PM Formalization of

Micro Food Processing Enterprises Scheme

DETAILED PROJECT REPORT

FOR

TOMATO POWDER PROCESSING

AATMANIRBHAR BHARAT

Indian Institute of Food Processing Technology

Ministry of Food Processing Industries

Pudukkottai Road, Thanjavur, Tamil Nadu 613005

Website: http://www.iifpt.edu.in

Email: info@iifpt.edu.in

Call: +91 4362 228155

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Project At a Glance		
1	Name of the Project	Tomato powder
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	30 MT/annum (55, 65, 75,90 & 100% capacity utilization in the 2nd, 3rd, 4th ,5th & 6th years' onwards respectively
11	Raw materials	Tomato Fruit
12	Major product outputs	Tomato powder
13	Total project cost (Lakhs)	28.57
	Land development, building & civil construction	5.3
	Machinery and equipment	18.43
	Utilities (Power & water facilities)	0.8
	Miscellaneous fixed assets	0.9
	Pre-operative expenses	0.90
	Contingencies	1.20
	Working capital margin	1.04
14	Working capital Management (In Lakhs)	
	Second Year	3.13
	Third Year	3.70
	Fourth Year	5.05
15	Means of Finance	
	Subsidy grant by MoFPI (max 10 lakhs)	10.00
	Promoter's contribution (min 20%)	7.43
	Term loan (45%)	11.14
16	Debt-equity ratio	1.5 : 1
17	Profit after Depreciation, Interest & Tax	
	2nd year	10.88
	3rd year	13.64
	4th year	17.09
18	Average DSCR	2.16
	Benefit Cost Ratio	1.85
	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 TOMATO PRODUCTION, CLUSTERS, POST-HARVEST MANAGEMENT AND VALUE ADDITION IN INDIA

1.1 INTRODUCTION

Tomato, though botanically a fruit for the purpose of trade, is generally considered a vegetable because of the way in which it is consumed. Tomatoes are widely grown in all parts of the world. Tomatoes are produced and processed during the two main seasons across much of India – August to October (kharif) and December to April (rabi). Tomatoes are also grown during the off-season (May to July) where conditions suit and also under protected cultivation. Tomato fits easily into different cropping systems, has high economic value and fruits can be processed, dried, canned and bottled. Moreover, tomatoes contribute to a healthy, well balanced diet. Tomatoes are rich in potassium, magnesium, phosphorus and small amounts of calcium. Tomatoes contain a lot of vitamin A, vitamin C and vitamin B3. They have small amounts of other B vitamins, and vitamin E. Tomatoes are mostly grown by a large number of small holder farmers with holdings of between 1-3 acres of land. The southern and central states constitute much of India's production including the states of Andhra Pradesh, Telangana, Karnataka and Maharashtra. Tomato production is growing worldwide because consumers demanding a wider range of innovative, value-added products. Tomatoes are an important crop for both the farmer and the consumer in India. It grows in almost every state of the country. Due to increasing standards of living in the cities and the rapid urbanization taking place in the rural areas, consumption of tomato based products is expected to go up steadily. The major institutional customers of tomato paste are restaurants. At present, the market of ketchup/puree, especially in the urban areas, is dominated by brands likes MEGGI and KISSAN. Some medium and small companies are also engaged in its production. However, because of poor post-harvest infrastructure and value addition, a huge quantity of tomato get wasted in the supply chain.

Therefore, processing of tomato can not only minimize wastage but also offers huge scope for entrepreneurship development at micro or small scale level through government schemes such as PM-Formalization of Micro Food Processing Enterprises Scheme of MoFPI, Government of India.

1.2 ORIGIN, DISTRIBUTION AND PRODUCTION OF TOMATO

The Tomato History has origins traced back to the early Aztecs around 700 A.D; therefore it is believed that the tomato is native to the Americas. It was not until around the 16th century that Europeans were introduced to this fruit when the early explorers set sail to discover new lands. Throughout Southern Europe, the tomato was quickly accepted into the kitchen, yet as it moved north, more resistance was apparent. The exact origin of tomato plant is not known, although it is speculated that it evolved from the prehistoric plant Night shade over millions of years ago in South America (together with potato, tobacco and chili peppers) and slowly moved to north until it was domesticated into the lands of Mesoamerica between Mexico and northern costa Rica. This land was a home of several advanced Pre-Columbian society who flourished there until arrival of Europeans in the age of discovery. During 500 B.C. One of those culture managed to domesticate tomato and integrate it into their cuisine. That culture was Aztec. From that point on, tomato slowly spread across the central and South America, somewhere being used as a food but somewhere aloes being used as a hallucinogenic. The first European contact with tomato came with Christopher columbus who possibly encountered it in 1493 but Spanish conquistador Hernan cortes may have been the first to transfer the small yellow tomato to Europe after he captured the Aztec City of Tenochtitlan, now Mexico city in 1521. The earliest discussion of the tomato in European literature appeared in a ‘Herbal’ written in 1544 by Pietro Andrea Mattioli an Italian physician and botanist. There seeing that Tomato could grow without a problem in a warm Mediterranean climate, Spanish government started encouraging its production in both Europe and its distant colonies. Most likely the first variety to reach Europe was yellow in colour since in Spain and Italy they were known as

pomid' oro or meaning yellow apples. Italy was the first to embrace and cultivate the tomato outside South America. The French referred to the Tomato as pommes d' amour or love apple and the Germans as 'apple of paradise : The English loved its brilliant red colour but they held the fruit in suspicion because its leaves resembled that of Deadly Nightshade (Belladona), a poisonous plant which also belongs to the solanaceae, the tomato's plant family'. An early as 1540 s tomato started being produced in Spanish field and was used regularly as a common food in early 17th century other European countries did not adopt tomato immediately.

In early 19th Century tomato finally arrived in Asia. It arrived there under the guidance of British consul in Syria John Barker who directed first cultivation efforts. By mid-19th Century, tomato gained much popularity and started being used widely in Syria, Iran and China Modern age of commercially grown tomato started with the efforts of Alexander W. Livingston American botanist and scientists who dedicated much of his life of upgrading tomato with selective breeding into the most commonly known form we know today. (Mc Cue, 1952 and Smith, 1994). The high acidic content of the tomato makes it a prime candidate for canning, which is one of the main reasons the tomato was canned more than any other fruit or vegetable by the end of the 19th century. Tomato came to India by way of Portuguese explores during the early 16th century. Because tomatoes thrive in warm, sunny condition with no severe frost, the plants took well to Indian soils. Due to lack of evidences as it is not clear when and where cultivation of tomato started in India but it is clear that they were the Britishers who made it popular. Different varieties of tomato were planted by them. Even today in Bengal tomato is named as 'Vilayati Begun'. According to Sir George Watt (1889). "19th Century onwards tomatoes were mainly grown in India for the Britishers. Mostly Bengali tomato were preferred due to its taste and sourness." Today India is the second largest grower of tomatoes.. The National Horticulture Board gives a higher figure estimating India's production to be closer to 20 Million. Andhra Pradesh leads tomato growth in India by covering approximately 35% of the country's production or almost 6 millions tonnes. Trailing a far distant second is Karnataka at 1.8 million tonnes. Other top tomato producing states in India are Orissa, West Bengal, Bihar, Gujarat, Maharashtra,

Chattisgarh, Tamil Nadu and Jharkhand respectively. India grown several varieties of tomatoes, from the small lively cherry tomato bursting with juice to the large fibrous beefsteak. The most common tomato variation are beefsteak, cheery, heirloom, roma and pear. A few of the 7500 tomato varieties grow in India many with rather peculiar name – "best of all", fire ball, desi Dixon, King humbere, roma and red cloud are a few examples.

It is important commercial vegetable crop of India. It is the second most important crop of world after potato. Fruits are eaten raw or in cooked form. It is rich source of vitamin A, C, potassium and minerals. It is used in soup, juice and ketch up, powder.

India is the second largest producer of Tomato in the world followed by China. Total area under Tomato cultivation is 7, 89,000 hectares of land. Tomato production is 19,759 thousand MT production. The major tomato producing states are Andhra Pradesh, Madhya Pradesh, Karnataka, Gujarat, Orissa, Bihar, Maharashtra, West Bengal, Telangana and Uttar Pradesh.

1.3 VARIETIES

The main varieties of tomato grown in the country are Pusa Ruby, Pusa Early Dwarf, Arka Abha, Arka Alok, Pant Bahar, Pusa hybrid-1, Pusa hybrid-2, MTH-6, Arka Vardan, Rashmi etc.

1) Vaishali:

This is a determinate hybrid variety of tomato which produces medium sized (100g) quality fruits. The variety is suitable for growing in hot and humid weather conditions. Suitable for tomato juice preparation.

2) Roma:

This is a variety of IARI, New Delhi. Fruits are elliptical in shape with yellow and thick stem end. Suitable for processing.

3) Pusa Ruby:

This is an early maturing variety developed by IAR1, New Delhi; derived through selection from the cross Sioux x Improved Meeruthi. Plants are indeterminate (80- 85 cm), spreading and hardy with fewer branches. Fruits are flattish round, small-medium, uniform red, slightly lobed (4-5 locules) and acidic; suitable for processing; suitable for cultivation during autumn, winter and springsummer seasons; gives an average yield of 30 t/ha.

4) Pusa-120:

Plants are semi determinate, spreading, late maturing with dark green foliage. Fruits are flattish round, attractive, medium to large, uniform red, less acidic, less seeded, resistant to nematode and suitable for winter and summer seasons. Average yield is 300- 320 q/ha.

5) Pusa Sheetal:

Plants are determinate, fruit set successfully under low night temperature (up to 80 C) and suitable for early spring season, fruits are flattish round with yellow stem end, smooth, attractive, medium sized, red colour and uniform ripening. Harvesting starts from early march. Average yield is 350 q/ha.

6) Arka Vikas:

Fruits are medium large (80-90g), oblate with light green shoulder, which develop deep red color on ripening. Suitable for fresh market. Adapted to both rain fed and irrigated conditions. Average yield is 350 q/ha

7) Arka Abha:

Fruits are oblate with light green shoulder. Develops deep red colour on ripening. Average fruit weight is 75g. Resistant to bacterial wilt caused by Ralstonia solanacearum. Suitable for fresh market. Average yield is 430 q/ha.

8) Arka Saurabh:

Fruits are medium large (70-80 g), round with light green shoulder, deep red in colour, firm with nipple tip, Suitable for both fresh market and processing. Average yield is 300-350q/ha.

9) Arka Alok:

Fruits are square round on lower cluster, large in size, firm with green shoulder, resistant to bacterial wilt. Suitable for freshmarket. Average yield is 460 q/ha.

10) Kashi Vishesh (DVRT-2):

Plants are determinate, dark green, fruits are red, spherical, medium to large sized. First harvest at 70-75 days after transplanting, Resistant to TLCV. Average yield is 400-450 q/ha.

11) Kashi Sharad:

Plants are indeterminate, leaves are broad, fruits are attractive red, slightly oval, firm with thick pericarp, longer shelf life, avg. fruit weight is 90-95 g. Average yield is 400-500q/ha.

12) HS-101:

Plants are determinate, multi branched, fruits develop in clusters of 2-3, round, small to medium sized, red at ripening and suitable for winter season cultivation. Average yield is 250-275 q/ha.

13) Pant Bahar:

The plants are bushy and profusely branched. Fruits are flattish round, medium in size with 5-6 locules, slightly ridged and uniform red at maturity. First picking starts in 75-80 days after transplanting. Average yield is 250 q/ha.

14) Pant T-3:

The fruit weight is about 70 g. Fruits become uniform red at maturity. Suitable for processing. Average yield is 300 q/ha.

15) Pusa Early Dwarf:

It is an early ripening selection from the cross between 'Improved Meeruti' and 'Red Cloud'-a typical dwarf type with medium large fruits of uniform colour. It has been observed to do well in both the seasons, and yields 395 q/ha.

16) Hisar Arun (Sel-7):

It is an early maturing variety developed by CCSHAU, Hisar; derived through modified pedigree method from the cross Pusa Early Dwarf x K-l. Plants are determinate dwarf, erect, with cut leave and synchronized clustered flowers, bear 15-20 fruits. Fruits are round, red, medium size (65-70 g), 4-6 locules with deep red flesh. First picking starts in 60-65 days after transplanting; gives an average of 150q/ha and 287 q/ha early and total yield respectively in 80-85 days of crop duration.

17) Hisar Lalit:

It is a nematode resistant variety developed by CCSHAU, Hisar. It is derived from the cross HS101 x Resistant Bangalore. Plants are determinate and early maturing. Fruits are round and medium to large in size. It is suitable for cultivation in nematode infested areas.

18) Punjab Chhuhara:

The plants are dwarf, bushy, determinate with dense and luxuriant foliage. Its dense foliage protects the fruit from sunburn. The fruits are pear shaped, small to medium sized, firm fleshy, less seedy and uniformly red at maturity. Yield: 350- 400 q/ha.

19) Marglobe:

Indeterminate in nature, fruits large, round with green stem end, smooth and juicy. It is late in maturity. Yield: 280-300 q/ha.

1.4 HEALTH BENEFITS AND NUTRITIONAL INFORMATION

Nutritional value:

Composition of Tomato (100g edible portion) by fresh weight basis

Nutrients	Quantity per 100g
Water	94 g
Energy	18 kCal
Protein	0.88 g
Fat	0.2 g
Carbohydrate	3.89 g
Phosphorous	24 mg
Calcium	10 mg
Magnesium	11 mg
Potassium	237 mg
Vitamin C	13.7 mg
Choline	6.7 mg
Niacin	0.594 mg
Vitamin E	0.54 mg

Tomato fruit is consumed in diverse ways, including raw as an ingredient in many dishes, sauces and in drinks, while it is botanically a fruit and is considered as a vegetable in culinary, carotene, anthocyanin and other natural antioxidants.

- **Anti-oxidant:** Tomatoes contain a lot of vitamins A and C, mostly because of beta-carotene, and these vitamins act as an anti-oxidant, working to neutralize dangerous free radicals in the blood stream.

- **Vitamin A:** Because of all that vitamin A, tomatoes are also an excellent food to help improve your vision. This also means tomatoes can help your eyes be better about night blindness.
- **Calcium:** Tomatoes have a fair amount of vitamin K and calcium, both of which help to strengthen and possibly repair in minor ways bones and bone tissue.

CONSTITUENTS AND HEALTH BENEFITS OF TOMATO

Tomatoes have an abundance of health benefits.

Let us take a look at them below.

Health benefits:

- **Good for the Skin and Hair:** Given the rising levels of pollution, our skin and hair end up bearing a lot of brunt. Incorporating tomatoes in your regular diet actually helps to battle the wear and tear our skin goes through. Tomatoes contain lycopene, which is also used for facial cleansers. And apart from eating them as salad, you can also peel the tomatoes, and use the skin as a mask on your face. It cleanses and refreshes your skin. And the Vitamin A in tomatoes protects your hair from external damages as well.

- **It's Anti-Carcinogenic**: The Lycopene in tomatoes is reported to control the growth of cancer cells, especially prostate, stomach, and colorectal cancer. If you cook tomatoes, the production of lycopene actually increases, so you can curry it as much as you like.

- **Antioxidant power:** Though most of the phytonutrients and vitamins in tomatoes have potent antioxidant properties, lycopene is a standout. In a test tube study published in Archives of Biochemistry and Biophysics, researchers found that lycopene was most effective at deactivating singlet oxygen (a harmful free radical) of all the carotenoids. This could be because lycopene has a unique molecule shape that is highly effective in deactivating free radicals.

- **Strong bones:** Lycopene may promote bone health and help prevent the development of osteoporosis. A study published in the Journal of Bone and Mineral Research found that participants with higher levels of lycopene in their blood were less likely to experience hip or nonvertebral fracture. Furthermore, a study published in Osteoporosis International found that postmenopausal women who added lycopene to their diets for four months saw decreased bone resorption (breakdown of bones).

- **Eyesight:** Tomatoes contain both vitamin A and beta-carotene, which can turn into vitamin A when digested. Vitamin A is known to be necessary for vision. It is required to keep the retina working correctly and for low-light and color vision, according to the Linus Pauling Institute at Oregon State University. It also plays a role in eye development.

1.5 CULTIVATION, BEARING & POST HARVEST MANAGEMENT:-

Tomato plants are vines, initially decumbent, typically growing 180 cm (6 ft) or more above the ground if supported, although erect bush varieties have been bred, generally 100 cm (3 ft 3 in) tall or shorter. Indeterminate types are "tender" perennials, dying annually in temperate climates (they are originally native to tropical highlands), although they can live up to three years in a greenhouse in some cases. Determinate types are annual in all climate.

Tomato plants are dicots, and grow as a series of branching stems, with a terminal bud at the tip that does the actual growing. When that tip eventually stops growing, whether because of pruning or flowering, lateral buds take over and grow into other, fully functional, vines.

Tomato vines are typically pubescent, meaning covered with fine short hairs. These hairs facilitate the vining process, turning into roots wherever the plant is in contact with the ground and moisture, especially if the vine's connection to its original root has been damaged or severed.

Most tomato plants have compound leaves, and are called regular leaf (RL) plants, but some cultivars have simple leaves known as potato leaf (PL) style because of their resemblance to that particular relative. Of RL plants, there are variations, such as rugose leaves, which are deeply grooved, and variegated, angora leaves, which have additional colors where a genetic mutation causes chlorophyll to be excluded from some portions of the leaves.

The leaves are 10–25 cm (4–10 in) long, odd pinnate, with five to nine leaflets on petioles, each leaflet up to 8 cm (3 in) long, with a serrated margin; both the stem and leaves are densely glandular-hairy

Their flowers, appearing on the apical meristem, have the anthers fused along the edges, forming a column surrounding the pistil's style. Flowers in domestic cultivars can be self-fertilizing. The flowers are 1–2 cm (1⁄2–3⁄4 in) across, yellow, with five pointed lobes on the corolla; they are borne in a cyme of three to 12 together.

Although in culinary terms, tomato is regarded as a vegetable, its fruit is classified botanically as a berry. As a true fruit, it develops from the ovary of the plant after fertilization, its flesh comprising the pericarp walls. The fruit contains hollow spaces full of seeds and moisture, called locular cavities. These vary, among cultivated species, according to type. Some smaller varieties have two cavities, globe-shaped varieties typically have three to five, beefsteak tomatoes have a great number of smaller cavities, while paste tomatoes have very few, very small cavities.

Cultivation and Bearing:-

Tomato plantation is done in well pulverized and leveled soil. Land is ploughed for 4-5times to bring soil to fine tilth, then planking is done to make soil level. At time of last ploughing well decomposed cow dung and Carbofuron@5kg or Neem cake@8kg per acre should be applied. Transplantation of tomato is done on raised bed of 80-90cm width. To destroy harmful soil borne pathogen, pest and organism, soil solarization is carried out. It can be done by using transparent plastic film as mulch. This sheet absorbs radiation and thus increases soil temperature and kills pathogen.

Solarization for one month before sowing is done. Tomato seeds are sown on raised beds of 80-90 cm width and of convenient length. After sowing, bed covered with mulch and irrigation of bed must be done with Rose-Can daily in morning. To protect crop from virus attack nursery bed is covered with fine nylon net. To make plants healthier and stronger and to harden seedling against transplanting sock, spray of Lihocin@1ml/Ltr water at 20 days after sowing is good. Damping off damages crop to great extent, to prevent crop from it, overcrowding of seedlings is avoided and soil is kept wet. If wilting is observed, ddrenching of Metalaxyl@2.5gm/Ltr water is done 2-3 times till plants are ready for transplantation. Seedling is ready for transplantation 25 to 30 days after sowing with 3-4 leaves. In case if seedlings age is more than 30 days transplantation must be done after de-toping. Watering of seedling beds is done 24 hours before transplanting so that seedlings can be easily uprooted and be turgid at transplanting time. To protect crop from bacterial wilt, seedlings are dip in 100 ppm Streptocycline solution for 5 minutes before transplanting.

For northern state, tomato cultivation for spring season is done in late November and transplanted in second fortnight of January. For autumn crop, sowing is done in July – August and transplanted in August - September. In hilly areas sowing is done in March-April and transplantation is done in April -May. Depending upon variety and its growth habit, spacing of 60x30cm or 75x60cm or 75x75cm is good.

Plant starts yielding generally by 70 days after transplantation. Harvesting is done depending upon purpose like for fresh market, long distance transport etc. Mature green

tomatoes, 1/4th fruits portion gives pink color are harvested for long distance markets. Almost all fruits turn into pink or red color but having firm flesh are harvested for local markets. For processing and seed extraction purpose, fully ripe fruits with soft flesh are used.

Post-harvest management:-

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

- Fruits are graded according to their size and color. All the diseased, deformed, bruised and unripe fruits are sorted out.
- Do not leave harvested fruit out in the hot sun;
- Providing shade for fresh tomatoes or other produce after harvest helps to reduce the pulp temperature and extend shelf life.
- There are more simple tools that can be used to harvest horticultural produce with less damage/bruises, like harvesting clippers, hand-held pruners, a picking basket on a long pole, harvesting bags that can be worn during picking, and color charts for visual determination of proper maturity for tomatoes and various other fruits and vegetable crops.
- Use of improved containers and packages for handling harvested produce, like wooden crates and plastic crates can be used to reduce postharvest loss. Adding a liner (such as paper or plant materials) to a rough container can help to reduce abrasion damage.
- Evaporative cooling can be provided with a few simple tools, including a solar-powered fan, a fiber pad (aspen wood fiber, straw or poly-cellulose fiber) and a digital temperature probe or wall thermometer. Air is cooled by pulling or pushing it though a wet pad, and then the cooled air is used to reduce the temperature of the packed produce.

- Zero Energy Cool Chambers (ZECC), this technology is made of materials that are easy to find, like low-cost bricks and sand to make an evaporative cooling chamber and includes 6 medium-sized plastic crates to hold stored fresh produce and a thatched shade cover on wooden poles to protect the ZECC from direct sun and reduce heat gain from solar radiation.

Packaging as a postharvest handling practice in tomato production is essential in putting the produce into sizeable portions for easy handling. However, using unsuitable packaging can cause fruit damage resulting in losses. Some common packaging materials used in most developing countries include wooden crates, cardboard boxes, woven palm baskets, plastic crates, nylon sacks, jute sacks, and polythene bags.

1.5 PROCESSING & VALUE ADDITION:-

Tomato production is a growing worldwide as consumers demanding a wider range of innovative, value-added products. Some of the Tomato Value Added Products of tomatoes are Tomato Puree, Tomato Juice, Mixtures of Vegetable Juice, Tomato Ketchup, Tomato Jam, Tomato Powder, Tomato Sauce, Tomato Pickle, Tomato Chutney, Tomato Ketchup, Tomato Soup, Tomato Paste etc.

This results in high demand on mixing technology for production and processing. Tomato processing industry is huge. A large part of the world tomato crop is processed into tomato paste/puree, which is subsequently used as an ingredient in many food products, mainly soups, sauces and ketchup. India has been exporting processed tomato in the form of tomato paste and ketchup. Tomato sauce is being used with snacks like rolls, cutlets, samosas, chops, soup, chowmin and other continental as well as chinese dishes. Bright mixture made from tomato is used as important items with all modern food/snacks. The only ketchup and sauce market in India is pegged at Rs 1,000 crore and growing at around 20% year-on-year. There is a big market for the processed tomato products. Tomato products are one of the chief ingredients in ready-to-eat or fast food products.

Sun-drying is an ancient method used in Indian households to dry fruits and vegetables. The removal of moisture from any substance is called dehydration. If the moisture in fruits and vegetables is reduced to a certain level by drying method, the shelf life can be increased. It is found to be one of the ways to provide antioxidant product at low price to the community. Hence, tomato was dried and developed the various products using dried tomato and dried peel.

Drying of tomato: The variety of tomato selected for the powdering was country tomato (Namdhaari) which is available in the selected area. Tomato was washed swell, deseeded and dried in the sunlight. The dried tomatoes were powdered. Tomato products were developed and standardized using the dried tomato powder. Products like sago tomato vadagam, rice tomato vadagam and tomato ribbon chips were developed using the tomato powder.

2. MODEL TOMATO POWDER 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 major tomato producing states are Andhra Pradesh, Madhya Pradesh, Karnataka, Gujarat, Orissa, Bihar, Maharashtra, West Bengal, Telangana and Uttar Pradesh.

2.2 INSTALLED CAPACITY OF THE TOMATO POWDER PROCESSING UNIT

The maximum installed capacity of the Tomato powder manufacturing unit in the present model project is proposed as 30 tonns/annum or 100 kg/day Tomato powder. 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.

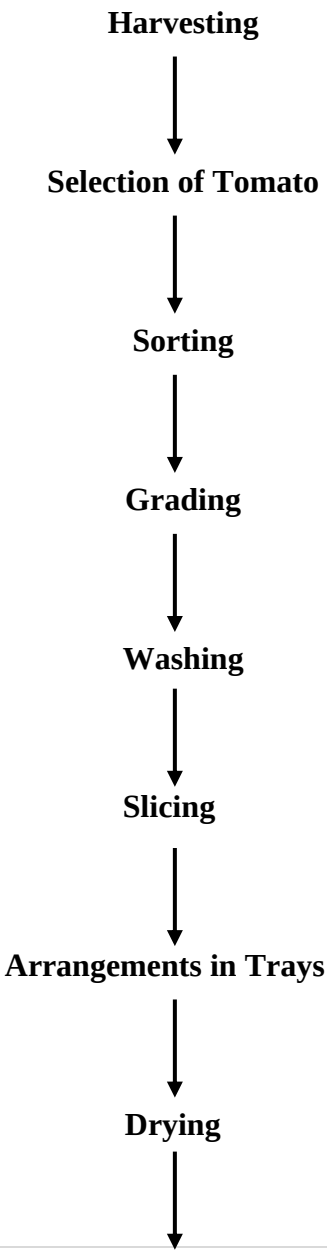
2.3 RAW MATERIAL REQUIREMENTS FOR THE UNIT

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 Tomato powder manufacturing project, the unit requires 960.31 kg/day, 1134.92 kg/day, 1309.52 kg/day, 1571.42 Kg/day & 1746.03 kg/day Tomato fruits at 55, 65, 75, 90 & 100 percent capacity utilization, respectively.

2.4 MANUFACTURING PROCESS OF THE TOMATO POWDER

Flow chart for tomato powder:



Cooling

↓

Pulverizing

↓

Packaging

↓

Sealing

Selection of Tomato

Mature tomato with bright color and characteristic flavor are selected. The variety and maturity of fruit influence the flavor and keeping quality of its powder. The fruits are plucked when they mature turns green to yellow-red. All Tomatoes soften extremely quickly, making them vulnerable to bruising and subsequent rotting. So gently pick the ripened fruits from the tree. The fruits should be harvested in the morning hours.

Sorting

Sorting is the process of grouping according to size, shape, colour and weight. Sorting covers two main separate processing operations:

a. Removal of damaged fruit and any foreign bodies (which might have been left behind after washing).

b. Qualitative sorting based on organoleptic criteria and maturity stage. Mechanical sorting for size is usually not done at the preliminary stage. The most important initial sorting is for variety and maturity.

Clean and bright coloured toamtoes should be preferred. Ruptured or bruised skin with bacterial or fungal infected tomatoes are not recommended.

After sorting, Tomato fruits should be graded into four grades.

Super A, Super, Fancy and Commercial.

Washing

Washing and sanitizing the fruits is required to remove the pesticide residues, plant debris and other possible contamination as well as microorganisms responsible for quality loss and decay. Generally immersed in tap water whereas sanitizing agents are added to process water to effectively reduce the microbial loads on the fruit surface. Tomatoes are seldom washed.. Washing with water must be accompanied with brushing, rubbing, and forcing the water against the fruit and into crevices. Detergents are frequently used in the wash or rinse water. Dirt and microorganisms are removed by washing with Sodium hypochlorite water. Rinsed with Sodium bicarbonate (2%) solution and again rinsed with water in fruit washing tank. Fluming in cold water reduces contact with the air and reduces bruising of soft fruit and is a retardant to oxidation if an antioxidant is used.

Slicing

Slicing of Toamtoes can be done manually or mechanically. In manual process, it should be done with hands using a serrated knife.

Mechanically, it can be done using a Vegetable slicer maching. Tomato fruits are sliced into thin slices for quick moisture reduction.

Drying

•Tradition Drying Method: Sun Drying

Drying of tomatoes takes place by utilizing the heat energy radiated by sun. The sliced tomatoes are spread on any available space and allowed under sun until it is completely dried.

The tomatoes are dried under sun for 5 to 10 days and the final moisture content of the dried tomato slices shall not exceed 6%.

•Other improved drying methods like solar drying, tunnel drying, tent drying and osmotic drying methods are also used.

Pulverizing

Pulverizing is also known as grinding / milling. The main aim is to obtain smaller particle size with good product quality in terms of flavour and colour. Different grinding methods are available for this process such as hammer mill, attrition mill, pin mill and plate mill. Two to three rounds of proper grinding will give fine powders. Dried fruits and their application in powder form have gained interest in the food industry. Drying and grinding conditions during powder processing greatly influence the quality attributes of biological materials. It implies not only nutritional changes but also physical, textural, sensorial and functional changes.

Packaging

The tomato powder can be packed using the form fill sealer in plastic or foil bags. It can also be packed in tins and glass containers.

2.5 MARKET DEMAND AND SUPPLY FOR TOMATO POWDER

The tomato based value added products such as puree, paste sauce and ketchup are extensively used in daily consumption pattern both in rural and urban India. Due to increasing standards of living in the cities and the rapid urbanization taking place in the rural areas, consumption of tomato based products is expected to go up steadily.

A large part of the world tomato crop is processed into tomato paste/puree, which is subsequently used as an ingredient in many food products, mainly soups, sauces and ketchup. India has been exporting processed tomato in the form of tomato paste and ketchup. Tomato sauce is being used with snacks like rolls, cutlets, samosas, chops, soup, chowmin and other continental as well as chinese dishes. Bright mixture made from tomato is used as important items with all modern food/snacks. The only ketchup and sauce market in India is pegged at Rs 1,000 crore and growing at around 20% year-on-year. Therefore, there is a big market for the processed tomato products. Tomato products are one of the chief ingredients in ready-to-eat or fast food products. The major institutional customers of tomato paste are restaurants. At present, the market of ketchup/puree, especially in the urban areas, is dominated by brands likes MEGGI and KISSAN. However, the existing market can still accommodate micro or small scale units on their own or under other's brand.

2.6 MARKETING STRATEGY FOR TOMATO POWDER

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

2.7 DETAILED PROJECT ASSUMPTIONS

This model DPR for Tomato 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 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. Tomato cost considered @ Rs.3/-per kg.
    2. 1 kg Tomato will produce 6% recovery.
    3. 1 Batch size is approximately 100 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 Tomato powder Unit	30	MT/annum
Utilization of capacity	1st Year Implementation, 55% in second, 65% in third, 75% in fourth year, 90% in fifth & onwards	
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	3	
Average sale prices per Kg	240	Rs/kg
Powder extraction	6%	
TOMATO POWDER	1 kg tomato powder from 17.46 kg Tomato	

2.8 FIXED CAPITAL INVESTMENT

2.8.1 MACHINERY AND EQUIPMENT

Sr No.	Equipment	Capacity	Quantity	Price (Rs. In Lacs)
1	Cold Room	1	10000 kg capacity	6
2	Bubble washer	1	200 kg per batch	2.9
3	Vegetable slicer	1	200 kg per hour	1.1
4	Tray drier with trolley	1	500 kg/hr	6.1
5	Pulverizer	1	Suitable	1.4
6	Cont. sealing machine	1	Suitable	0.25
7	Batch coding machine	1	Suitable	0.12
8	Weighing balance	1	Suitable	0.06
9	Accessories	1	Suitable	0.5
			Total	18.43

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 28.57 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 (days)	Year 2	Year 3	Year 4
Raw material stock	5	0.28	0.33	0.44
Work in progress	10	0.55	0.65	0.89
Packing material	10	0.06	0.07	0.10
Finished goods' stock	10	0.94	1.11	1.52
Receivables	20	1.88	2.23	3.04
Working expenses	14	0.46	0.55	0.75
Total current assets		4.18	4.94	6.73

Trade creditors		0.00	0.00	0.00
Working capital gap		4.18	4.94	6.73
Margin money (25%)		1.04	1.23	1.68
Bank finance		3.13	3.70	5.05

2.10TOTAL PROJECT COST AND MEANS OF FINANCES

Particulars	Amount in Lakhs
i. Land and building (20 x 32 x 12 ft - LxBxH)	5.3
ii. Plant and machinery	18.43
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	1.04
Total project cost (i to vii)	28.57
Means Of finance	
i. Subsidy	10.00
ii. Promoters Contribution	7.43
iii. Term Loan (@10%)	11.14

2.11 MANPOWER REQUIREMENTS

Total Monthly Salary (Rs.)	No	Wages	Total Monthly	Total Annualy
Supervisor (can be the owner)	1	15000	15000	180000
Technician	1	12000	12000	144000
Helper	2	5500	11000	132000
Sales man	1	7000	7000	84000
			45000	540000

2.12 EXPENDITURE, REVENUE AND PROFITABILITY ANALYSIS

	Particulars	1st Year	2nd Year	3rd Year	4 th Year	5th year	6th year
A	Total Installed Capacity (MT)	524 MT Tomato /Annum	16.5	19.5	22.5	27	30
	Capacity utilization (%)	Under Const.	55%	65%	75%	90%	100%
B	**Expenditure (Rs. in Lakh)**	0					
	Tomato (Av. Price @ Rs. 3/Kg)	0.00	8.64	10.21	11.79	14.14	15.71
	Packaging materials	0.00	0.99	2.34	2.70	3.24	3.60
	Utilities (Electricity, Fuel)	0.00	2.59	3.06	3.53	4.24	4.71
	Salaries (1st yr only manager's salary)	1.80	5.40	5.40	5.40	5.40	5.40
	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	**2.60**	**20.92**	**24.42**	**26.92**	**30.52**	**32.93**
C	**Total Sales Revenue (Rs. in Lakh)**	**0.00**	**39.60**	**46.80**	**54.00**	**64.80**	**72.00**
	Sale of tomato powder (Av. Sale Price @ Rs. 240/kg)	0.00	39.60	46.80	54.00	64.80	72.00
D	**PBDIT (Total exp.-Total sales rev.) (Rs. in Lakh)/Cash Inflows**	**-2.60**	**18.68**	**22.38**	**27.08**	**34.28**	**39.07**
	Depreciation on civil works @ 5% per annum	0.27	0.25	0.24	0.23	0.22	0.21
	Depreciation on machinery @ 10% per annum	1.84	1.66	1.49	1.34	1.21	1.09
	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%	1.16	1.12	1.07	1.03	0.97	0.91
	Interest on working capital @ 12%	0.00	0.38	0.44	0.61	0.61	0.61

E	Profit after depreciation and Interest (Rs. in Lakh)	**-5.99**	**15.54**	**19.49**	**24.41**	**31.82**	**36.82**
F	Tax (assumed 30%) (Rs. in Lakh)	**0.00**	**4.66**	**5.85**	**7.32**	**9.55**	**11.04**
G	Profit after depreciation, Interest & Tax (Rs. in Lakh)	**-5.99**	**10.88**	**13.64**	**17.09**	**22.27**	**25.77**
H	Surplus available for repayment (PBDIT-Interest on working capital-Tax) (Rs. in Lakh)	1.16	1.12	1.07	1.03	0.97	0.91
I	Coverage available (Rs. in Lakh)	1.16	1.12	1.07	1.03	0.97	0.91
J	Total Debt Outgo (Rs. in Lakh)	0.39	0.43	0.47	0.52	0.57	0.63
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)	-3.76	12.89	15.46	18.73	23.76	27.12
M	Payback Period	2.0 Years					
	(on Rs. 28.57 Lakhs initial investment)						

2.13 REPAYMENT SCHEDULE

Year	Beginning	PMT	Interest	Principal	Ending Balance
1	1,114,386.05	154,586.72	115,896.15	38,690.57	1,075,695.48
2	1,075,695.48	154,586.72	111,872.33	42,714.39	1,032,981.09
3	1,032,981.09	154,586.72	107,430.03	47,156.69	985,824.40
4	985,824.40	154,586.72	102,525.74	52,060.99	933,763.41
5	933,763.41	154,586.72	97,111.39	57,475.33	876,288.09
6	876,288.09	154,586.72	91,133.96	63,452.76	812,835.32
7	812,835.32	154,586.72	84,534.87	70,051.85	742,783.47
8	742,783.47	154,586.72	77,249.48	77,337.24	665,446.23

9	665,446.23	154,586.72	69,206.41	85,380.31	580,065.92
10	580,065.92	154,586.72	60,326.86	94,259.87	485,806.05
11	485,806.05	154,586.72	50,523.83	104,062.89	381,743.16
12	381,743.16	154,586.72	39,701.29	114,885.43	266,857.72
13	266,857.72	154,586.72	27,753.20	126,833.52	140,024.21
14	140,024.21	154,586.72	14,562.52	140,024.21	-
		2,164,214.12	1,049,828.06	1,114,386.05	(1,114,386.05)

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	5.30	5.04	4.78	4.54	4.32	4.10	3.90	3.70
Depreciation	0.27	0.25	0.24	0.23	0.22	0.21	0.19	0.19
Depreciated value	5.04	4.78	4.54	4.32	4.10	3.90	3.70	3.52
Plant & Machinery	18.43	16.59	14.93	13.44	12.09	10.88	9.79	8.82
Depreciation	1.84	1.66	1.49	1.34	1.21	1.09	0.98	0.88
Depreciated value	16.59	14.93	13.44	12.09	10.88	9.79	8.82	7.93
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	24.53	22.30	20.29	18.47	16.83	15.34	13.99	12.77
Depreciation	2.23	2.01	1.82	1.64	1.49	1.35	1.22	1.11
Depreciated value	22.30	20.29	18.47	16.83	15.34	13.99	12.77	11.67

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)	28.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Recurring cost (Rs. in Lakh)	2.60	20.92	24.42	26.92	30.52	32.93	32.93	32.93	
Total cost (Rs. in Lakh)	31.17	20.92	24.42	26.92	30.52	32.93	32.93	32.93	232.74
Benefit (Rs. in Lakh)	0.00	39.60	46.80	54.00	64.80	72.00	72.00	72.00	
Total Depreciated value of all assets (Rs. in Lakh)								11.67	
Total benefits (Rs. in Lakh)	0.00	39.60	46.80	54.00	64.80	72.00	72.00	83.67	432.87
Benefit-Cost Ratio (BCR): (Highly Profitable project)	**1.860**								
Net Present Worth (NPW):	200.13								

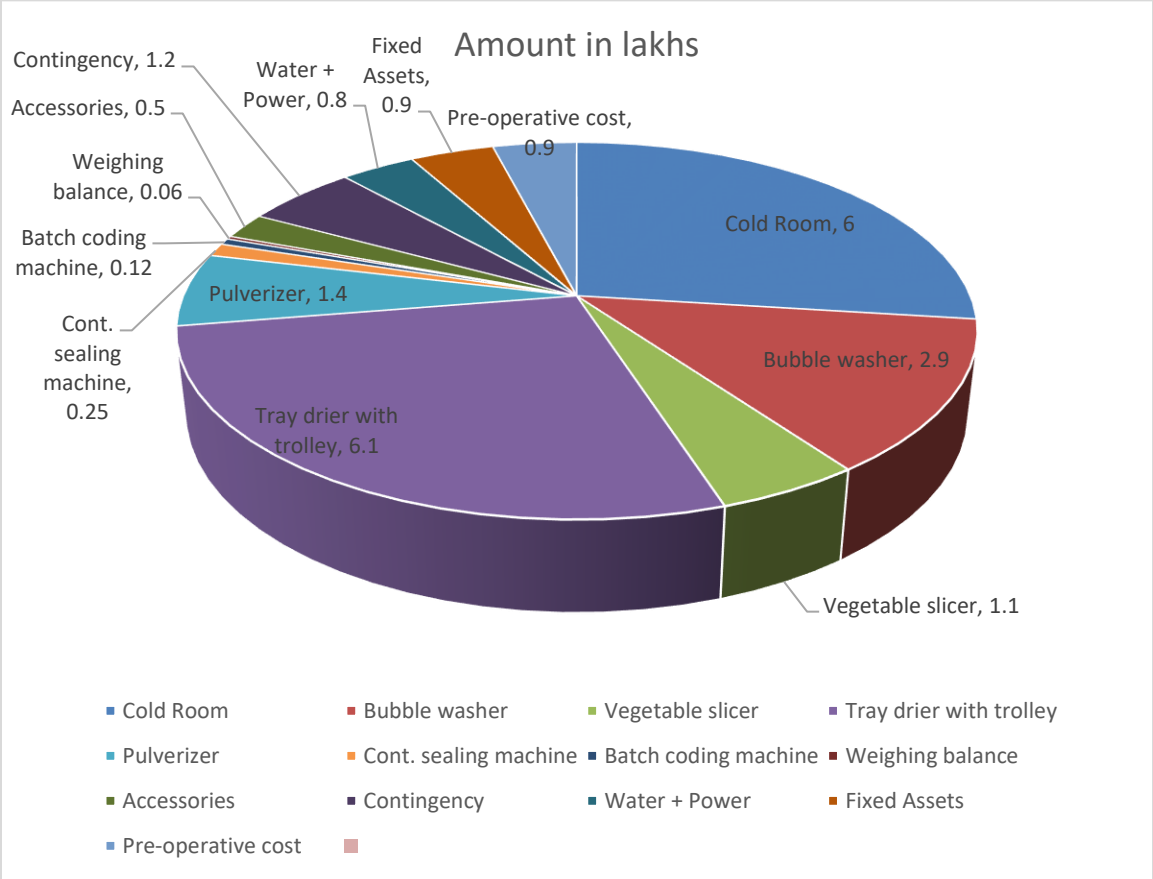
2.16 BREAK EVEN ANALYSIS

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.

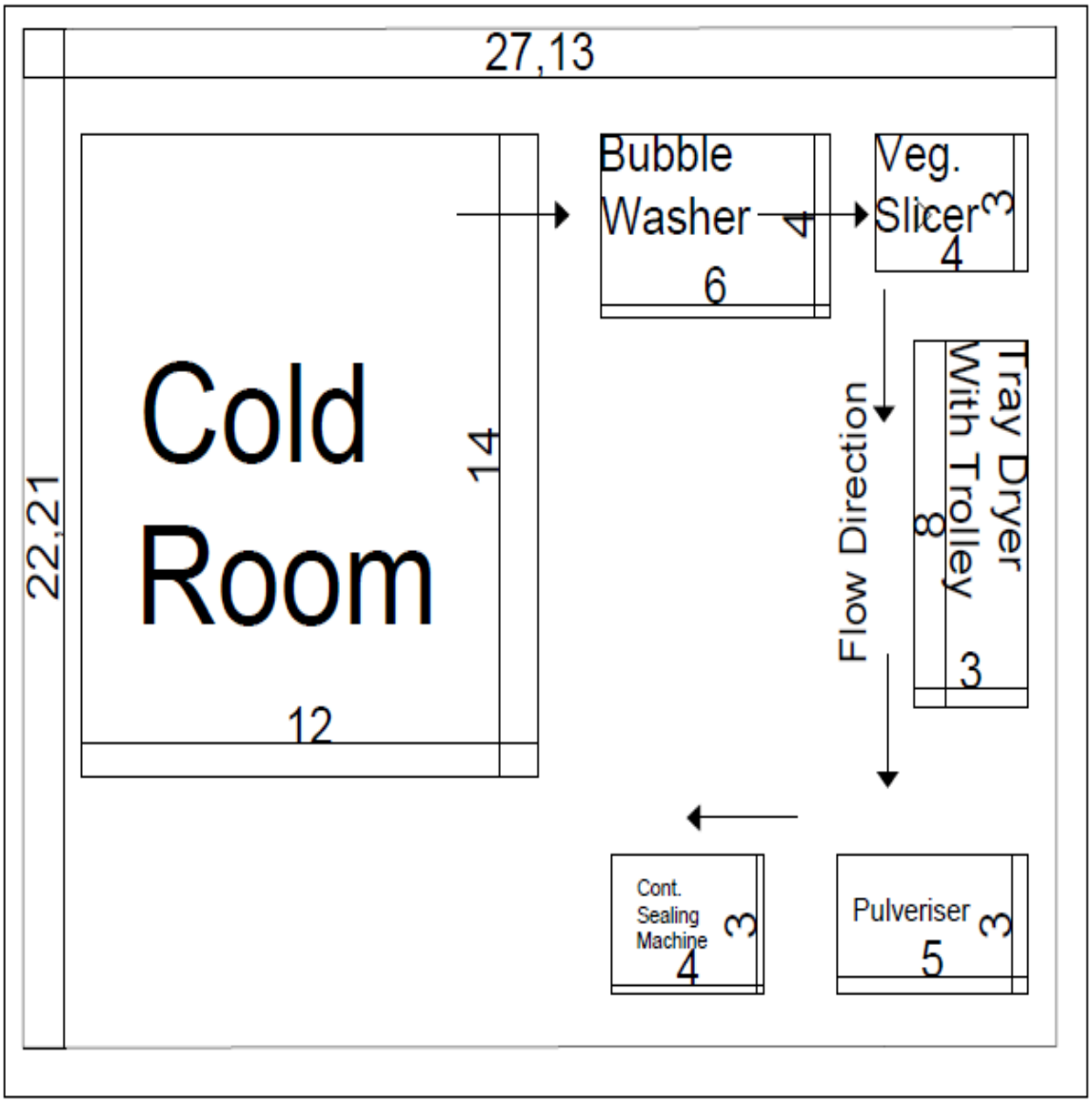
Particulars	1st Year	2nd year	3 rd year	4th year	5th year	6th year	7th year	8th year
Capacity utilization (%)	Under Const.	55%	65%	75%	90%	100%	100%	100%
Production MT/Annum		16.5	19.5	22.5	27	30	30	30
Fixed Cost (Rs. in Lakh)								
Permanent staff salaries	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
Depreciation on building @ 5% per annum	0.27	0.25	0.24	0.23	0.22	0.21	0.19	0.19
Depreciation on machinery @ 10% per annum	1.84	1.66	1.49	1.34	1.21	1.09	0.98	0.88
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	1.16	1.12	1.07	1.03	0.97	0.91	0.85	0.77
Insurance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Total Fixed Cost (Rs. in Lakh)	**9.09**	**8.83**	**8.59**	**8.37**	**8.16**	**7.96**	**7.76**	**7.58**
Sales Revenue (Rs. in Lakh)	**0.0**	**39.6**	**46.8**	**54.0**	**64.8**	**72.0**	**72.0**	**72.0**
Variable Cost (Rs. in Lakh)								
Tomato (Av. Price @ Rs. 3/Kg)	0.00	8.64	10.21	11.79	14.14	15.71	15.71	15.71
Packaging materials	0.00	0.99	1.17	1.35	1.62	1.80	1.80	1.80
Casual staff salaries	0.00	3.90	3.90	3.90	3.90	3.90	3.90	3.90
Utilities (Electricity, Fuel)	0.00	2.59	3.06	3.53	4.24	4.71	4.71	4.71
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	0.38	0.44	0.61	0.61	0.61	0.61	0.61
Total Variable Cost (Rs. in Lakh)	**0.50**	**19.20**	**21.59**	**24.08**	**27.41**	**29.63**	**29.63**	**29.63**
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)	-	4.75	4.68	4.32	5.18	5.04	5.04	4.32

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



2.18 TYPICAL TOMATO POWDER MANUFACTURING UNIT LAYOUT



2.19 MACHINERY SUPPLIERS

S.no	Name of the company	Machineries
1.	MMM Buxabhoy& Co 140 Sarang Street 1st Floor, Near Crawford Market, Mumbai, India. Tel: +91 22 2344 2902 Fax: +91 22 2345 2532 Email: yusufs@vsnl.com; mmmb@vsnl.com;	Packaging and labelling machines
2.	Acufil Machines S. F. No. 120/2, Kalapatty Post Office, Coimbatore - 641 035, Tamil Nadu, India. Tel: +91 422 2666108/2669909 Fax: +91 422 2666255 Email : acufilmachines@yahoo.co.in	Dryer; Packaging and labelling machines
4.	Planters Energy network (PEN) No 5, Power House, 3rd Street, N R T Nagar, Theni 625531, Tamil Nadu, India Tel: +91 4546 255272 Fax: +91 4546 25527	Dryer
5.	Premium Engineers Pvt Ltd Plot No 2009, Phase IV, GIDC Vatva, Ahmedabad 382445, India. Tel: +91 7925830836 Fax: +91 7925830965	Dryer; Milling & grinding machinery

6.	Central Institute of Agricultural Engineering, Nabi Bagh Berasia Road, Bhopal 462 038 Madhya Pradesh, India. Tel: +91 755 2737191 Fax: +91 755 2734016	Slicing machinery; Cleaning machinery; Milling & grinding machinery
7.	Gardners Corporation 158 Golf Links, New Delhi 110003, India. Tel: +91 11 3344287/3363640 Fax: +91 11 3717179	Slicing machinery; Cleaning machinery; Milling & grinding machinery; Packaging and labelling machines
8.	Rajan Universal Exports Post Bag no 250, 162 Linghi Chetty Street, Chennai 600 001, India. Tel: +91 44 25341711/25340731/25340751 Fax: +9144 25342323	Cleaning machinery; Milling & grinding machinery
9.	Gurdeep Packaging Machines Harichand Mill compound, LBS Marg, Vikhroli, Mumbai 400 079, India. Tel: +91 22 2578 3521/577 5846/579 5982 Fax: +91 22 2577 2846	Packaging and labelling machines
10.	Rank and Company A-p6/3, Wazirpur Industrial Estate, Delhi – 110 052, India. Tel: +91 11 7456101/ 27456102 Fax: +91 11 7234126/7433905 E-mail: R ank@poboxes.com	Dryers

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

Director

Indian Institute of Food Processing Technology

(Ministry of Food Processing Industries, Government of India)

Pudukkottai Road, Thanjavur - 613 005, Tamil Nadu

Phone No.: +91- 4362 - 228155, Fax No.:+91 - 4362 – 227971

Email: director@iifpt.edu.in; Web: www.iifpt.edu.in