MINISTRY OF FOOD PROCESSING INDUSTRIES
GOVERNMENT OF INDIA

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PM Formalisation of
Micro Food Processing Enterprises Scheme

DETAILED PROJECT REPORT FOR
GREEN CHILLI PASTE PROCESSING

AATMANIRBHAR BHARAT

National Institute of Food Technology, Entrepreneurship and Management (NIFTEM) - Thanjavur

(an Institute of National Importance under Ministry of Food Processing Industries, Government of India)
Pudukkottai Road, Thanajvur – 613005
https://niftem-t.ac.in/
Ph : 04362-228155, Fax:04632-227971

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Project At a Glance		
1	Name of the Project	Green chili paste
2	Name of the entrepreneur/FPO/SHG/Cooperative	
3	Nature of proposed project	Proprietorship/Company/ Partnership
4	Registered office	
5	Project site/location	
6	Names of Partner (if partnership)	
7	No of shareholders (if company/FPC)	
8	Technical advisor	
9	Marketing advisor/partners	
10	Proposed project capacity	150 MT/annum (55, 65, 75,90 & 100% capacity utilization in the 2nd, 3rd, 4th ,5th & 6th years' onwards respectively
11	Raw materials	Green chili
12	Major product outputs	Green chili paste
13	Total project cost (Lakhs)	19.78
	Land development, building & civil construction	5.18
	Machinery and equipment	8.38
	Utilities (Power & water facilities)	0.8
	Miscellaneous fixed assets	0.9
	Pre-operative expenses	0.90
	Contingencies	1.20
	Working capital margin	2.42
14	Working capital Management (In Lakhs)	
	Second Year	7.25
	Third Year	8.56
	Fourth Year	11.68
15	Means of Finance	
	Subsidy grant by MoFPI (max 10 lakhs)	6.92
	Promoter's contribution (min 20%)	4.75
	Term loan (45%)	8.11
16	Debt-equity ratio	1.7 : 1
17	Profit after Depreciation, Interest & Tax	
	2nd year	19.88
	3rd year	21.02
	4th year	25.61
18	Average DSCR	2.16
	Benefit Cost Ratio	1.91
	Term Loan Payment	7 Years with 1 year grace period
	Pay Back Period for investment	2 Years

Note: All the data/contents of this DPR are taken from the available information on IIFPT site.

1 GENERAL OVERVIEW OF GREEN CHILI PRODUCTION, CLUSTERS, POST-HARVEST MANAGEMENT AND VALUE ADDITION IN INDIA

1.1 INTRODUCTION

Chili is one of the most important commercial spice crops and is widely used universal spice, named as wonder spice. Different varieties are cultivated for varied uses like vegetable, pickles, spice and condiments. Chili (botanically known as *Capsicum annuum L.*; *Capsicum frutescene L.*), also called red pepper belongs to the genus capsicum, under the *solanaceae* family. It is believed to have originated in South America. Chilies are referred to as chilies, chili, hot peppers, bell peppers, red peppers, pod peppers, cayenne peppers, paprika, pimento, and capsicum in different parts of the world. Chilies are integral and the most important ingredient in many different cuisines around the world as it adds pungency, taste, flavor and color to the dishes. Indian Chili is considered to be world famous for two important commercial qualities—its color and pungency levels. Some varieties are famous for the red color because of the pigment Capsanthin and others are known for biting pungency attributed to capsaicin. The other quality parameters in Chili are length, width and skin thickness.

Green Chili is the fruit of plants from the genus *Capsicum* which are members of the nightshade family, Solanaceae. Chili peppers are widely used in many cuisines as a spice to add heat to dishes. The substances giving chili peppers their intensity when ingested or applied topically are capsaicin and related compounds known as capsaicinoids.

Chili peppers originated in Mexico. After the Columbian Exchange, many cultivars of chili pepper spread across the world, used for both food and traditional medicine. This diversity has led to a wide variety of varieties and cultivars, including the *annuum* species, with its *glabriusculum* variety and New Mexico cultivar group, and the species of *baccatum*, *chinense*, *frutescens*, and *pubescens*.

Cultivars grown in North America and Europe are believed to all derive from *Capsicum annuum*, and have white, yellow, red or purple to black fruits. In 2016, the world's production of raw green chili peppers amounted to 34.5 million tons, with China producing half.

The main Chilli growing states in India are Andhra Pradesh, Karnataka, Maharashtra, Odisha, Tamil Nadu, Bihar, Uttar Pradesh, and Rajasthan. And these states account for nearly 80% area under Chilies cultivation in India. It can be grown all types of soils from light sandy to heavy clay. Optimum soil pH level for Chili is 5.8 to 6.5. And very sensitive to water logging. Thoroughly plough the land 3 to 4 times followed by planking to level the field.

1.2 ORIGIN, DISTRIBUTION AND PRODUCTION OF GREEN CHILI

Capsicum fruits have been a part of human diets since about 7,500 BC, and are one of the oldest cultivated crops in the Americas, as origins of cultivating chili peppers are traced to east-central Mexico some 6,000 years ago. They were one of the first self- pollinating crops cultivated in Mexico, Central America, and parts of South America.

Peru is the country with the highest cultivated *Capsicum* diversity because it is a center of diversification where a variety of all five domesticates were introduced, grown, and consumed in pre-Columbian times. Bolivia is the country where the largest diversity of wild *Capsicum* peppers is consumed. Bolivian consumers distinguish two basic forms: *ulupicas*, species with small round fruits including *C. eximium*, *C. cardenasii*, *C. eshbaughii*, and *C. caballeroi* landraces; and *arivivis* with small elongated fruits including *C. baccatum* var. *baccatum* and *C. chacoense* varieties.

Distribution to Europe:

When Christopher Columbus and his crew reached the Caribbean, they were the first Europeans to encounter *Capsicum.* They called them "peppers" because, like black pepper of the genus *Piper* known in Europe, they have a spicy, hot taste unlike other foods.

Distribution to Asia:

The spread of chili peppers to Asia occurred through its introduction by Portuguese traders, who – aware of its trade value and resemblance to the spiciness of black pepper – promoted its commerce in the Asian spice trade routes. It was introduced in India by the Portuguese towards the end of the 15th century. In 21st century Asian cuisine, chili peppers are commonly used across diverse regions.

In 2016, 34.5 million tones of green chili peppers and 3.9 million tones of dried chili peppers were produced worldwide. China was the world's largest producer of green chilies, providing half of the global total. Global production of dried chili peppers was about one ninth of fresh production, led by India with 36% of the world total.

1.3 VARIETIES

There are different varieties of green chili growing worldwide. Varieties of green chili growing worldwide are described below.

Bhut Jolokia, North East India – World's Hottest Chili

Bhut jolokia is also known as ghost chili or ghost pepper is mostly cultivated in the Northeast states of India. It is currently considered the hottest pepper in the world. Though, while it is a difficult pepper to raise, its high soil temperature needs make it a good candidate to grow indoors for those willing to brave its picky nature. This Bhut jolokia is used as a food and a spice in northeastern India in both fresh and dried forms, the pods are unique among peppers and color as well.

Naga Chili, Nagaland

Naga Chilli is also called Naga Morich, is a small but hottest chili pepper cultivated in Northeast India, especially in Nagaland and Manipur. The Naga chili is related to the Bhut jolokia and listed as one of the world's hottest known chili from India.

Naga Viper pepper is hybrid chili varieties created in England by chili farmer, produced from the Naga Morich and the world's most famous and hottest Bhut jolokia.

Kashmiri Chillies, Kashmir

As the name suggests, this Kashmiri Chilli is found in Kashmir and is the most sought after red Chilli in India for its color. An Indian kitchen is incomplete without Kashmiri mirch as this adds the color to the mouth-watering dishes every household cooks. This Kashmiri chili is less hot or pungent, as compared to the other variants found in India.

Kashmiri Chili is popular as a color agent and used across the country in many dishes. Red chili powder from Kashmir is mild and one of the must-have spice to many Indian cuisines. Kashmiri Chili as the name suggests is produced in colder regions of Kashmir and most sought after red Chilies in India for its color.

Guntur Chili, Andhra Pradesh

Andhra Pradesh is known for its spicy dishes and credit goes to Guntur Chilies, from Guntur district of the state. Guntur Sannam is one of the types of Guntur chili, is also cultivated in Madhya Pradesh. Guntur chili from Guntur district is renowned globally and the red chili powder Guntur is exported to countries in the Middle East and Latin America.

1.4 HEALTH BENEFITS AND NUTRITIONAL INFORMATION

Nutritional value:

Nutrition values of 100g of green chili:

Total Fat: 0.3 g

Sodium: 397 mg

Total Carbohydrate: 4.6 g

Dietary Fiber: 1.7 g

Protein: 0.7 g

Vitamin D: 0.00 mcg

Calcium: 36.00 mg

Iron; 1.33 mg

Potassium: 113 mg

CONSTITUENTS AND HEALTH BENEFITS OF GREEN CHILI

Green chilies also have many potential health benefits which are described below:

Health benefits:

1. Source of antioxidant

Green chilies are the great source of antioxidants. It has ample amounts of Vitamin C, A, B complex (B6 and B9). It reimburses the damaging effects of bacteria in the bodies and helpful to prevent blood clotting which is a major cause for cardiovascular problems such as cardiac arrest and heart stroke. It hinders the extent of cancer to colon, lungs and prostate.

2. **Reduces inflammation**

Green chilies provide relief from pain and swelling is associated with outraging bone ailments such as rheumatoid, osteoarthritis and arthritis.

3. **Soothes respiratory system**

Chilies contain phytonutrients that relaxes respiratory passage and reduces the chances of lung cancer with prevention of problems related with lungs such as cough, asthma and cold.

4. **Prevent infections**

Green chilies have anti-bacterial properties that prevents from infections such as athlete's foot, colon infections and herpes zoster.

5. **Enhance immunity**

It encompasses essential nutrients such as Vitamin C and B6 that enhance the immunity of the body to counteract diseases.

6. **Supports digestion**

Green chilies are packed with essential dietary fiber that cleanses colon and supports healthy bowel movements and also prevents the chances of constipation.

7. **Rich in calcium**

Adequate amount of calcium in green chilies is must for keeping the bones and teeth healthy as well as strong. It also repairs tissues and helps in forming new blood cells.

8. **Vision health**

Green chilies contains Vitamin A, an essential nutrient required for improving vision and lower the chances of cataracts and macular degeneration that occurs as people ages.

9. **Assist to lose weight**

No calories are found in green chilies. Also it promotes the body's metabolism and helps to burn excess fat from the body.

10. Radiant skin

Vitamin C, a powerful antioxidant facilitates the formation of collagen which maintains firmness as well as health of the skin. The phytonutrients found in it helps to cure rashes, acne, blemishes, pimples and wrinkles. Vitamin E forms natural oils which are beneficial for the skin.

11. Positive mood

Capsaicin releases the good endorphins and acts as anti-depressant keeping the mood positive.

1.5 CULTIVATION, BEARING & POST HARVEST MANAGEMENT:-

Belonging to family *Solanaceae*, chili or mirchi is botanically called *Capsicum annuum*. It is a small, annual shrub with an erect, branched shoot. It has a tap root system with simple leaves. The flowers are small, white in color and are pendent. In other words, unlike in other plants the flowers of chili droop down and hang like pendants. The chili fruits also similarly hang downwards. Chili seeds are contained within the fruit.

Cultivation and Bearing:-

Chili can be cultivated for two purposes. One is for Vegetable purpose that is Green Chili; the other is for spice purpose known as red Chili powder. However, the farmer can earn income from any of the farming as it depends and varies from region to region and season to season green Chili can be cultivated in varied climatic conditions from tropical to the subtropical type of climatic conditions. Chili is one of the vegetable crops that can give profitable returns to the grower or Chili farmer. However, Chili is also one of the vegetable

crops that consume high investment than any other vegetable crops. The integrated pest management in Chili crop that consumes fewer pesticides has been described in the post which we have given earlier. Let us get into the topic of Chili profit costs for 1 acre.

Chili is a tropical and sub-tropical plant requiring a combination of warm, humid yet dry weather. During the growth stage it needs a warm and humid weather. However, a dry weather is suitable for fruit maturity. Temperature range of 20^0-25^0C is ideal for chili growth. At 37^0C or higher the fruit development is affected. Similarly in case of heavy rain the plant defoliates and starts rotting. However, in case of low moisture conditions during fruiting period the bud does not develop properly. Hence, the flower and fruit may drop off. In other words, a high temperature and relatively low humidity level would lead to deflowering and fruits if developed would be very small.

Chilies need moisture for growth. It has been found that black soil which retains moisture is ideal in case they are grown as rain fed crops. Under irrigated conditions, the crop needs well-drained sandy loam with rich organic content. They can also be grown in deltaic soil under irrigated conditions. In hilly areas like Uttarakhand, soil is mixed with gravel and coarse sand before undertaking chili cultivation.

Chilies are crops that cannot withstand a lot of water. Heavy rainfall and stagnated water would result in rotting of the plants. In case of irrigated crops, watering should be only when it is necessary. A frequent watering would result in shedding of flowers and a spurt of vegetative growth. The amount of water to be irrigated, the number of irrigations and its frequency highly depends on the climatic conditions and the soil type. If the leaves start drooping during day time it is an indication of water requirement. Similarly, if the flowers seem weak or exhibit not enough vigor, irrigating the crop would help. Some farmers irrigate the field once the soil moisture content drops below 25%.

Chili harvesting is done according to the intended use of chilies. For making chili powders and dry chili, the fruits are harvested when the chili turns dark red in color. The green fruit is plucked for preparing chili pickles. However, ripe fruits must be plucked at regular intervals.

Retaining them in the plant for a longer period of time can cause color fading and wrinkles. Green chilies can be plucked 8-10 times while ripe ones are plucked 5-6 times.

Post-harvest management:-

There are some vegetables handling management after harvesting to avoid post-harvest losses. Following are Post-harvesting handling practices:

- Vegetables are graded according to their size and color. All the diseased, deformed, bruised and unripe vegetables are sorted out.
- Do not leave harvested vegetables out in the hot sun;
- Wear cotton gloves when harvesting. This reduces chances of getting injured.
- Use picking bags. This reduces damage as a result of abrasion on
- Wooden or metal picking bins and allows fruit to be gently lowered into
- Bulk harvesting bins;
- Do not leave stems on fruit or damage buttons by “plugging”;
- Use clean, smooth harvesting bins;
- Make sure packing line equipment is cleaned regularly. This reduces dirt and wax buildup which can cause fruit abrasion;
- Reduce packing line abrasion by using foam, rubber and smooth belts to Cushion fruit;
- Remove old and rotten fruit regularly from the packing shed and surrounds;
- Treat harvested fruit with a registered fungicide within 24hrs of harvest;

The general practice is to wash the harvested vegetables with chlorine. They are dried at a temperature of 50-55˚C after coating. If the vegetables have to be transported over longer distances, then they are packed in wooden boxes else baskets made of bamboo and mulberry are used for packing green chilies. The boxes or baskets have to be ventilated and the vegetables should be wrapped in tissue paper or newspaper for protection.

1.6 PROCESSING & VALUE ADDITION:-

Chili is one of the most valuable commercial spice crops of the world. Different varieties are grown for vegetables, spices, condiments, sauces and pickles. Both green and dried chilies are the important components of Indian routine diet. It gives the required pungency, color, taste and flavor to dishes. When chilies taken with food, it stimulates the taste buds and thereby increase the flow of saliva which contains the enzyme analyze helping in the digestion of starchy or cereal foods. The presence of capsaicin in chili is responsible for its pungency and it has medicinal value. The extracted capsaicin is used in pain balms, cosmetics, medicines related to heart diseases. Capsanthin, a pigment in chili used for natural coloration to Jams, Jellies, and Squashes, without any adverse effect on human health. India is the largest producer consumer and exporter of chili cultivating in the area of 7.75 lakhs hectares with 14.92 lakh metric tons production contributing about 40 5 of the World's chili production. The important chili growing states are Andhra Pradesh, Maharashtra, Karnataka, Orissa, and Tamilnadu forming more than 70% of India. The per unit productions high in Andhra Pradesh and Tamilnadu where the chili crop is raised under irrigated condition than in Maharashtra and Karnataka, where the crop is raised mainly under rain fed situations. India is exporting about 3.0 lakh tons chili to several countries valued at Rs 263101.5 lakh.

Value added products from chili are green chili powder, red chili powder, green chili paste, red chili paste, red and green chili pickle and sauces, etc. Chili is also known for human health benefits as powerful anti-oxidant, reducing damaging effects of LDL (bad cholesterol), lowering and regulating blood sugar, helping in weight loss, elevating endorphin and serotonin levels, boosting immune systems, etc.

2. MODEL GREEN CHILI PASTE PROCESSING UNDER FME SCHEME

2.1 LOCATION OF THE PROPOSED PROJECT AND LAND

The entrepreneur must provide description of the proposed location, site of the project, distance from the targeted local and distant markets; and the reasons/advantages thereof i.e. in terms of raw materials availability, market accessibility, logistics support, basic infrastructure availability etc. The main Chili growing states in India are Andhra Pradesh, Karnataka, Maharashtra, Odisha, Tamil Nadu, Bihar, Uttar Pradesh, and Rajasthan. And these states account for nearly 80% area under Chilies cultivation in India.

2.2 INSTALLED CAPACITY OF THE GREEN CHILI PASTE PROCESSING UNIT

The maximum installed capacity of the Green chili paste manufacturing unit in the present model project is proposed as 150 tons/annum or 500 kg/day Green chili paste. The unit is assumed to operate 300 days/annum @ 8-10 hrs. /day the 1styear is assumed to be construction/expansion period of the project; and in the 2nd year 55 percent capacity, 3rd year 65 percent capacity, 4th year 75 percent capacity, 5th year 90 percent capacity & 6th year onwards 100 percent capacity utilization is assumed in this model project.

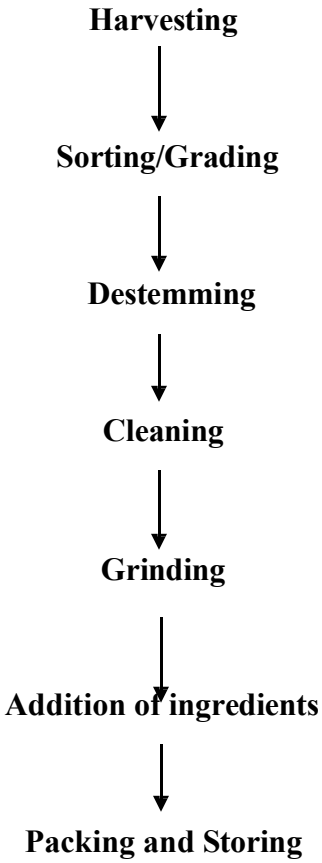
2.3 RAW MATERIAL REQUIREMENTS FOR THE UNIT

A sustainable food processing unit must ensure maximum capacity utilization and thus requires an operation of minimum 280-300 days per year to get reasonable profit. Therefore, ensuring uninterrupted raw materials supply requires maintenance of adequate raw material inventory. The processor must have linkage with producer organizations preferably FPCs through legal contract to get adequate quantity and quality of raw materials which otherwise get spoiled. In the Green chili paste manufacturing

project, the unit requires 330 kg/day, 390 kg/day, 450 kg/day, 540 Kg/day & 600 kg/day green chili vegetable at 55, 65, 75, 90 & 100 percent capacity utilization, respectively.

2.4 MANUFACTURING PROCESS OF THE GREEN CHILI PASTE

Flow chart for Green chili paste:



Green chili is a Indian spice well known for its fiery taste. Green chili paste is prepared by grinding washed green chili into fine paste. It is mostly used during cooking other dishes such as vegetable sandwich, curries, vadas etc.

2.5 MARKET DEMAND AND SUPPLY FOR GREEN CHILI PASTE

The Global Spices Market is expected to register significant growth during the forecast period. The increasing per capita disposable incomes have made packaged spices affordable for all consumer groups. The increasing working population with limited time for cooking is boosting the demand for on-the-go convenience foods, which is significantly contributing to the growing demand for packaged spice products owing to their convenience. Globally, spice production is highly volatile due to largely affected by environmental factors, such as rainfall, floods, and draughts, creating a gap in demand and supply. Spices Market is expected to register a CAGR of 3.89% and reach USD 14,512.6 Million by 2025.

2.6 MARKETING STRATEGY FOR GREEN CHILI PASTE

The increasing urbanization and income offers huge scope for marketing of vegetables based products. Urban organized platforms such as departmental stores, malls, super markets can be attractive platforms to sell well packaged and branded Green chili products.

2.7 DETAILED PROJECT ASSUMPTIONS

This model DPR for Green chili paste unit is basically prepared as a template based on certain assumptions that may vary with capacity, location, raw materials availability etc. An entrepreneur can use this model DPR format and modify as per requirement and suitability. The assumptions made in preparation of this particular DPR are given in This DPR assumes expansion of existing vegetable processing unit by adding new dehydration processing line. Therefore, land and civil infrastructures are assumed as already available with the entrepreneurs.

- Herewith in this DPR, we have considered the assumptions as listed below in the tables of different costs, which may vary as per region, seasons and machinery designs and supplier.
    1. Green chili cost considered @ Rs.12/-per kg.

2. 1 kg green chili will produce 90% recovery.
3. 1 Batch size is approximately 500 kg.
4. No. of hours per day are approximately 8-10 hours.
5. Batch yield is 95%.

Detailed Project Assumptions		
Parameter	Assumption	
Capacity of the Green chili paste Unit	150	MT/annum
Utilization of capacity	1st Year Implementation, 55% in second, 65% in third, 75% in fourth year, 90% in fifth years, & 100% in sixth years onwards respectively.	
Working days per year	300	days
Working hours per day	10	hours
Interest on term and working capital loan	12%	
Repayment period	Seven year with one year grace period is considered.	
Average prices of raw material	12	
Average sale prices per Kg	70	Rs/kg
Pulp extraction	90	
GREEN CHILI PASTE	1 Kg King Green chili paste from 1.2 kg Green chili vegetable	

2.8 FIXED CAPITAL INVESTMENT

2.8.1 MACHINERY AND EQUIPMENT

Sr No.	Equipment	Capacity	Quantity	Price (Rs. In

				Lacs)
1	Cold store sq. meter	1	1500 Kg	4
2	Vegetable washing trough	1	500 liter	0.65
3	Vegetable grinder	1	100 kg/Hr	0.3
4	Blending/mixing tank	1	100 kg	0.6
5	Induction sealer	1	Suitable	0.3
6	Shrink tunnel	1	Suitable	0.35
7	Pouch filling Unit	1	400 PPH	1.5
8	Batch coding machine	1	Suitable	0.12
9	Weighing balance	1	Suitable	0.06
10	Accessories	1	Suitable	0.5
			Total	8.38

2.8.2 OTHER COSTS:-

Utilities and Fittings:-

Utilities and Fittings	
1.Water	Rs. 0.8Lacs total
2.Power	

Other Fixed Assests:

Other Fixed Assets	
1. Furniture & Fixtures	Rs. 0.9 lac total
2. Plastic tray capacity	
3. Electrical fittings	

Pre-operative expenses

Pre-operative Expenses	
Legal expenses, Start-up expenses, Establishment cost, consultancy fees, trials and others.	0.9 LAC
Total preoperative expenses	0.9 LAC

Contingency cost to be added as approx.1.2 Lac.

So total startup cost at own land & Premise may be somewhat similar to 19.78 lacs. This is according to survey done at X location India. This may vary on location, situation and design change over.

2.9 WORKING CAPITAL REQUIREMENTS

Particulars	Period	Year 2 (55%)	Year 3 (65%)	Year 4 (75%)
Raw material stock	7 days	0.60	0.70	0.96
Work in progress	15 days	1.19	1.41	1.92
Packing material	15 days	0.45	0.53	0.73
Finished goods' stock	15 days	2.18	2.57	3.51
Receivables	30 days	4.35	5.14	7.01
Working expenses	30 days	0.90	1.06	1.45
Total current assets		9.66	11.42	15.57
Trade creditors		0.00	0.00	0.00
Working capital gap		9.66	11.42	15.57
Margin money (25%)		2.42	2.85	3.89
Bank finance		7.25	8.56	11.68

2.10 TOTAL PROJECT COST AND MEANS OF FINANCES

Particulars	Amount in Lakhs
i. Land and building (20 x 32 x 12 ft - LxBxH)	5.18
ii. Plant and machinery	8.38
iii. Utilities & Fittings	0.8
iv. Other Fixed assets	0.9
v. Pre-operative expenses	0.90
vi. Contingencies	1.20
vii. Working capital margin	2.42
Total project cost (i to vii)	19.78
Means Of finance	
i. Subsidy	6.92
ii. Promoters Contribution	4.75
iii. Term Loan (@10%)	8.11

2.11 MANPOWER REQUIREMENTS

Total Monthly Salary (Rs.)	No	Wages	Total Monthly	Total Annualy
Supervisor (can be the owner)	1	18000	18000	216000
Technician	1	14000	14000	168000
Semi-skilled	2	7600	15200	182400
Helper	1	5500	5500	66000
Sales man	1	8000	8000	96000
			60700	728400

2.12 EXPENDITURE, REVENUE AND PROFITABILITY ANALYSIS

	Particulars	**1st Year**	**2nd Year**	**3rd Year**	**4th Year**	**5th year**	**6th year**
A	Total Installed Capacity (MT)	180 MT Green chilly/Annum	82.5	97.5	112.5	135	150
	Capacity utilization (%)	Under Const.	55%	65%	75%	90%	100%
B	**Expenditure (Rs. in Lakh)**	0					
	Green chili (Av. Price @ Rs. 18/Kg)	0.00	9.39	11.10	12.81	15.37	17.08
	Salt @ Rs. 3/kg	0.00	0.08	0.10	0.11	0.13	0.15
	Other materials (Rs. 90/kg)	0.00	1.34	1.58	1.82	2.19	2.43
	Packaging materials (Rs 44 per Kg)	0.00	4.95	11.70	13.50	16.20	18.00
	Utilities (Electricity, Fuel)	0.00	1.09	1.29	1.48	1.78	1.98
	Salaries (1st year only manager's salary)	2.16	7.28	7.28	7.28	7.28	7.28
	Repair & maintenance	0.00	0.70	0.80	0.90	0.90	0.90
	Insurance	0.30	0.30	0.30	0.30	0.30	0.30
	Miscellaneous expenses	0.50	2.30	2.30	2.30	2.30	2.30
	Total Expenditure	**2.96**	**27.43**	**36.45**	**40.51**	**46.46**	**50.42**
C	**Total Sales Revenue (Rs. in Lakh)**	**0.00**	**57.75**	**68.25**	**78.75**	**94.50**	**105.00**
	Sale of Green Chili Paste (Av. Sale Price @ Rs.70/kg)	0.00	57.75	68.25	78.75	94.50	105.00
D	**PBDIT (Total exp.-Total sales rev.) (Rs. in Lakh)/Cash Inflows**	**-2.96**	**30.32**	**31.80**	**38.24**	**48.04**	**54.58**
	Depreciation on civil works @ 5% per annum	0.26	0.25	0.23	0.22	0.21	0.20
	Depreciation on machinery @ 10% per annum	0.84	0.75	0.68	0.61	0.55	0.49
	Depreciation on other fixed assets @ 15% per annum	0.12	0.10	0.09	0.07	0.06	0.05
	Interest on term loan @ 12%	0.84	0.81	0.78	0.75	0.71	0.66

	Interest on working capital @ 12%	0.00	0.87	0.87	0.87	0.87	0.87
E	Profit after depreciation and Interest (Rs. in Lakh)	**-5.02**	**28.40**	**30.02**	**36.59**	**46.51**	**53.17**
F	Tax (assumed 30%) (Rs. in Lakh)	**0.00**	**8.52**	**9.01**	**10.98**	**13.95**	**15.95**
G	Profit after depreciation, Interest & Tax (Rs. in Lakh)	**-5.02**	**19.88**	**21.02**	**25.61**	**32.56**	**37.22**
H	Surplus available for repayment (PBDIT-Interest on working capital-Tax) (Rs. in Lakh)	0.84	0.81	0.78	0.75	0.71	0.66
I	Coverage available (Rs. in Lakh)	0.84	0.81	0.78	0.75	0.71	0.66
J	Total Debt Outgo (Rs. in Lakh)	0.28	0.31	0.34	0.38	0.42	0.46
K	Debt Service Coverage Ratio (DSCR)	3.00	2.62	2.28	1.97	1.69	1.44
	Average DSCR	2.16					
L	Cash accruals (PBDIT- Interest-Tax) (Rs. in Lakh)	-3.80	20.98	22.01	26.52	33.38	37.97
M	Payback Period	2.5 Years					
	(on Rs. 19.78 Lakhs initial investment)						

2.13 REPAYMENT SCHEDULE

Year	Beginning	PMT	Interest	Principal	Ending Balance
1	810,784.86	112,471.41	84,321.63	28,149.79	782,635.07
2	782,635.07	112,471.41	81,394.05	31,077.37	751,557.71
3	751,557.71	112,471.41	78,162.00	34,309.41	717,248.30
4	717,248.30	112,471.41	74,593.82	37,877.59	679,370.71
5	679,370.71	112,471.41	70,654.55	41,816.86	637,553.85
6	637,553.85	112,471.41	66,305.60	46,165.81	591,388.03
7	591,388.03	112,471.41	61,504.36	50,967.06	540,420.97

8	540,420.97	112,471.41	56,203.78	56,267.63	484,153.34
9	484,153.34	112,471.41	50,351.95	62,119.47	422,033.88
10	422,033.88	112,471.41	43,891.52	68,579.89	353,453.99
11	353,453.99	112,471.41	36,759.21	75,712.20	277,741.79
12	277,741.79	112,471.41	28,885.15	83,586.27	194,155.52
13	194,155.52	112,471.41	20,192.17	92,279.24	101,876.28
14	101,876.28	112,471.41	10,595.13	101,876.28	(0.00)
		1,574,599.79	763,814.93	810,784.86	(810,784.86)

2.14 ASSET'S DEPRECIATION

Assets' Depreciation (Down Value Method)						Amounts in Lakhs	
Particulars	1st Year	2nd year	3 rd year	4th year	5th year	6th year	7th year	8th year
Civil works	5.18	4.92	4.67	4.44	4.22	4.01	3.81	3.62
Depreciation	0.26	0.25	0.23	0.22	0.21	0.20	0.19	0.18
Depreciated value	4.92	4.67	4.44	4.22	4.01	3.81	3.62	3.44
Plant & Machinery	8.38	7.54	6.79	6.11	5.50	4.95	4.45	4.01
Depreciation	0.84	0.75	0.68	0.61	0.55	0.49	0.45	0.40
Depreciated value	7.54	6.79	6.11	5.50	4.95	4.45	4.01	3.61
Other Fixed Assets	0.80	0.68	0.58	0.49	0.42	0.35	0.30	0.26

Depreciation	0.12	0.10	0.09	0.07	0.06	0.05	0.05	0.04
Depreciated value	0.68	0.58	0.49	0.42	0.35	0.30	0.26	0.22
All Assets	14.36	13.14	12.04	11.04	10.13	9.31	8.56	7.88
Depreciation	1.22	1.10	1.00	0.91	0.82	0.75	0.68	0.62
Depreciated value	13.14	12.04	11.04	10.13	9.31	8.56	7.88	7.26

2.15 FINANCIAL ASSESSMENT OF THE PROJECT

Benefit Cost Ratio (BCR) and Net Present Worth (NPW)

Particulars	1st Year	2nd year	3 rd year	4th year	5th year	6th year	7th year	8th year	
Capital cost (Rs. in Lakh)	19.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Recurring cost (Rs. in Lakh)	2.96	27.43	36.45	40.51	46.46	50.42	50.42	50.42	
Total cost (Rs. in Lakh)	22.74	27.43	36.45	40.51	46.46	50.42	50.42	50.42	324.85
Benefit (Rs. in Lakh)	0.00	57.75	68.25	78.75	94.50	105.00	105.00	105.00	
Total Depreciated value of all assets (Rs. in Lakh)								7.26	
Total benefits (Rs. in Lakh)	0.00	57.75	68.25	78.75	94.50	105.00	105.00	112.26	621.51
Benefit-Cost Ratio (BCR): (Highly Profitable project)	**1.913**								
Net Present Worth (NPW):	296.67								

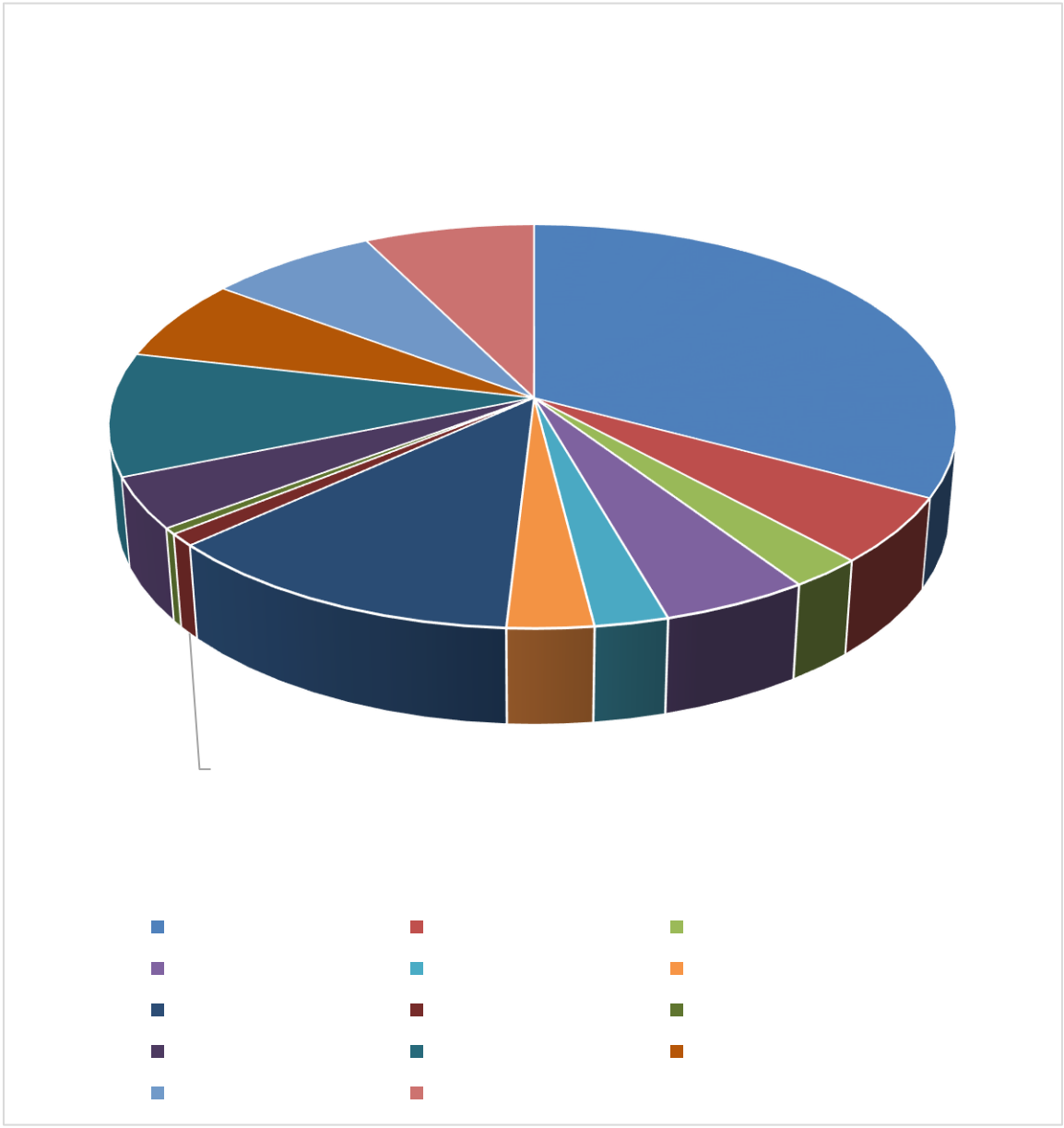
2.16 BREAK EVEN ANALYSIS

Break even analysis indicates costs-volume profit relations in the short run. This is the level at which, the firm is in no loss no profit situation.

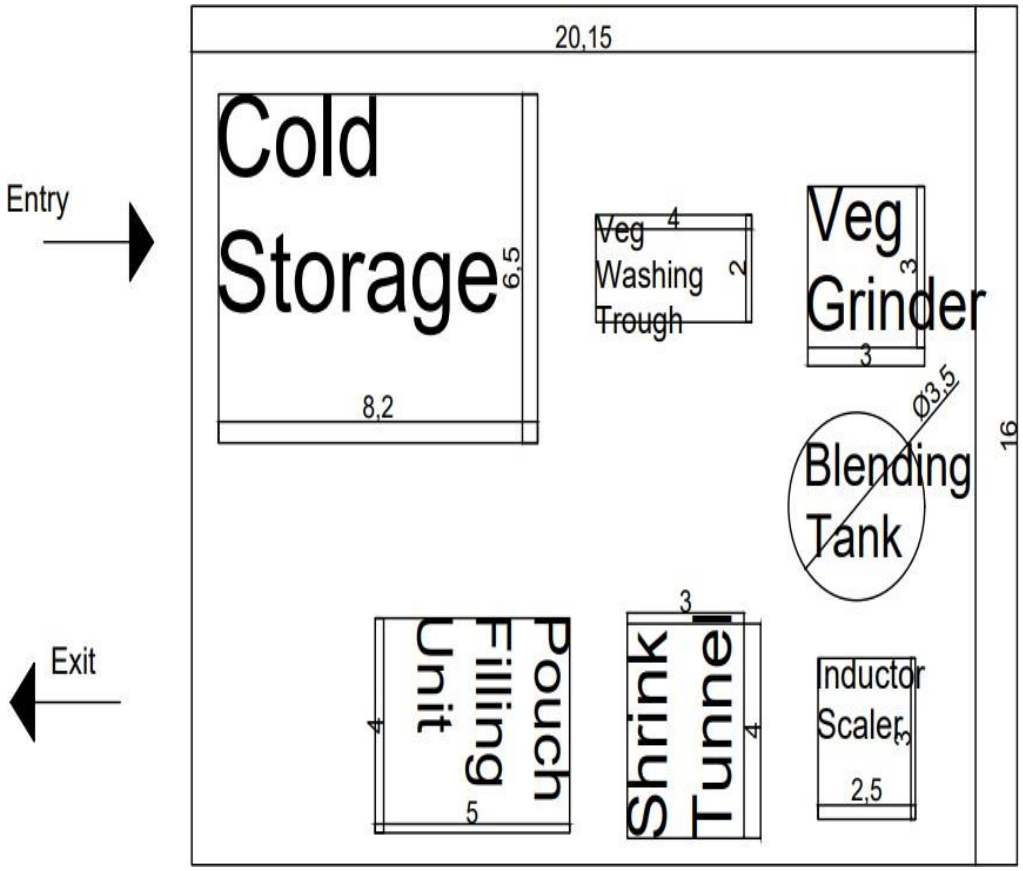
Particulars	**1st Year**	**2nd year**	**3 rd year**	**4th year**	**5th year**	**6th year**	**7th year**	**8th year**
Capacity utilization (%)	Under Const.	55%	65%	75%	90%	100%	100%	100%
Production MT/Annum		82.5	97.5	112.5	135	150	150	150
Fixed Cost (Rs. in Lakh)								
Permanent staff salaries	7.284	7.284	7.284	7.284	7.284	7.284	7.284	7.284
Depreciation on building @ 5% per annum	0.26	0.25	0.23	0.22	0.21	0.20	0.19	0.18
Depreciation on machinery @ 10% per annum	0.84	0.75	0.68	0.61	0.55	0.49	0.45	0.40
Depreciation on other fixed assets @ 15% per annum	0.12	0.10	0.09	0.07	0.06	0.05	0.05	0.04
Interest on term loan	0.84	0.81	0.78	0.75	0.71	0.66	0.62	0.56
Insurance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Total Fixed Cost (Rs. in Lakh)	**9.64**	**9.50**	**9.36**	**9.23**	**9.11**	**8.99**	**8.88**	**8.76**
Sales Revenue (Rs. in Lakh)	**0**	**57.75**	**68.25**	**78.75**	**94.5**	**105**	**105**	**105**
Variable Cost (Rs. in Lakh)								
Green chili (Av. Price @ Rs.12/Kg)	0.00	9.39	11.10	12.81	15.37	17.08	17.08	17.08
Salt @ 3 per kg	0.00	0.08	0.10	0.11	0.13	0.15	0.15	0.15
Other ingredients	0.00	1.34	1.58	1.82	2.19	2.43	2.43	2.43
Packaging materials	0.00	4.95	5.85	6.75	8.10	9.00	9.00	9.00
Casual staff salaries	0.00	5.78	5.78	5.78	5.78	5.78	5.78	5.78
Utilities (Electricity, Fuel)	0.00	1.09	1.29	1.48	1.78	1.98	1.98	1.98

Repair & maintenance	0.00	0.70	0.80	0.90	0.90	0.90	0.90	0.90
Miscellaneous expenses	0.50	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Interest on working capital @ 12%	0.00	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Total Variable Cost (Rs. in Lakh)	**0.50**	**26.20**	**29.37**	**32.53**	**37.13**	**40.19**	**40.19**	**40.19**
Break Even Point (BEP)								
as % of sale	-	12.00	10.00	8.00	8.00	7.00	7.00	6.00
Break Even Point (BEP) in terms of sales value (Rs. in Lakhs)	-	6.93	6.83	6.30	7.56	7.35	7.35	6.30

2.17 PIE CHART FOR BETTER UNDERSTANDING OF EXPENSES OF EACH HEAD:



2.18 TYPICAL GREEN CHILI PASTE MANUFACTURING UNIT LAYOUT



2.19 MACHINERY SUPPLIERS

There are many machinery suppliers available within India for vegetables based beverage processing machineries and equipment. Some of the suppliers are:

1. Bajaj Process pack Limited, Noida, India
2. Shriyan Enterprises. Mumbai, India

3. LIMITATIONS OF MODEL DPR & GUIDELINES FOR ENTREPRENEURS

3.1 LIMITATIONS OF THE DPR

i. This DPR has provided only the basic standard components and methodology to be adopted by an entrepreneur while submitting a proposal under the Formalization of Micro Food Processing Enterprises Scheme of MoFPI.

ii. This DPR is made to provide general methodological structure not for specific entrepreneur/crops/location. Therefore, information on the entrepreneur, forms and structure (proprietorship/partnership/cooperative/ FPC/joint stock company) of business, background of proposed project, location, raw material base/contract sourcing, entrepreneur's own SWOT analysis, market research, rationale of the project for specific location, community advantage/benefit, employment generation etc are not given in detail.

iii. The present DPR is based on certain assumptions on cost, prices, interest, capacity utilization, output recovery rate and so on. However, these assumptions in reality may vary across places, markets and situations; thus the resultant calculations will also change accordingly.

3.2 GUIDELINES FOR THE ENTREPRENEURS

i. The success of any prospective food processing project depends on how closer the assumptions made in the initial stage are with the reality of the targeted market/place/situation. Therefore, the entrepreneurs must do its homework as realistic as possible on the assumed parameters.

ii. This model DPR must be made more comprehensive by the entrepreneur by including information on the entrepreneur, forms and structure (proprietorship/partnership/cooperative/ FPC/joint stock company) of entrepreneur's business, project location, raw material costing base/contract sourcing, detailed market research, comprehensive dehydrated product mix

based on demand, rationale of the project for specific location, community advantage/benefit from the project, employment generation, production/availability of the raw materials/crops in the targeted area/clusters and many more relevant aspects for acceptance and approval of the competent authority.

iii. The entrepreneur must be efficient in managing the strategic, financial, operational, material and marketing aspects of a business. In spite of the assumed parameter being closely realistic, a project may become unsustainable if the entrepreneur does not possess the required efficiency in managing different aspects of the business and respond effectively in changing situations.

iv. The machineries should be purchased after thorough market research and satisfactory demonstration.

v. The entrepreneur must ensure uninterrupted quality raw materials' supply and maintain optimum inventory levels for smooth operations management.

vi. The entrepreneur must possess a strategic look to steer the business in upward trajectory.

vii. The entrepreneur must maintain optimum (not more or less) inventory, current assets. Selecting optimum source of finance, not too high debt-equity ratio, proper capital budgeting and judicious utilization of surplus profit for expansion is must.

viii. The entrepreneur must explore prospective markets through extensive research, find innovative marketing strategy, and maintain quality, adjust product mix to demand.

ix. The entrepreneur must provide required documents on land, financial transaction, balance sheet, further project analysis as required by the competent authority for approval.

x. The entrepreneur must be hopeful and remain positive in attitude while all situations.

Contact Us

National Institute of Food Technology, Entrepreneurship and Management (NIFTEM) - Thanjavur

(an Institute of National Importance under Ministry of Food Processing Industries, Government of India)

Pudukkottai Road, Thanjavur – 613005, Tamil Nadu,India

Ph: 04362-228155, Fax:04362-227971

Email: director@iifpt.edu.in Web: https://niftem-t.ac.in/