

The Detailed Analysis on Cultivation Issues Faced by Cardamom Cultivators in Tamil Nadu

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ABSTRACT

The Detailed Analysis on Cultivation Issues Faced by Cardamom Cultivators in Tamil Nadu, this research conducted with well-structured questioner, mainly the data collected in Theni district in Tamil Nadu. Cardamom is called as Queen of spices. It has a unique position in the international spices market as it is one of the most required spices. Cardamom is cultivated from the southern extend of evergreen forests of Western Ghats. Up to early seventies, India was the main producer and exporter of cardamom. Now Guatemala has emerged as world's largest producer, offering tough competition to Indian cardamom in the international market. The normal habitation of cardamom is evergreen forests of Western Ghats. It is found to grow up within an altitude ranging between 600 to 1200 meters above MSL (Mean Sea Level). Though considerable variations both in the total rainfall pattern and its distribution are noticed in the cardamom tracts (900-4000 mm) a well distributed rainfall of 1500-2000 mm with not less than 200 mm summer showers and mean temperature of 15° C to 25° C is ideal. Cardamom generally grows well in forest loamy soils that are acidic in nature. The collected data analyzed to find out the Cultivation Issues Faced by Cardamom Cultivators in Tamil Nadu and explained in this paper.

Keywords: Cardamom, Cultivators, Cultivation, Analysis, Statistical Tools, Entrepreneurs, developing, Indian economy.

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Introduction

The Detailed Analysis on Cultivation Issues Faced by Cardamom Cultivators in Tamil Nadu, this research conducted with well-structured questioner, mainly the data collected in Theni district in Tamil Nadu. The data analysis has been carried out for the verification of fitness of data as well as for the test of hypothesis on cultivation and marketing issues in Tamilnadu and Kerala. Mean scores of all issues have been verified in addition to its standard deviation. The reliability tests have been carried out using Cronbach's Alpha value and the inter item correlation have been found. In order to test the validity of the measure, KMO sample adequacy, Bartlett's Chi-square, degree of freedom, and level of significance were used. The statistical tools used for analysis of the data are ANOVA, Chi-square test and regression analysis. ANOVA has been used to study the significant influence of factors of cardamom cultivation and marketing aspects on field and income from cardamom. Chi-square test has been used for finding the association among factors involved in cultivation and marketing of cardamom. Multiple regression analysis has been used for predicting the impact of factors on cultivation and marketing upon generated income from cardamom cultivation. Descriptive analysis for Tamilnadu, The mean assessment score of Tamilnadu cardamom growers' issues possession of land, maintenance, intercrop, Government assistance for cultivation.

Mean assessment score of cardamom growers cultivation issues in Tamil Nadu

Land issues of cardamom growers in Tamilnadu has been studied with seven items, the items used are; ancestors land, traditional cultivation, suitability of land, soil testing, land preparation, profitability, and contract farming. Mean scores of all seven items have been verified in addition to its standard deviation. The items with the mean score above 3.5 are; suitability of land ($\bar{x}=3.70$), soil testing ($\bar{x}=3.86$), land preparation ($\bar{x}=4.01$) and profitability ($\bar{x}=3.60$). The other items i.e. ancestors land ($\bar{x}=3.26$), traditional cultivation ($\bar{x}=3.05$), contract farming ($\bar{x}=3.30$) have been recorded with low mean score.

The maintenance related assessment of cardamom growers have thirteen items, the items are; ideal climate, rainfall pattern, water supply, drainage, wind flow, winter affect,

maintenance, pest & disease, pesticide dosage, labor availability, high wage, technology driven, and variety's productivity. The items with the mean score above 3.5 are; ideal climate ($\bar{x}=4.12$), rainfall pattern ($\bar{x}=3.95$), drainage ($\bar{x}=4.01$), wind flow ($\bar{x}=4.09$), winter affect ($\bar{x}=4.46$), maintenance ($\bar{x}=4.46$), pest & disease ($\bar{x}=4.76$), pesticide dosage ($\bar{x}=4.34$), labor availability ($\bar{x}=4.46$), high wage ($\bar{x}=4.27$), variety's productivity ($\bar{x}=4.01$), the other items water supply ($\bar{x}=3.27$), and technology driven ($\bar{x}=3.29$), have been recorded with low mean score.

Mean assessment scores of five items (shade trees, intercrop affect, intercrop yield, and intercrop yield) of intercropping have been verified in addition to its standard deviation. The items with the mean score above 3.5 are only cardamom ($\bar{x}=4.10$), shade trees ($\bar{x}=3.81$), intercrop yield ($\bar{x}=3.53$), intercrop profit ($\bar{x}=3.78$) and the other item Intercrop affect ($\bar{x}=2.76$) have been recorded with low mean score.

Cultivation & government related issues of cardamom growers in Tamilnadu have been studied with seven items, the items are; Government policy, crop loan, spices board support, spices board landowners, delayed subsidy, DIC support, and financial assistance. Mean scores of all seven items have been verified in addition to its standard deviation. The mean score of all the items under study have come out below 3.5. The items with their mean score are; government policy ($\bar{x}=3.29$), crop loan ($\bar{x}=2.83$), spices board support ($\bar{x}=3.08$), spices board landowners ($\bar{x}=3.10$), delayed subsidy ($\bar{x}=3.48$), DIC support ($\bar{x}=2.46$), and financial assistance ($\bar{x}=2.06$).

Mean assessment Score of cultivation issues of cardamom growers in Tamilnadu

| Cultivation issues | Mean assessment score |
|--------------------------|-----------------------|
| I. Land Issues | |
| i. Ancestors land | 3.26 |
| ii. Cultivation | 3.05 |
| iii. Suitability of land | 3.70 |
| iv. Soil testing | 3.86 |
| v. Land preparation | 4.01 |
| vi. Profitability | 3.60 |
| vii. Contract farming | 3.30 |
| II. Crop Maintenance | |
| i. Ideal climate | 4.12 |
| ii. Rainfall pattern | 3.95 |
| iii. Water supply | 3.27 |

| | |
|-----------------------------|------|
| iv.Drainage | 4.01 |
| v.Wind flow | 4.09 |
| vi.Winter affect | 4.46 |
| vii.Maintenance | 4.46 |
| viii.Pest & disease | 4.76 |
| ix.Pesticide dosage | 4.34 |
| x.Labor availability | 4.46 |
| xi.High wage | 4.27 |
| xii.Technology driven | 3.29 |
| xiii.Variety's productivity | 4.01 |
| III.Interrcropping | |
| i.Only cardamom | 4.10 |
| ii.Shade trees | 3.81 |
| iii.Intercrop affect | 2.76 |
| iv.Intercrop yield | 3.53 |
| v.Intercrop profit | 3.78 |
| IV.Cultivation & Government | |
| i.Government policy | 3.29 |
| ii.Crop loan | 2.83 |
| iii.Spices board support | 3.08 |
| iv.Spices board land owners | 3.10 |
| v.Delayed subsidy | 3.48 |
| vi.DIC support | 2.46 |
| vii.Financial assistance | 2.06 |

Descriptive Analysis of Cultivation Issues of Cardamom Growers for Tamil Nadu:

The assessment score of possession of land for direct farming pattern of cardamom cultivation varies from 18 to 34 with mean score of 25.55 and standard deviation 4.318. While as the assessment score of possession of land for contract farming pattern of cardamom cultivation varies from 20 to 25 with mean score of 22.03 and standard deviation 1.591. The proportion of mean score percentage has been calculated in accordance to the scale of measurement and the value of Possession of Land for direct and contract farming pattern of cardamom cultivation is 73% and 62% respectively.

The assessment score of crop maintenance for direct and contract farming pattern of cardamom cultivation has been calculated. For direct farming pattern it varies from 44 to 63 with mean score of 53.68 and standard deviation as 3.463. While as for contract farming pattern it varies from 43 to 59 with mean score of 53.45 and standard deviation as 4.678. The

proportion of weighted means score percentage of maintenance for direct and contract farming pattern of cardamom cultivation are 82.5% and 82.2% respectively.

The assessment score for Intercropping under direct farming pattern of cardamom cultivation varies from 13 to 24 with mean score of 18.4 and standard deviation as 2.407. While as the assessment score of intercrop for contract farming pattern of cardamom cultivation varies from 14 to 20 with mean score of 16.45 and standard deviation as 1.954. The proportion of mean score percentage, calculated in accordance to the scale of measurement and the value of Intercrop for direct and contract farming pattern of cardamom cultivation, is 73.6% and 65.8% respectively.

The assessment score of Government assistance for cultivation for direct farming pattern of cardamom cultivation varies from 10 to 26 with mean score of 20.64 and standard deviation as 3.502. The proportion of mean score percentage has been calculated in accordance to the scale of measurement and the value of Government assistance for cultivation for direct farming pattern of cardamom cultivation is 58.9%. The assessment score of Government assistance for cultivation for contract farming pattern of cardamom cultivation varies from 15 to 23 with mean score of 19.12 and standard deviation as 2.781. The proportion of mean score percentage has been calculated in accordance to the scale of measurement and the value of Government assistance for cultivation for contract farming pattern of cardamom cultivation is 54.6%.

Descriptive Analysis of Cultivation Issues of Cardamom Growers for Tamil Nadu

| Issues | Land Ownership | N | Mean | S.D. | Std. Error | 95% Confidence Interval for Mean | | Min. | Max. | Proportion of mean |
|--------|----------------|---|------|------|------------|----------------------------------|-------------|------|------|--------------------|
| | | | | | | Lower Bound | Upper Bound | | | |

| | | | | | | | | | | Score |
|---------------------------------------|------------------|-----|-------|------|------|-------|-------|----|----|-------|
| Possession of Land | Direct Farming | 117 | 25.55 | 4.31 | 0.39 | 24.76 | 26.34 | 18 | 34 | 73% |
| | Contract Farming | 33 | 22.03 | 1.59 | 0.27 | 21.47 | 22.59 | 20 | 25 | 62% |
| | Total | 150 | 24.77 | 4.14 | 0.33 | 24.1 | 25.44 | 18 | 34 | 70.7% |
| Maintenance | Direct Farming | 117 | 53.68 | 3.46 | 0.32 | 53.05 | 54.32 | 44 | 63 | 82.5% |
| | Contract Farming | 33 | 53.45 | 4.67 | 0.81 | 51.8 | 55.11 | 43 | 59 | 82.2% |
| | Total | 150 | 53.63 | 3.74 | 0.30 | 53.03 | 54.24 | 43 | 63 | 82.5% |
| Intercrop | Direct Farming | 117 | 18.4 | 2.40 | 0.22 | 17.96 | 18.84 | 13 | 24 | 73.6% |
| | Contract Farming | 33 | 16.45 | 1.95 | 0.34 | 15.76 | 17.15 | 14 | 20 | 65.8% |
| | Total | 150 | 17.97 | 2.44 | 0.20 | 17.58 | 18.37 | 13 | 24 | 71.8% |
| Government assistance for Cultivation | Direct Farming | 117 | 20.64 | 3.50 | 0.32 | 20 | 21.28 | 10 | 26 | 58.9% |
| | Contract Farming | 33 | 19.12 | 2.78 | 0.48 | 18.14 | 20.11 | 15 | 23 | 54.6% |
| | Total | 150 | 20.31 | 3.40 | 0.27 | 19.76 | 20.86 | 10 | 26 | 58% |

Test of Hypothesis on Tamilnadu cardamom growers cultivation and marketing issues:

In order to test the distribution of mean score of Tamilnadu cardamom growers cultivation issues , a hypothesis has been proposed as below.

Hypothesis testing using ANOVA

H₀: The average evaluation score of factors (possession of land, maintenance, intercrop, Government assistance for cultivation.) of cultivation is equal among direct and contract farmers in Tamil Nadu.

H₁: The average evaluation score of factors (possession of land, maintenance, intercrop, Government assistance for cultivation) of cultivation vary among direct and contract farmers in Tamil Nadu.

ANOVA for cultivation factors of Tamilnadu cardamom growers

The ANOVA results for land holdings of cardamom for direct and contract farmers in Tamilnadu is the significance value of the *F*-test (20.99) in the ANOVA table for possession of land pattern of cardamom cultivation is less than 0.05. Thus alternative hypothesis is accepted that the average evaluation score of land holding of cardamom is influenced by the type of farming in cardamom. The ANOVA results for land maintenance of cardamom for direct and contract farmers. The significance value of the *F*-test (0.096) in the ANOVA table for Maintenance is greater than 0.05. Thus null hypothesis is accepted that the average evaluation score of land maintenance of cardamom is equal among direct and contract farmers.

The below table shows the ANOVA results for Intercrop of cardamom for direct and contract farmers. The significance value of the *F*-test (18.18) in the ANOVA table for Intercrop is less than 0.05. Thus alternative hypothesis is accepted that the average evaluation score of Intercrop of cardamom vary among direct and contract farmers. The ANOVA results for Government assistance for cultivation for direct and contract farmers. The significance value of the *F*-test (5027) in the ANOVA table for Government assistance for cultivation is less than 0.05. Thus alternative hypothesis is accepted that the average evaluation score of Government assistance for cultivation vary among direct and contract farmers.

ANOVA for cultivation factors of Tamilnadu

| Variables | | Sum of Squares | df | Mean Square | F | Sig. |
|--------------------|----------------|-----------------------|-----------|--------------------|----------|-------------|
| Possession of Land | Between Groups | 318.33 | 1 | 318.33 | 20.99 | .000 |
| | Within Groups | 2243.96 | 148 | 15.16 | | |
| | Total | 2562.29 | 149 | | | |
| Maintenance | Between Groups | 1.352 | 1 | 1.35 | 0.09 | .757 |
| | Within Groups | 2091.48 | 148 | 14.13 | | |

| | | | | | | |
|---------------------------------------|----------------|---------|-----|--------|-------|------|
| | Total | 2092.83 | 149 | | | |
| Intercrop | Between Groups | 97.592 | 1 | 97.592 | 18.18 | .000 |
| | Within Groups | 794.30 | 148 | 5.367 | | |
| | Total | 891.89 | 149 | | | |
| Government Assistance for Cultivation | Between Groups | 59.455 | 1 | 59.45 | 5.27 | .023 |
| | Within Groups | 1670.43 | 148 | 11.28 | | |
| | Total | 1729.89 | 149 | | | |

Prioritize the Issues of Tamil Nadu Cardamom Cultivation

It is found that traditionally-growing, profitable-crop, wind flow, demand, mono-crop and DIC-assistance were found statistically significant. All the significant issues related to the cultivation of cardamom are prioritized based on their mean scores in descending order. The order with their mean scores and standard deviation is as; profitable-crop (2.45 ± 0.54), traditionally-growing (2.16 ± 0.79), mono-crop (1.55 ± 0.49), DIC-assistance (1.50 ± 0.50), wind flow (1.31 ± 0.46) and demand (1.22 ± 0.42).

Similarly, it is found that soil-advantage, high-wage, high-cost, technology drive, drainage, policy-recession and govt.-support are found statistically not significant. All the issues related to the cultivation of cardamom are prioritized based on their mean scores in descending order. The order with their mean scores and standard deviation is as; soil-advantage (2.69 ± 0.48), high-wage (1.70 ± 0.46), high-cost (1.63 ± 0.48), policy-recession (1.48 ± 0.50), govt.-support (1.40 ± 0.49), technology drive (1.31 ± 0.46), and drainage (1.20 ± 0.40).

Conclusion:

The issues found in previous section for cultivation are prioritized based on their level of significance. The sub-categories of issues related to cultivation of cardamom in Tamilnadu found in this study are profitable-crop, traditionally-growing, mono-crop, DIC-assistance, wind flow, demand, soil-advantage, high-wage, high-cost, policy-recession, govt.-support, technology-drive and drainage. This study gives a detailed view on the important Cultivation Issues Faced by Cardamom Cultivators in Tamil Nadu.

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