



Capacity Building Toolkit (Module 7)

# BUSINESS MODEL: ORGANIC PEPPER

**Published by**

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

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GIZ is responsible for the content of this publication

On behalf of the

German Federal Ministry for Economic Cooperation and Development (BMZ)

New Delhi, India

July, 2019

# ABOUT THE MODULE

National Bank for Agriculture and Rural Development (NABARD), Bankers Institute of Rural Development (BIRD) and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH have come up with a 'Farmer Producer Organisation (FPO) Capacity Building Toolkit'. The toolkit contains the following modules

1. FPO orientation material
2. FPO capacity assessment tool
3. Training of Trainers (ToT) manual for Board of Directors (BOD)
4. FPO Massive Open Online Course (MOOC)
5. Guidebook on FPO business planning
6. Guidebook on FPO legal compliances
7. Business models for FPOs
8. Schemes and policy initiatives for supporting FPO
9. Guidebook on commodity derivative market for FPOs
10. Guidebook on input business planning for FPOs
11. Guidebook on FPO financing for bankers

MODULE 7 'Business models for FPO' presents a compilation of business models of various commodities based on experience of Umbrella Programme for Natural Resource Management (UPNRM) to help FPOs and other stakeholders in development of business plan, as a reference material.

The module covers challenges with respect to the commodity, project idea, impacts, sustainability and financial details including cost-economics. This business model is on Organic Pepper.







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# BACKGROUND

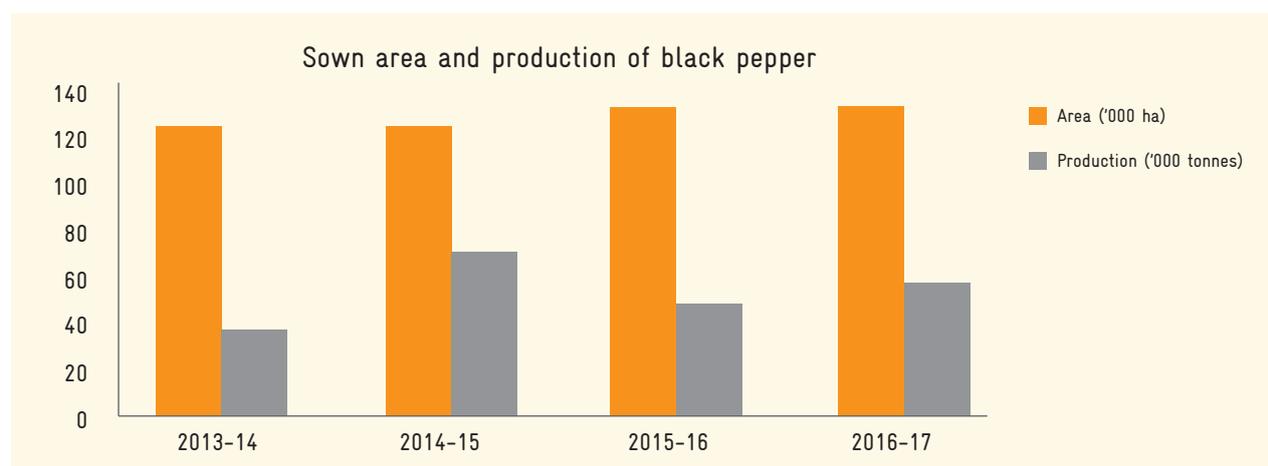
Black pepper also referred to as the “King of Spices” is an important spice of India. Vietnam, Indonesia, and India are the leading producers of black pepper which is widely used for seasoning and as a spice.

Originating in the tropical forest in the Western Ghats of India, black pepper spread from India to other parts of the world. Today, Vietnam is the world leader in the production of black pepper, accounting for about 34 per cent of the world’s production while India is the second largest producer of black pepper with around 17 per cent of the global production. Brazil, Indonesia and China comprise other black pepper producing countries.

India has the highest land area under black pepper cultivation in the world. However, per ha productivity is very low in India as compared to other countries especially Vietnam and Indonesia.

Top black pepper producing states in India are Kerala, Karnataka and Tamil Nadu. Traditionally Kerala has been the largest producer of black pepper in India. However, since 2014 Karnataka has overtaken Kerala to become the top black pepper producing in the state. In 2015-16 the production of black pepper in Karnataka was recorded as 33000 MT as against 26000 MT for Kerala.

**Table 1: Production details of black pepper in India**



Source: Spice Board of India

Black pepper is a traditional cash crop in the country, and 95 per cent of the black pepper produced is for export primarily to the United States (US), India, Netherlands, and Germany. It contributes to nearly 60-65 per cent of total export earnings from all spices in the country, although in the recent years the exports had suffered due to the imposition of Minimum Import Price (MIP) by the government. However, this issue seems to have been sorted out during 2018.

## Organic pepper

India is amongst the largest producer of black pepper but organic cultivation of this spice is on a limited scale in the country. While some Non-Governmental Organisations (NGOs) in Kerala have initiated the organic cultivation of black pepper, the scale is rather limited. There is also a lack of reliable data regarding the production of organic black pepper in the country.

However, there is a growing demand for organic products in India as well as across the world. Wary of the use of pesticides, harmful colours and other chemicals during cultivation and processing there is a growing demand among consumers for organic products, especially spices. The consumers are also willing to pay a premium for organic products.

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# CHALLENGES IN CULTIVATION OF ORGANIC PEPPER

## 2.1 Low Productivity

One of the biggest challenges in black pepper cultivation is low productivity. Experts believe that intensive use of chemical fertilisers degrades the soil nutrients and microbes which is leading to low productivity of pepper. However, organic farming can lead to an improvement in soil fertility and enhancement in yields in the long term.

## 2.2 Lack of quality planting material

Lack of availability of quality planting material for the farmers is another issue that affects the productivity of black pepper farms.

## 2.3 Improving cultivation practices

The farmers who are currently engaged into cultivation of organic black pepper lack adequate capacities and knowledge about organic farming. There is a need to improve cultivation practices by introducing a regulated system of planting, integrated pest and disease management practices and use of organic inputs/bio agents.

## 2.4 Post-harvest management

Black pepper cultivators lack proper awareness relating to post-harvest management techniques. By introducing a regulated system of planting, integrated pest and disease management practices along with the usage of organic inputs/bio agents, the cultivation practices can be improved.

## 2.5 Difficulties in organic certification

Farmers need handholding support in establishing Internal Control Systems (ICS) and in completing other necessary formalities for obtaining certification. Moreover, the cost of certification of organic spices is high and beyond the capacity of an average Indian farmer. This has to be brought down to a reasonable and affordable level.

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# PROJECT IDEA

India is the second largest producer of black pepper in the world and more than INR 1.3 lakh ha area is under pepper cultivation in the country. However, conventional cultivation of pepper is becoming increasingly difficult for farmers due to declining crop yield, lack of availability of quality planting material, increase in insect and pest attacks and erratic rainfall. Moreover, poor cultivation techniques for pepper cultivation as an intercrop have also resulted in limited yields for farmers.

In this backdrop, it is felt that cultivation of organic black pepper could be a much more viable and economically rewarding option for the farmers. Organic cultivation, it is felt, has the potential to introduce sustainable practices into pepper farming that have lower input costs, has sustained crop yield and also has the potential to improve soil fertility.

The project idea is to mobilise farmers and support them to cultivate organic pepper by providing them financial and technical support. The project would strive to build capacities of farmers in organic cultivation while also ensuring that improved cultivation and post-harvest techniques are used.

The farmer groups at the village level would be federated in the form of cluster level organisation or FPOs of smallholders to promote the cultivation of organic pepper and also to establish a strong supply chain.

## 3.1 Intervention strategies and convergence

This project is based on the surmise that a local competent NGO or an established FPO would take the lead in initiating this project. The proposed project seeks to intervene at two levels i.e. at the farmer group level and at the FPO level. The following is the nature of intervention/support envisaged under this project idea:

### For support to farmers groups

The support may be provided through a local competent NGO or an established FPO for the following interventions.

- a. Farmer mobilisation and sensitisation for the adoption of organic farming techniques.
- b. Training and extension services on a package of practices for organic black pepper farming.
- c. Compensation for certification cost (organic) maximum up to one ha of farmland.

- d. Loan for meeting cultivation costs - working capital.
- e. Facilitating farmers to access good quality seeds.
- f. Facilitating farmers to get crop insurance.
- g. Facilitating farmers to develop linkages with producer organisations for the sale of organic black pepper.

A cluster development approach will be adopted to have a minimum of 1000 acres (400 ha) of the area under organic pepper in a cluster. This will help to minimise the overhead costs including administrative, monitoring, certification costs.

#### For support to FPOs to strengthen organic black pepper supply chain:

- a. Establishment of office and processing unit of FPO.
- b. Support for farmer mobilisation and sensitisation for the adoption of organic farming.
- c. Support for conducting training and extension services for the farmers on a Package of Practices (POPs) for organic farming.
- d. Compensation for organic certification cost of farmers maximum up to one ha of farmland.
- e. Maintenance of a robust internal control system and system for traceability.
- f. Procurement of quality seeds and supply to members.
- g. Provision of credit to the farmer members for cultivation costs – need based.
- h. Promote crop insurance and ensure farmers to get crop insurance.
- i. Procurement of black pepper from farmers, aggregation at the sub-cluster level.
- j. Grading, drying and grinding of pepper.
- k. Negotiate with different buyers for the sale of organic pepper.
- l. Agreements with the buyers and obtaining pre-finance from the buyers.
- m. Convergence with various enabling schemes.

The funds can either flow directly to the FPO or through an NGO which will have the overall responsibility of achieving the project objectives.

#### For support to producer organisation for procurement and trade of organic pepper

A loan could be provided to FPOs for procurement and trade of black pepper. The loan will be utilised as working capital to purchase organic produce of member producers, and for transportation, temporary storage, drying, grading, processing and supplying to the buyers.

### 3.2 Potential for upscaling

Black pepper is a high-value spice with high demand in national and international markets. India has a significant area under black pepper cultivation and there is sufficient scope for converting part of it for organic pepper cultivation.

This model can be replicated across Kerala, Tamil Nadu, Karnataka as well as part of Maharashtra and Goa (with suitable modifications based on local requirements).

### 3.3 Comparison with conventional approach

Studies reveal that in addition to its environmental and ecological merits, organic farming of black pepper also has several other merits as compared to the conventional cultivation systems.

Amidst reports that yield of black pepper per ha is declining under conventional farming practices (inorganic) studies reveal that organic cultivation of black pepper could have significant merits for farmers. According to a study conducted by Parvathi and Waibel (2015) amongst the smallholder black pepper farms in Kerala it was found that organic farms were most productive and that conventional black pepper farmers could enhance their yields by 113 per cent if they adopted organic black pepper farming.

In addition to this, cultivation costs in organic farms are believed to be lower as the input costs of farmers (chemical fertilisers and pesticides) are reduced due to replacement of chemical inputs by bio-manures and bio-pesticides and also due to less incidence of insect and pest attacks in the long term.

The market price of organic black pepper is also significantly higher than conventionally grown black pepper. Online market survey revealed that wholesale prices of organic black pepper were listed to be 20 per cent to 30 per cent higher than conventionally grown black pepper (although rates would differ based on the quality of produce).

### 3.4 UPNRM case example

This project idea is based upon the model established by Wayanad Social Service Society (WSSS), Kerala under UPNRM. This model promotes organic cultivation of black pepper amongst farmers from Kerala. It has been quite effective in increasing incomes of farmers through a FPO based model that promotes aggregation, processing and marketing of farm produce. The following are the highlights of this pilot:

- More than 6000 ha land across 40 villages brought under black pepper and coffee cultivation.
- More than 10000 farmers were involved and organised under 1216 Self Help Groups (SHGs) and 490 farmer clubs.
- Farmers have improved capacities and POPs for organic black pepper and coffee cultivation.
- Cost saving, productivity enhancement and higher revenues for farmers.
- Farmers are also cultivating other crops like cardamom, ginger, turmeric, cinnamon, clove, vanilla, lemongrass, vegetables and fruits which supplement their incomes.
- Processing facilities developed for increasing efficiency across the value chains that includes cleaning, grading, sorting, cracking, grinding and packaging.
- Marketing by FPO and better prices for farmers.
- Environment and biodiversity conservation owing to the use of organic inputs/bio-agents and bio-fertilisers.
- Project able to generate fair trade premium amounting of INR 8 crores.

### 3.5 Business model with flow chart representation

Under this model, it is proposed that an established NGO can provide support in mobilisation of farmers into SHGs/Producer Groups (PGs)/Farmer Interest Groups (FIGs) and later collectivise them in the form of an FPO.

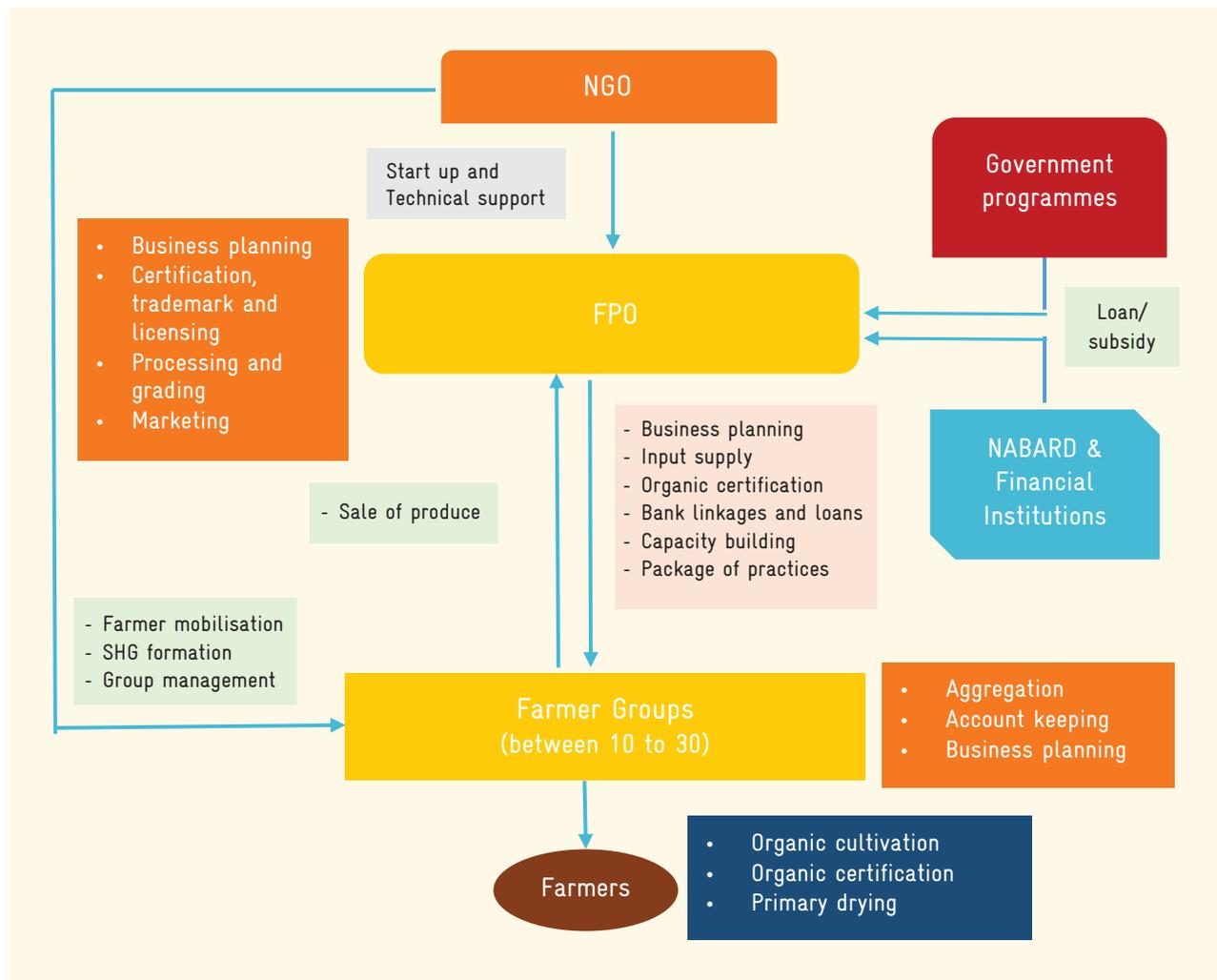
The FPO could obtain loan (along with grant/subsidy if applicable) from NABARD or commercial banks. The loan taken by the FPO would be for establishing a processing centre, establishment of systems for collection of produce from farmers, operational costs of processing centre as well as for meeting working capital requirements for purchase of farmer produce.

If required the FPO can also channelise loans for the farmers (through banks) after keeping a fixed margin on interest rates to meet its administrative cost.

The FPO is also required to build capacities of farmers in organic cultivation and also assist them in organic certification. For this purpose, it could channelise funds from various government schemes otherwise it would have to utilise part of the loan funds.

The following flow chart represents the role of various institutions within the business model and also depicts the flow of inputs and outputs.

**Figure 1: Diagrammatic representation of the proposed business model**



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# IMPACTS AND SUSTAINABILITY

## 4.1 Impacts – Social, Economic and Environmental

### Social impacts

- a. Providing chemical residue free organic black pepper for consumption to the public, thereby helping in food safety.
- b. Building social capital and social cohesion through the organisation of farmers.
- c. Building capacity of individual farmers and also farmer groups.
- d. Generating additional employment for a number of persons through a FPO and other business activities.

### Economic impacts

- a. Reduced cost of production of black pepper as well as other crops (no purchase of chemical fertilisers, pesticides, insecticides etc. with farm yard manure being prepared by farmers themselves. Reduced number of spraying saves labour costs)
- b. Increased yield of black pepper as well as other crops (after a few years) contributing to increased income of the family.
- c. Increased access to organic and Fairtrade (if certified under Fairtrade) market; hence a price premium on the harvests sold and later access to Fairtrade premium for community development activities.
- d. Increased access to other economic activities supported by various companies.
- e. Organic farming is taken up in a combination of several food crops that leads to increased benefits and enhanced food security for farmers.

### Environmental impacts

- a. Reduction of soil, water and air pollution because of use of organic manures, FYM and organic pesticides and IPM.
- b. Reduction of health hazards because of no use of chemical fertilisers, pesticides, insecticides etc.
- c. No pesticides residues in fibre, hence no carcinogenic threats to the users.
- d. Increase in biodiversity – agri-biodiversity, micro-organisms etc.
- e. Eco-balance between pests and beneficial insecticides.
- f. Improved soil fertility and crop productivity.

## 4.2 Mainstreaming Options

This model has a high potential to be replicated in the Malabar region as well as in the pepper growing regions of Tamil Nadu. Banks may look into the prospects of providing financial support for this model.

## 4.3 Climate resilience or adaptability of the model

Climate change and climate variability manifesting in the form of low rainfall and higher temperatures are a major concern for black pepper farmers. Lack of rainfall for prolonged periods affect black pepper productivity while high temperature causes spike shedding in black pepper. Salinity is another major issue as salinity, caused due to the use of large quantities of chemical fertilisers and overexploitation of aquifers is believed to have an adverse impact on the production of black pepper. Similarly, it is also a well-documented fact that insect and pest attacks have been on the increase due to conventional agriculture and also due to variations in climate.

Organic cultivation is expected to address some of the concerns for farmers over a period of time. Organic practices are expected to enhance resilience in farming systems by ensuring better soil health and increasing organic soil matter which results in higher water retention in the soil which is expected to enhance the yield of black pepper. In the medium-term organic cultivation is also expected to build the resilience of crops against insect and pest attacks, thereby reducing the plant protection costs for farmers. Stopping the use of chemical fertilisers is also expected to reduce the salinity of the soil which is quite favourable for black pepper cultivation.

## 4.4 Sustainability

This model is expected to become self-sustainable after support for the initial 3 to 4 years. This has been based upon the understanding and experience from similar initiatives currently being taken up by Wayanad Social Service Society (WSSS) in Wayanad, Kerala.

In fact, this model has been designed in a manner that it would be comparatively easy to achieve sustainability in the short term. The major factors that are expected to contribute towards sustaining this model are:

1. Facilitating agency to provide initial facilitation, startup and handholding support.
2. Capacity building of farmer groups and FPOs in governance, business planning and financial management.
3. Farmers groups to be linked with banks for loan.
4. Convergence with ongoing government schemes to be achieved.
5. The economics of this model indicate moderate to high returns from the farmers and the FPO.
6. This model factors the cultivation of one crop only, however, farmers would be able to cultivate at least one more organic crop and hence this would result in even higher economic gains for the farmers.
7. Adoption of organic practices is expected to lead to improved soil condition and hence improved crop productivity in the medium-term. This is expected to result in higher financial returns for the farmers.
8. The economic analysis of FPO has been done based on the processing of black pepper only. However, it is expected that the FPO would also engage in collection/processing of other organic farm produce and this would enhance its turnover and revenues.

# FINANCIAL DETAILS

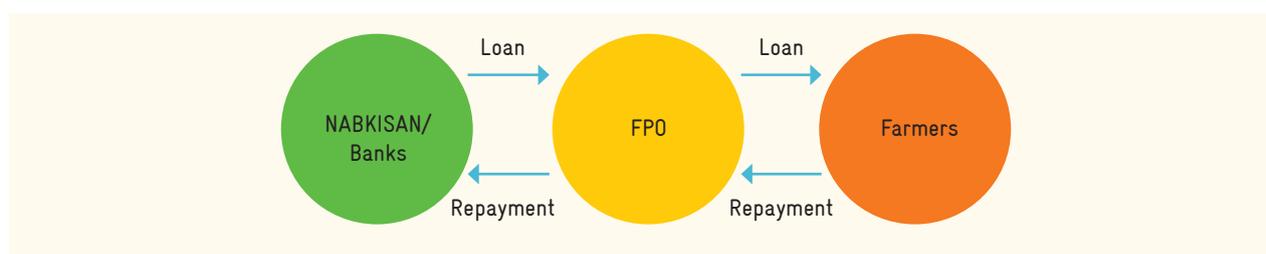
## 5.1 Scope of financing and subsidy

At the FIG level, farmers would be requiring financial support in the form of loans for meeting the cost of cultivation for the first three years (till the time the first harvest of black pepper is done).

It is proposed that this requirement may be met partially through grant assistance from Paramparagat Krishi Vikas Yojana (PKVY) and partially from banks loans. In case culturable wastelands are to be brought under cultivation then Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) also provides financial assistance which may be utilised. Convergence with spice board may be also done to avail their existing subsidies for farmers. The facilitating agency and/or the FPO would assist the farmers in convergence.

FPO may also facilitate the farmers to obtain loans for meeting their cultivation costs. These loans would be sourced from NABKISAN or other banks.

**Figure 2: Flow of loan for FPO and farmers**



It is envisaged that for this business model the FPO would require a loan of INR 72 lakh for meeting capital costs and another loan as working capital of INR 600 lakh for meeting the working capital requirements for procurement of black pepper from farmers. The working capital requirement would be primarily met through loans from NABKISAN and other banks while capital costs would be met partially through loans and partially through grants from NABARD, Spice Board and Ministry of Food Processing industries.

**PKVY:** Under PKVY farmers taking up organic farming (minimum group size of 50 farmers) are provided grant assistance of INR 20000 per acre spread over a three-year period. Farmers could utilise these funds for purchasing seed, crop harvesting and transportation of produce.

**Small Farmers' Agribusiness Consortium (SFAC) Scheme:** SFAC supports the FPOs by extending the loan guarantee and equity capital support schemes: The following two schemes of SFAC would be helpful for the FPOs to leverage the loan from banks:

- a. Loan/equity guarantee cover scheme: Loans to POs/FPOs/FPCs under credit guarantee cover.** Under this scheme FPOs can get term loan, working capital loan and or both. However, to be eligible to get the loan, the FPO must be 1 to 2 years old having audited balance sheet for at least one year and a minimum share capital of INR 3 lakh. The rate of interest is charged as per the NABARD refinancing rate. The loan is given up to 6 times of the net worth of FPOs or INR 1 Cr whichever is less.
- b. Equity Grant Fund Support to FPCs:** The Equity Grant Fund enables eligible FPCs to receive a grant equivalent in amount to the equity contribution of their shareholder in the FPC, thus enhancing the overall capital base of the FPC. The Scheme shall address nascent and emerging FPCs, which have paid up capital not exceeding INR 30 lakh as on the date of application.

**NABKISAN's support to newly formed FPOs:** There is provision for the loans to emerging/nascent POs which are not in a position to provide collaterals. However, funding support to such FPOs can be provided in the form of loan of upto INR 50 lakh which depends purely on the merits and prospects of their business plan.

**MGNREGA:** In case unculturable wastelands, erstwhile fallow lands are proposed to be used for spice cultivation then under 'land development works' component of MGNREGA labour cost for bunding and land levelling are provided under this scheme.

**Spice Board of India:** The Spice Board of India is also offering various schemes for farmers, NGOs and for farmer organisations. Major components of assistance by Spice Board include:

- *Pepper thresher:* Subsidy is offered @ 50 per cent of the cost of the equipment subject to a maximum of INR 15000 per thresher.
- *Bamboo mats:* Spices Board India provides bamboo mats at 90 per cent subsidy to tribal growers and 50 per cent subsidy to others.
- *Supply of polythene/silpauline sheets:* These are provided at 50 per cent subsidy to tribal growers and at 33.33 per cent to other growers.
- *Pepper/clove ladders:* Spices board distributes ladders for harvesting pepper and clove with 50 per cent of cost of the ladder, subject to a maximum of INR 5000 is provided as subsidy.
- *Spice cleaners/graders for pepper:* Board provides pepper cleaning/grading machines at 50 per cent assistance, subject to a maximum of INR 35000.
- *Organic cultivation:* The assistance to spice growers is available to the extent of 12.5 per cent cost of production; subject to maximum of INR 12500 per ha.
- *Assistance for ICS groups:* 50 per cent cost of maintenance of ICS subject to a maximum of INR 75000, as subsidy.
- *Organic certification:* Individuals growers are eligible for 50 per cent of the cost of certification subject to a maximum of INR 30000.
- *Bio-agent production unit:* For setting up bio-agents production units i.e. training cum demonstration centres NGOs/SHGs/Spices Producer Societies/Farmers Group etc. are eligible to avail benefit under this scheme; the Board provides 50 per cent of the cost of equipment, accessories and mother culture unit subject to a maximum of INR 1.50 lakh as subsidy.

- *Organic value addition:* For setting up primary processing/value addition units Growers Societies/NGOs/Women groups/SHGs etc. having valid scope certificate for C1/C2/C3/Organic are eligible to avail 50 per cent of cost of the equipment/machineries subject to a maximum of INR 5.00 lakh as subsidy.

## 5.2 Cost Economics

The proposed business model provides estimates of cost-benefits at two levels i.e. at the level of individual farmer and at the level of the FPO for organic black pepper cultivation, processing and marketing.

### 5.2.1 Cost-benefit for farmers

The following table provides details of the expected cost of cultivation and the expected net revenue for individual farmers engaged in organic black pepper cultivation on one-acre land.

**Table 2: Cost-benefits for individual farmers engaged in organic black pepper cultivation (1 acre landholding)**

S. NO	Pepper	Unit	Quantity	Unit Cost (INR)	Total Cost (INR)				
					Year 1	Year 2	Year 3	Year 4	Year 5
<b>A.1 Sowing Practices</b>									
1	Cost of raising seedlings (per Acre)	No	250	25.00	6250	0	0	0	0
2	Cost of crop supporting tree plant	No	250	50.00	12500	0	0	0	0
Total (A.1)					18750	0	0	0	0
<b>A.2 Main Field cultivation</b>									
3	Land preparation	Person days	10	250	2500	0	0	0	0
4	Manure	Kg	250	10	2500	2625	2756	2894	3039
5	Plantation	Person days	15	250	3750	3938			
6	Irrigation	Person days	20	250	5000	5250	0	0	0
7	Weeding	Person days	10	250	2500	2625	2756	2894	3039
8	Bio-fertilisers / Bio agents	Kg	1500	10	15000	15750	16538	17364	18233
9	Micro-nutrients	Kg	10	150	1500	1575	1654	1736	1823
10	Cost of plant protection	Kg	8	100	800	840	882	926	972
Total (A.2)					33550	32603	24586	25815	27106
<b>A.3 Harvest and post-harvest costs</b>									
11	Labour cost for harvesting	Person days	10	300	0	0	3000	3150	3308
12	Drying and grading	Person days	3	250	0	0	1500	1575	1654
13	Packaging and transportation cost	Qtl	3.75	1000	0	0	3750	3938	4134
Total (A.3)					0	0	8250	8663	9096
<b>A.4 Other costs</b>									
14	Crop insurance (per acre)	Per annum		1700			1700	1700	1700
15	Interest on loan (@ 12 per cent per annum)				4626	7121	9944	6944	3944
Total (A.4)					4626	7121	11644	8644	5644
Cost of Cultivation (A1+A.2+A.3+A4)					56926	39723	44480	43122	41846

S. NO	Pepper	Unit	Quantity	Unit Cost (INR)	Total Cost (INR)				
					Year 1	Year 2	Year 3	Year 4	Year 5
<b>B Other information</b>									
16	Yield per Acre-Pepper (Increase 5 per cent in Yield after 3 <sup>rd</sup> Year)	Kg	300			300	315	331	
17	Selling prices	INR	350			350	368	386	
<b>B.1 Income of Pepper Farmers</b>									
18	Sale of Pepper (Return from 3 <sup>rd</sup> Year)					105000	115763	127628	
19	Total Cultivation cost					141129	43122	41846	
20	Net Return	INR				-36129	72641	85782	
21	Net Return per Acre in 5 years	INR						122294	
<b>B.2 Annualised net return per acre (over 5 years)</b>									<b>24459</b>

### Assumptions

- The cost of cultivation may be sourced from the ongoing schemes of the Government primarily PKVY wherein a subsidy for an individual farmer is provided for upto 3 years.
- Since the farmers would get the first harvest at the end of the third year, therefore, they would require loans to meet the cultivation costs during the first three years. The FPO could arrange loan from the bank for the farmers.
- From the third year onwards it is assumed that the farmers would be able to get organic certification and hence a premium price of black pepper has been taken and subsequently 5 per cent inflation has been factored in.
- Each year price inflation of 5 per cent in production costs has been factored in.
- The above assumption does not factor in drip irrigation system. In case drip irrigation is factored in then the yields are expected to increase by about 15 to 20 per cent.

## Economic analysis

It is evident from the table below that under the proposed business model the farmers are able to get a return of around INR 25000 annualised over 5 years. While the net annual returns are around INR 60000 to INR 85000 from the 3<sup>rd</sup> year onwards. The benefit cost ratio for an individual farmer is calculated to be 1.29.

**Table 3: Economic analysis of organic black pepper cultivation in one-acre landholding**

Particulars	Amount in INR					Total
	Year 1	Year 2	Year 3	Year 4	Year 5	
Capital cost	18750	0	0	0	0	
Recurring cost	38176	39723	44480	46076	50892	
Total cost	56926	39723	44480	43122	41846	226097
Total benefits			105000	115763	127628	348391
Net benefits	-56926	-39723	60520	72641	85782	122294
Net present worth of cost @15 per cent	154287					
Net present worth of benefits @15 per cent	198737					
Benefit Cost Ratio	1.29					

## LOANS

It is envisaged that the black pepper cultivators would require loan to meet their cultivation costs during the first three years. However, at the end of 3<sup>rd</sup> year the farmers would be able to sell their first crop and earn revenues and subsequently they would not require loans to meet the cultivation costs. The repayment of loan is projected from the 4<sup>th</sup> year onwards.

**Table 4: Working capital loan for farmers**

S.No	Loan	Year 1	Year 2	Year 3	Year 4	Year 5
1	Yearly Loan Requirement	38550	20790	23530		
2	Cumulative loan requirement	38550	59340	82870	82870	57870
3	Repayment				25000	25000
4	Interest on Loan (Diminishing) @ 12 per cent per annum	4626	7121	9944	6944	3944

## 5.2.2 Cost-benefit for FPOs

Details of cost-benefit of FPO engaged in processing and marketing of organic black pepper is provided under Table 6.

**Table 5: Cost-benefits for FPO engaged in processing and marketing of black pepper (1000 acres)**

S.No	Particulars	Unit	Quantity	Cost (Rs.)	Year 1	Year 2	Year 3	Year 4	Year 5
<b>A.1 Capital Cost</b>									
1.1	Storage (transit storage) cum office	Sq. ft.	1500	700	10.50	0.00	0.00	0.00	0.00
1.2	Office equipment (weight machines, chairs, table, shelf, desktop computer, printer etc.)	Lumpsum	1	150000	1.50	0.00	0.00	0.00	0.00
1.3	Black Pepper processing and packaging unit-decorning machine, grader and grinder, (including installation)	Nos	1	4000000	40.00	0.00	0.00	0.00	0.00
1.4	Drying yard	Lumpsum	1	500000	5.00				
1.5	Purchase of vehicle for transportation	Nos	1	1500000	15.00	0.00	0.00	0.00	0.00
<b>Total capital cost</b>					<b>72.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>A.2 Recurring cost</b>									
2.1	Mobilisation of farmers, training and technical guidance or organic farming (per year for 3 years)	Acre	1000	1000	10.00	10.00	10.00	0.00	0.00
2.2	Capacity building of farmers in POPs, primary processing etc	Acre	1000	2500	25.00	25.00	25.00	0.00	0.00
2.3	Certification cost (including overheads)	Acre	1000	1000	10.00	10.00	10.00	10.00	10.00
2.4	Procurement of pepper from the farmers @3 quintals from one acre (1000 acres)	Quintals	3000	35000	1050.00	1102.50	1157.63	1215.51	1276.28
2.6	Operational and maintenance expenses of processing unit	Quintals	3000	500	15.00	15.75	16.54	17.36	18.23
2.7	Packing and transportation expenses	Per quintal	3000	200	6.00	6.30	6.62	6.95	7.29
2.8	Staff, administration, travel, coordination, marketing etc.	Month	12	180000	21.60	22.68	23.81	25.00	26.25

S.No	Particulars	Unit	Quantity	Cost (Rs.)	Year 1	Year 2	Year 3	Year 4	Year 5
2.9	Interest on loan for working capital (12 per cent)	Half yearly			30.00	36.00	36.00	36.00	36.00
2.1	Interest on loan for capital cost (12 per cent)	Per annum			8.64	8.48	8.29	8.09	7.86
<b>Total recurring cost</b>					<b>1176.24</b>	<b>1228.23</b>	<b>1285.59</b>	<b>1310.82</b>	<b>1374.06</b>
<b>Total cost - capital and recurring</b>					<b>1248.24</b>	<b>1228.23</b>	<b>1285.59</b>	<b>1310.82</b>	<b>1374.06</b>
<b>A.3 Income/ Benefits</b>									
3.1	Sale of pepper	Quintals	2700	45000	1215.00	1275.75	1339.54	1406.51	1476.84
<b>Total Income</b>					<b>1215.00</b>	<b>1275.75</b>	<b>1339.54</b>	<b>1406.51</b>	<b>1476.84</b>
3.2	Net Return				-33.24	47.52	53.95	95.69	102.78

### Assumptions

In the above analysis the following assumptions have been made:

- The above analysis assumes that the FPO is promoting cultivation of organic black pepper with about 500 to 750 farmers cultivating an aggregated area of 1000 acres.
- The cost of cultivation/conversion to organic black pepper farming for the farmers will be sourced from different schemes of the Government including PKVY.
- The FPO would assist the farmers in obtaining organic certification.
- The storage infrastructure will be made of low-cost materials.
- Loan will be obtained for INR 5.00 crores during the first as working capital for procurement of black pepper from the farmers while in the subsequent years a loan of INR 6.00 crores would be required. This amount for procurement will be taken on loan for about 6 months each harvesting season.
- A loan of INR 0.72 crores would be obtained for meeting the capital costs.
- An increment of 5 per cent each year for price escalation in the market value of black pepper (selling price) as well as a premium of 15 per cent (after organic certification) has been factored in from the 3<sup>rd</sup> year.
- An increment of 5 per cent each year for price escalation and that of 10 per cent (for organic certification) in the purchase price of black pepper from the farmers has been factored in from the 3<sup>rd</sup> year.
- An increase of 5 per cent each year in the cost of processing has been factored.
- An increase of 5 per cent each year in the administrative costs has been factored.
- The staff of FPO will coordinate the entire business operation including monitoring of conversion of conventional to organic farming.

### ECONOMIC ANALYSIS

It is evident from the table below that under the proposed business model the FPO would incur a deficit of about INR 33 lakh in the first year (including capital costs of INR 72 lakh) but from the 2<sup>nd</sup> year onwards the FPO is expected to break even and from the 4<sup>th</sup> year FPO is projected to obtain a net return of about INR 53 to 62 lakh per annum. The benefit cost ratio is calculated to be 1.01 which is quite good and which indicates that this business model is viable.

**Table 6: Economic analysis of operations of FPO**

Particulars	Amount in INR Lakh					Total
	Year 1	Year 2	Year 3	Year 4	Year 5	
Capital cost	72	0	0	0	0	
Recurring cost	1176	1396	1463	1494	1563	
Total cost	1248	1396	1463	1494	1563	7163
Total benefits	1215	1403	1473	1547	1625	7264
<b>Net benefits</b>	<b>-33</b>	<b>8</b>	<b>11</b>	<b>53</b>	<b>62</b>	<b>100</b>
Net present worth of cost @15 per cent	4735					
Net present worth of benefits @15 per cent	4780					
Benefit Cost Ratio	1.01					

## LOANS

It is envisaged that for this business model the FPO would require a loan of INR 72 lakh for capital expenditure and in the first year of operation a loan of INR 500 lakh for meeting the working capital requirements for procurement of black pepper from farmers. The working capital is roughly around 50 per cent of the total procurement cost and would be required for 6 months each year. From the second year onwards the value of procured commodities is expected to increase with the result that the FPO would require working capital of INR 600 lakh.

**Table 7: Working capital loan for FPO**

Working Capital Loan	INR in Lakh				
	Year 1	Year 2	Year 3	Year 4	Year 5
Yearly Working Capital Requirement	500	600	600	600	600
Repayment	500	600	600	600	600
Interest on net working capital Loan (Diminishing) @ 12 per cent per annum	30	36	36	36	36

As far as loan for capital expenditure is concerned, its repayment would be initiated from second year onwards and it is expected to be repaid over a period of 10 years.

**Table 8: Capital expenditure loan for FPO**

Capital expenditure loan	INR in Lakh									
	Y 1	Y 2	Y 3	Y 4	Y 5	Y 6	Y 7	Y 8	Y 9	Y 10
Capital expenditure	72.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Repayment	0.00	10	10	10	10	10	10	10	10	10
Interest on capital loan (Diminishing) @ 12 per cent per annum	8.64	8.48	8.29	8.09	7.86	7.60	7.32	6.99	6.63	6.23
Total loan outstanding	80.64	79.12	77.41	75.50	73.36	70.96	68.28	65.27	61.91	58.13





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