

Production and Marketing of Organic Large Cardamom in West District of Sikkim

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ABSTRACT

The study was conducted in West Sikkim district with the overall objective to study the economics and marketing of organic large cardamom. The research is based on the primary data collected from a total of 100 farmers. The values of economic parameters, viz, NPV, BCR, IRR and PBP was worked out to be Rs. 4,28,028.48 per hectare, 1.78, 43 per cent and 5.07 years respectively. Hence, confirming the economic viability and certainty in the investment of organic large cardamom plantation. In the study area two marketing channels were identified in the marketing of the produce, viz., Channel 1 (Producer – Village trader – Wholesaler – Retailer – Consumer) and Channel 2 (Producer – Wholesaler – Retailer – Consumer). The marketing cost and marketing margin were found to be higher in Channel 1 (Rs. 14777.64 and Rs. 22584.00) and least in channel – 2 (Rs. 8619.11 and Rs.19876.36). The price spread was also found to be higher in channel 1 (Rs. 37361.63) and least in channel 2 (Rs. 28495.47). The producers share in consumer rupees was highest in channel 2 (64.38) than in channel 1 (56.05 per cent). The marketing efficiency was found to be more in channel 2 than channel 1 when calculated by Conventional method, Shepherds' formula and Acharya's model.

Keyword: Organic; Marketing channel; Marketing efficiency;

Large Cardamom is a perennial herbaceous spice crop which belongs to Zingiberaceae family under the order Scitamineae with subterranean rhizomes and 50 - 140 aerial leafy shoots. The North East India is the leading producers of large cardamom in the country. The other two countries where large cardamoms are cultivated outside India are Nepal and Bhutan. Organic farming is the technique of crop and livestock production without using pesticides, fertilizers, genetically modified organisms, antibiotics and growth hormones. Organic farming lean mainly upon crop rotations, crop residues, animal manures, green manures and legumes, off-farm wastes and plant protection which results in maintaining better soil structure and fertility (Sharma, et al, 2000). Large cardamom is mostly produced organically in Sikkim. Sikkim contributes about 89 per cent in area and 86 per cent in production (DESME, 2010) so it has the largest area and the highest production of large cardamom in India. The gross income earned in Sikkim through large cardamom increased from 1.9 million

USD in 1975 to 13.8 million USD in 2005 (APEDA, 2019). So far in the state there has been no systematic study on the production and marketing of the crop, it is hence felt necessary to study the cost and return and the marketing pattern of the crop. The present study was carried out with the following objectives (i) To analyse the economic viability of organic large cardamom cultivation, (ii) To analyse the various marketing channels, price spread, marketing efficiency and farmer's share in consumer rupee in various supply chains.

METHODOLOGY

The period of enquiry was related to the agriculture year 2018-19. The study was conducted in West district of Sikkim. A three stage sampling design was employed. In the first stage, Dentam block was selected purposively. At the second stage six villages viz., Upper Shankhu, Middle Shankhu, Lower Shankhu, Hee-gaon, Hee-Kangbari and Uttarey were selected purposively. In the final stage, from the prepared list, a total of 100

respondent farmers were selected using proportionate random sampling technique.

To examine the economic feasibility of organic large cardamom, various economic viability measures, viz, Net Present Value (NPV), Internal Rate of Return (IRR), Benefit Cost Ratio (BCR) and Payback Period (PBP) were calculated.

Net Present Value (NPV) : Net present value is the difference between the series of inflows (returns) and the outflows (cost) over the economic life of organic large cardamom enterprises. It was computed by equation below;

$$NPV = \sum_{t=1}^n \frac{(B_t - C_t)}{(1+r)^t}$$

Where,

t = Years 1, 2, 3 ... 10, B_t = Benefit from the system in period 't',
 C_t = Cost associated with the system in period 't',

r = Discount rate and

n = Numbers of years used in the analysis

Internal Rate of Return (IRR) : Internal rate of return was calculated using the following formula:

$$IRR = \sum_{t=1}^n \frac{(B_t - C_t)}{(1+r)^t} = 0$$

Where,

t = Years 1, 2, 3 ... 10, = Benefit from the system in period 't',

C_t = Cost associated with the system in period 't',

r = Discount rate and

n = Numbers of years used in the analysis

Benefit cost ratio (BCR) : This criterion indicated the rate of return per rupee invested in organic large cardamom plantation. It was worked out by dividing the sum of discounted net cash flow by establishment cost.

$$BCR = \frac{\sum_{t=1}^n \frac{B_t}{(1+r)^t}}{\sum_{t=1}^n \frac{C_t}{(1+r)^t}}$$

Where,

t = Years 1, 2, 3 ... 10,

= Benefit from the system in period 't',

= Cost associated with the system in period 't',

r = Discount rate;

n = Numbers of years used in the analysis

Payback Period : The payback period of organic large cardamom after bearing was calculated by using the following formula

$$\text{Payback period} = \frac{\text{Investment of project in rupees}}{\text{Annual net cash flow in rupees}}$$

Price spread : Price spread refers to the difference between the price paid by the consumer and the price

received by the producer. The smaller the price spread indicates, the greater the efficiency of the marketing system.

Price spread = price paid by consumer – price received by the producer

Producers share in consumer's rupee : It is the price received by the farmer expressed as a per centage of the retail price (the price paid by the consumer)

$$P_s = \frac{P_f}{P_r} \times 100$$

Where,

= Producers share in consumer's rupee,

= Price received by the farmer,

= Price paid by the consumer

Marketing Efficiency :

Shepherd Formula

$$E = \frac{O}{I}$$

Where,

E = Index of Marketing efficiency,

O = Value added by the marketing system and

I = 'Cost + margin' of market intermediaries

Acharya's Modified Marketing Efficiency :

$$MME = \frac{FP}{MC + MM}$$

Where,

MME = Modified measure of Marketing efficiency,

FP = Price received by farmers,

MC = Marketing cost

MM = Marketing margin

RESULTS AND DISCUSSION

Cost and Return of organic large cardamom : The establishment cost included the cost of cutting, clearing of fields, digging, fencing, planting, gap filling, planting material, FYM and vemi-compost and PPC which are incurred in planting year. The operational cost included the cost of irrigation, weeding, FYM and vermin-compost, harvesting, threshing, drying and transportation. Irrigation and weeding is done every year. Harvesting is done from third year onwards. The organic large cardamom establishment cost was Rs. 135482.27 per ha and operational cost was Rs. 53998.01 per ha. The total cost for ten years was Rs. 926257.22 per ha and the gross return was Rs. 2025116.50 per ha.

Economic viability of large cardamom cultivation : The results indicated that the per hectare NPV at 12 per cent discount rate was found out to be Rs. 4,28,028.48 per ha. The NPV was positive indicating

that the investment in large cardamom is financially feasible and economically viable. Benefit Cost Ratio at (BCR) @ 12 per cent for organic large cardamom was 1.78. The BCR was more than unity so it indicates that the crop is financially feasible and economically viable. IRR was 43 per cent which is higher than the prevailing interest rate (12%) hence, investment in organic large cardamom is feasible. The results indicated that the Pay Back Period (PBP) was 5.07 years to recover the entire investment in the study area with 12% interest rate.

Table 1. Cost and Return of organic large cardamom

Particulars	Total (Rs/ha)
Establishment cost	135482.27
Operational cost	790774.94
Total cost	926257.22
Total returns	2025116.50
Net return	1098859.28

Table 2. Economic viability of large cardamom cultivation

Particulars	Value
Net Present Value (Rs.)	4,28,028.48
Benefit Cost Ratio	1.78
Internal rate of return (%)	43
Pay Back Period (years)	5.07

Marketing channels of organic large cardamom : In channel-1 the producer himself sold the produce to the village trader, village trader sold it to the wholesaler, wholesaler sold it to retailer and the retailer sold it to the consumer. In channel-2 the producer sold the produce to the wholesaler, wholesaler sold it to retailer and the retailer sold it to the consumer.

Table 3. Marketing channel of organic large cardamom

Particulars	Supply chain
Channel-1	Producer – Village trader – Wholesaler – Retailer – Consumer
Channel-2	Producer – Wholesaler – Retailer – Consumer

Marketing cost and marketing margin of organic large cardamom : In Channel-1 has the higher marketing cost and marketing margin i.e., Rs. 14777.64 per quintal and Rs. 22584.00 per quintal followed by channel-2 with marketing cost of Rs. 8619.11 per quintal and marketing margin Rs.19876.36 per quintal. From the table it can also be see that the retail price is more in channel – 1 with Rs. 85000 per quintal and channel–2 has less retail price with Rs. 80000 per quintal compared to channel–1. In the study area the farmer’s gate price was more

in channel-2 which showed that channel-2 was more profitable to the farmers compared to channel-1. The cost of large cardamom for the consumers was more in channel-1 due to more marketing cost and involvement of more middlemen’s.

Table 4. Marketing cost and marketing margin of organic large cardamom (Rs/q)

Item	Channel-1		Channel-2	
	C _{most}	% CP	Cost	% CP
Farm gate price	47638.37	56.05	51504.53	73.58
<i>Marketing cost</i>				
Producer	7361.63	8.7	3495.47	4.99
Village trader	2768.23	3.26		
Wholesaler	2580.00	3.04	3177.27	4.54
Retailer	2067.78	2.43	1946.36	2.78
Total	14777.635	17.39	8619.11	12.31
<i>Marketing margin</i>				
Village trader	7231.77	8.51	-	-
Wholesaler	7420.00	8.73	11822.73	9.75
Retailer	7932.22	9.33	8053.64	2.78
Total	22584.00	26.57	19876.36	12.53
Consumer price	85000	100	80000	100

CP=Consumer price

Table 5. Price spread of organic large cardamom Rs/quintal)

Particulars	Channel-1	Channel-2
Price received by the farmer	47638.37	51504.53
Cost incurred	7361.63	3495.47
Margin	40276.731	48009.059
Village trader purchase price	55000	-
Cost incurred	2768.23	-
Margin	27231.77	-
Wholesaler’s purchase price	65000	60000
Cost incurred	2580.00	3177.27
Margin	17420.00	16822.727
Retailer purchase price	75000.00	70000
Cost incurred	2067.78	1946.36
Margin	7932.22	8053.64
Price paid by consumer	85000	80000
Price spread	44723.269	31990.941

Price spread of organic large cardamom : In the study area the price spread of channel 1 was Rs. 44723.26 per quintal and for channel-2 the price spread was Rs. 31990.94 per quintal which is lower compared to channel-1. Price spread is the difference between the price paid by the consumer and the price received by the producer per unit sold. For studying the price spread,

the cost and margins of various intermediaries have to be ascertained at various level of marketing. In the study area the price spread was higher in Channel-1 due to higher cost and profits of the middlemen's.

Producers share in consumer rupees of organic large cardamom : The price received by the farmer in channel-1 was 56.05 per cent and in channel-2 was 64.38 per cent. This testifies that the large cardamom growers should sell their produce in local market assuring them a better price for organic large cardamom (Rayudu, 1985). It is observed that the longer the channel the less is the producers share in consumer rupee.

Table 6. Measuring of marketing efficiency of organic large cardamom

Particulars	Channel-1	Channel-2
Retailer's sale price Rs./q	85000	80000
Total marketing cost Rs./q	14744.31	8925.15
Total margins of intermediaries Rs./q	22617.33	14876.36
Price received by farmers Rs./q	47638.37	56198.49
Value added by marketing system Rs./q	37361.634	23801.51
Producers share in consumers rupee Rs./q	56.05	64.38
<i>Index of Marketing Efficiency</i>		
Convention method (E) (5/2)	2.53	2.67
Shepherd's method (ME) (1/2)	5.76	8.96
Acharya's method (MME) [4/(2+3)]	1.28	2.36

Marketing efficiency of organic large cardamom : Marketing efficiency was calculated for the identified two channels by Conventional method, Shepherd's method and Acharya's method. Calculating by conventional the marketing efficiency was more in channel-2 (2.67) than channel-1 (2.53). On the other hand when marketing efficiency is calculated by Shepherd's method, it was found to be more in channel

2 (8.96) than channel-1 (5.76). Again calculated by Acharya's method it was found to be more in channel-2 (2.36) than channel-1 (1.28). Marketing efficiency is the ratio between output and input. Marketing is said to be efficient if the total marketing margins are higher per unit of marketing cost. In the study the marketing efficiency was higher in Channel-2. Hence, Channel 2 was found to be more efficient compared to channel-1.

CONCLUSION

The crop contributes significantly to the household economy which can be a better option for uplifting the socio – economic status of the organic large cardamom farmers. The study revealed that farming of organic large cardamom was capital as well as labour intensive. The estimated values of all the feasible parameters have been confirmed the crop economically feasible and viable in the investment of organic large cardamom in the study area. Marketing cost and margin vary considerably from channel to channel and it was directly related to the length of the channel *i.e.* the longer the channel the higher is the marketing cost and margin. From the study, the marketing cost and margin of channel-1 was higher compared to channel-2. The price paid by the consumer increases with the length of the channel and vice-versa. Therefore, from the study it was concluded that the price paid by the consumer was more in channel-1 compared to channel-2. The producers share in consumers rupee was higher in channel-2 followed by channel-1. The marketing efficiency was found to vary inversely with the length of the channel. The farmers opted channel-2 because there was less intervention of middlemen and fetched more profit compared to channel-1.

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