



PM Formalisation of Micro Food Processing Enterprises Scheme

DETAILED PROJECT REPORT FOR PROCESSING OF RED CHILLI POWDER



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1 EXECUTIVE SUMMARY

Chili powder (also spelled chile, chilli, or, alternatively, powdered chili) is the dried, pulverized fruit of one or more varieties of chili pepper, sometimes with the addition of other spices (where it is also sometimes known as chili powder blend or chili seasoning mix). It is used as a spice (or spice blend) to add pungency (piquancy) and flavor to culinary dishes.

Chili powder is sometimes known by the specific type of chili pepper used. Varieties of chili peppers used to make chili powder include Aleppo, ancho, cayenne, chipotle, chile de árbol, jalapeño, New Mexico, pasilla, and piri piri chili peppers. Gochugaru is a variety used in Korean cuisine traditionally made from sun-dried Korean red chili peppers known as taeyang-cho, with spicier varieties using Cheongyang peppers. Kashmiri chili powder is bright red, but mild in heat and used in Indian cuisine, named after the region of Kashmir.

India is one of the largest consumer and exporter of chillies. It consumes around 6.2 million tonnes i.e. about 90% of the total produce of the country. The demand from the chilli powder-producing sector constitutes 30% of total production in the country.

Demand for Indian chilli in Malaysia, Bangladesh, Sri Lanka and USA has been growing on an average between 20 - 25% because of its quality and price competitiveness.

Andhra Pradesh is the largest producer of Chilli in India and contributes about 26% to the total area under Chilli, followed by Maharashtra (15%), Karnataka (11%), Orissa (11%), Madhya Pradesh (7%) and other states contributing nearly 22% to the total area under Chilli

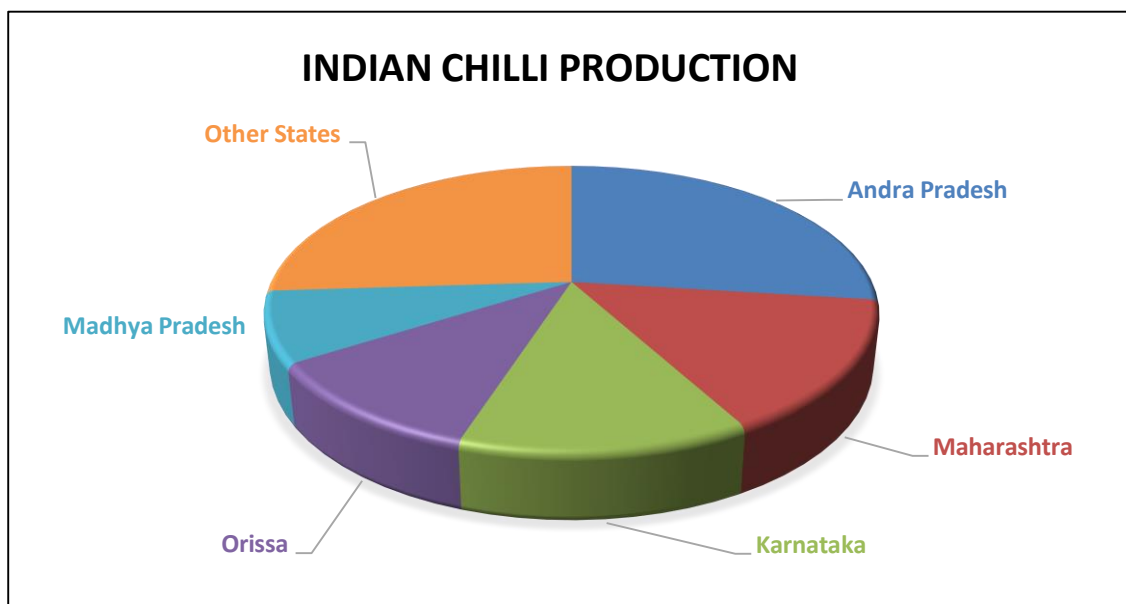


TABLE 1
PROJECT AT GLANCE

1	Name of the proposed project	Chilli Processing Unit
2	Name of the entrepreneur/FPO/SHG/ Cooperative	
3	Nature of proposed project	
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	1 Tonn/day (60, 70 & 80% capacity utilization in the 2nd, 3rd and 4th years' onwards respectively)
11	Raw materials	Chilli Processing Unit
12	Major product outputs	Chilli Powder
13	Total project cost :	Rs. 21.78 Lakhs
	· Land development, building & civil : construction	Rs. 3.50 Lakhs
	· Machinery and equipment's : (Lakhs)	Rs. 11.14 Lakhs
	· Utilities (Power & water facilities) : (Lakhs)	Rs. 0.7 Lakhs
	· Miscellaneous fixed assets : (Lakhs)	Rs. 0.8 Lakhs
	· Pre-operative expenses : (Lakhs)	Rs. 0.9 Lakhs
	· Contingencies : (Lakhs)	Rs. 2.00 Lakhs
	· Working capital margin : (Lakhs)	Rs. 2.74 Lakhs
14	Working capital requirement	
	· 2nd year (Lakhs)	Rs. 5.48 Lakhs
	· 3rd year (Lakhs)	Rs. 6.52 Lakhs
	· 4th year (Lakhs)	Rs. 7.53 Lakhs
15	Means of Finance	
	· Subsidy grant by MoFPI (max 10 lakhs) : :	Rs. 10.00 Lakhs
	· Promoter's contribution (min 20%)	Rs. 4.36 Lakhs
	· Term loan (45%) :	Rs. 7.42 Lakhs
16	Debt-equity ratio	0.28
17	Profit after Depreciation, Interest & Tax	
	· 2nd year (Lakhs)	Rs. 22.47 Lakhs
	· 3rd year (Lakhs)	Rs. 18.98 Lakhs
	· 4th year (Lakhs)	Rs. 22.60 Lakhs
18	Average DSCR	5.79

19	Benefit-Cost Ratio	1.28
20	Term loan repayment	7 Years with 1year grace period
21	Payback period for investment	1 years 5 months

2 OBJECTIVE OF THE PROJECT

The Prime Objective of the Report is to present a Viable Bankable Model of “**Red Chili Powder Processing Unit**” through adoption of appropriate technology, utilization of resources, quality production and suitable market strategy.

Some important objectives behind setup of “Red Chili Processing Unit” are:

- ✓ The prime objective is to setup this unit is to produce & make available quality product in most hygienic conditions with good packaging, untouched & with very less human interference during entire operations till market.
- ✓ To produce & market safe, quality-assured products with highest nutrient value than existing one.
- ✓ Improve customer’s nutrition by allowing them to consume quality processed product.
- ✓ Empowering the lifestyle of promoter by adopting proper techniques in production and marketing of final product.
- ✓ Proper utilization of land, water, labour & other resources for better plant economics.
- ✓ Employment generation for youth and women in surrounding areas.

3 PROJECT PROFILE

TABLE 2
PROJECT DESCRIPTION

PARTICULARS	DESCRIPTION
Project Name	“SET UP OF RED CHILLI POWDER PROCESSING UNIT”
Project Location	
Project Area	5000 Sq Ft
Project Proposed Economic Activities	Setup of Chilli Powder Processing Unit
Project Capacity/Annum	Chilli Powder Processing Unit ✓ 450 kg / Day Capacity

4 GENERAL OVERVIEW OF RED CHILLI PRODUCTION, CLUSTERS, PHM AND VALUE ADDITION IN INDIA

4.1 INTRODUCTION

It is known as the most valuable crop of India. It is used as a principle ingredient of various curries and chutneys, also used in vegetables, spices, condiments, sauces and pickles. Pungency in chillies is due to the active constituent "Capsaicin", an alkaloid. The native home of chilli is considered to be Mexico with secondary origin of Guatemala. Chilli was introduced in India by the Portuguese in Goa in the middle of 17th century and since then it had rapidly spread throughout the country. Capsaicin has many medicinal properties, especially as an anti-cancerous agent and instant pain reliever. It also prevents heart diseases by dilating blood vessels. Major chilli growing countries are India, China, Pakistan, Indonesia, Korea, Turkey and Sri Lanka in Asia; Nigeria, Ghana, Tunisia and Egypt in Africa; Mexico, United States of America in North & Central America; Yugoslavia, Spain, Romania, Bulgaria, Italy and Hungary in Europe and Argentina, Peru and Brazil in South America. India is the world leader in chilli production followed by China & Pakistan. Andhra Pradesh, Maharashtra, Karnataka, Orissa, Tamil Nadu, Bihar, UP and Rajasthan are the main chilly growing states.

Chilli is one of the most important commercial crops of India. It is grown almost throughout the country. There are more than 400 different varieties of chillies found all over the world. It is also called as hot pepper, cayenne pepper, sweet pepper, bell pepper, etc. Its botanical name is "Capsicum annum". The world's shortest chilli "Naga Jolokia" is cultivated in hilly terrain of Assam in a small town Tezpur, India. Different varieties are grown for vegetables, spices, condiments, sauces and pickles. Chilli occupies an important place in Indian diet. It is an indispensable item in the kitchen, as it is consumed daily as a condiment in one form or the other. Among the spices consumed per head, dried chilli fruits constitute a major share. Currently, chillies are used throughout the world as a spice and also in the making of beverages and medicines. If some varieties of chillies are famous for red colour because of the pigment 'capsanthin,' others are known for biting pungency attributed to 'capsaicin.' India is the only country which is rich in many varieties with different quality factors. Chillies are rich in vitamins, especially in vitamin A and C. They are also packed with potassium, magnesium and iron. Chillies have long been used for pain relief as they are known to inhibit pain messengers, extracts of chilli peppers are used for alleviating the pain of arthritis, headaches, burns and neuralgia. It is also claimed that they have the power to boost immune system and lower cholesterol. They are also helpful in getting rid of parasites of gut.

4.2 ORIGIN, DISTRIBUTION AND PRODUCTION OF CHILLI

Chillies are known from pre-historic times in Peru. They are believed to have originated in the tropical America. It is also said that chillies have originated in the Latin American regions of the New Mexico and Guatemala as a wild crop around 7500BC, as per the remains of the pre-historic Peru. The people native to these places domesticated this crop in and around 5000 BC,. Chilli is said to be the first ever domesticated crop in America. The three species *C. annum*, *C. frutescens* and *C. chinense* evolved from a common ancestor located in the North of the Amazon basin (NW-Brazil, Columbia). Further evolution brought *C. annum* and *C. frutescens* to Central America, where they were finally

domesticated (in México and Panamá, respectively), whereas *C. chinense* moved to the West and was first put to cultivation in Perú. Two other species were first cultivated in Western South America: *C. baccatum* in the Peruvian lowlands and *C. pubescens* at higher elevations, in the Andes (Perú, Bolivia, Ecuador). At that time, chillies were cultivated by the farmers together with a primary crop to protect the primary crop from any damage from birds. Columbus carried chilli seed to Spain in 1493. The cultivation of chilli and *Capsicum* spread rapidly from Spain to Europe. The Portuguese brought capsicum from Brazil to India during the year 1584. Chillies became popular in the whole of Asia rapidly and native Asians started cultivating this crop as well. The south Asian climate suited this crop, and since its introduction in the 16 century has been increasingly cultivated in south Asia. Chillies are the cheapest spices available in India and are eaten across all groups of people. The most important chilli growing states in India are Andhra Pradesh, Maharashtra, Karnataka and Tamil Nadu, which together constitute nearly 75 percent of the total area. Andhra Pradesh tops the list in dry chilli production followed by Tamil Nadu, Maharashtra, Orissa and Karnataka.

4.3 HEALTH BENEFITS AND NUTRITIONAL IMPORTANCE

Pungency in chilli is due to the alkaloid “capsaicin” contained in the pericarp and placenta of fruits, it produces mild to intense spice when eaten. Capsaicin is a potent inhibitor of substance P, a neuropeptide associated with inflammatory processes. The hotter the chili pepper, the more capsaicin it contains. The hottest varieties include Naga Jalokia, habañero and Scotch bonnet peppers. Jalapeños are next in their heat and capsaicin content, followed by the milder varieties, including Spanish pimientos, and Anaheim and Hungarian cherry peppers. Capsaicin is being studied as an effective treatment for sensory nerve fiber disorders, including pain associated with arthritis, psoriasis, and diabetic neuropathy. When animals injected with a substance that causes inflammatory arthritis were fed a diet that contained capsaicin, they had delayed onset of arthritis, and also significantly reduced paw inflammation.

Fresh Chilli peppers are very rich in vitamin C: i.e. 111.0 mg. per 74 grams in comparison to only 37 mg. in oranges, which makes them very effective as immune system stimulants and healing agents especially for cellular damage. Many folk remedies recommend Chilli pepper in wound cleaning preparations for gangrene and open sores and even as a styptic, though more modern sources generally advise against using Chilli on broken skin. While drying, Chilli loses most of its vitamin C, it increases the vitamin A content by 100 times. Vitamin A is a powerful anti-oxidant and anti-inflammatory agent. Chilli preparations have been used as a gargle to treat sore throat and laryngitis. Surprisingly, it has been shown that Chillies do not aggravate or cause stomach ulcers. In fact, they have a preventative effect, as stomach ulcers are mostly caused by bacteria and it's antibacterial action kills such bacteria. In folk-medicine they have also long been used to treat worms. Chilli has a very beneficial effect on the circulatory system. Studies have shown that it counter act on cholesterol build up and reduces platelet aggregation, thus reducing the risk of heart attacks and strokes. It also lowers high blood pressure and increase peripheral circulation.

TABLE 3
NUTRITIONAL COMPOSITION OF CHILLI

Parameters	Value {Per 100 gm}	
	<u>CHILLIES DRY</u>	<u>CHILLIES (GREEN)</u>
Moisture	10.000 gm	85.700 gm
Protein	15.000 gm	2.900 gm
Fat	6.200 gm	0.600 gm
Minerals	6.100 gm	1.000 gm
Fibre	30.200 gm	6.800 gm
Carbohydrates	31.600 gm	3.000 gm
Energy	246.000 K cal	29.000 K gm
Calcium	160.000 mg	30.000 mg
Phosphorus	370.000 mg	80.000 mg
Iron	2.300 mg	4.400 mg
Vitamins		
Carotene	345.000 µg	175.000 µg
Thiamine	0.930 mg	0.190 mg
Riboflavin	0.430 mg	0.390 mg
Niacin	9.500 mg	0.900 mg
Vitamin C	50.000 mg	111.000 mg
Minerals & Trace Elements		
Sodium	14.000 mg	--
Potassium	530.000 mg	--
Phytin Phosphorus	71.000 mg	7.000 mg
Magnesium	--	272.000 mg
Copper	--	1.400 mg
Manganese	--	1.380 mg
Molybdenum	--	0.070 mg
Zinc	--	1.780 mg
Chromium	--	0.040 mg
Oxalic Acid	--	67.000 mg
<u>Caloric values</u>		
Chili (Dry)		297
Chili (Green)		229

4.5 CULTIVATION, BEARING AND POST-HARVEST MANAGERMENTS

Harvesting is done when the pods are well ripened and partially withered in the plant itself. The harvested pods are kept in heaps either indoor or in shade away from direct sun light for 2 or 3 days so as to develop uniform red colour and then dried in the sun by spreading them on clean dry polythene sheets, cemented / concrete drying yards etc. Pods are spread out in thin layers for uniform drying with frequent stirring to prevent mold growth and discolouration. The dried pods are heaped and covered by clean gunny bags / polythene sheets. The moisture content of dry pods are kept at 8- 10 %. Improved drying system could be used to ensure cleanliness and uniform colour of the product.

**FIGURE 1
CHILLI CROP**



Climate Requirement for Chilli Farming

The chili is a plant of tropical and sub-tropical region -It grows well in warm and humid climate and a temperature of 20-25°C. Low moisture in soil during blossom development and fruit formation causes the bud, de blossom and fruit drops. Excessive rainfall is detrimental to the crops, because it brings about defoliation and rotting of the plant. As a rained crop, it is grown in areas receiving an annual precipitation of 25-30 inches.

Soil Requirement for Chilli Farming

Chilli can be grown in a range of soils, but black soils which retain moisture for long periods are suitable for rainfed crop whereas well drained soils, deltaic soils and sandy loams are good under irrigated condition. However, in hills of Uttarakhand, chilli are grown in a wide range of soils ranging from sandy to clay loam mixed with gravel and coarse sand.

FIGURE 2
HARVESTING OF CHILLI



Post-harvest Management:-

Harvesting is done when the pods are well ripened and partially withered in the plant itself. The harvested pods are kept in heaps either indoor or in shade away from direct sun light for 2 or 3 days so as to develop uniform red colour and then dried in the sun by spreading them on clean dry polythene sheets, cemented / concrete drying yards etc. Pods are spread out in thin layers for uniform drying with frequent stirring to prevent mold growth and discoloration. The dried pods are heaped and covered by clean gunny bags / polythene sheets. The moisture content of dry pods are kept at 8- 10 %. Improved drying system could be used to ensure cleanliness and uniform colour of the product.

After removing the extraneous matters like plant parts, etc. well dried pods should be packed in clean, dry gunny bags and stored ensuring protection from dampness. Dunnage should be provided to stack the packed bags to prevent moisture ingress from the floor. Care should be taken to stack the bags at 50 –60 cm away from the wall. Storing chillies for longer period may lead to deterioration. However, if cold storage facilities are used, the product may be stored for 8-10 months. Insects, rodents and other animals should be effectively prevented from getting access to the premises where chilli is stored.

1. Harvesting should be done during early mornings, It should be avoided during rains or just after rains.
2. While harvesting fruits, care should be taken to hold stalks firmly and fruit should be pulled upward gently, breaking the base of the stalk.
3. For dry chillies, care should be taken that the fruit should not be ripened or over ripened.
4. The harvesting should not be delayed as delayed harvesting gives poor quality produce.
5. The harvested fruits should be heaped indoor for 2-3 days, so that the partially ripe fruits, allows the whole produce to develop a uniform red colour.
6. The best temperature for ripening is 22-25 C and direct sunlight is to be avoided since this can result in development of white patches.
7. The ripen pods should be dried in the sun spreading them on clean dry polythene sheets, cemented drying yard.
8. The moisture content of dry pods should be kept at 8-10%
9. Reverting solar dryer are used for drying helps in reducing of drying time.

10. Chillies should be stack at 50 to 60 cms. away from the wall.
11. Periodic fumigations during storage with methyl bromide and phosphine is useful to control insects.
12. The product should not be stored for longer period except in case of cold storage with moisture proof plastic liners (polythene bags) preferably between 0-10 C with 65 to 70 percent humidity.
13. If possible while transporting from field, plastic field crates in places of sacks may be used to avoid mechanical damage.

4.6 PROCESSING AND VALUE ADDITION IN INDIA

Processed products such as dehydrated chilli, pickle, powder, paste, sauce, etc., can be prepared for higher returns. Generally growers sell chilli directly even though real return can come only from processed products. Hence, farmers must be educated in the processing of chilli for value addition.

Juice of chilli brings a warming flush to the skin and eased soreness. Capsicum has a tonic and carminative effect and is especially useful in a tonic dyspepsia. Pungent types of chillies are used by the pharmaceutical industry in the preparation of stimulant and counter irritant balms and in stomach ache, carminative and stimulant formulation.

The pungency in chilli is due to the alkaloid capsaicin contained in the pericarp and placenta of fruits. Capsaicin is a key ingredient in many liniments and together with other chemical compounds found in chilli peppers is prescribed in the treatment of rheumatism and bruises. It is also used to treat stomach aches involves poor functioning of stomach muscles. Capsaicins are also being used in clearing the lungs and sinuses, enhance the flow of digestive juices, which trigger the brain to release endorphins (natural pain killers), help to neutralize cavity causing acids, protect the body against cancer through anti oxidant activity. Because of capsaicin's specific excitatory and neurotoxic properties on c-fibres, capsaicin has been extensively used for relieving pain and thermo regulation. Capsicum is administered in the form of powder, tincture, lineament, plaster, ointment, medicated roll etc. Two types of pain relief products are currently being marketed including cream containing 0.75 percent capsaicin (eg. Zostrice TM) and plaster containing three percent oleoresin (Vorwek-TM). It also corrects bowel disorders and it prevents the formation of puss in the wound and because the red-hot chilli pepper is an inhospitable place for bacteria, its extracts have been used as antibacterial agents.

5 MODEL CHILLI POWDER PROCESSING UNDER FME SCHEME

5.1 LOCATION OF 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 there of i.e. in terms of raw materials availability, market accessibility, logistics support, basic infrastructure availability etc.

The ideal locations for establishment of exclusive Chilli Powder processing unit are in the production clusters of Chilli growing states/Areas such as Andhra Pradesh, Karnataka, West Bengal, Uttar Pradesh, Gujrat, Tamil Nadu and Maharashtra where adequate quantities of surplus raw materials can be available for processing.

5.2 INSTALLED CAPACITY OF POCCESSING PLANT

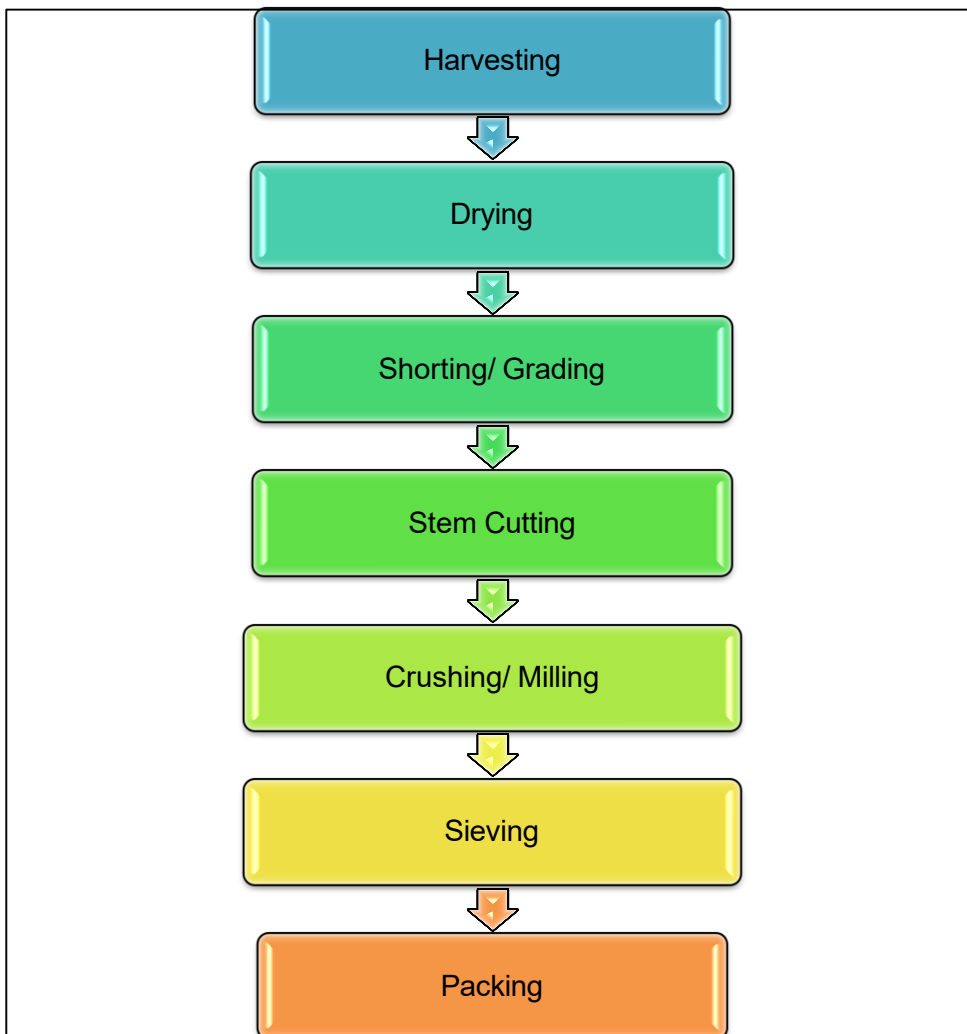
The maximum installed capacity of the Processing unit in the present model project is proposed as 150 tonns/annum or 500 kg/day input capacity of Chilli. The unit is assumed to operate 300 days/annum @ 8-10 hrs/day. The 1st year is assumed to be construction/expansion period of the project; and in the 2nd year 70 percent capacity, 3rd year 80 percent capacity and 4th year onwards 90 percent capacity utilization is assumed in this model project.

5.3 RAW MATERIAL REQRUMENT FOR THE UNIT

A sustainable food processing unit must ensure maximum capacity utilization and thus requires an operation of minimum 250 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.

5.5 PROCESSING PROCESS

FIGURE 3
RED CHILLI POWDER PROCESS FLOWCHART



Harvesting

Harvesting is done when the pods are well ripened and partially withered in the plant itself. The harvested pods are kept in heaps either indoor or in shade away from direct sun light for 2 or 3 days so as to develop uniform red colour.

Drying

Drying in the sun by spreading them on clean dry polythene sheets, cemented / concrete drying yards etc. Pods are spread out in thin layers for uniform drying with frequent stirring to prevent mold growth

and discolouration. The dried pods are heaped and covered by clean gunny bags / polythene sheets. The moisture content of dry pods are kept at 8- 10 %. Improved drying system could be used to ensure cleanliness and uniform colour of the product.

Shorting and grading

Sorting is the process of grouping according to size, shape, weight, image and color. Grading is pre-requisite for development of the modern marketing, trade and economy of any commodity. The Indian chillies are graded mostly by farmers on the basis of colour and size, before they are brought in the market. The damaged discoloured and immature pods are removed depending on market demand. However, at traders level the other important quality parameter are moisture and stalks. Excess moisture add weight to the pods but give room to various fungi to grow. Similarly, if the stalk of the pods is broken, exposing the seeds entirely, the seeds may fall out. On the other hand in absence of optimum moisture the pods may break and let off the seeds. Thus the seed and pod ratio in a lot is also a valuable parameter of grade.

Dry Cleaning

Cleaning the spice prior to packaging and sale, is to ensure that the spice is of the highest quality and will obtain the highest price. Cleaning should remove all the foreign matter that lowers the quality and endangers the sale. The first step majorly is of de-stoning & leaf removing. Vibratory sieves are used to remove sand, small stones, seeds & dust particles & air blower is used to remove leaves.

Steam Cutting

Chillies stem cutting machine is generally used to cut the stem of the red chillies in bulk amount saving the time and labour costs. By using this machine the red chillies stems are easily cut. This machines are generally used in mirchi powder making companies.

Crushing/ Milling

Process of milling is commonly also known as grinding process. Under this process the crushed parts are milled & grinded to powder form. After 2-3 rounds of proper grinding fine chili powder is obtained.

Sieving

Centrifugal sifter with fine mesh can be used & replaced with traditional sifters. The internal shaft with rubber blades rotate to break the lumps along with it passing through desired size of fine mesh to get smooth fine chili powder.

Powder chilli packing

Red Chilli Powder Should having 8% moisture content for safe storage. Mostly packed in plastic pouches.

5.6 MAEKRT DEMAND AND SUPPLY FOR RED CHILLI POWDER

Indian states like Andhra Pradesh, Gujarat, Rajasthan, Orissa and Madhya Pradesh are the five leading states for the production of spices. The new age urban population around the world is extremely health conscious which is causing rise in demands for organic spices. The three biggest clients of spice manufacturers include retail, industrial and catering sector. Andhra Pradesh leads the country in the production of chilli, with 49% Spices are generally sold at premium spices and also in greater demand which can further enhance export revenues in major spice producing countries. Spices farming mechanism starts at grass root level conserving the generative and renewing capacity of the soil, plant nutrition, and soil management, yields nutritious food rich in vitality which has resistance to diseases. Increasing demand of natural flavoring and coloring agents in food, medicinal properties and health benefits are driving the spices market. There is high demand for spices from regions like Asia Pacific, Middle East and Europe.

5.7 DETAIL RROJECT ASSUMPTIONS

This model DPR for Chilli powder 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 Red Chilli Processing unit by adding Red Chilli Powder 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.

TABLE 4
PROJECT DETAILS

	Detailed Project Assumptions	
	Parameter	Value
1	Capacity of the processing unit	500 Kg/Day input Capacity of Chilli
2	Utilization of capacity	1st year implementation, 60% in 2nd year, 70% in 3rd year and 80% in 4th year onwards.
3	Working days per year	300 days
4	Working hours per day	8 hrs.
5	Interest on term and working capital loan	12%
6	Repayment period	Seven years with one-year grace period is considered.
7	Average prices of raw material	Rs. 70/Kg.
8	Final Product	Chilli Powder

9	Recovery Rate	90%
10	Average Selling Price	140 Rs/Kg

**TABLE 5
FIXED CAPITAL INVESTMENT**

Sr. No.	Particulars	Size/ Dimensions / Specification	Quantity (No)	Total Area (Sq ft)	Unit Cost (Rs)	Amount (Rs)	Amount (Lakh)
A	Capital Investment		1 Plot			3,50,000	3.50
	Capital Investment					3,50,000	3.50
B	Machinery & Equipment's						
1	Micro pulveriser with 10 HP motor starter and all accessories	1MT/hr	1		260000	2,60,000	2.60
2	Hanging weighing Scale	100 kg	1		17000	17,000	0.17
3	Digital Weighing Machine	100 kg	2		4,300	8,600	0.09
4	Band Sealer		2		2159	4,318	0.04
5	Packaging Machinery	2000 pack/ hr	1		650000	6,50,000	6.50
6	Sieving m/c.	15 kg/ hr	2		82,000	1,64,000	1.64
7	Miscellaneous		1		10000	10,000	0.10
	Machinery & Equipment's					11,13,918	11.14
C	Other Costs						
C1	Utilities & Fittings						
1	Water					70,000	0.70
2	Power						
	Total					70,000	0.70
C2	Other Fixed Assets						
1	Furniture & Fixtures					80,000	0.80
2	Electrical Fittings						
	Total					80,000	0.80
C3	Pre-operative Expenses						

1	Legal Expenses, Start -up Expenses, Establishment Cost, Consultancy fees, Trials and others					90,000	0.90
2	Plastic Tray Capacity						
3	Electrical Fittings						
	Total					90,000	0.90
C4	Contingency					2,00,000	2.00
	Total					2,00,000	2.00
C	Total Cost (C1+C2+C3+C4)					4,40,000	4.40
II	Total Cost (I+F+G)					19,03,918	19.04

TABLE 6
WORKING CAPITAL REQUIRMENTS

Sr. No.	Description	Quantity	Unit Rate/ Kg	Total Cost (Rs) /Day	Total Cost (Rs) / Month	Total Cost (Rs) / Year
1	Chilli	500	70	35,000	8.75	87.50
2	Packaging Material (1 kg or ½ Kg)	1,000	3.5	3,500	0.88	8.75
3	Labour - Cleaning, Stem Removing	12	300/day	3,600	0.90	9.00
4	Supervisor / Manager	1	500/ day	600.00	0.15	1.50
5	Electricity			360	0.09	0.90
6	Transportation			500	0.13	1.25
7	Miscellaneous			300.00	0.08	0.75
	Total Cost			43,860.00	10.97	109.65
	Working Capital Margin 20%			2,74,125.00	2.74	

TABLE 7
TOTAL PROJECT COST

Sr. No.	Particulars	Amount In Lakhs
i	Land Development & Building Structure	3.50
ii	Plant & Machinery	11.14
iii	Other Fixed Assets	2.40
iv	Working Capital Margin	2.74
v	Contingency	2.00
vi	Total Project Cost	21.78

TABLE 8
MEANS OF FINANCE

Sr. No.	Particulars	Amount In Lakhs
i	Subsidy	10.00
ii	Promoters Contribution	4.36
iii	Term Loan	7.42
	Total Means of Finance (1 to 3)	21.78

TABLE 9
EXPENDITURE, REVENUE AND PROFITABILITY

PARTICULARS+A2:G45	YEAR					
	1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr
Capacity %	-	60.00	70.00	80.00	90.00	100.00
A. INCOME						
Sales of Chilli Powder	-	95.45	112.47	129.82	147.51	165.53
Total	-	95.45	112.47	129.82	147.51	165.53
B. EXPENSES						
Raw Material	-	52.50	62.48	72.10	81.90	91.88
Consumables	-	-	-	-	-	-
Packing cost	-	5.25	6.25	7.21	8.19	9.19
Transportation cost	-	0.75	0.89	1.03	1.17	1.31
Direct employee cost	-	6.30	7.50	8.65	9.83	11.03
Depreciation	-	2.46	2.13	1.85	1.60	1.39
Office Rent	-					
Plant Electricity Cost	-	0.54	0.64	0.74	0.84	0.95
Miscellaneous	-	0.45	0.54	0.62	0.70	0.79
Office Expenses	-	0.66	0.73	0.80	0.88	0.97

Telephonic Expenses	-	0.06	0.60	0.66	0.73	0.80
Indirect Employee	-	0.50	0.50	0.50	0.50	0.50
Repair & Maintenance	-	0.50	1.50	1.65	1.82	2.00
Audit, Accounts & Compliance	-	0.44	0.44	0.48	0.53	0.59
Insurance		0.5	2	2	2	3
Total Cost	-	70.91	86.19	98.49	111.11	124.03
Add :- Opening Stock		-	8.39	9.93	11.46	13.02
Less :- Closing Stock	-	8.39	9.93	11.46	13.02	14.61
Cost of Sales	-	62.52	84.65	96.96	109.55	122.44
GROSS PROFIT	-	32.93	27.81	32.86	37.96	43.09
	-	34.50%	24.73%	25.31%	25.73%	26.03%
FINANCE EXPENSES						
Interest on Term Loan	0.89	0.82	0.69	0.57	0.44	0.31
Interest On CC		-	-	-	-	-
Total Interest	0.89	0.82	0.69	0.57	0.44	0.31
PROFIT BEFORE TAX	-0.89	32.11	27.12	32.29	37.52	42.78
INCOME TAX (30%)	-0.27	9.63	8.14	9.69	11.26	12.83
PROFIT AFTER TAX	-0.62	22.47	18.98	22.60	26.26	29.94

TABLE 10
REPAYMENT SCHEDULE

Year	Outstanding loan at start of yr.	Disbursement	Total outstanding Loan	Surplus for repayment	Interest payment	Repayment of principal	Total outgo	o/s Loan at the end of the yr.	Balance left
1	-0.00	7.42	7.42	1.57	0.89	0	0.89	7.42	0.68
2	7.42		7.42	9.35	0.82	1.06	1.88	6.36	7.47
3	6.36		6.36	14.97	0.69	1.06	1.76	5.30	13.21

4	5.30		5.30	18.29	0.57	1.06	1.63	4.24	16.66
5	4.24		4.24	21.91	0.44	1.06	1.50	3.18	20.41
6	3.18		3.18	25.13	0.31	1.06	1.37	2.12	23.75
7	2.12		2.12	26.42	0.19	1.06	1.25	1.06	25.17
8	1.06		1.06	31.40	0.06	1.06	1.12	(0.00)	30.28

**TABLE 11
ASSETS DEPRECIATION**

PARTICULARS	YEAR					
	1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr
Land & Building Structure						
Opening Bal.		3.50	3.15	2.84	2.55	2.30
Additions	3.50					
Less :- Depreciation @ 10%		0.35	0.32	0.28	0.26	0.23
Closing Bal.	3.50	3.15	2.84	2.55	2.30	2.07
PARTICULARS	YEAR					
	1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr
Plant & Machinery						
Opening Bal.		11.14	9.47	8.05	6.84	5.81
Additions	11.14					
Less :- Depreciation @ 15%		1.67	1.42	1.21	1.03	0.87
Closing Bal.	11.14	9.47	8.05	6.84	5.81	4.94
PARTICULARS	YEAR					
	1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr

Other Required Material & Accessories							
Opening Bal.		4.40	3.96	3.56	3.21	2.89	
Additions	4.40						
Less :- Depreciation @ 10%		0.44	0.40	0.36	0.32	0.29	
Closing Bal.	4.40	3.96	3.56	3.21	2.89	2.60	
TOTAL DEPRECIATION	-						
PARTICULARS		YEAR					
	1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr	
Land & Building Structure	-	0.35	0.32	0.28	0.26	0.23	
Plant & Machinery	-	1.67	1.42	1.21	1.03	0.87	
-	-						
Other Required Material & Accessories	-	0.44	0.40	0.36	0.32	0.29	
TOTAL DEPRECIATION	-	2.46	2.13	1.85	1.60	1.39	

TABLE 12
FINANCIAL ASSESSMENT OF PROJECT

	YEAR							
	1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr	7th yr	8th yr
Cost	19.04	70.91	86.19	98.49	111.11	124.03	125.05	125.57
Benefit	-	95.45	112.47	129.82	147.51	165.53	167.19	168.86
Discounting Rate	0.91	0.83	0.75	0.68	0.62	0.56	0.51	0.47
P.V Cost	17.31	58.60	64.75	67.27	68.99	70.01	64.17	58.58
P.V Benefit	-	78.88	84.50	88.67	91.59	93.44	85.79	78.78

Total P.V Cost	469.69
Total P.V Benefit	601.64

Benefit Cost Ratio	1.28
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TABLE 13
BREAK EVEN ANALYSIS

PARTICULARS	Year						
	1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr	7th yr
Annual Production in Kg	-	67,500	78,750	90,000	1,01,250	1,12,500	1,12,500
Revenue	-	95.45	112.47	129.82	147.51	165.53	167.19
Selling Cost Per Kg	-	141.40	142.81	144.24	145.68	147.14	148.61
Office & General Expenses	-	1.16	1.77	1.94	2.14	2.35	2.59
Depreciation	-	2.46	2.13	1.85	1.60	1.39	1.21
Total Fixed Cost	-	3.62	3.90	3.79	3.74	3.74	3.79
Total Fixed Cost Per Kg	-	5.36	4.95	4.21	3.69	3.33	3.37
Total Variable Cost	-	64.80	77.11	88.99	101.09	113.40	113.40
Variable Cost Per Kg	-	96.00	97.92	98.88	99.84	100.80	100.80
Contribution	-	30.65	35.35	40.83	46.42	52.13	53.79
Contribution per Unit	-	45.40	44.89	45.36	45.84	46.34	47.81
Contribution in %	-	32%	31%	31%	31%	31%	32%
Break Even Point kg	-	0	0	0	0	0	0
Break Even Point Rs	-	2.94	3.21	3.10	3.05	3.06	3.12
Break Even In %	-	11.82	11.02	9.28	8.05	7.18	7.05
Margin Of Safty	-	92.50	109.25	126.71	144.45	162.48	164.07

FIGURE 4
PIA CHART FOR BETTER UNDERSTANDING OF EXPENCES OF EACH HEAD

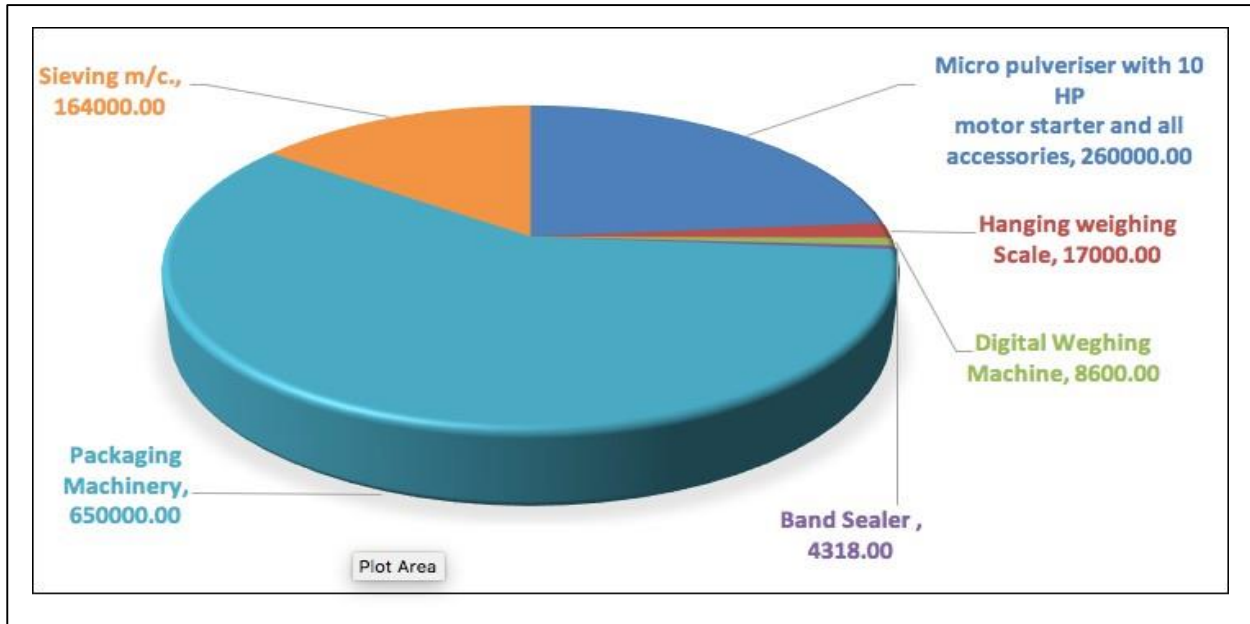
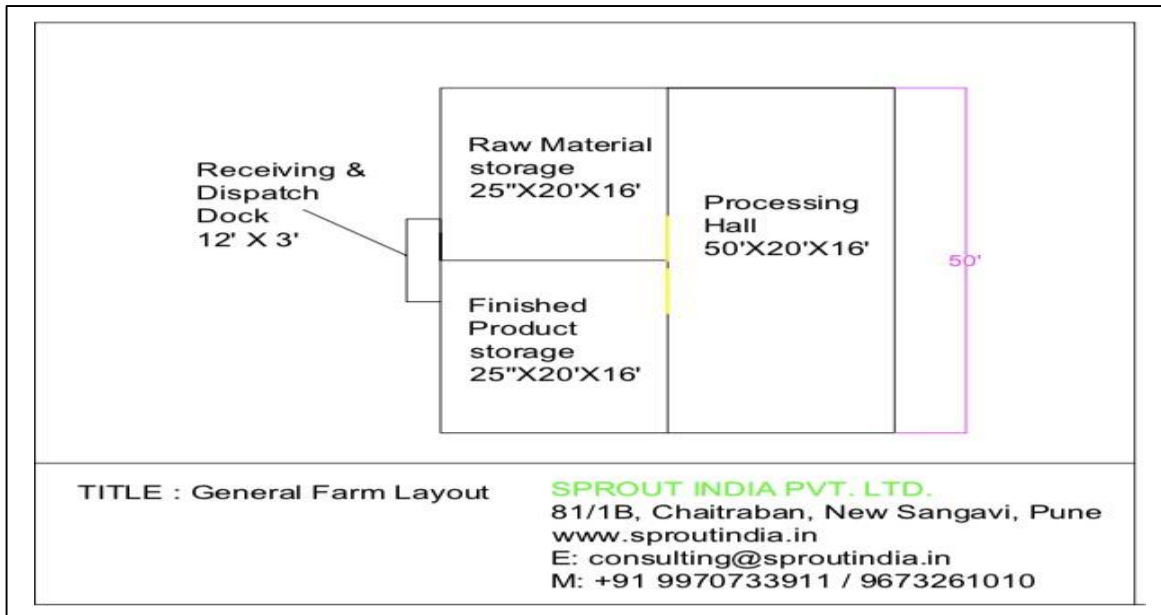


FIGURE 5
PLANT LAYOUT



5.8 MACHINERY SUPPLIERS

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

- Stellar Food Tech. Pune, Maharashtra, India
- Proveg Engineering & Food Processing Private Limited
- Near Swad Kolhapur Restaurant, Chikhli, Pune
- Lithotech Food & Spice Machinery
- Vasai East, Mumbai
- Varahi Industries
- GIDC Vatwa, Ahmedabad
- Srinidhi Industries
- 17. Bommasandra, Bengaluru

6 LIMITATIONS OF MODEL DPR AND GUIDELINES FOR ENTREPRENEURS

6.1 LIMITATIONS OF MODEL 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.

6.2 GUIDELINES FOR ENTEPRENURES

- 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

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