CHAPTER VII
FINDINGS SUGGESTIONS AND CONCLUSIONS

INTRODUCTION

With the object of achieving higher income, the attention of progressive and potential agriculturalists of southern part of India is being drawn towards cardamom cultivation.

Cardamom has an enviable market the world over owing to its use in the modern fast food culture which has become indispensable now. Cost is no bar to one when the question of enhancing the quality of the products with the magical fragrance of the beans to allure the consumers. Thus, cardamom is an important produce with potential for earning substantial measure of foreign exchange.

In India, many attempts were made to popularise this crop among the farmers. However, the production and productivity levels in India are not encouraging due to number of cultivational factors that hinder the growth of cardamom cultivation in the country. Further the unorganised and fluctuating market structures discourage and dissuade the otherwise enthusiastic farmers to take up cardamom cultivation on a large scale.

This sorry state of affairs with regard to cardamom cultivation and marketing in India therefore needs an in-depth analysis on a micro level.

The present study was undertaken to analyse the trend in cardamom cultivation world over, to ascertain the cost and return structure, to find out the resource productivity and to explore the problem associated with production and marketing of cardamom growers in the study area.

MAJOR FINDINGS OF THE STUDY

Profile of the Sample Respondents

- A majority of the sample farmers were in the age group of 40 to 50 years.
- The majority of the respondents were graduates which implies the elite nature of the cardamom plantation of the enlightened farmers with high level of literary.
➢ The majority of the farmers in small, medium and large categories are male members.

➢ A majority of small and medium farmers hail from backward class and majority of large farmers belong to other communities.

➢ A majority of the respondents in all the three categories were basically agriculturists.

➢ More than one-third of small farmers had dependents of 6-8 members and half of the medium level farmers were having 4 to 6 members and nearly half of the large farmers were having a family size of below 4 members.

➢ More than two-third of respondents in all the three categories of farmers were members of various farmers’ association.

➢ A substantial number of respondents from small and large categories and a majority of respondents from medium category had cultivated cardamom in their own lands.

➢ A majority of both small and medium farmer respondents were under ‘less than Rs.2.5 lakhs’ category and a substantial number of large farmer respondents were under the ‘more than Rs.7.5 lakhs’ income group.

➢ More than three-fourth of small and medium farmers managed the cardamom plantations directly. But large farmers managed their plantations through others.

➢ Majority of small, medium and large farmers had the experience of cultivating cardamom for the period of 3 to 6 years.

**Cardamom Production – A Global Perspective**

➢ The average production of cardamom in Guatemala stood at 17366.50 M.T. per annum whereas in India, it was 9160.75 M.T. per annum during the period. It indicates that out of the total cardamom produced by both these countries, Guatemala accounts for 65 per cent and India 35 per cent. The growth of production of cardamom in Guatemala is more consistent than that of India during the period.
Cardamom Cultivation in India

The growth rate of production of cardamom was at the rate of 2.56 per cent per annum, whereas the area under cultivation grew at the negative growth rate of 0.462 per cent per annum. However, the productivity had increased at the rate of 3.04 per cent per annum. The co-efficient of variation indicates that the growth of area under cardamom cultivation was more consistent than that of the growth of production and productivity. The cardamom cultivation in India appears to be prosperous in the coming years.

Cardamom Cultivation in Karnataka

The growth rate of area and production of cardamom cultivation in Karnataka registered a negative trend which was 0.693 and 1.231 per cent per annum respectively, whereas the productivity under cultivation grew at the rate of 5.196 per cent per annum.

In respect of the volume of area, Karnataka’s share was always substantial to the India’s total. The share ranges between 35.09 per cent and 40.27 per cent indicating the formidable place of Karnataka during the period. On an average, Karnataka accounts for 36.20 per cent share in the India is total cardamom and there has not been large scale increase or decrease in its India share of area.

In respect of the volume of production, Karnataka’s share was always substantial to the India’s total. The share ranges between 14.15 per cent and 23.54 per cent indicating the formidable place of Karnataka during the period. On an average, Karnataka accounts for only 18.20 per cent share in India’s total production of cardamom.

Cardamom Cultivation in Tamil Nadu

The production of cardamom had significantly increased at the rate of 0.69 per cent per annum. The productivity had positive growth rate of 2.33 during the period. However, the area under cultivation had a decreasing trend.

Tamil Nadu’s share regarding volume of area was always substantial to the India’s total. The share ranges between 6.41 per cent and 8.60 per cent (average 7.05%) indicating an assertive place. On an average, Tamil Nadu accounts for 7.05
per cent in the total area of cardamom cultivation in India with the large scale increase or decrease.

With regard to volume of production of cardamom, Tamil Nadu’s share was always substantial to the India’s total. The share ranges between 6.82 per cent and 10.79 per cent (average 8.37%) indicating the important position of Tamil Nadu during the period.

**Cardamom Cultivation in Kerala**

The production and productivity of cardamom in Kerala increased at the rate of 21.54 per cent and 21.85 per annum respectively. Whereas the area under cultivation was gradually decreasing over the study period, though the rate of decrease was not statistically significant. The co-efficient of variation reveals that the growth level of area under cultivation was more consistent than that of production and productivity of cardamom during the period.

In respect of volume of area, Kerala’s share was always substantial to the India’s total. The share ranges between 52.80 per cent and 58.49 per cent indicating the formidable place of Kerala during the study period. On an average, Kerala accounts for 56.76 per cent share in the India’s area of cardamom cultivation.

In respect of volume of production, Kerala’s share was always substantial to the India’s total. The share ranges between 68.10 per cent and 77.87 per cent indicating the formidable place of Kerala during the study period. On an average, Kerala accounts for 73.43 per cent share in the India’s total volume of production.

**Cardamom Cultivation in Idukki District**

The production of cardamom in Idukki increased at the rate of 3.75 per cent per annum during the study period, whereas in respect of the area under cultivation is not significant. As far as productivity is concerned, the compound growth rate was 3.51 per cent per annum. The co-efficient of variation reveals that the growth level of area under cultivation was more consistent than that of production and productivity of cardamom during the period.

In respect of volume of area, Idukki’s share was always substantial to the Kerala’s total. The share ranges between 73.56 per cent and 79.54 per cent during the
period. On an average, Idukki accounts for 78.70 per cent share in Kerala’s total area of cultivation.

In respect of the volume of production, Idukki’s share was always substantial to the Kerala’s total. The share ranges between 90.35 per cent and 93.30 per cent during the period. On an average, Idukki accounts for 91.85 per cent share in Kerala’s total cardamom production.

**COST AND RETURN ANALYSIS**

- The total establishment cost was the highest in the case of small farmers and the lowest in the case of large farmers. Component-wise analysis also indicates the similar conclusion.
- Overall analysis of the operation and maintenance cost of all the three categories of farmers indicates that the small farmers incurred the highest cost in respect of all inputs compared to the medium and large farmers. However, the percentage to total for labour is higher in the case of large farmers because the size of operation in this case involves more labour.
- The total cost of production for small farmers is higher than that of other two categories and it tends to decrease as the scale of operation increases.
- The average output per acre is greater in the case of large farmers when comparing to the other two categories. At the same time the average cost of production per kilogram is more for small farmers. Hence, it may be concluded that the productivity tends to decrease and cost of production increases as the size of operation decreases.
- The profit obtained by the small farmers from the sale of cardamom output per acre was lesser than that of the other two categories.
- An identical trend prevailed in respect of variable cost, fixed cost and total cost for all the small, medium and large farming categories in respect of age-wise analysis of cardamom cultivation.
- As the age of plant increases up to eighth year the cost of production also increases showing a direct relationship between cost of production and age of the plant. Contrary to this after eight years of its age, as age of the plant increases, the cost of production decreases showing inverse relationship between them. Therefore, it could be concluded that age of the plant has a significant effect on the cost of production for small, medium and large farming categories.
Cardamom output starts increasing from fourth year onwards reaching a stabilised yield between six to eight years of age and it starts decreasing from ninth year onwards. It reaches the minimum during the aged stage in all the three categories of farmers.

The overall analysis indicates that the higher production of cardamom during the yield increasing stage resulted in lower cost of production consequent to increase in the gross return from the sale proceeds of cardamom in all the three categories of farming.

The overall analysis indicates that the net profit ratio was the highest in the case of large farmers. The reason being the large farmers were able to reap higher grade of harvest, which resulted in increased gross sales.

The overall analysis also indicates that net profit ratio of the large farmers was 47.01 per cent which was the highest during the yield increasing stage. This was the maximum return obtained from cardamom cultivation in the study area.

INPUT - OUTPUT ANALYSIS

The relationship between the yield of cardamom and the independent input variables were analysed for yield increasing stage of 4 to 8 years of age and yield decreasing stage of 9 to 12 years.

In respect of small farmers having yield increasing stage of 4 to 8 years, the co-efficient of determination was 77 per cent which indicated that all the selected independent variables had the impact of 77 per cent variation in output of cardamom. F-test shows that the estimated Cobb-Douglas type production function was statistically significant at one per cent level.

The parameters such as labour and cost of irrigation were found to be statistically significant at five per cent level and cost of manures fertilizers and age of plants were significant at one per cent level. It was also found that one per cent increase of labour, manures and fertilizers, cost of irrigation and age of plants would result in increase in yield of 0.25 per cent, 0.28 per cent, 0.11 per cent and 0.14 per cent respectively.

The estimated Cobb-Douglas type production function for medium farmers falling under yield increasing stage of 4 to 8 years showed the co-efficient of
determination of 88 per cent which indicated that 88 per cent variation in the output was explained by all the six independent variables.

Among the independent variables, labour, manures and fertilizers, plant protection chemicals, cost of irrigation and age of the plants were found to be statistically significant.

The production function model also indicated that when there was one per cent increase in cost of labour, manures and fertilizers, plant protection chemicals, cost of irrigation and age of plants, the yield increased by 0.58 per cent, 0.11 per cent, 0.13 per cent, 0.07 per cent and 0.27 per cent respectively.

The production function model for large farmers indicated that 81 per cent of variation in output was explained by all the six independent variables. All the independent variables except mulching material and plant protection chemicals were found to be statistically significant. It was also found that one per cent increase in cost of labour, manures and fertilizers, cost of irrigation and age of plants, resulted in an increase of yield of cardamom by 0.38 per cent, 0.11 per cent, 0.18 per cent, and 0.32 per cent.

The production function estimate for small farmers in respect of yield decreasing stage of 9 to 12 years of age showed that a 71 per cent of variation in the level of output was explained by all these six independent variables. It was also found that the change of one per cent in cost of labour, manures and fertilizers, and cost of irrigation resulted in change of 0.18 per cent, 0.20 per cent, and 0.25 per cent respectively in the yield of cardamom. The age of plant was found to be negatively correlated to the level of yield of cardamom.

The production function model for medium farmers had coefficient of determination of 74 per cent which indicated that the selected independent variables explained 74 per cent variation in yield of cardamom output. Moreover all selected independent variables except mulching material were statistically significant. The age of plant was found to be negatively correlated to the level of yield of cardamom.

In respect of large farmers, the estimated model showed coefficient determination of 87 per cent. The coefficient elasticity of all the independent variables were found to be statistically significant except the mulching materials.
and plant protection chemicals. The age of plant was found to be negatively correlated to the yield of the cardamom output.

The estimated returns to scale for small farmers in respect of yield increasing stage was found to be increasing with sum of production elasticity of 1.05, which was decreasing at 0.41 for yield decreasing stage.

The return to scale for medium farmers was found to be increasing during yield increasing with sum of production elasticity of 1.04, which was decreasing at 0.09 during the yield decreasing stage.

The sum of production elasticity for the yield increasing stage of large farmers was 1.211 which showed the increasing returns to scale which was only 1.064 in the case of yield decreasing stage which indicated decreasing returns to scale.

The estimation of resource use efficiency for the yield increasing stage in respect of small farmers indicated the ratio of marginal value of productivity to the factor cost for yield increasing stage as 1.01, 17.59, 3.45 and 8.89 respectively for labour, cost of irrigation, manures and fertilizers and age of the plant. This analysis indicated that there was scope for further increase of yield with the increasing use of above variables. The same ratio for medium farmers were 2.63, 10.34, 2.66, 1.39, and 0.27 for the respective variables such as labour, cost of irrigation, plant protection chemicals, manures and fertilizers and age of the plant. Hence, the medium farmers would also be benefited by spending more on these variables. This ratio for large farmers was 1.84, 36.95, 21.83 and 1.57 for the same variables expect plant protection chemicals and hence large farmers would also be benefited by spending more on these variables.

The estimation of resource use efficiency for the yield decreasing stage in respect of small farmers indicated the ratio of marginal value of productivity to the factor cost for yield decreasing stage as 0.76, 37.46, 2.38 respectively for labour, cost of irrigation and manures and fertilizers. This analysis indicated that there was scope for further increase of yield with the increasing use of above variables. The same ratios for medium farmers were 0.71, 25.10, 3.99 and 1.58 for the respective variables such as labour, cost of irrigation, plant protection chemicals and manures and fertilizers. Hence, the medium farmers would also be benefited by spending more on
these variables. This ratio for the yield decreasing stage of large farmers was 1.62, 118.87, and 1.96 respectively for labour, cost of irrigation and manures and fertilizers.

Capital productivity was ascertained on the investments made on cardamom cultivation by applying various capital budgeting techniques.

The pay-back period for small farmers in cardamom cultivation was 5.11 years which was less than cut-off year of 6.67 years calculated at cost of capital of 15 per cent. The benefit cost ratio of small farmers was 1.278 which indicated the earnings of Re.1.28 on the investment of every one rupee. The net present value was found to be Rs.1,57,075.35 which indicated that investment in cardamom cultivation was profitable one. The Internal rate of return was found to be 34 per cent which was also much higher than cost of capital of 15 per cent.

In respect of medium farmers the pay-back period was 4.70 years. The benefit-cost ratio was 1.38 and the net present value was Rs.2,08,420.35 and the internal rate of return was also found to be 40.14 per cent. All these show that the growers were really benefited from cardamom cultivation.

The large farmers had the pay-back period of 4.40 years and enjoyed the benefit-cost ratio of 1.481. They also had net present value of Rs.1,88,973.28 out of their cardamom cultivation. They earned internal rate of return of 46.25 per cent which was also much higher than the estimated cost of capital of 15 per cent.

The capital productivity analysis based on a price which is much lower than the prevailing selling price indicates a satisfactory economic viability of investment made in cardamom cultivation.

Problems and Prospects of Cultivation

- Among the major production problems ‘Erratic climatic behavior’ was the most dominant factor, ranked first by small farmers, and ‘Increasing cost of inputs’ was ranked first by medium and large farmers.
- In case of ten identified marketing problems, all the categories of respondents assigned higher importance to ‘wide price variation’.
- Quantity of cardamom exported from India increased from a moderate level of 226 metric tonnes in 1996-97 to an impressive level of 1,545 metric tonnes in 2000-01. From this it is inferred that there is a great scope for further improvement in the years to come.
Saudi Arabia, United States of America, Kuwait, U.A.E, Japan, United Kingdom and Malaysia are the major importers of cardamom from India.

SUGGESTIONS

The aforesaid analysis clearly indicates cardamom cultivation is a profitable venture for all categories of farmers. In order to enhance the production and productivity, the following measures are suggested.

1. Large farming has an edge over others and hence efforts may be made to popularise cardamom even where the crop is not so far introduced. An integrated approach with the proper initiatives from the Spices Board along with the co-operation of state agriculture department. Cardamom development agency and other progressive farmers to propagate cardamom cultivation in the non-traditional areas. Similarly, as judicious application of various inputs is hoped to increase the level of output in the existing farms, dissemination of technical information through appropriate for a will help the cardamom farmers to undertake required measures to obtain optimum yield. Integrated pest management, co-operation farming and similar measures may be thrust upon with the help of credit institutions.

2. The farmers are advised to cultivate cardamom as main-crop in high ranges along with other spice crops that required similar climatic condition. e.g., coffee, pepper, nutmeg, clove and cocoa, which will reduce the cost of production and increase the return on cardamom cultivation.

3. The government should extend subsidy facilities during planting as well as raising of cardamom plantation.

4. The quality of the planting of cardamom determines the productivity and quality of the cardamom. The cultivation practices involve so much of expenses with the constant escalation of the cost of all the inputs. Substandard cardamoms will result in loss in terms of production and profit. Therefore, genetically improved, pest and disease tolerant and high yielding cardamom vines for propagation must be raised and offered at affordable prices to the farmers.

5. Variations and crisis in supply and demand are quite natural to any agricultural or horticultural products, the world over. Increasing the yield of cardamom is a
means by which the Indian cardamom can withstand the price fluctuation at the world market ensuring secured returns to the cultivators.

6. At present there is no regulated market for cardamom as in the case of other cash crops. The middlemen are forming cartel among themselves in fixation of prices of cardamom which in most of the time is not remunerative to the farmers. Hence, the government may extend the regulated market facilities to cardamom also which can eliminate the dominance of middlemen in fixation of prices.

7. The prices of cardamom in most of the times fluctuate very widely which affect the income level of cardamom growers. The government may assure minimum support price for cardamom also which will ensure steady return to the growers. The cardamom farmers and even the local traders, at the point of cultivation are in the dark about the ruling price of cardamom which leads to large scale exploitation of the farmers.

8. The cardamom growers should also be covered under crop insurance like other crops covered in our country.

9. The government should extend export subsidy scheme for the export of cardamom also. It helps the growers to make exports easily by fixing the competitive price for cardamom.

CONCLUSION

Cardamom cultivation is comparatively a profitable venture for all categories of farmers in spite of the high cost of cultivation and the fluctuating nature of cardamom’s price structure. The wide price variation for cardamom is the biggest problem faced by the cardamom growers. Increasing the productivity and production of cardamom, strengthening the channels of marketing, export promotion activities and promoting the habit of mass consumption of natural cardamom as value added product will encourage the cardamom growers to a great extent. The respective government and the Spices Board are to take up sustained efforts to safeguard the interests of the cardamom growers and the cardamom industry.

The suggestions made in the present study are of immense use to the policy makers to make appropriate decision for mitigating the problems faced by the cardamom growers.
SCOPE FOR FURTHER RESEARCH

Further research may be undertaken on cardamom in the following areas

❖ Prospects for cardamom industry through value added products
❖ Contributing factors for variation in price structure of cardamom
❖ E-Marketing in cardamom.