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Cultivation of cardamom (*Elettaria cardamomum* Maton) in homesteads

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Abstract

Trials on cultivation of cardamom (*Elettaria cardamomum*) in homesteads conducted during 1991-93 in an area of 0.05 ha under controlled shade at Chettalli (Karnataka, India) resulted in a yield of 103 kg of dry cardamom within 30 months and an actual gross return of Rs. 47,388, net return of Rs. 26,175 and benefit-cost ratio of 2. It also generated employment of 380 labour days for effective utilisation of spare time besides productive utilisation of backyards for profitable cultivation of cardamom.

Key words : cardamom, cultivation, economics, *Elettaria cardamomum*.

Introduction

Cardamom (*Elettaria cardamomum* Maton) is generally cultivated beneath evergreen forest trees of Western Ghats in South India, but also sometimes as a homestead crop mainly by small and marginal farmers and agricultural labourers under controlled overhead shade. In recent years most of the farm labourers stay near to cardamom plantations in *pysari* (Government granted areas) settlements by constructing their own houses. They also possess some cultivable land around their houses which is normally used for cultivating vegetables. As cardamom is a high value and low gestation crop (24-30 months), part of the backyard can be profitably brought under homestead cultivation for additional employment during spare time to get extra income over 5 months in a year. No information is available on the economic feasibility of such a system of cultivation of cardamom. Hence, a trial was undertaken to study the yield potential, labour utilisation pattern and economic analysis of cultivation of cardamom in homesteads.

Materials and methods

The trial was laid out in an area of 0.05 ha at Chettalli (Kodagu District, Karnataka, India) (12" 25' N latitude, 70" 45' longitude and 850 m above MSL) during August 1991 to December 1993 crop

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seasons. Chettalli is characterised by moderate climate, with a mean annual precipitation of 1543 mm and a mean temperature ranging from 17.8°C (minimum) to 28.5°C (maximum). The soil of the trial site was kandic paleustalf, containing high nitrogen, low phophorus and medium potassium contents. The site was an open area with a gentle eastern slope.

Trenches of 45 cm width and 45 cm depth and convenient length were taken across the slope of the trial site at 1.8 m apart. The soil excavated from the top 20 cm depth was heaped on the upper side of the trenches. The lower 25 cm depth of soil was removed and accumulated on the lower side of the trenches to form a bund to prevent soil erosion. The soil collected first from the top 20 cm along with equal proportion of humus rich top jungle soil, sand and cattle manure was filled back in the trenches and scuffled thoroughly by leaving a depression of 5 cm at the top to facilitate mulching and retention of soil moisture. The filled trenches were allowed for natural settling for 30 days prior to planting. Ten month old Cl-37 cardamom seedlings (Malabar type) were planted at a spacing of 1.8 m x 0.9 m (309 plants/0.05ha) in the trenches on 8th August 1991. Regular cultural practices, irrigation (twice a week) by hose pipe and plant protection measures were carried out as per the package of practices recommended for high production technology of cardamom (Korikanthimath & Venugopal 1989).

An overhead *pandal* was provided during the last week of November 1991 since till then the sky remained cloudy with monsoon showers. The *pandal* was erected at a height of 4 m by planting poles at 3.6 m x 3.6 m and covered with locally available silver oak (*Grevillea robusta*) cross bars and leafy twigs to provide shade and allow filtered sunlight. The shade was removed during the monsoon season during the second week of June up to the middle of November for better tillerring and growth. Ripened cardamom capsules were harvested periodically at an interval of 15 days during 1992 and 1993 crop seasons and dried in a flue pipe drier.

The cost of cultivation, gross and net returns were estimated. The Net Present Worth (NPW) and Benefit Cost Ratio (BCR) were computed at 18% discount rate in order to see the feasibility of investment of cultivation of cardamom in homsteads.

Results and discussion

Partitioning of input costs

Among the various input costs incurred towards raising of cardamom in homesteads, the cost towards labour was the highest accounting for 45.72% of total expenses (Table 1). This observation is in conformity with the earlier study of Korikanthimath (1995). The cost of pesticides - Rs. 2869 (13.52 %) was the next highest followed by fertilizers - Rs. 2125 (10.02%). The cost of cultivation was highest (Rs. 7639) during the third year mainly due to the higher labour costs for harvesting. The average cost of cultivation for three years was Rs. 7071.

Labour requirement

Preplanting operations like clearing of area, layout of land, opening of trenches, collection of jungle soil, sand, etc, transporting and filling of trenches, required maximum number of men labour days - 64 man days (60.38% of total men labour requirement) compared to just 1 woman labour day

Table 1. Input requirement for cultivation of cardamom in homesteads (0.05 ha)

Input	Cost (Rs.)			Total cost (Rs.)	% cost
	1991-92	1992-93	1993-94		
Planting material (309 seedlings x Rs. 2.50)	772	-	-	772	3.64
Pandal material	375	285	310	970	4.57
Fertilizers	246	1035	844	2125	10.02
Manures (compost)	425	480	532	1437	6.77
Pesticides	914	922	1033	2869	13.52
Labour wages	3211	2829	3658	9698	45.72
Fuel charges for irrigation pumpset	320	375	410	1105	5.21
Maintenance of farm machinery	450	515	576	1541	7.26
Miscellaneous expenditure	185	235	276	696	3.28
Total	6898	6676	7639	21,213	100.00

during the first year of establishment (Table 2). Due to heavy and strenuous nature of preplanting operations, the higher involvement of men labourers was unavoidable during the first year (1991-92) of planting. This observation is in conformity with the earlier studies of Korikanthimath *et al.* (1989) and Korikanthimath (1995) who observed that in case of planting cardamom beneath evergreen shade trees in the natural forest ecosystem, the requirement of men labour was more than women during the first year of establishment of plantations. Some of the post planting operations like weeding, mulching and trashing which were exclusively carried out by women labourers, required 28, 30 and 18 women days during the first, second and third years of planting, respectively.

In the first year, among the post planting operations, collection of poles, cross bars, erection and covering of *pandal* with shade tree twigs required 20 men and 10 women labour days. The remaining post planting operations like application of fertilizers and manures, plant protection and cleaning of roads and drains required 24 labour days during the first year of planting and 29 labour days during the second (1992-93) and third years (1993-94). The requirement of men labour days was higher (106 man days) during the first year compared to second (32 man days) and third (35 man days) years. This is mainly due to the strenuous nature of work during the first year of planting.

Harvesting of cardamom is a skilled and specialised job and is normally done better by women labourers. Woman labour utilisation was maximum for harvesting (37.20% of all operations). Thus, harvesting operations accounted for 50.00 and 43.24% of total woman

Table 2. Labour requirement (in days) for cultivation of cardamom in homesteads (0.05 ha)

Operation	1991-92 (I year)			1992-93 (II year)			1993-94 (III year)			Total		
	Men[1]	Women[1]	Amount (Rs.)	Men[2]	Women[2]	Amount (Rs.)	Men[3]	Women[3]	Amount (Rs.)	Men	Women	Amount (Rs.)
Cleaning of area	4	-	76	-	-	-	-	-	-	4	-	76
Layout of land	2	1	57	-	-	-	-	-	-	2	1	57
Opening of trenches	33	-	627	-	-	-	-	-	-	33	-	627
Collection of jungle soil and filling of trenches	25	-	475	-	-	-	-	-	-	25	-	475
Planting seedlings	2	1	57	-	-	-	-	-	-	2	1	57
Mulching	-	5x2	190	-	5x2	228	-	5x2	252	-	30	670
Staking and tying seedlings	2	1	57	-	-	-	-	-	-	2	1	57
Application of fertilizers	4	2	114	4	2	137	4	2	151	12	6	402
Application of manures	6	3	171	6	3	205	6	3	227	18	9	603
Irrigation	10	10	380	10	10	456	10	10	504	30	30	1340
Erecting overhead *pandal*	20	10	570	8	4	274	8	4	303	36	18	1147
Trashing (twice)	-	-	-	-	3x3	205	-	3x3	227	-	18	432
Weeding (thrice during first year and twice there after)	-	4x3	228	-	4x2	137	-	4x2	202	-	28	567
Clearing of roads and drains	2	-	38	2	-	46	2	-	50	6	-	134
Plant protection	6	3	171	8	4	274	8	4	303	22	11	748
Harvesting	-	-	-	-	32	730	-	45	1136	-	77	1866
Processing and grading	-	-	-	4	2	137	7	5	303	11	7	440
Total	106	43	3211	32	74	2829	35	90	3658	173	207	9698

[1] @ Rs 19.00/day; [2] @ 22.82/day; [3] @ Rs. 25.20/day

Table 3. Economics of cultivation of cardamom in homesteads (0.05 ha)

Variable	Year			Total
	1991-92	1992-93	1993-94	
Dry yield (kg)	-	32	71	103
Price (Rs/kg)	-	478	452	-
Gross income				
Actual	-	15,296	32,092	47,388
Discounted @ 18% pa	-	10,985	19,532	30,517
Cost of cultivation				
Actual	6898	6676	7639	21,213
Discounted @ 18% pa	5846	4795	4649	15,290
Net returns				
Actual	-6898	8620	24,453	26,175
Discounted @ 18% pa	-5846	6190	14,883	15,227
Return per rupee invested on labour				3.70
Per day return				23.90
Benefit Cost Ratio = 2				
Net Present Worth = Rs. 15,227				

All figures are in Rs.

labour days during the third and second year of planting, respectively. Timely harvesting is an important factor for obtaining high crop recovery and returns (Korikanthimath & Naidu 1986).

The requirement of 149, 106 and 125 labour days during the first, second and third year of planting from 0.05 ha of homestead cultivation of cardamom indicated the potentiality of generation of employment opportunities especially for small and marginal farmers and even agricultural labourers who can effectively utilise the space available in the backyards and be employed in their farms round the year. Totally Rs. 3211, Rs. 2829 and Rs. 3658 per 0.05 ha were incurred on labour during the first, second and third year of the trial, respectively.

Economics

During the second year, a dry cardamom yield of 32 kg was obtained followed by 71 kg in the third year (in 0.05 ha) with a total cost of cultivation of Rs. 21,213 for all the three years. The actual gross and net returns realised were Rs. 47,388 and Rs. 26,175, respectively. The discounted (@ 18% pa) cost of cultivation, gross and net returns (Rs. 15,290, Rs. 30,517 and Rs. 15,227 per 0.05 ha, respectively) also indicated that homestead cultivation of cardamom is a profitable proposition. The return per rupee invested on labour was 3.70 and the per day return was Rs. 23.90. The BCR (2) and NPW (Rs. 15,227) also indicated the profitability of the enterprise.

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