

Economics in production of large cardamom (*Amomum subulatum* roxb.) in Sankhuwasabha, Nepal

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Received : 25.02.2023 ; Revised : 05.05.2023 ; Accepted : 07.05.2023

DOI : 10.53552/ijmfmap.9.1.2023.68-72

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ABSTRACT

The study was conducted to assess the economics and minimum support price of Large Cardamom in the Sankhuwasabha district. A field survey using a structured questionnaire with 100 simple random households was done to collect the information regarding cost and return of cardamom production. The secondary data related to cost of production, minimum support price, marketing system and the channel was reviewed from Journal, Articles, Books and Newspaper. Data entry and analysis was done by using Microsoft Excel (2007). The study found that Benefit-cost ratio and net profit per hectare of Large cardamom was 1.33 and NPR 2,46,765 respectively with payback period of 4.89 years. The minimum support price of Large Cardamom in the study area was calculated to be NPR 720 per kg. The main reason for choosing Cardamom farming was higher income than other crops. Major risks associated with this enterprise were indirect marketing channel from Nepal to other countries, unorganized market and monopoly in abroad market. Large cardamom farming can be developed as an important livelihood source of mountain people in the eastern Himalayan region of Nepal.

Keywords: Large Cardamom, production, profitability

INTRODUCTION

Cardamom (*Amomum subulatum* roxb) is spices crops that represent Nepal in the global market and ranks in the terms of production and exports (Kandel, 2019). *A. subulatum* is only grown in three eastern Himalayan countries namely Nepal, India and Bhutan (Sharma *et al.*, 2009). Cardamom is the world's oldest spice and third most expensive spice followed by saffron and vanilla (Tangjang and Sharma, 2018). Large Cardamom is high-value crop with low volume which has high export value (Bhandari and Bhandari, 2018). Cardamom fruit is capsule which contains 8.5% moisture, protein 6%, volatile oil 2.8%, crude fiber 22%, starch 43.2%, ether extract 5.3%, and alcohol extract 7% (Shankaracharya *et al.*, 1990). Gopal *et al.* (2012) reported that cardamom seed is diuretic, antidote for snake and scorpion venom, stimulant, stomachic, alexipharmic and astringent in properties. Kalauni and Joshi (2020) reported that 80% of total Cardamom in Nepal is produced in districts of Koshi province i.e. Illam, Taplejung, Sankhuwasabha, Dhankuta, Bhojpur, Panchthar and Tehrathum. Bumble bees and honey bees are

most frequent visitors of Large cardamom flowers (Gaira *et al.*, 2016) and these pollinators have a economic role in the production of Large Cardamom. The fruits mature during the third year after the plantation and harvesting is carried out during August to November-December. The production of Large Cardamom in Nepal in the year 2019/20 was 7954 Mt and was planted in 15,055 ha (MoALD, 2021) area. Thapa (2016) stated that minimum support price (MSP) is a form of market intervention by the government that ensures farmers a guarantee price as well as an assured market for their produce. The marketing channel of Large Cardamom is farmers to wholesaler to trading Centre in Birtamod to Exported to India and third Countries (Baniya *et al.*, 2019). Kattel *et al.* (2020) reported that 90% of Nepalese Cardamoms is exported to Indian market. Sankhuwasabha district is one of the major leading Cardamom producing districts of Nepal because of the favorable climatic environment and better average precipitation in the district.

Despite the very good prospect of quality Cardamom in the Sub Himalayan of Nepal, the

average productivity at present is in declining trend Sharma *et al.* (2016). During 2014, the large Cardamom price was at a peak point that hit a high of NPR. 2500 per kg which went down to NPR. 750 per kg in 2019/20 (Gautam & Prasain, 2020). A study was carried out to know whether the cardamom farmers in Sankhuwasabha are benefitted or not and to know whether they can really be sustained in their livelihood or not.

METHODS AND METHODOLOGY

Selection of research site

The study was conducted in Sankhuwasabha district of Koshi province of Nepal. Cardamom cultivation area lies between 1000 m to 3000m above mean sea level.

Sample size, sampling procedure and selection of the respondents

A total of 100 households were selected to meet a goal for the survey in the study area. Large Cardamom farming households were surveyed and a sample was selected based on a simple random sampling method. Farmers cultivating Cardamom was selected.

Source of data

Primary data

The primary data were collected from the farmers of the study area by face-to-face interaction and key informant interview (KII) with a structured questionnaire to get the information regarding the economics and marketing of Cardamom production. The field survey was conducted during March to May, 2021.

Sources of secondary data

The secondary data related to Cardamom yield was collected from different organizations and institutions related to agronomy such as Krishi diary, Ministry of Agriculture and Livestock Development (MoALD), Central Bureau of Statistics (CBS). The data relating to the cost of production were collected from different journals published in national and international journals.

Methods and techniques of data analysis

The collected data was checked for accuracy and after collection of necessary information, it was entered in MS excel 2007. Same software was used

for analysis. Estimation of Benefit-cost ratio, payback period and analysis of minimum support price was done.

Benefit-Cost Ratio : Total Revenue/Total Expenditure

Payback period= Number of year before full recovery+ (Absolute value of last negative cumulative cash flow / Cash flow in the year of first positive cumulative cash flow)

RESULTS AND DISCUSSION

Reason for choosing Cardamom cultivation with ranks

The survey in the area stated that majority of respondents choose Cardamom farming due to higher income than other crop, followed by easy marketing etc. The details about reason for choosing Cardamom cultivation is mentioned below in Table1:

Cost of Large Cardamom production

The cost for Cardamom production was estimated using production cost data received from field survey and secondary data from agribusiness promotion and marketing development directorate. Therefore, from base year to third year, an actual expense was collected through Focus group discussion. For the cost items from fourth year onwards 10% addition in production cost of previous year was added.

Cost of production of Large Cardamom has been found NPR.160797/ha in the 1st year which reduced to 44377 /ha in the 2nd year due to cutting off of cost of sapling and planting *Alnus spp.* and manuring cost. In the 3rd and 4th year cost again increased to NPR.88353 and NPR. 94543/ ha respectively. The detail calculation is given in Table 2.

Financial Analysis of Large Cardamom

Financial analysis of the Large Cardamom cultivation as enterprise had been made to understand the profitability of the project. The study found that, Benefit-Cost Ratio (BCR) of Cardamom was 1.33 with the payback period of 4.89 year. The financial analysis revealed that the enterprise is profitable.

$$\text{Benefit - Cost Ratio : } \frac{\text{Total Revenue}}{\text{Total Expenditure}} = \frac{979073}{732310} = 1.33$$

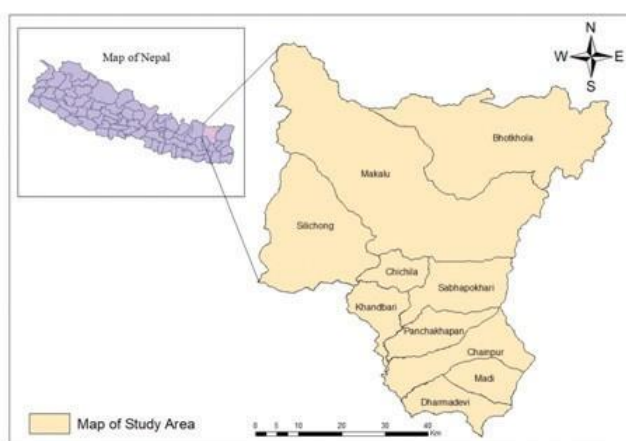


Fig. 1: Map of Nepal showing the study district, Sankhuwasabha

Table 1: Reason for choosing Cardamom cultivation in Sankhuwasabha district

Reasons	Index Value	Rank
Higher income than other crop	0.885	I
Easy Marketing	0.689	II
Easier than other crop cultivation	0.604	III
Marginal Land can be utilized	0.544	IV
Following the tradition	0.480	V

Table 2: Details of cost estimation for Large Cardamom production (per ha)

Description Particular	Unit	Base year			Year 1 Total	Year 2 Total	Year 3 Total
		Quantity	Rate	Total			
Variable Cost							
	D	166	550	91300	40700	42350	43000
Large Cardamom sapling	No.	6119	10	61190	0	0	0
Alnus Sapling	No.	463	10	4630	0	0	0
Labor cost for Harvesting/Drying	D		550	0	0	29700	32450
Wood for Drying	NPR			0	0	4210	5000
Human labor for curing	NPR		1000	0	0	7000	9000
Transportation cost	NPR		1416	0	0	1416	1416
Total Variable Cost	157120	40700	84676	90866			
Fixed Cost							
Land tax	NPR		555	555	555	555	555
Water tax	NPR		443	443	443	443	443
Repair and maintenance	NPR		679	679	679	679	679
Miscellaneous	NPR		2000	2000	2000	2000	2000
Total fixed cost			3677	3677	3677	3677	
Total cost(1+2)			160797	44377	88353	94543	

Source: Field Survey, 2021 Note: (D means Days, No. means No. of Labor, NPR means Nepalese Currency)

Table 3: Financial Analysis of Large Cardamom (per ha)

Year	Total expenditure (NPR)	Total income (NPR)	Net benefit (NPR)	Cumulative cash flow
Base Year	160797	0	(160797)	(160797)
Year 1	44377	0	(44377)	(205174)
Year 2	88353	0	(88353)	(293527)
Year 3	94543	250475	155932	(137595)
Year 4	104000	257400	153400	15805
Year 5	114400	249200	134800	150605
Year 6	125840	222000	96160	246765
Total	732310	979073	246765	

Source: Field Survey, 2021

Table 4: Analysis of Minimum Support Price (NPR.720/kg) from initial year of income

Year	Total expenditure (NPR)	Total income (NPR)	Net benefit (NPR)	Cumulative cash flow
Investment year	160797	0	(160797)	(160797)
Year 1	44377	0	(44377)	(205174)
Year 2	88353	0	(88353)	(293527)
Year 3	94543	167760	73217	(220310)
Year 4	104000	224640	120640	(99670)
Year 5	114400	256320	141920	42250
Year 6	125840	266400	140560	182810
Total	732310	915120	182810	-

Source: Field Survey, 2021

BCR = Total Income / Total Expenditure = 915120 / 732310 = 1.24

PBP = 5 + (99670/141920) = 5+0.70= 5.70 years

Payback period= No. of year before full recovery + (Absolute value of last negative cumulative cash flow / Cash flow in the year of first positive cumulative cash flow)

$$= 4 + \frac{137595}{153400} = 4 + 0.89 = 4.89 \text{ years.}$$

Calculation of Minimum Support Price

MSP per kg Cardamom =

$$\frac{\text{Cost of production} + 25\% \text{ cost of production}}{\text{Total yield}}$$

$$= \frac{732310 + 25\% \text{ of } 732310}{1271} = 915387 / 1271 = 720$$

Analysis of Minimum Support Price

The Minimum support price per kg of large Cardamom is NPR720/ kg. It makes BCR 1.24 having payback 5.70 years in the study area.

CONCLUSION

In study area, it was found that the total cost of production of Cardamom per hectare as NPR.732310 (Base year to 6th year) with total income (NPR.979075) per hectare. The Benefit Cost Ratio of Cardamom was found to be 1.33 with payback period of 4.89 year. Based on the analysis of cost of production and financial analysis of the enterprise, we can conclude that the enterprise is profitable and feasible in the research area. Also

farmers should adopt the modern techniques to reduce the production cost rather than using man labour.

ACKNOWLEDGEMENT

We would like to extend our sincere gratitude to Prime Minister Agriculture Modernization Project (PMAMP), Nepal, Agriculture knowledge centre; Sankhuwasabha and Purbanchal university for providing this platform.

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