| 7.      | Source of information | 0.199*                     |
| 8.      | Social participation  | 0.216*                     |
| 9.      | Mass media exposure   | 0.393**                    |
| 10.     | Risk orientation      | 0.205*                     |
| 11.     | Economic motivation   | 0.331**                    |

\*Significant at 0.05 level

\*\* Significant at 0.01 level

NS = Non-significant

### 4. Conclusion

The study indicated that coconut growers in South Goa predominantly exhibited a moderate level of knowledge regarding improved coconut production technologies. Higher levels of awareness were recorded for cultural practices such as propagation, spacing, pit size, mulching, weeding, rejuvenation of palms, and harvesting, whereas notable deficiencies were observed in technically critical areas including soil testing, nutrient management, irrigation practices, plant protection measures, and high-density planting. The analysis further revealed that variables such as education, area under coconut cultivation, mass media exposure, economic motivation, source of information, social participation, annual income, risk orientation, and source of irrigation had a positive and significant influence on the knowledge level of growers, while age showed a negative association. These findings emphasize the necessity of strengthening farmers' knowledge of improved production technologies through need-based extension interventions, systematic capacity-building programmes, and effective dissemination of location-specific recommendations.

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