Cardamom Production

- A Success Story

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ABSTRACT

Attempts made at the NRCS Cardamom Research Centre, Appangala, Kodagu, Karnataka and some of the selected plantations, revealed that by intensive scientific management cardamom production can be stepped up significantly. Based on this lead, a strategy for intensive cultivation was tested in farmers field. In one of such Demonstration Plots (viz., M/s. Chettoli Estate, Chettalli, North Coorg) wherein the scientific method of cultivation was adopted from 1982 onwards, a modest yield of 290 kg/ha was obtained in 1984 (2 years after planting) followed by the highest yield of 1625 kg/ha recorded in 1985 (3 years after planting). This was followed by 400, 775 and 800 kg/ha of dry cardamom in 1986, 1987 and 1988, 4th, 5th and 6th year after planting respectively. Because of the adoption of scientific cultivation practices, it was possible to produce an average of 778 kg/ha of dry cardamom which is 13 times more than the national average yield of 60 kg/ha. The recurring cost of cultivation of cardamom for an average crop of 750 kg/ha was Rs. 30,000/ha which works out to be Rs. 40-00 for produciug one kg of cardamom. The returns after deducting cost of cultivation would be Rs. 60,000/-per ha per year. The results show a vast potentiality for increasing the yield at a relatively reduced cost of production.

INTRODUCTION

India's share in world market for cardamom which was about 70 percent in the past has been reduced to 41 percent during 1984-85 (Anonymous, 1984). In the recent years, Guatemala has emerged as a competetor to Indian cardamom in the international market. Though the Indian national average yield has increased from 46 kg/ha in 1970-71 to 75 kg/ha in 1985, it is far less compared to 250 kg/ha in Guatemala (Charles, 1986). The rate of growth of production in Guatemala since the late seventies has been over 14 percent. On the otherhand, India's growth rate has only been 0.7 percent. Majority of Indian growers (75-80%) continue to depend on rainfall and consequently the production is very low thereby raising the cost of production (Chandrasekhar, 1988). Using the historical data releating to production and exports and applying linear trend equation it is estimated that the gap between world supply and demand may touch 5000 tonnes by the year 2000-01 AD (Chandrasekhar, 1987). This shows the need for increasing cardamom yields.

As the international market becomes increasingly competitive, only high production per unit area and low cost of production would ensure survival of this industry. In view of the above facts, the National Research Centre for Spices. Cardamom Research Centre, Appangala, Kodagu, made attempts to increase production by adopting scientific cultivation. This study describes the technology that has helped the growers to achieve high production of cardamom per unit area.

Materials and Methods

M/s. Chettolli Estate, Chettalli, North Coorg receives a well distributed rainfall of 1000-1500mm The plantation has an ideal eastern slope with adequate shade trees comprising of Athi *(Ficus sp.)* Garagathi and Nerale *(Eugenia sp.)* planted at 13.5x13.5 m during 1940. The soils are moderately acidic, rich in available N and low in phosphorous and medium potash. Cardamom was planted in an area of 1 ha in the centre of four old kent coffee plants at 2.1 x 2.1 m spacing during 1982. Subsequently the coffee bushes were uprooted to facilitate growth of cardamom.

The methods of cultivation consisted of regulating the shade to allow 60-65% filtered sunlight; planting with 10 months old quality seedlings of Malabar type, 12 rounds of irrigation during summer, application of fertilizer @ 270:270:540 kg N,P_2O_5 and K_2O/ha along with 375 kg neem cake in four splits at quarterly interval, adequate plant protection viz., five rounds of insecticides and two rounds of Bordeaux mixture, B.H.C. (10%) dusting @ 12.5/kg round x 3 rounds, 10 rounds of 'katte' tracing and removal of affected plants regular schedule of after care viz., weeding, mulching, light earthing up, 3 rounds trashing to facilitate better aeration and light infliteration; picking capsules at physiologically ripened (karikai) stage, drying and processing to retain green colour. The plantation was kept under regular schedule of cultural operations and intensive care.

RESULTS AND DISCUSSION

1. Yield of dry cardamom

An yield of 290 kg/ha was obtained during 1984, two years after planting. The highest yield of 1625 kg was obtained during 1985, 3 years after planing During the following year in 1986 the yield came down to 400 kg/ha and subsequently yield shot up to 775 and 800 kg/ha during 1987 and 1988 respectively [Table 1]. The highest crop of 850 kg/ha of dry cardamom was obtained two years

rwise yield of cardamom

.	Year after planting	Dry cardamom (kg/ha)
	2 (1984)	290
	3 (1985)	1625
	4 (1986)	400
	5 (1987)	775
	6 (1988)	800
		778
years		

ng at M/s. Lakshmi Estate, Hallery Coorg, Karnataka, where cardamom at 1.80 x 1.20 m spacing (Korikant- *al.*, 1988). In Kerala the highest yield was obtained after 3 years from plant- ikanam Estate where cardamom was planted at 9' x 5' (krishna, 1986). In cardamom the highest yields are obtained either during 3rd or 4th year after planting, depending on the level of management then comes gradually down and reaches a plateau.

st of cultivation/ha/year

lature of work	Input/Quantity (No. of labourers)	Amount (Rs.)
Weeding	5 Labourers x 2 rounds	200-00
Mulching	5 Labourers x 1 round	100-00
Trashing	25 Labourers x 3 rounds	1,500-00
Light earthing up	25 Labourers x 1 round	500-00
Irrigation	12 Rounds @ Rs. 145/round	1,750-00
Fertiliser	270:270:540 kg N, $P_2 0_5$ and $K_2 0$/ha + 375 kg Neem cake	5,200-00
Fertiliser application charges	3. 125 labourers x 4 rounds	250-00
Plant protection	i) Five rounds of systemic insecticide + 2 rounds of Bordeaux mixture	5,250-00
	ii) B.H.C. (10%) dusting @ 12.5 kg/round x 3 rounds	225-00
	iii) 'Katte' tracing - 10 rounds x 5 labourers per round	1,000-00
Picking	7 kg wet capsules (1.5 kg dry per person) 1 kg dry-Rs. 13-33 (750 x Rs. 13-33)	10,000-00
Drying and processing	Handling charges Rs. 2-00 + Fuel charges Rs. 3-00 per kg of dry cardamom	3,750,00
Miscellaneous	Unforeseen charges	275-00
	Total Rs.	30,000-00

2. **Cost of cultivation**

Taking into consideration the existing field conditions and the various cultural operations, an average dry cardamom yield of 750 kg/ha could be obtained. The cost of cultivation is worked out taking the average of variable costs at Rs. 30,000/ ha/ year for all the 5 crop seasons. Out of the total variable (inputs) costs, picking, drying and processing constituted 45.83%, followed by plant protection (21.58%) and fertiliser (18-16%) and rest of the operations/inputs put together 14.43% respectively.

Table 3. **Relationship between yield levels and cost of production.**

Sl. No.	Yield levels of dry cardamom in kg/ha	Cost of cultivation in Rs./ha	Cost of Production per kg of dry cardamom in Rs.	Returns after deducting cost of cultivation in Rs./ha*
1.	250	19832-50	79-33	10167-50
2.	500	24915-00	49-83	35085-00
3.	750	30000-00	40-00	60000-00
4.	1000	35080 00	35-00	84920-00
5.	1250	40162-50	32-13	109837-50
6.	1500	45245-00	30-16	134755-00

*Assuming a market price of Rs. 120/kg.

3. **Cost of production in relation to yield targets:**

Taking into consideration of the figures pertaining to cost of cultivation of Rs. 30,000/ha/year would be required for getting 750 kg/dry cardamom. The cost of production per kg of dry cardamom is proportion to different yield targets/ha along with the returns per ha is presented in Table 3. The cost of cultivation for the yield level of 250 kg/ha would be Rs. 19,832-50/ha amounting to Rs. 79-93/ kg of dry cardamom, as against Rs. 30,000/ha and Rs. 40-00/kg of dry cardamom at the average yield level of 750 kg/ha. This study clearly shows that the cost of cultivation decreases with increase in yield levels per unit area.

4. **Returns (Income)**

On an average one kg of dry cardamom with good, bold cardamom with mixed size and colour fetches Rs. 90/-to Rs. 150/- with the average being Rs. 120/kg. With the average yield of 750 kg/ha @ Rs. 120 kg would be Rs. 90,000/ha. At the lowest yield level of 250 kg/ha, the returns after deducting cost of cultivation/ha would be Rs. 10,167-50/ha as against Rs. 1, 34, 755-00 at a highest yield level of 1500 kg dry cardamom per hectare. This clearly shows that net returns can be increased by inereasing the yield per unit area and bringing down the cost of cultivation.

The Chettoli Estate has been serving as a model garden to enlighten growers about the high production potentiality of cardamom under intensive care. The demonstration plot has opened new vistas in increasing cardamom yields per unit area and bringing down the cost of production, thus bringing the gap between realised (actual) and realisable (potential) yield. As a result of the continued efforts of planters, M/s. Chettolli Estate, Chettalli is now one of the best estates in Karnataka.

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