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**KfW**



**BUSINESS MODEL**  
on Mainstreaming and Bank Financing  
**LARGE CARDAMOM**  
**CULTIVATION & MARKETING**

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# 1

## BACKGROUND

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India is the largest producer of large cardamom with 54% share in world production. Among the leading producers of large cardamom in India are Sikkim and the districts of Kalimpong and Darjeeling in West Bengal. The states of Uttarakhand, Arunachal Pradesh, Nagaland, Mizoram, Manipur, Meghalaya and Assam are also major producers of large cardamom in India. Other Himalayan countries in the sub-continent such as Bhutan and Nepal are also major cultivators of this spice and have recently witnessed a spike in the production and export of large cardamom.

Most hilly areas and tribal farmers in Sikkim today follow methods of cultivating cardamom that are eco-friendly and comparatively cost-effective. This is possible due to the utilization of family labour, local resources and traditional methods of farming. In a report titled 'Organic Cultivation of Large Cardamom in Sikkim' by Popular Kheti, this traditional system of farming has been deemed far more environment-friendly and thus viable than modern chemical farming. However, the flipside of this choice is the significant reduction in yield level at the initial stage, which can be overcome by adoption of suitable agro-management practices.

# 2

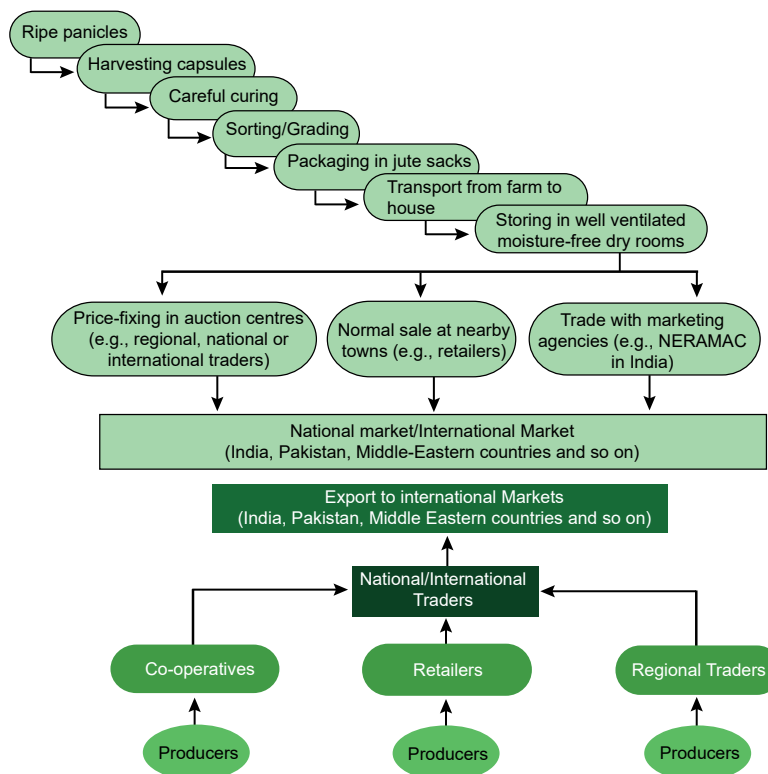
## LARGE CARDAMOM VALUE CHAIN

Large cardamom dried fruit is a high-value, low-volume spice crop grown only in the three eastern Himalayan countries, and is widely used in foods, beverages, perfumes, and medicines. Production is currently declining, and improved post-harvest management would be one way to help ensure the sustainability of this niche crop. The value chain for large cardamom consists largely of traditional practices which should be scientifically refined during a number of post-harvest steps including marketing. The large cardamom post-harvest value chain consists of growers, collectors, traders, and exporters. The primary processing steps required by the present market are curing, tail cutting, and grading. Curing is carried out by the farmers, and the remaining steps are done by wholesalers.

The Indian large cardamom market has a complex structure where the product inflow and outflow takes place simultaneously. However, it is apparent that a large quantity is consumed in the domestic market, as the Indian export volume is comparatively low. The Spices Board of India controls and monitors the spice trade in this country. Local dealers or wholesalers collect dried large cardamom capsules from the farmers, perform minimal quality grading and sell in bulk to exporters.

In India, large cardamom moves through two market channels. In the first, farmers sell cured capsules through aggregators, and in the second, farmers sell them through contractors or bidders in an auction center. In both channels, the capsules then move on to wholesalers, before moving to retailers and then finally to consumers.

### Value chain mapping of Large cardamom



# 3

## ISSUES AND CHALLENGES IN LARGE CARDAMOM CULTIVATION AND MARKETING

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### Challenges in the production of Large Cardamom

Identification and management of insect pest and diseases is a major hurdle that the producers face during production. Foorky disease of large cardamom is a major viral disease that was observed in the fields. However, farmers have no knowledge about the cause and management of the disease. Also, management of viral disease requires incineration of the infected plants and it is difficult to persuade the growers to do that.

1. Lack of knowledge about scientific methods of cultivation
2. Lack of proper trainings in production as well as post-harvest handling of produce.
3. Lack of knowledge about identification and control of pest and diseases.
4. Lack of quality planting materials (HYV, disease and pest resistant varieties)
5. Lack of government support.
6. Lack of availability of FYM.
7. Lack of availability of Funds and capital.

### Challenges in the marketing of Large Cardamom

A severe problem faced during the marketing of large cardamom was found to be post-harvest losses. A lack of proper knowledge about curing of the harvested crop and a lack of proper storage facilities often leads to a large quantity of the produce perishing before reaching the market. Significant percentage of the growers faced the problem of lack of awareness about market information. Lack of good transportation facilities, high transportation cost and distance of the market from the farm were the other major problem faced by the farmers.

1. Post-harvest losses due to lack of knowledge about post-harvest handling of produce including cleaning and curing.
2. Lack of good storage facilities.
3. Lack of awareness about market information.
4. Lack of good transportation facilities.
5. Distance of the market from the fields.



# 4

## PROJECT IDEA

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The project idea is based on sustainable production of large cardamom and set up better market linkages for the farmers for improving farm incomes through increased and better quality production of large cardamom. To ensure effective utilisation of farm land and year round income sources for the farmers, the cardamom cultivation is integrated with dairy and vermi-compost production. The steady flow of harvest ensures year round income for the household. Integration of components such as sale of milk, use of vermi-compost as organic fertilizer for cardamom plantations makes it a sustainable livelihood option for the farmers. The model has huge potential for enhancing production and productivity of high value large cardamoms, contributing towards increasing farmers' income while ensuring sustainable natural resource management. The model can be replicated in most of the parts of the north eastern states by making requisite changes as per local conditions.

However, the model requires significant investment for working capital for cardamom processing, land development and input costs. In most cases, resource poor farm families, especially in the hilly areas of Himalayan mountain areas inhabited predominantly by tribal families, find it challenging to make such an investment without credit support.

In India, large cardamom moves through two market channels. In the first, farmers sell cured capsules through aggregators, and in the second, farmers sell them through contractors or bidders in an auction center. In both channels, the capsules then move on to wholesalers, then retailers, and finally consumers.

### Case example of UPNRM project

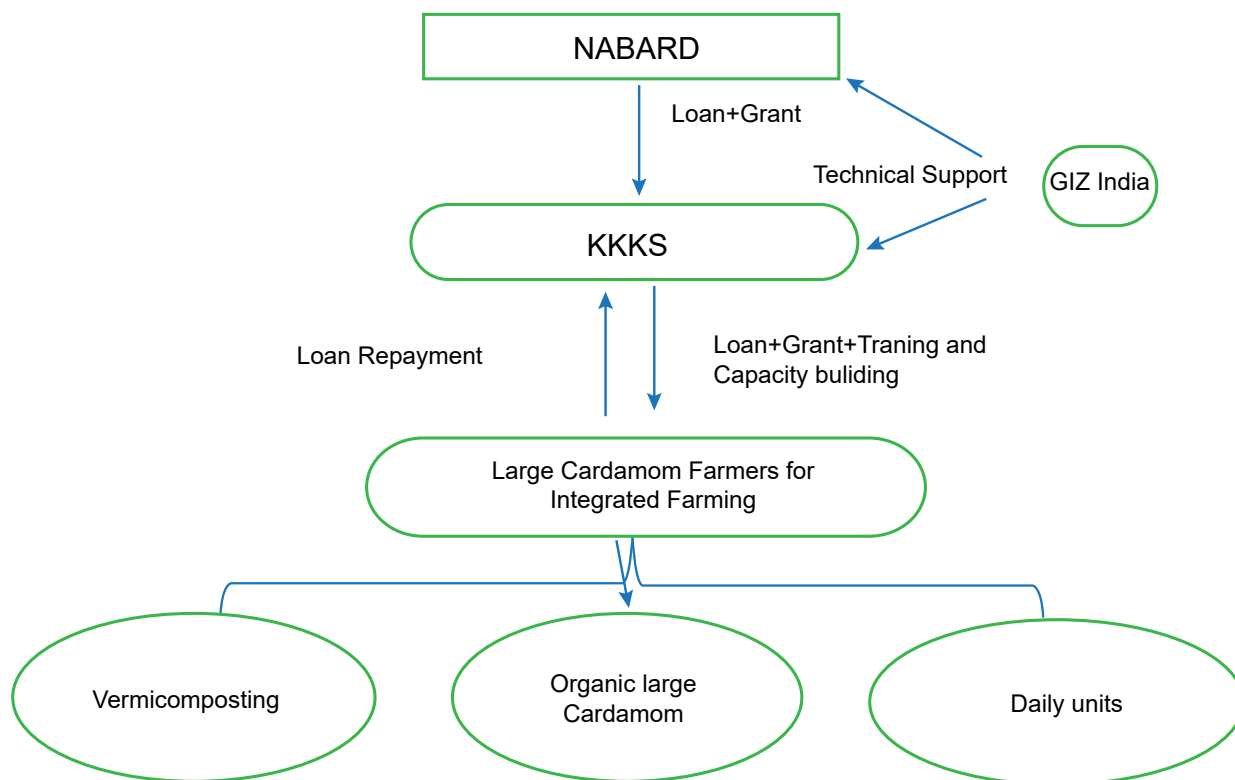
The National Bank for Agriculture and Rural Development (NABARD), KfW Development Bank and GIZ India are collectively implementing the Umbrella Programme for Natural Resource Management (UPNRM). The aim of the project is to promote environmentally sustainable growth by encouraging private investments that are pro-poor. The programme looks at enhancing investments in rural areas, creating business opportunities and enabling rural communities, to sustainably utilise their natural resources. It also provides capacity building support tailored to the specific needs of the rural communities. Innovative and scientific farm practices, increased market linkages, and access to credit that boosts production, and income are some of the concerted efforts under UPNRM. The programme represents a paradigm shift as it moves away from purely grant-based funding to a greater reliance on loans. This increases the leverage and outreach of investments in rural areas, creating income based on sound business models that ensure the sustainability of natural resources. Since its inception in 2007, the programme's portfolio has expanded rapidly, ensuring the provision of livelihood opportunities, to India's rural poor. UPNRM is leading a movement to mainstream Natural Resource Management (NRM) and climate change concerns into the credit financing portfolio of mainstreaming financial institutions in India. More than 130 partners are engaged under the UPNRM, managing nearly 325 projects spread across 22 states and one union territory in India.

UPNRM has supported various business models based on sustainable utilization of natural resources which includes "Integrated Farming System- organic large cardamom cultivation with vermicomposting and dairy "among others. The model has created significant economic and environmental impact at ground level.

Large Cardamom is cultivated over 3,500 hectares in the districts of Kalimpong and Darjeeling in West Bengal. More than 10000 families in the hills are engaged in cardamom farming. The hills produce 1,043 metric tonnes of

cardamom annually. The large cardamoms are mostly exported to Pakistan, Bangladesh and Middle East countries. Due to lack of post-harvest processing practices, lack of skill among the farmers and high competition from the neighboring markets of Nepal, Bhutan and China, the earnings of the families in the hills engaged in the cultivation of large cardamom declined over the years.

The UPNRM Project model:



The project was implemented by Kalimpong Krishak Kalayan Sangathan (KKKS) in Darjeeling district of West Bengal under UPNRM and was later developed as a Model Scheme by NABARD. The project was implemented with 100 farmers as a pilot project and created large scale impact in generating employment opportunities as an area development scheme. The project addresses the climate resilient agriculture in the hill districts of Darjeeling, West Bengal. Apart from tea, large cardamom is the major cash crop for the tribal farmers of the district. Mostly, the crop is being grown organically in the district. So, Integrated Farming comprising of organic large cardamom cultivation, dairy unit and vermicomposting unit can be one of the efficient way for use of agricultural waste. Further, for better income realization at farmer level from large cardamom cultivation, use of organic input enhances the quality of large cardamom and fetches better export price.

## Financial details of UPNRM Project

S.No.	Items	Financial Details
1.	Total Financial Outlay (TFO) considered	Rs. 91.00 lakhs (Rupees Ninety One Lakhs only).
2.	Contri from Kalimpong Krishak Kalayan Sangathan (KKKS) towards margin money	Rs. 8.00 lakhs (Rupees Eight Lakhs only).
3.	Financial Assiatance sanctioned by NABARD a. Total Term Loan from NABARD under UPNRM b. Grant from NABARD under UPNRM	Rs 83.00 lakhs (Rupees Eighty Three Lakhs only). Rs 71.00 lakhs (Rupees Seventy One Lakhs only). Rs 12.00 lakhs (Rupees Twelve Lakhs only) for accompanying measures
4.	Rate of Interest to be changed on Term Loan Component	11.0% p.a

Project area: Maipatey, Magarjung, Kashyam and Samdung village of Kalimpong district, West Bengal

### Key Intervention Process



Training on integrated Organic Farming



GIS mapping



Organic Certification



Loan Based Cultivation of large Cardamom



Demonstration of Post Harvest Technology



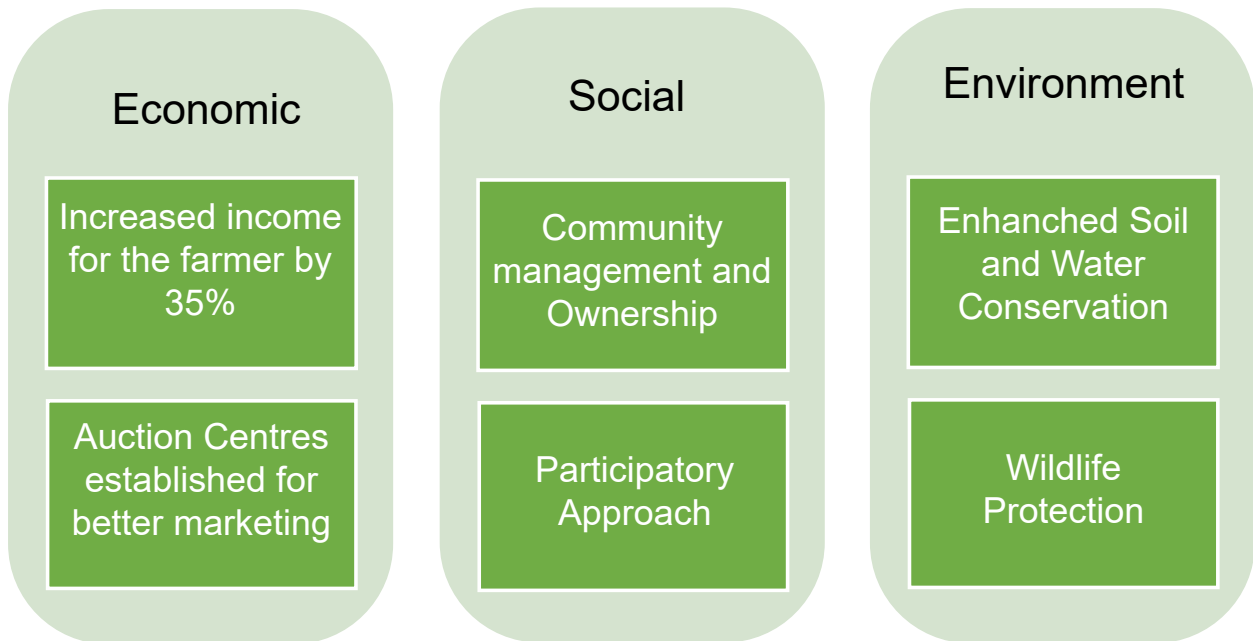
Access to Market through auction

# 5

## KEY IMPACT OF LARGE CARDAMOM CULTIVATION

Major sources of household income in the region are large cardamom farming, livestock, other cash crops, beekeeping and honey production, and off-farm labour etc. Large cardamom is/the largest contributor to household income in the area. The next most important source of household income was livestock, contributing to the average total household income. Livestock has always been an integral part of traditional farming systems in the hills and is a source of manure, which is used to maintain the soil fertility of crop land. Livestock are also an important source of income through the sale of milk and dairy products, meat, and calves. The remaining sources of income, such as other cash crops, beekeeping and honey production, and agricultural labour under the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) together contributed to income.

### Impact of cultivation of Large Cardamom



# 6

## SCOPE OF FINANCING, SUBSIDY AND CONVERGENCE

As a response to the growing need for intervention in the field of large cardamom cultivation the Government at the centre and the state have come up with a variety of schemes and synergies that are commissioned to assist the proliferation of the large cardamom cultivation, ensure better standards of produce and improve the lives of the farmers who are involved with the production of this crop.

### Schemes and Programmes

The Spices Board India, under the Ministry of Commerce and Industry, have designed several schemes to bolster this cause under the 'Export Orientated Production and Post-Harvest Improvement of Spices'. Under this scheme, the Spices Board of India is responsible for the overall development of cardamom (Small & Large) in terms of improving production, productivity and quality. The Board is also implementing post-harvest improvement programmes for production of quality spices for export. List of schemes and benefits attached in annexure 1.

Apart from the above conventions, the Spices Board encourages the formation of spice producer's societies and these societies must function as nodal centers for dissemination of information to farmers, who are members of the society and can act as bridge that links the Board and the farmers and in addition to the training programmes could be arranged through these societies. In addition to the formation of spice producer's societies (SPS), it is proposed to promote processing and value addition at a primary level for whole spices. The Board claims to provide assistance to registered SPS for drying, cleaning, grading and packing of whole spices - 50% of the cost of the primary processing equipments and basic infrastructure subject to a maximum of Rs. 6 lakhs per SPS will be provided as grant in aid.

Among other initiatives is the Transcriptome Sequencing in small and large cardamom that the Spices Board is carrying out in collaboration with the Indian Agricultural Statistics Research Institute (IASRI-ICAR), New Delhi. There are regular efforts made by the Spices Board Regional Office and the Agricultural Office in Kalimpong to foster better cultivation of cardamom by providing assistance to demotivated farmers. For instance in the year 2014-15, the Agricultural Office Kalimpong along with the Gorkhaland Tribal Association distributed 1,80,000 cardamom seedlings to farmers in the vicinity in order to reduce their expenses and motivate to produce effectively. Apart from these, the officials of the Spices Board of India to ensure that operations are running smoothly at cardamom plantations conduct regular field inspections. There are Focused Group Discussions and quality training programmes initiated by officials and other organization in order to carry out this mission of improvement. The Kalimpong Quality Training Programme 2017-18 saw a participation of 418 farmers, of which 375 were male and 43 were female.

It is also interesting to note that alongside boosting the productivity of large cardamom, many state-funded research institutes like the Indian Agricultural Research Institute in Kalimpong are also increasingly concerned with the growth of other crops such as the mandarin. The market for mandarin has depleted immensely and this can be attributed to the increasing interest in growing large cardamom in the district.

The Ministry of Commerce and Industry are also striving to expand the growth of large cardamom in the North-Eastern Region, in order to ensure demands of the international and domestic market are met. This is being promoted in the form of prizes for productivity where in, a cash prize of Rs. 25,000 and Rs. 15,000 is being offered to farmers who stand 1st and 2nd, along with certificates and citations. Some farmers units that have come up in this

region are the All Mizoram Farmers Union in Aizwal, Agro Tech Composite Nursery in Dimapur, Assam and the A.B Tanyam Society, Ziro, Arunanchal Pradesh.

According to the State Focus Paper West Bengal published by NABARD, the average income of farmers in West Bengal is Rs. 4016/- against the Rs. 6900 of farmers in other parts of India. Of this amount only 6% is constituted by livestock rearing and therefore attempts are being made to promote the increase of the same given that West Bengal has the potential to lead in this sector. The National Bank for Agricultural and Rural Development has also partnered with KFW and GIZ India to initiate the Umbrella Programme for Natural Resource Management, to promote the conservation of natural resources and judicious utilization available material to ensure generation of income at the level of resources for poor communities. NABARD also suggests taking extensive consultations from various stakeholders at both the level of the state and the nation and other climate change adaptive strategies that will be region based such as the National Implementing Entity for Adaptive Fund, the Green Climate Fund and the National Adaptive Fund for Climate Change. These strategies strive to ensure development of irrigation structures for increasing area under irrigation, soil and water conservation techniques, climate resilience for conservation of biodiversity in climate hotspots and promotion of community based eco-tourism in regions such as Darjeeling.

## Stakeholders

From the discussion that has ensued it is evident that the enterprise of cultivating cardamom has a number of stakeholders who are involved driven by various motives and intensities.

All of the above agencies and organizations work as extensions to cultivation of cardamom in Kalimpong. As is apparent from the list, these organizations are linked with different sectors of involvement ranging from finances

Category	Role	Groups
State Led- Organizations	Setting up schemes, Sanctioning Bodies, Assistive Development of Market, Upgradation and Promotion, Training and Development	Spices Board of India, Department of Agriculture, Department of Horticulture, Agri-Hoti Demo Farm,
Research	Improving available technology and making new technological and scientific interventions that will effectively increase production and quality of cardamom in the region, Running diagnostics for viruses, sustained research on alternative methods	Uttar Banga Krishi Vishwavidyalaya, Indian Agricultural Research Institute, Indian Cardamom Research Institute, Indian Council for Agricultural Research
Market/ Traders/ Exporters	Purchasing original products and re-selling them.	Markets centers like Siliguri and Gangtok, Individual traders and private players like Ajosha Bioteknik Pvt Ltd, Kanchendzonga Infrastructure Pvt. Ltd. Exporters such as Jabs International Pvt Ltd, K Kishore Overseas, MM International, Mehta Exports
Farmers/ Organizations	Cultivation, Grass root level investment, Mobilisation of resources	Examples of certain FPO's are Ranikhola Famer's Production Organisation, Kisan Unnati Utpadak
Auctioneers	Hosting auctions sanctioned by the Spices Board of India.	Cardamom Planter's Association, Greenhouse Cardamom Marketing India Pvt. Ltd., Header Systems India Ltd.
Funding Bodies	Providing necessary loans, and financial assistance for the purchase of planting material and seeds	NABARD Co-operative Banks, Regional Banks, Gorkhaland Tribal Association, District Rural Development Cell
Local Bodies	Investment at a local level in terms of training programmes and schemes to improve livelihood of farmers, demonstrating possibility of applying better methods, capacity development	Krishi Vigyan Kendra Knowledge Network, Kalimpong Krishak Kalyan Sangathan,

to sciences. This is a positive indication for the future of large cardamom plantation farming since it enables the potential to increase the scale and size of the cardamom production and market. However, there are sectors that still indicate a lack of involvement and stakeholders. For instance, compared to Sikkim, that has a large number of Farmer Producer's Organizations, Kalimpong is yet to come with up organized efforts by individual farmers on large scale to improve quality of production and also their livelihoods. A lower number of organized farmer associations might lead to an underrepresentation of farmer perspectives in state organizations, which in turn might have adverse effects on the cultivation practices. A higher representation and better organization might also assist the possibility of furthering land holdings with assistance from the state's sanctioning bodies for cardamom.

## Areas of Intervention

There are several areas that require intervention that can be fostered not only by major state-led organizations but also at the level of the individual or smaller independent organizations such as NGO's. In a recent report, the ICAR suggested few areas that might require sustained involvement. The report highlights the lack of data on the performance of different cultivars and varieties of large cardamom. It emphasizes on a need to conduct multi-location trials at different elevations to select high yielding and disease tolerant varieties/cultivars. Among other suggestions it also stresses on the requirement for facilities for virus diagnostics and conservation of water at the farm level. It also, very rightly, proposes the discouragement of production and marketing of smoked cardamom by creating awareness as it contains more carbon, which has infamous health hazards. Please refer to Annexure-2 for details on the area of interventions.

## 7

## FINANCIAL ANALYSIS

## Costs of Production

The process of estimating the cost of cultivation of cardamom plantation is different from other annual crops. This is largely because cardamom is a perennial crop, which cannot give any yield in the first two years of its growth. It starts bearing fruit in the third year. However, the normal yield is obtained only from the matured plantation in the fourth year of cultivation. Some plants have longer life spans and therefore continue to provide for above 12 years, the economically acceptable yield period is up to 12 years of maturation. So, there is a gestation period of three years on investments in the cardamom plantations. Hence, the expenditure incurred on the plantations during the gestation period of three years are considered while estimating the cost of cultivation of cardamom.

The expenditure incurred for the cultivation of cardamom included not only expenses incurred within the plantations but also outside the plantations. The expenses incurred within the plantations were labour charges, purchase of plant protection materials like fertilizer, pesticide. The tables below details the cost of cultivation for large cardamom as approved by NABARD and published by Spices Board India in 2014. It includes the costs of a span of a gestation period of 3 years and then a financial analysis of 8 years which is the most commonly recorded life span of a cardamom plant.

Particulars	1st Year				Total
	Input		Labour		
	Quantity	Cost	No. Of Man Days	Cost	
Land Preparation	0	0	60	13200	13200
Planting-Stacking	4000	32000	20	4400	36400
Manuring for 2 rounds	8000 kg	16000	20	4400	20400
Weeding/Mulching 2 rounds	0	0	20	4400	4400
Irrigation/Shade Management	0	0	20	4400	4400
Spraying and Bio-Pesticides	10 kg	1700	10	2200	3900
Harvesting	0	0	0	0	0
Curing and Processing	0	0	0	0	0
Miscellaneous	0	0	5	1100	110
<b>TOTAL</b>		<b>49700</b>	<b>155</b>	<b>34100</b>	<b>83800</b>



Particulars	2nd Year				
	Input		Labour		Total
	Quantity	Cost	No. Of Man Days	Cost	
Land Preparation	0	0	0	0	0
Planting-Stacking	400	3200	2	440	3640
Manuring for 2 rounds	16000 kg	32000	40	8800	40800
Weeding/Mulching 2 rounds	0	0	30	6600	6600
Irrigation/Shade Management	0	0	20	4400	4400
Spraying and Bio-Pesticides	20 kg	3400	15	3300	6700
Harvesting	0	0	0	0	0
Curing and Processing	0	0	5	0	0
Miscellaneous	0	0	5	1100	1100
<b>TOTAL</b>		<b>38600</b>	<b>112</b>	<b>24640</b>	<b>63240</b>

Particulars	3rd Year				
	Input		Labour		Total
	Quantity	Cost	No. Of Man Days	Cost	
Land Preparation	0	0	0	0	0
Planting-Stacking	0	0	0	0	0
Manuring for 2 rounds	16000 kg	32000	40	4400	40800
Weeding/Mulching 2 rounds	0	0	40	8800	8800
Irrigation/Shade Management	0	0	20	4400	4400
Spraying and Bio-Pesticides	20 kg	3400	15	3300	6700
Harvesting	0	0	30	6600	6600
Curing and Processing	0	0	10	2200	2200
Miscellaneous	0	0	3	660	660
<b>TOTAL</b>	<b>16000kg</b>	<b>35400</b>	<b>158</b>	<b>34760</b>	<b>70160</b>

### Income from Large cardamom

Income	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Total
Yield kg/ha	0	0	0	250	275	302.5	302.5	302.5	1432.5
Price/kg	800	800	800	800	800	800	800	800	800
Income	0	0	0	200000	22000	242000	242000	242000	1146000
Expenditure	68500	51800	58600	58600	58600	58600	58600	58600	468900
Interest 12%/annum	8220	6216	7032	6960	6960	6960	6960	6960	56268
Total Cost	76720	58016	65632	64960	64960	64960	64960	64960	525168
Gross Profit	76720	-58016	65632	135040	155040	177040	177040	177040	620832

## Credit potential analysis

DF @15%	
NPV of Costs	2,75,678
NPV at Income	3,20,889
NPW	45,210
BCR	1.16
IRR	23%

Total financial outlay	in INR
Loan	50,000
Repayment Period (in years)	7
No. of installments (half yearly)	14

Repayment Schedule	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Total loan o/s	50,000	42,857	35,714	28,571	21,429	14,286	7,143
Interest repayment (@ 12%)	6,000	5,143	4,286	3,429	2,571	1,714	857
Principal repayment	7,143	7,143	7,143	7,143	7,143	7,143	7,143
Income	-	-	-	2,00,000	22,000	2,42,000	2,42,000
Capital+ recurring	76,720	58,016	65,632	64,960	64,960	64,960	64,960
net surplus	-76,720	-58,016	-65,632	1,35,040	-42,960	1,77,040	1,77,040
Total repayment	13,143	12,286	11,429	10,571	9,714	8,857	8,000
Net profit	-89,863	-70,302	-77,061	1,24,469	-52,674	1,68,183	1,69,040
DSCR	-5.4	-4.3	-5.4	13.1	-4.2	20.2	22.2
Avg DSCR	5.2						

# 8

## RECOMMENDATIONS

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- ✔ Government should provide the growers with the necessary training facilities for scientific cultivation of large cardamom.
- ✔ Farmers should be taught to identify and control insect-pest and disease incidence at an early controllable stage and they should be introduced to INM, IPM and IDM.
- ✔ Farmers need to be trained in post-harvest handling of produce, like sorting, grading and curing to avoid post-harvest losses.
- ✔ Broadcasting of market information in radios and television is an essential step in raising awareness about the up to date market information amongst the growers.
- ✔ Construction of durable storage houses that can protect the produce from harsh weather and climate
- ✔ The traditional methods of drying the capsules include sun drying and drying over the fire. They both have disadvantages as the produce rots fast during rainy and overcast days when the produce is dried outside in the open. Also, when the crop is dried over the fire, the spice loses some of its flavor and hence the quality is lowered. Therefore, it is required that bhattis or other improved dryers be constructed or installed in the villages and the villagers be taught to use them to their advantage.
- ✔ Promoting cooperative methods of marketing among the growers is essential in order to reduce marketing cost of the producers.
- ✔ Provision of better transportation facilities, better roads and reasonable transportation cost will encourage the growers to strive better and also encourage other farmers to start large cardamom cultivation. It would help the growers to increase the production and productivity of the crop if the Spice Board of India would lend them help in the form of technology and technical knowhow.

# ANNEXURE

## 1. List of Government Schemes in large cardamom sector

Component	Objective and Scale of Assistance	
<b>Replanting</b>	The programme is intended to encourage the growers to take up replantation of old, senile and uneconomic gardens. A subsidy of Rs. 28000/- per hectare is offered to growers owing large cardamom upto 8 hectares towards 33.33% of the cost of replanting and maintenance during gestation period. The subsidy is limited to new plantation of 4 Ha. The subsidy is paid in two equal annual installments	
<b>Production of Planting through Certified Nursery Schemes</b>	Making available quality planting materials to the growers, Board gives assistance at Rs.2 per sucker for raising of sucker nurseries in farmers' field.	
<b>Rainwater-Harvesting</b>	The programme for rainwater harvesting using devices made of earth excavated pits lined with silpauline sheets is implemented in North Eastern States for large cardamom. 33.33% of the actual cost of construction subject to a maximum of Rs.12000/- per device is provided as subsidy.	
<b>Curing Houses (Modified Bhatti)</b>	ICRI-Gangtok has developed a scientific curing technology for large cardamom by introducing Modified Bhatti in which cardamom capsules are dried using indirect heating system in which the dried capsules retain the pink [maroon] colour and natural flavour. In order to popularize this method, Board is providing subsidy at Rs.9,000/- for 200 kg capacity and Rs.12500/- for 400 kg capacity Modified Bhatti towards 33.33% cost of construction of Modified Bhatti respectively.	
<b>Construction of Irrigation Structures:</b>	This programme is aimed at developing water resources in the cardamom plantations, which will help the growers to irrigate their plantations in summer. Assistance is given for construction of irrigation devices ie 50% of the actual cost of construction or Rs 20,000/- whichever is less is paid as subsidy.	
<b>Installation of Irrigation Equipment</b>	Board will assist in installing irrigation equipment at 50% subsidy subject to a maximum of Rs.10,000/- to farmers of large	
<b>Mechanization</b>	<b>Equipment</b>	<b>Scale of Assistance</b>
	Pit Digger	50% cost or Rs.1500
	PP equipment	50% cost or Rs.2000
	Agricultural tools	50% cost of Rs.500

## 2. Critical areas for intervention

Factors	Constraint
<b>Input Sourcing</b>	Expensive planting material, Cost of plantation high, No income from cardamom farming in the first 3 years of planting, High-yielding seeds must be sold at cheap costs to increase productivity
<b>Technical Assistance</b>	Scientific methods must be used to curb the use of worn out methods that do not yield a good crop. Machines and tools must be provided at subsidized rates if required. Lack of diagnostic and virus centers to assess diseases. Methods to compensate for productivity in cases emergencies such as bad weather, etc
<b>Farmer Initiatives and Awareness</b>	Lack of promotion of organized farmer associations, lack of awareness and reluctance among farmers to adopt scientific methods
<b>Market</b>	Uncertain prices, price hikes and sharp falls, Increase in the number of middlemen that restrict farmers from fetching better prices, export numbers on the fall.
<b>Finances</b>	Better access to loans for farmers from regional banks or official bodies with a more relaxed system of repayment is required. Programmes on how to mobilize finances to maximize both production and profit for farmers.



# NOTES



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# NOTES



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