



Model Detailed Project Report

PROCESSING OF PAPAD

**Under the Formalization of Micro Food Processing Enterprises Scheme
(Ministry of Food Processing Industries, Government of India)**



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1 EXECUTIVE SUMMARY

Papadam (also called papad or papar) is a thin, crisp, round flatbread from India. It is typically based on a seasoned dough usually made from peeled black gram flour (urad flour), either fried or cooked with dry heat (usually flipping it over an open flame). Flours made from other sources such as lentils, chickpeas, rice, tapioca, certain millets or potato can be used.

Papadums are typically served as an accompaniment to a meal in India, Pakistan, Bangladesh, Nepal and Sri Lanka or as an appetizer or snack, sometimes with toppings such as chopped onions, chopped carrots, chutneys or other dips, and condiments. In Pakistan, these are made of rice and often used as a snack or meal accompaniment. In certain parts of India, papadums which have been dried, but not cooked, are used in curries and vegetable dishes. Papadums have been a part of the cuisine of the Indian subcontinent for generations[citation needed] and are an intrinsic part of everyday meals. Several varieties of papadam exist, such as sabudana papad.

Papad is a good appetizer and a source for digestion. Roasted or grilled papad helps to absorb the fatty material from the mouth and throat. Papad should be eaten in moderate proportion; else it can become the reason for acidity. Papad is very high in sodium, hence not advisable for hypertensive people. Papad are made of lentils, hence are free from gluten, rich in protein and dietary fiber.

TABLE 1
PROJECT AT GLANCE

1	Name of the proposed project	Papad 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	450 Kg/day (60, 70 & 80% capacity utilization in the 2nd, 3rd and 4th years' onwards respectively)
11	Raw materials	Papad Processing Unit
12	Major product outputs	Papad
13	Total project cost :	Rs. 18.20 Lakhs
	· Land development, building & civil : construction	Rs.4.00 Lakhs
	· Machinery and Equipment's : (Lakhs)	Rs. 7.50 Lakhs
	· Utilities (Power & water facilities) : (Lakhs)	Rs.1.00 Lakhs
	· Miscellaneous fixed assets : (Lakhs)	Rs. 0.8 Lakhs
	· Pre-operative expenses : (Lakhs)	Rs. 1.00 Lakhs
	· Contingencies : (Lakhs)	Rs.2.00 Lakhs

	· Working capital margin : (Lakhs)	Rs. 1.90 Lakhs
14	Working capital requirement	
	· 2nd year (Lakhs)	Rs.4.74 Lakhs
	· 3rd year (Lakhs)	Rs. 5.64 Lakhs
	· 4th year (Lakhs)	Rs. 6.51 Lakhs
15	Means of Finance	
	· Subsidy grant by MoFPI (max 10 lakhs) : :	Rs. 10.00 Lakhs
	· Promoter's contribution (min 20%)	Rs. 3.64 Lakhs
	· Term loan (45%) :	Rs. 4.56 Lakhs
16	Debt-equity ratio	0.39
17	Profit after Depreciation, Interest & Tax	
	· 2nd year (Lakhs)	Rs. 9.91 Lakhs
	· 3rd year (Lakhs)	Rs. 8.16 Lakhs
	· 4nd year (Lakhs)	Rs. 10.05 Lakhs
18	Average DSCR	3.20
19	Benefit-Cost Ratio	1.10
20	Term loan repayment	7 Years with 1year grace period
21	Payback period for investment	2years 2 Months

2 OBJECTIVE OF THE PROJECT

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

Some important objectives behind setup of “Papad Manufacturing 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 PAPAD MANUFACTURING UNIT”
Project Location	NA
Project Area	3000 Sq Ft
Project Proposed Economic Activities	✓ Setup of Papad Food Processing Unit with optimum capacity
Project Capacity/Annum	Papad Food Processing Unit ✓ 135 Tons Per Annum (450 Kg Per Day - 25working days per month)

4 GENERAL OVERVIEW OF BLACK GRAM PRODUCTION, CLUSTERS, PHM AND VALUE ADDITION IN INDIA

4.1 INTRODUCTION

Black gram (*Vigna mungo* L.) being a legume, it enriches soil N content and has relatively a short (90-120 days) life span. It is originated in India where it has been cultivated from ancient times and is one of the most highly prized pulses in India. Although it has been introduced to other tropical areas mainly by Indian immigrants about 70% of the world's Black gram still comes from India. Black Gram is a perfect combination of all nutrients which include 20 to 25% of proteins, 40 to 47% of starch along with ash, fats, carbohydrates and essential vitamins. It is boiled and eaten directly or used after splitting into dhal. It is extensively used in various culinary preparations and recommended for diabetes. The green pods are eaten as a vegetable which is highly nutritious. The hulls or the outer covering of gram and straw are used as a cattle feed. Plant growth and development of black gram are greatly influenced by various environmental factors such as temperature, light, water and nutrient availability (Rajam, 1997). Under abiotic stress conditions, where variations of above factors affect plant growth and development adversely resulting in a dramatic reduction of the crop yield. The main objective of the study was to estimate the impact of water stress at vegetative and reproductive stages on plant growth and development.

4.2 ORIGIN, DISTRIBUTION AND PRODUCTION OF BLACK GRAM

Black gram originated in South Asia, where it has been in cultivation from ancient times and is one of the most highly prized pulses of India. It is very widely used in Indian cuisine. In India the Black gram is one of the important pulses grown in both Kharif and Rabi seasons. This crop is extensively grown in Nagapattinam, Thiruvarur, Cuddalore, Thoothukudi, Tirunelveli, and Villupuram districts of Tamilnadu. The Coastal Andhra region in Andhra Pradesh is known for black gram. It is consumed in the form of 'dal' (whole or split, husked and un-husked) or perched. Grounded urad dal is used for making papad. It is also green manuring crop. High values of lysine make urdbean an excellent complement to rice in terms of balanced human nutrition.

4.3 VARIETIES

The powdery mildew - resistant variety LBG 17 is suitable for rabi in southern zone, and varieties PDU 1 and Mash 414 are suitable for spring season.

Use of resistant varieties is recommended as follows.

- Yellow Mosaic Virus (YMV) resistant varieties : Pant U - 19, Pant U - 30 Sarala, Jawahar urd - 2, Teja (LBG - 20), ADT - 4
- Powdery Mildew (PM) resistant varieties : TAU - 2 , IPU 02 - 43
- Stem fly resistant varieties : KBG - 512
- Cercospora leaf spot resistant varieties : Jawa har urd - 2, Jawahar urd - 3 .

4.4 HEALTH BENEFITS AND NUTRITIONAL IMPORTANCE

- Papad is a good appetizer and a source for digestive.
- Roasted or grilled papad helps to absorb the fatty material from the mouth and throat.
- Papad should be eaten in moderate proportion, else it can become the reason of acidity.
- Papad is very high in sodium, hence not advisable for hypertensive people.
- Papads are made of lentils, hence are free from gluten, rich in protein and dietary fiber.

TABLE 3 NUTRITIONAL COMPOSITION OF RAW BLACK GRAM PER 100 GM

Sr. No.	Particular	Qty
1	Energy	341 Kcal
2	Carbohydrates	58.99 g
3	Protein	25.21 g
4	Total Fat	1.64 g
5	Dietary Fiber	18.3 g
6	Folates	216 mg
7	Niacin	1.447 mg
8	Pantothenic acid	0.906 mg
9	Pyridoxine	0.281 mg
10	Riboflavin	0.254 mg
11	Thiamin	0.273 mg
12	Vitamin-A	23 IU 1%
13	Sodium	38 mg
14	Potassium	983 mg
15	Calcium	138 mg
16	Copper	0.981 mg
17	Iron	7.57 mg
18	Magnesium	267 mg
19	Phosphorus	379 mg

4.5 CULTIVATION, BEARING AND POST-HARVEST MANAGERMENTS

During the twelfth Plan (2012-2015) the total production was 18.29 lakh tonnes on an area of 31.29 lakh hectares. As regards the total contribution from states, Madhya Pradesh stand first in respect of area (19.40%) followed by U.P. (17.88%) and Andhra Pradesh (11.69%), whereas in production U.P. stands first (16.98%) followed by Andhra Pradesh (16.75%) and Madhya Pradesh (15.07%). The highest yield was recorded by the state of Bihar (898 kg/ha) followed by Sikkim (895 kg/ha) and Jharkhand (890 kg/ha) the National yield average was (585 kg/ha). The lowest yield was recorded in the state of C.G. (309 kg/ha) followed by Odisha (326 kg/ha) and J&K (385 kg/ha).

FIGURE 1
BLACK GRAM CROP



Climate Requirement for Black Gram Farming

During kharif, it is cultivated throughout the country. It is best suited to rice fallows during rabi in southern and south-eastern parts of India. Black gram needs relatively heavier soils than green gram.

Soil Requirement For Soil Farming

Black gram can be grown on variety of soils ranging from sandy soils to heavy cotton soils. The most ideal soil is a well-drained loam with pH of 6.5 to 7.8. Black gram cannot be grown on alkaline and saline soils. Land is prepared like any other kharif season pulse crop. However during summer, it requires a thorough preparation to give a pulverized free from stubbles and weeds completely.

Post-Harvest Management: -

Urd should be harvested when 70-80 % pods matured and most of the pods turn black. Over maturity may result in shattering. Harvested crop should be dried on threshing floor for few days and then threshed. Threshing can be done either manually or by trampling under the feet of bullocks. The clean seeds should be sun dried for 3 - 4 days to bring their moisture content at 8-10% to safely store in appropriate bins.

4.6 PROCESSING AND VALUE ADDITION IN INDIA

Processing is an important marketing function in the present day marketing of Black gram. Processing converts the raw materials and brings the produce nearer to human consumption. It is concerned with value addition to the produce by changing its form. Pulses are generally converted into dal by decuitating and splitting the whole seed. Over 75% of the total legumes produced in the country is split into dal. Processing of Black gram is generally known as dal milling or, dehulling. Milling means removal of the outer husk and splitting the grain into two equal halves. Dal milling is one of the major food processing industries in the country, next only to rice milling. The efficiency of conversion of grain to dal by traditional methods of milling is low and the resultant product especially that from the wet method is inferior in cooking quality. The average dal yield varies from 68-75

percent (theoretical value 85 percent), i.e. a net loss of 10-17 percent during the conversion of Black gram into finished dal by traditional methods.

Value addition in pulses can be more fruitful in the market. Motivated by the consumer demand there is a need for development of short cooking time, microbial safety and high quality foods. Pulses being cheaper source of plant protein than nuts, milk, cheese, meat and fish can be used in bakery products like pasta, bread, snacks etc. Pulses provide ample opportunities to be used in processed foods like bread, pasta as well as an ingredient for designer foods for the snacks, baby foods and sport foods.⁴⁻¹⁴ They can fortify breakfast cereals, microwaveable or partly prepared pulse based meal in order to fulfil consumer demand of convenient meal solution. Food service sector also prefer quick cooking pulse products.

5 MODEL PAPAD 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 Papad processing unit are in the production clusters of Black Gram growing states/Areas such as Bihar, Andhra Pradesh , West Bengal, Uttar Pradesh, Maharashtra, Madhya Pradesh and Uttarakhand where adequate quantities of surplus raw materials can be available for processing.

5.2 INSTALLED CAPACITY OF PAPAD MANUFACTURING PLANT

The maximum installed capacity of the manufacturing unit in the present model project is proposed as 135 tonns/annum or 450 kg/day Puffed/ Flaked Rice. 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 60 percent capacity, 3rd year 70 percent capacity and 4th year onwards 80 percent capacity utilization is assumed in this model project.

5.3 RAW MATERIAL REQRIMENT FOR THE UNIT

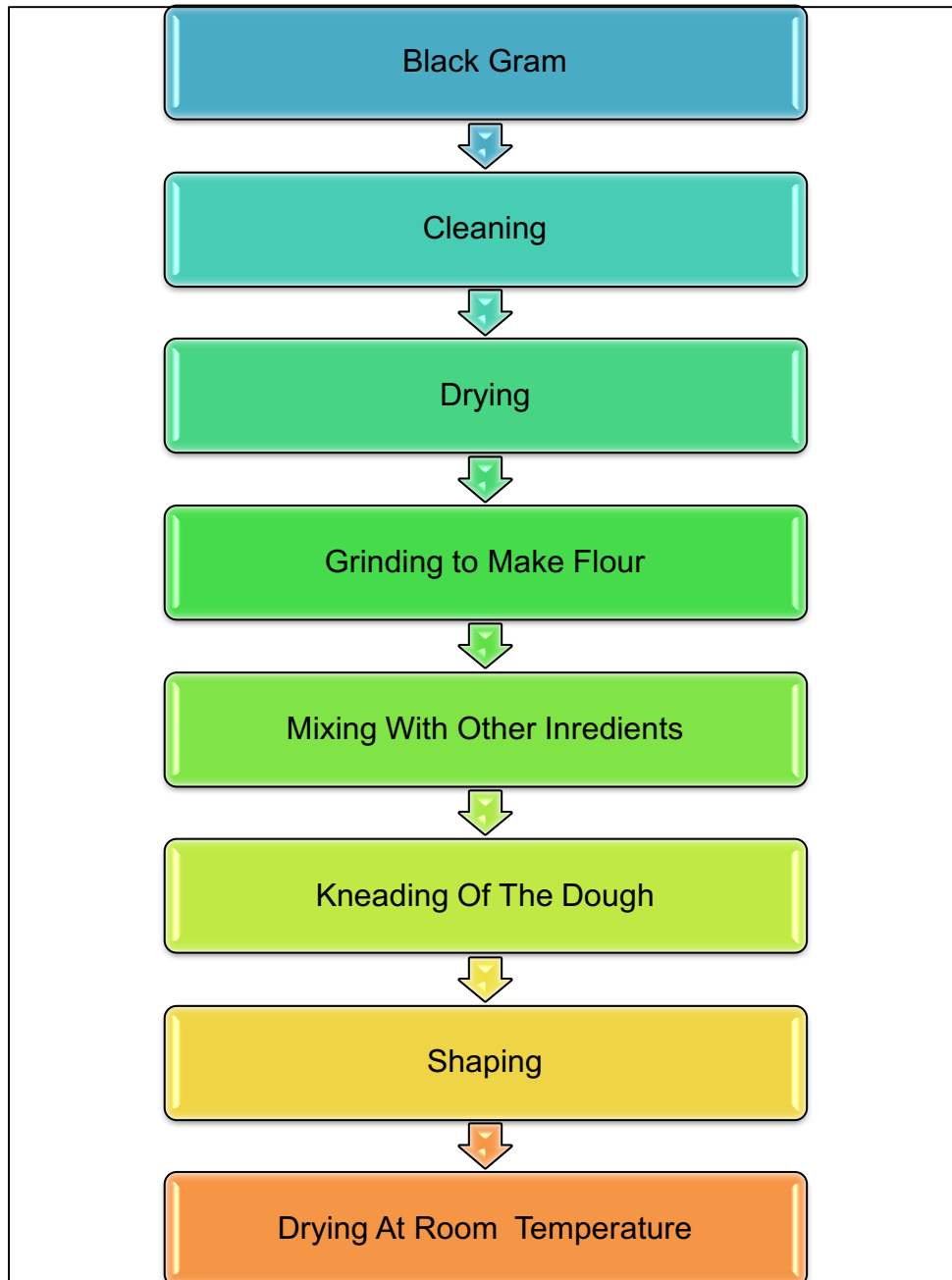
A sustainable food processing unit must ensure maximum capacity utilization and thus requires an operation of minimum 300 days per year to get reasonable profit. Therefore, ensuring uninterrupted raw materials supply requires maintenance of adequate raw material inventory. The processor must have linkage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

5.4 MANUFACTURING PROCESS

Papad

Black gram dhal (urad dhal) is first cleaned by passing through the designer to remove stones. It is then ground fine in the hammer mill and then passed through a sieve to remove fiber and coarse material. The material passing through the sieve is collected, weighed and the desired quantities are taken to the kneading machine. Salt and spices and sodium-bicarbonate are added to the desired quantity and the ingredients mixed thoroughly. Water is added slowly and the dough formed. Vigorous kneading is necessary. The dough is rolled into lengths and cut into uniform pieces to be placed in the flattening machine. On pressing the foot operated pedal, the dough is flattened to the desired thickness, shape, and size. The excess dough is removed and recycled once again. The papad are dried in a current of cold air to a moisture content of 12%. Excessive drying is avoided to prevent brittleness and cracking. The papads are then packed by weight or numbers.

FIGURE 2 PAPAD PRCOESS FLOWCHART



Cleaning of Black gram

Black gram received at the mill needs to be cleaned for yielding good quality flour with higher recovery. Usually, two, types of cleaners are used: reciprocating air-screen cleaners and reel screen cleaners. In reciprocating air screen cleaners air is blown through two screens (sieves) which separate out lighter material such as dust, stalk, dried leaves, husk, etc. The upper screen has bigger perforations while the second screen has smaller perforations for final cleaning. The reel screen cleaners consist of 2-4 cylindrical compartments. The frame of the machine is made of wooden or mild steel sheet. In these compartments, different size perforation screens are fitted on a 5-7.5 mm diameter shaft. The cylindrical screen drum rotates at 5-35 rpm.

Drying

Drying of pulses (Black gram) is necessary to ensure safe storage before milling as pulses received at the mill have generally higher moisture content. Sun drying of pulses is an economical option for drying of pulses. The sun drying is done for 1-6 days as per the requirement. The black grams are spread over the floor/roof in a 5 to 7.5 cm thick layer which is intermittently stirred manually with the help of rakes or turning by foot. At night, the drying pulses are collected in heaps and covered with a canvass sheet to preserve the heat. Mechanically heated air dryers, either batch type or continuous flow type are also used by the millers. The temperature of heated air for drying varies from 60 to 120 °C.

De-hulling

Removal of the seed coat is beneficial for the following reasons:

- Reduces anti-nutritional factors, such as tannins and insoluble fiber (non-nutrients that can bind protein and other nutrients), thereby improving nutritional quality, protein digestibility, texture and palatability.
- Removes astringent taste caused by tannins.
- Allows the production of higher quality flours, without browning/speckling (also increases leavening ability). Dry heating
- The rice is now preheated under slow heat for 35 minutes in order to attain approximate grain temperature of 110°C.

Grinding of Black gram

The production of flours involves grinding whole or dehulled seeds/dhal into small particles. To obtain a flour of more uniform particle size, ground particles are passed through one or more screens.

Mixing of ingredients

For the papad preparation the black gram flour is mixed with other ingredients salt, Sodium bicarbonate, Water Potable, crushed cumin seed and black pepper, asafoetida, Ca-propionate etc. In Appropriate quantity.

Kneading of the dough

Kneading is a process in the making of papad, Its importance process in the mixing of flour with water and used to mix the ingredients and add strength to the final product. Kneading can be performed by forming and kneading machine.

Shaping

The papad press is machinery operated. The papad dough is made from pulse flour (preferably urad dal), salt, carbonates, farinaceous material and water. The dough is made into sheet form by press machine into 1-mm thickness and cut into circular shape by machine. The pressed circular shaped papad is dried to 14-15% moisture level at room temperature using dryer machine.

Packaging

The papad with a 14-15 % moisture label is packed in polythene sheets using a hand sealing machine and sent to the market after final packaging.

FIGURE 3
PAPAD



5.5 MAEKRT DEMAND AND SUPPLY FOR PAPAD

Demand for different varieties of papad is increasing steadily. The demand is steady throughout the year and it generally hikes 10-155% during the festive season. In the Indian context, there is some national brand, but the market is predominantly controlled by local manufacturers. In initiating papad making business, it is advisable to make prior market research about the preferred tastes of local consumers.

In India, papad market is approximately Rs 1,000 crore and our market share is 5% of it. Papad is one of those food items which are always in demand and extremely popular in Indian markets. It is one of the largest griha udyog industries in the country and available widely from e-commerce website to mom and pop stores. In India, one's meal is incomplete without crushing this thin, crispy disc-shaped roasted papad with dal rice in your plate.

Papad market has always been steadily growing across the country. But in recent years, it is found that the market is growing especially abroad as people outside India have started consuming Indian food. Not only papad industry, but also Indian restaurants across the world are getting benefit of it as papad is a very versatile food product and is used in a lot of recipes for its crunchiness.

5.6 MARKETING STRATEGY FOR RICE PRODUCTS

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

5.7 DETAIL PROJECT ASSUMPTIONS

This model DPR for Papad 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 Papad processing unit by adding Papad manufacturing 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		
Sr.No	Parameter	Value
1	Capacity of the processing unit	500Kg/Day urad dal
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. 60/Kg.
8	Average sale prices (Rs.)	Rs.100/Kg
9	Recovery rate	90%

**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			4,00,000	4.00
	Capital Investment					4,00,000	4.00
B	Machinery & Equipment's						

1	Fully Auto Papad Machine		1		750000	7,50,000	7.50
2	Flour Kneading Machine		1				
3	Flate Sheet making		1				
4	coconut Disintegrate		1				
5	Papad Sheeter		1				
5	Cutter Machine		1				
6	Packaging Machinery		1				
7	Electric Drier		1				
8	Miscellaneous		1				
	Machinery & Equipment's					7,50,000	7.50
C	Other Costs						
C1	Utilities & Fittings						
1	Water					1,00,000	1.00
2	Power						
	Total					1,00,000	1.00
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					1,00,000	1.00
2	Plastic Tray Capacity						
3	Electrical Fittings						
	Total					1,00,000	1.00
C4	Contingency					2,00,000	2.00
	Total					2,00,000	2.00
C	Total Cost (C1+C2+C3+C4)					4,80,000	4.80
II	Total Cost					16,30,000	16.30

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	Black Gram	500	60	30,000	7.50	75.00
2	Caustic soda	11	30	330	0.08	0.83
3	Oil	18	90	1,620	0.41	4.05
4	Salt	21	10	210	0.05	0.53
5	Packaging Material (1 kg)	450	1.5	675	0.17	1.69
3	Labour	10	300/day	3,000	0.75	7.50
4	Supervisor / Manager	1	500/day	600.00	0.15	1.50
5	Electricity			600	0.15	1.50
6	Transportation			500	0.13	1.25
7	Miscellaneous			400.00	0.10	1.00
	Total Cost			37,935.00	9.48	94.84
	Margin for Working Capital 20%			0.08	1.90	19

TABLE 7
TOTAL PROJECT COST

Sr. No.	Particulars	Amount In Lakhs
i	Land Development & Building Structure	4.00
ii	Plant & Machinery	7.50
iii	Other Fixed Assets	2.80
iv	Working Capital Margin	1.90
v	Contingency	2.00
vi	Total Project Cost	18.20

TABLE 8
MEANS OF FINANCE

Sr. No.	Particulars	Amount In Lakhs
i	Subsidy	10.00
ii	Promoters Contribution	3.64
iii	Term Loan	4.56
	Total Means of Finance (1 to 3)	18.20

TABLE 9
EXPENDITURE, REVENUE AND PROFITABILITY

PARTICULARS	YEAR					
	1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr
Capacity %	0	60	70	80	90	100
A. INCOME						
Sales of Papad	-	68.18	80.33	92.73	105.36	118.24
Total	-	68.18	80.33	92.73	105.36	118.24
B. EXPENSES						
Raw Material	-	45.00	53.55	61.80	70.20	78.75
Consumables	-	3.24	0.37	0.43	0.49	0.55
Packing cost	-	1.01	1.20	1.39	1.58	1.77
Transportation cost	-	0.75	0.89	1.03	1.17	1.31
Direct employee cost	-	5.40	6.43	7.42	8.42	9.45
Depreciation	-	2.01	1.75	1.53	1.33	1.16
Office Rent						
Plant Electricity Cost	-	0.90	1.07	1.24	1.40	1.58
Miscellaneous	-	0.60	0.71	0.82	0.94	1.05
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	1	1	1	1
Total Cost	-	61.57	70.75	80.85	91.20	101.80
Add :- Opening Stock		-	6.43	7.61	8.79	9.98

Less :- Closing Stock	-	6.43	7.61	8.79	9.98	11.20
Cost of Sales	-	55.13	69.57	79.67	90.00	100.58
GROSS PROFIT	-	13.04	10.76	13.05	15.36	17.65
	-	19.13%	13.40%	14.08%	14.58%	14.93%
FINANCE EXPENSES						
Interest on Term Loan	0.55	0.50	0.43	0.35	0.27	0.19
Interest On CC		0.14	0.14	0.14	0.14	0.14
Total Interest	0.55	0.65	0.57	0.49	0.41	0.34
PROFIT BEFORE TAX	0.55	12.39	10.19	12.56	14.94	17.32
INCOME TAX (20%)	0.11	2.48	2.04	2.51	2.99	3.46
PROFIT AFTER TAX	0.44	9.91	8.16	10.05	11.95	13.85

**TABLE 10
REPAYMENT SCHEDULE**

Ye ar	Outstan ding loan at start of yr.	Disbur se- ment	Total outstan ding Loan	Surplu s for repaym ent	Inter est pay men t	Repay ment of princi pal	Total outg o	o/s Loan at the end of the yr.	Balan ce left
1	-0.00	4.56	4.56	1.46	0.55	0	0.55	4.56	0.91
2	4.56		4.56	1.22	0.50	0.65	1.16	3.91	0.07
3	3.91		3.91	4.70	0.43	0.65	1.08	3.26	3.62
4	3.26		3.26	6.36	0.35	0.65	1.00	2.60	5.36
5	2.60		2.60	8.26	0.27	0.65	0.92	1.95	7.34
6	1.95		1.95	9.77	0.19	0.65	0.84	1.30	8.93
7	1.30		1.30	10.46	0.11	0.65	0.76	0.65	9.69
8	0.65		0.65	10.97	0.04	0.65	0.69	-	10.29

TABLE 11
ASSETS DEPRECIATION

PARTICULARS	YEAR							
	1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr	7th yr	8th yr
Land & Building Structure								
Opening Bal.		4.00	3.60	3.24	2.92	2.62	2.36	2.13
Additions	4.00							
Less :- Depreciation @ 10%		0.40	0.36	0.32	0.29	0.26	0.24	0.21
Closing Bal.	4.00	3.60	3.24	2.92	2.62	2.36	2.13	1.91
PARTICULARS	YEAR							
	1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr	7th yr	8th yr
Plant & Machinery								
Opening Bal.		7.50	6.38	5.42	4.61	3.92	3.33	2.83
Additions	7.50							
Less :- Depreciation @ 15%		1.13	0.96	0.81	0.69	0.59	0.50	0.42
Closing Bal.	7.50	6.38	5.42	4.61	3.92	3.33	2.83	2.40
PARTICULARS	YEAR							
	1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr	7th yr	8th yr
Other Required Material & Accessories								
Opening Bal.		4.80	4.32	3.89	3.50	3.15	2.83	2.55
Additions	4.80							
Less :- Depreciation @ 10%		0.48	0.43	0.39	0.35	0.31	0.28	0.15
Closing Bal.	4.80	4.32	3.89	3.50	3.15	2.83	2.55	2.40
TOTAL DEPRECIATION		-						

PARTICULARS	YEAR							
	1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr	7th yr	8th yr
Land & Building Structure	-	0.40	0.36	0.32	0.29	0.26	0.24	0.21
Plant & Machinery	-	1.13	0.96	0.81	0.69	0.59	0.50	0.42
-	-							
Other Required Material & Accessories	-	0.48	0.43	0.39	0.35	0.31	0.28	0.15
TOTAL DEPRECIATION	-	2.01	1.75	1.53	1.33	1.16	1.02	0.79

**TABLE 12
FINANCIAL ASSESSMENT OF PROJECT**

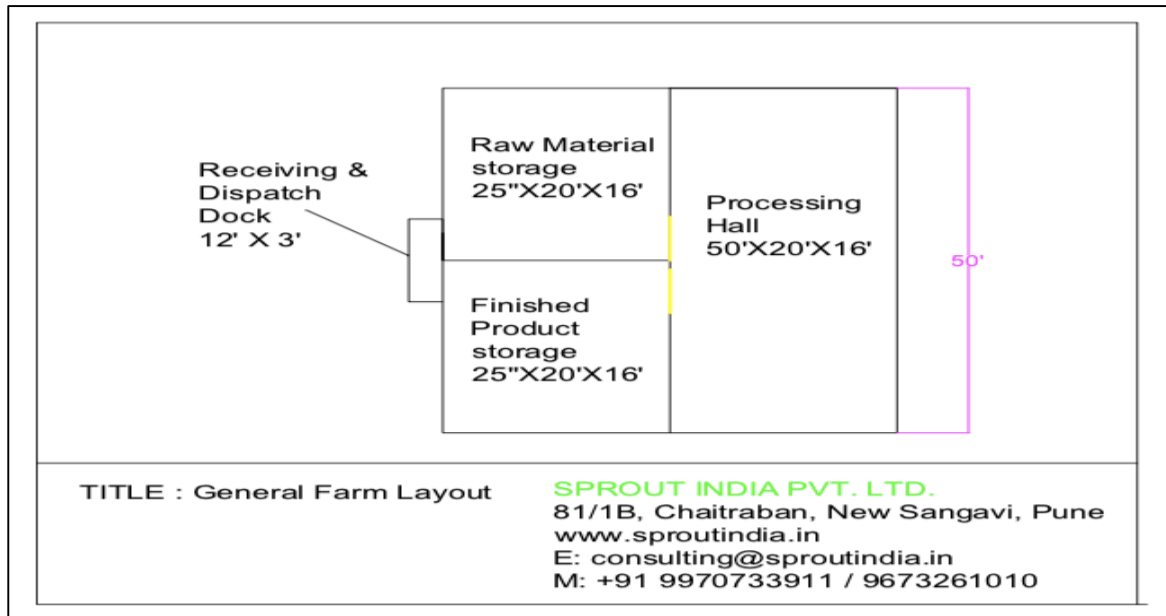
	YEAR							
	1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr	7th yr	8th yr
Cost	16.30	61.57	70.75	80.85	91.20	101.80	102.73	103.12
Benefit	-	68.18	80.33	92.73	105.36	118.24	119.42	120.62
Discounting Rate	0.91	0.83	0.75	0.68	0.62	0.56	0.51	0.47
P.V Cost	14.82	50.88	53.15	55.22	56.63	57.47	52.71	48.10
P.V Benefit	-	56.34	60.36	63.33	65.42	66.74	61.28	56.27

Total P.V Cost	388.99
Total P.V Benefit	429.75
Benefit Cost Ratio	1.10

TABLE 13
BREAK EVEN ANALYSIS

PARTICULARS	Year							
	1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr	7th yr	8th yr
Annual Production in Kg	-	67,500	78,750	90,000	1,01,250	1,12,500	1,12,500	1,12,500
Revenue	-	68.18	80.33	92.73	105.36	118.24	119.42	120.62
Selling Cost Per Kg	-	101.00	102.01	103.03	104.06	105.10	106.15	107.21
Office & General Expenses	-	1.16	1.77	1.94	2.14	2.35	2.59	2.84
Depreciation	-	2.01	1.75	1.53	1.33	1.16	1.02	0.79
Total Fixed Cost	-	3.17	3.51	3.47	3.47	3.52	3.60	3.63
Total Fixed Cost Per Kg	-	4.69	4.46	3.85	3.43	3.12	3.20	3.23
Total Variable Cost	-	55.40	62.45	72.07	81.86	91.84	91.84	91.84
Variable Cost Per Kg	-	82.08	79.30	80.08	80.85	81.63	81.63	81.63
Contribution	-	12.77	17.88	20.66	23.50	26.40	27.59	28.78
Contribution per Unit	-	18.92	22.71	22.95	23.21	23.47	24.52	25.58
Contribution in %	-	19%	22%	22%	22%	22%	23%	24%
Break Even Point kg	-	0	0	0	0	0	0	0
Break Even Point Rs	-	2.35	2.74	2.69	2.69	2.74	2.84	2.87
Break Even In %	-	24.78	19.65	16.79	14.77	13.31	13.07	12.61
Margin Of Safty	-	65.82	77.60	90.04	102.67	115.50	116.59	117.75

**FIGURE 4
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
- Arruthra Food Machines Rajiv Gandhi Salai, Coimbatore, Tamil Nadu
- S.S.Agrofoodtech Tilakwadi, Belgaum, Karnataka
- JACKSON MACHINE Odhav Industrial Estate, Ahmedabad, Gujarat

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.