

Detailed Project Report

JAMUN WINE PROCESSING UNIT



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1. THE PROJECT AT A GLANCE

1	Name of the Project	Jamun Wine
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 share-holders (if company/FPC)	
8	Technical advisor	
9	Marketing advisor/partners	
10	Proposed project capacity	60 MT/annum (55, 65, 75,85, 95 and 100% capacity utilization in the 2nd, 3rd, 4th, 5th, 6th 7 7th year onwards respectively
11	Raw materials	Ripened Jamun Fruits
12	Major product outputs	Jamun Wine
13	Total project cost (Lakhs)	37.47
	Land development, building & civil construction	8
	Machinery and equipment	23.16
	Utilities (Power & water facilities)	0.6
	Miscellaneous fixed assets	0.8
	Pre-operative expenses	0.6
	Contingencies	1.2
	Working capital margin	2.51
14	Working capital Management (In Lakhs)	
	Second Year	7.53
	Third Year	8.90
	Fourth Year	12.13
15	Means of Finance	
	Subsidy grant by MoFPI (max 10 lakhs)	9.74
	Promoter's contribution (min 20%)	7.49
	Term loan %	20.23
16	Debt-equity ratio	1.60:1
17	Profit after Depreciation, Interest & Tax	
	2nd year	26.04
	3rd year	44.39
	4th year	52.81
18	Average DSCR	2.18

	Benefit Cost Ratio	1.54
	Term Loan Payment	7 Years with 1 year grace period
	Pay Back Period for investment	2 Years

2. GENERAL OVERVIEW AND INTRODUCTION

2.1 INTRODUCTION

- Syzygium cumini, commonly known as Malabar plum, Java plum, black plum, jamun or jambolan, is an evergreen tropical tree in the flowering plant family Myrtaceae, and favored for its fruit, timber, and ornamental value.
- It can reach heights of up to 30 meters (98 ft) and can live more than 100 years. A rapidly growing plant, it is considered an invasive species in many world regions. The name of the fruit, black plum, is sometimes mistranslated as blackberry, which is a different fruit in an unrelated order.
- The tree was introduced to Florida in 1911 by the United States Department of Agriculture, and is commonly grown in tropical and subtropical regions worldwide.
- Syzygium cumini trees start flowering from March to April. The flowers are fragrant and small, about 5 mm in diameter. The fruits develop by May or June and resemble large berries; the fruit of Syzygium species is described as "drupaceous". The fruit is oblong, ovoid. Unripe fruit looks green. As it matures, its color changes to pink, then to shining crimson red and finally to black color. A variant of the tree produces white colored fruit.
- The fruit has a combination of sweet, mildly sour and astringent flavour and tends to colour the tongue purple.

- Jambolan fruits have a sweet or slightly acidic flavor, are eaten raw, and may be made into sauces or jam.
- Inferior fruits may be made into juice, jelly, sorbet, syrup, or fruit salad. The fruit and its juice and the seed contain a biochemical called ‘jamboline’ which is believed to check the pathological conversion of starch into sugar in case of increased production of glucose. Since the fruit is a very rich source of anthocyanin, it imparts antioxidants properties too.
- Plants of this family are known to be rich in volatile oils which are reported for their uses in medicine and many fruits of the family have a rich history of uses both as edibles and as traditional medicines in divergent ethnobotanical practices throughout the tropical and subtropical world.
- The fruits are rich in raffinose, glucose, fructose, citric acid, malic acid, gallic acid, anthocyanins; delphinidin-3-gentiobioside, malvidin-3-laminaribioside, petunidin-3-gentiobioside, cyanidin diglycoside, petunidin and malvidin. The sourness of fruits may be due to presence of gallic acid. The color of the fruits might be due to the presence of anthocyanins

2.2 ORIGIN, DISTRIBUTION AND PRODUCTION OF JAMUN

- It is native to the Indian Subcontinent, adjoining regions of Southeast Asia, including Myanmar, Sri Lanka, and the Andaman Islands.
- The original home of jamun is India or the East Indies. It is also found in Thailand, Philippines, Madagascar and some other countries. The jamun has successfully been introduced into many other subtropical regions including Florida, California, Algeria, Israel, etc.

- In India, the maximum number of jamun trees are found scattered throughout the tropical and subtropical regions. It also occurs in the lower range of the Himalayas up to an elevation of 1,300 meters and in the Kumaon hills up to 1,600 meters. It is widely grown in the larger parts of India from the Indo-Gangetic plains in the North to Tamil Nadu in the South.

2.3 VARIETIES

- ✓ There are so many standard varieties of this fruit under cultivation. The common variety grown under North Indian conditions is "Ram Jamun". It produces big sized, oblong fruits, deep purple or bluish-black in colour at full ripe stage. The pulp of the ripe fruit is purple pink and the fruit is juicy and sweet. The stone is small in size. The variety ripens in the month of June- July and it is very common both in rural as well as in urban markets.
- ✓ Another late maturing variety bears small sized, slightly round fruits, deep purple or blackish in colour at full ripe stage. The colour of the pulp is purple, less juicy, the weight and sweetness of pulp is also less in comparison to that of 'Ram Jamun'. The stone present in this variety is comparatively large in size. Fruits ripen in the month of August.
- ✓ At present, there are a number of seedling strains of jamun in India which provide a good scope for selection of better varieties.

2.3.1 Important variety of Jamun

- Jamun badama
- Jamun Bhado
- Jamun Jethi

- Jamun Ra- Jamun
- Jamun Ashada
- Jamun Kaatha
- Jamun Konkan Bahadoli
- Rajendra Jamun -1
- Jamun Goma Priyanka
- Narendra Jamun 6
- Jamun CISH J -42
- Jamun CISH J -37

3. HEALTH BENEFITS AND NUTRITIONAL INFORMATION

HEALTH BENEFITS OF JAMUN

- The bark is acrid, sweet, digestive, astringent to the bowels, anthelmintic and used for the treatment of sore throat, bronchitis, asthma, thirst, biliousness, dysentery and ulcers.
- It is also a good blood purifier.
- The fruit is acrid, sweet, cooling and astringent to the bowels and removes bad smell from mouth, biliousness, stomachic, astringent, diuretic and antidiabetic.
- The fruit has a very long history of use for various medicinal purposes and currently has a large market for the treatment of chronic diarrhea and other enteric disorders.
- The seed is sweet, astringent to the bowels and good for diabetes.
- The ash of the leaves is used for strengthening the teeth and gums.
- The extracts of Jamun parts have been in use for prevention and curing of various diseases for centuries and today it is commonly known for its anti-diabetic property.
- Essential oils like lauric acid, phytochemicals, lipids, phenols with their antioxidant property, present in Jamun, have medicinal effects.
- Jamun is a rich source of phytochemicals in its different parts: leaves, fruit, seed, and bark. Studies have showed the presence of phenols, flavonoids, alkaloids, glycosides, steroids, cardiac glycosides, saponins, terpenoid, and tannins in the Jamun leave extract.

- The abundant constituents of the oils in Jamun leaves are: α pinene (32.32%), β -pinene (12.44%), trans-caryophyllene (11.19%), 1, 3, 6-octatriene (8.41%), delta-3-carene (5.55%), α -caryophyllene (4.36%), and α -limonene (3.42%). Syzygium cumini seed oil was found to contain lauric (2–8%), myristic (31.7%), palmitic (4–7%), stearic (6.5%), oleic (32.2%), linoleic (16.1%), malvalic (1.2%), sterculic (1.8%), and vernolic (3.0%) acids.
- The seed extract is used to treat cold, cough, fever and skin problems such as rashes and the mouth, throat, intestines and genitourinary tract ulcers by the villagers of Tamil Nadu.
- All parts of the jambolan can be used medicinally and it has a long tradition in alternative medicine. From all over the world, the fruits have been used for a wide variety of ailments, including cough, diabetes, dysentery, inflammation and ringworm
- It is widely distributed throughout India and ayurvedic medicine (Indian folk medicine) mentions its use for the treatment of diabetes mellitus.
- In Unani medicine various parts of jambolan act as liver tonic, enrich blood, strengthen teeth and gums and form good lotion for removing ringworm infection of the head
- A number of herbal formulations were also prepared in combination with this plant available in market which showed potential antidiabetic activity and are used regularly by diabetic patients on the advice of the physicians.
- Different parts of the jambolan were also reported for its antioxidant, anti-inflammatory, neuropsychopharmacological, antimicrobial, anti-bacterial, anti-HIV, antileishmanial and antifungal, nitric oxide scavenging, free radical scavenging, anti-diarrheal, antifertility, anorexigenic, gastroprotective and anti-ulcerogenic and radioprotective activities.

3.3 NUTRITIONAL INFORMATION

Nutrition information table: values per 100g of edible portion

Nutrient	Nutrition value	% RDA
Energy	61.5	2.91%
Protein	0.70g	1.29%
Total Carbohydrate	14 g	10.76%
Crude fiber	0.90g	2.13%
Total fat	0.30g	-
Minerals/ Electrolytes	-	-
Calcium	15mg	1.5%
Iron	1.62mg	8.52%
Sodium	26.20mg	1.31%
Potassium	55mg	1.57%
Magnesium	35mg	9.09%
Phosphorus	16.20mg	1.62%
Copper	0.23mg	11.5%
Sulphur	13mg	-
Chlorine	8mg	-
Vitamins	-	-
Vitamin A	80 IU(2 mcg)	0.2%
Vitamin B1	0.03mg	2.14%
Vitamin B2	0.01mg	0.5%
Vitamin B3	0.29mg	2.07%
Vitamin C	18mg	22.5%
Vitamin B9	3 mcg	1%

4. CULTIVATION, BEARING & POST HARVEST MANAGEMENT

CULTIVATION & BEARING

- *Syzygium cumini* is an evergreen Shrub growing to 25 m (82ft) by 25 m (82ft) at a fast rate. The flowers are pollinated by Bees, Flies, Wind. **Suitable for:** light (sandy), medium (loamy) and heavy (clay) soils and prefers well-drained soil.

Suitable pH

- Acid, neutral and basic (alkaline) soils and can grow in very acid soils.
- It can grow in semi-shade (light woodland) or no shade.
- It prefers moist or wet soil and can tolerate drought. The plant can tolerate strong winds but not maritime exposure.

Climate and soil:

- Since Jamun is a hardy fruit crop, it can be grown under adverse soil and climatic conditions. It thrives well under both tropical and subtropical climates. It requires dry weather at the time of flowering and fruit setting. Early rains are beneficial for better growth, development and ripening of fruit.
- Young plants are susceptible for frost. The Jamun trees can be grown on a wide range of soils-calcareous, saline sodic soils and marshy areas. Deep loam and well drained soils are ideal. It does not prefer very heavy and light sandy soils.

Varieties for commercial cultivation:

- Most common type grown in North India is known as Ra-jamun (large, Oblong, deep purple colour fruit). Another type in Varnasi without seed (Narendra Jamun 6).

Propagation

- Propagated both by seeds and vegetative technique, the most common being by seeds. The seeds have no dormancy, hence fresh seeds can be sown (within 10-15 days) 4-5cm deep at a distance of 25cm×15cm.
- The seeds germinate 10-15 days after sowing. The seedlings become ready for transplanting in spring or next monsoon. Seedling plants bear fruits of variable size and quality.
- Therefore, vegetative method is desirable for propagation of improved or selected types. Budding is most successful for commercial raising of plants. It is done on one year root stock having about 10mm thickness. In low rainfall area, July-August is ideal time.

Planting:

- Pits of 1m×1m×1m size are dug 10m apart for seedling trees and 8m apart for budded plants in a properly cleaned field. Pit digging should be completed before the onset of the monsoon or spring season.
- They should be filled with a mixture of top soil and well rotten farmyard manure or compost in a 3:1 ratio. Monsoon season (July-September) is ideal time of planting. But it can also be planted with a good survival rate in spring (February – March) if irrigation facilities are available. About 100-150 plants are required for planting a hectare land.

Training and pruning

- Young plants need training for development of framework. Keep the main stem or trunk clean up to a height of 60-90cm from the ground level by removing the basal branches and sprouts. Jamun plants do not require any pruning except removing diseased and dry and crisscross twigs.

Manuring and fertilization

- In pre-bearing period, 20-25kgs well rotten farmyard manure/plant/year should be applied. For bearing trees, this dose is increased up to 50-60kg/plant/year.
- The ideal time for giving the organic manure is a month before flowering. Grown up trees should be applied 500g N, 600g P and 300g K /plant/year. This should be spread near the canopy of the plant and mixed in soil by hoeing.
- **Aftercare:** Green manuring can be done during rainy season. Sprouts arising from base of its plants should be removed timely and the plantation should be kept weed free. Jamun is a cross pollinated crop hence raising of honey bees near the plantation is desirable for maximum fruit set and productivity.
- **Irrigation:** Young plants require 6-8 irrigations for better growth. In bearing trees, irrigation should be given from September to October for better fruit bud formation and from May to June for better development of fruits. Normally 5-6 irrigations are required.

4.2 HARVESTING & POST HARVEST MANAGMENT

- ✓ Seedlings trees start bearing at the age of 9-10 years, whereas budded one take 5-6 years. Fruits ripen during June-July or with onset of rains. It takes 3-5 months to ripen after full bloom. Fruit change colour from green to deep red or bluish black. Fruit does not ripen after harvesting.
- ✓ Fully ripe fruits are harvested daily by hand picking or by shaking and collecting the fruits on a polythene sheet.
- ✓ Jamun trees needs number of pickings, since all fruits do not ripen at a time. The average yield of fully grown budded and seedling tree is 50-70kg and 80-100kg/plant/year.
- ✓ Jamun fruits are highly perishable. They can be stored only up to 2 days at ambient temperature. Precooled fruits packed in perforated polythene bags can be stored for 3 weeks at 8-10C and 85-90% humidity.

- ✓ Jamun fruits can be processed into excellent quality fermented beverages such as cider and vinegar, and non-fermented ready to serve beverages and squashes. A good quality jelly can also be prepared from its fruits.
- ✓ The seeds can be processed into powder which is very useful to cure diabetes. The problem of flower and fruit drop can be minimized by spraying of GA3 (60ppm) twice, one at full bloom and other 15 days after fruit set.

5. PROCESSING & VALUE ADDITION: -

The products listed below:

- 1) Jamun jam
- 2) Jamun chocolates/ jamun jellies
- 3) Jamun bar
- 4) Jamun wine
- 5) Jamun powder
- 6) Jamun juice
- 7) Dried jamun/ jamun chunk

6. MANUFACTURING PROCESS OF THE JAMUN WINE

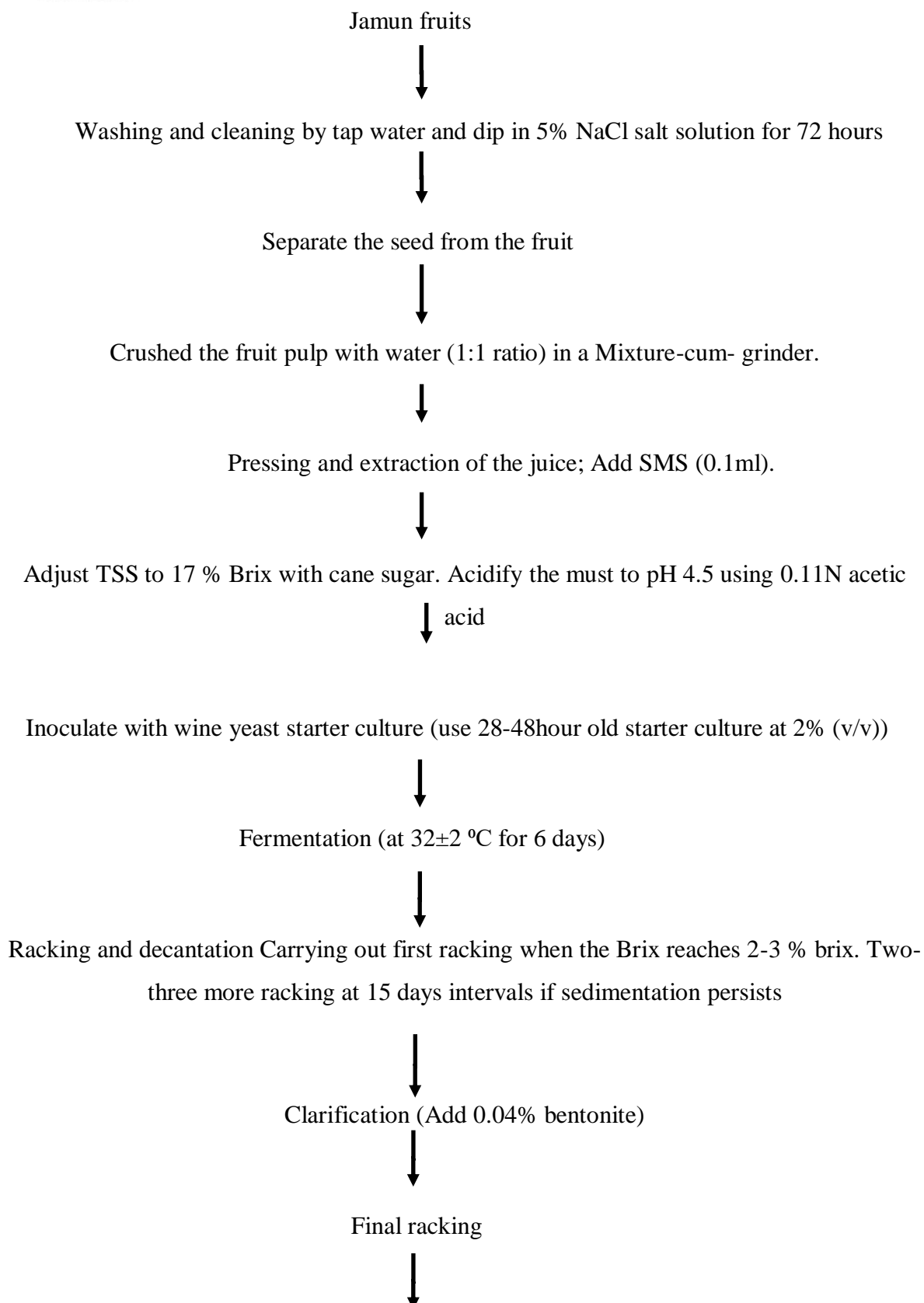
The following processing method/sequence to be taken care while processing the jamun wine.

- One kilogram of jamun fruits was cleaned by washing in tap water and immersed for two days in 5% salt (NaCl) solution to reduce the tannin content after which the lone seed was manually removed from the pulp.
- The pulp was then crushed with water (1:1 w/v ratio) in a Mixer-cum-Grinder (TTK Prestige Ltd., Bangalore, India) and the juice was extracted by using a juice squeezer.
- Approximately 400 ml juice was extracted from one-kilogram pulp after subtracting the amount of water added. The juice (must) filtered through cheese cotton cloth had 120 Brix and was treated with sodium metabisulphite (SMS) (0.1ml) to inhibit the growth of undesirable microorganisms such as acetic acid bacteria, wild yeasts and molds. Then, cane sugar and tartaric acid were added into the juice (amelioration) to attain 16.5o Brix and pH 4.5, respectively
- The ameliorated must was inoculated with 2% (v/v) starter culture
- (Prepared with grape juice) of *S. cerevisiae* var. bayans and fermentation was carried out at room temperature of $32\pm 2^{\circ}\text{C}$ for six days. Racking of wine was carried out when total soluble sugars (TSS) reached 2-3 Brix. Two or three more racking were done at 15 days interval to remove any sediment deposited in the wine.
- The wine after racking was clarified with the addition of 0.04% bentonite and analyzed.
- Sodium metabisulphite (0.1ml) was added as preservative before bottling. Three replicates were maintained for conducting this experiment.

6.1 Flow Chart for Jamun wine.

Manufacturing

The typical Procedure for manufacturing of jamun wine is as below:



Bottling and corking. Add 100 (0.1ml SMS. Fill in bottle full.

Cork and seal the bottle with bee's wax



Wine

7. LOCATION OF THE PROPOSED PROJECT AND LAND

- Jamun prefers to grow under tropical and subtropical climate. It is also found growing in lower ranges of the Himalayas up to an altitude of 1300 meters. The jamun requires dry weather at the time off towering and fruit setting. In subtropical areas, early rain is considered to be beneficial for ripening of fruits and proper development of its size, colour and taste.
- The original home of jamun is India or the East Indies. India ranks 2 in production of jamun in the world. In India, Maharashtra is major jamun producer followed by Uttar Pradesh, Tamil Nadu, Gujarat, Assam and other.
- The ideal locations for establishment of exclusive jamun wine processing unit are in the production clusters of jamun wine growing states.

8. MARKET DEMAND AND SUPPLY FOR JAMUN BASED PRODUCTS

- ✓ The greenery base products especially jamun like, consumption is picking up due to increasing income and changing food habits. Therefore, demand for these products is prevalent across length and breadth of the country throughout the year.
- ✓ Jamun wine & other products if highlighted properly for all these health benefits can occupy significant cold products market.

- ✓ The global oil (& other adjuncts) value is expected to reach a mammoth one by 2023, recording an anticipated high CAGR during the forecast period (2018-2023). A very few market giants dominate the global market occupying the major selling market.
- ✓ Only thing to be done over here is to replace the existing products with jamun & other green veg. related products with proper demonstration.

9. MARKETING STRATEGY FOR JAMUN WINE.

- ✓ **Marketing strategy** is a long-term, forward-looking approach and an overall game plan of any organization or any business with the fundamental goal of achieving a sustainable competitive advantage by understanding the needs and wants of customers.
- ✓ The increasing urbanization and income offer huge scope for marketing of fruit base products. Urban organized platforms such as departmental stores, malls, super markets can be attractive platforms to sell well packaged and branded Jamun Based products.

10.DETAILED PROJECT ASSUMPTIONS

Detailed Project Assumptions		
Parameter	Assumption	
Capacity of the Jamun Wine Unit	60	MT/annum
Utilization of capacity	1st Year Implementation, 55% in second, 65% in third, 75% in fourth year, 85% in fifth, 95% in sixth & 100 % from seventh year onwards	
Working days per year	300	days
Working hours per day	10	hours
Interest on term and working capital loan	12%	

Repayment period	Seven years with one year grace period is considered.	
Average prices of raw material	82.5	
Average sale prices per Kg	500	Rs/kg
Oil extraction	0%	
Jamun Wine	1 kg Juice form 2.75 kg Jamun Fruit	

- ✓ This model DPR for manufacturing 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 unit by adding new line.
- ✓ 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. JAMUN cost considered @ Rs. 30/- per kg.
 2. SUGAR cost considered @ Rs. 35/- per kg.
 3. WATER cost considered @ Rs. 0.25/- per kg.
 4. Yield is considered as 40 %, which may vary depend on degree of cleanliness of the seed, and seed purchase is assumed as a bulk & in that 5% approx. will be eliminated as a rejection due to over ripened, decayed, diseased, rotten etc.
 5. Machinery cost may also vary from vendor to vendor.
- ✓ Land and civil infrastructures are assumed as already available with the entrepreneurs.
 - ✓ We took les sugar content as fruit is itself sweeter, cost can be reduced by increasing sugar content.

11. PROJECT START-UP COSTING SHEETS

Land and Building.

Land and Civil Infrastructures	
1. Land 1000 sq. ft	Assumed land already developed and has 900 sq. ft. built in area. Rs. 6.00 Lakhs
2. Built up processing area 900 Sq. Ft.	
Total	Rs. 8.00 Lakhs

• Land and civil infrastructures are assumed as already available with the entrepreneurs. Still, we have considered approx. 6 lac Rs. as a construction cost for safer side of the entrepreneur.

Machinery and Equipment: - Rs. 23.16 Lacs

Machinery and Equipment				
Sr. No	Equipment	Quantity	Capacity	Amount (in Lakhs)
1	Deep Freezer	1	4000 kg	20
2	Pulping Machine	1	200 kg/hr	0.6
3	processing tank	1	500 Ltr	0.6
4	Plastic crates	60	48 Ltr	0.36
5	Polycarbonate Drums	20	200 Ltr	0.3
6	Manual Bottle filling machine	1	Suitable	0.3
7	Weighing balance	1	100 Kg	0.5
8	Accessories	1	Standard	0.5
	TOTAL			23.16

Other costs: -

Utilities and Fittings: -

Utilities and Fittings	
1. Water	Rs. 0.6 Lacs total
2. Power	

Other Fixed Assets: -

Other Fixed Assets	
1. Furniture & Fixtures	Rs. 0.8 Lacs 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.	0.6 Lac
Total preoperative expenses	0.6 Lac

Contingency cost to be added as approx. 1.1 Lac.

So total start-up cost at own land & Premise may be somewhat similar to **37.47 lacs**. This is according to survey done at X location India. This may vary on location, situation and design change over.

Working capital requirement (in Lacs)

		55%	65%	75%
Particulars	Period (Days)	Year 2	Year 3	Year 4
Raw material stock	15	1.19	1.41	1.92
Work in progress	30	2.38	2.82	3.84
Packing material	10	1.47	1.74	2.37
Finished goods' stock	5	1.50	1.77	2.41
Receivables	10	2.99	3.53	4.82
Working expenses	7	0.51	0.60	0.82
Total current assets		10.04	11.86	16.18
Trade creditors		0.00	0.00	0.00
Working capital gap		10.04	11.86	16.18
Margin money (25%)		2.51	2.97	4.04
Bank finance		7.53	8.90	12.13

12. INSTALLED CAPACITY OF THE JAMUN WINE MANUFACTURING UNIT

The maximum installed capacity of the jamun wine manufacturing unit in the present model project is proposed as 60 tons/annum or 200 kg/day jamun wine manufacturing. The unit is assumed to operate 300 days/annum @ 8-10 h/day. The 1st year is assumed to be construction/expansion period of the project; and in the 2nd year 55 percent capacity, 3rd year 65 percent capacity and 4th year onwards 75 percent capacity utilization is assumed in this model project.

Total Project Cost and Means of Finance (Rs. in Lakhs)

Particulars	Amount in Lakhs
i. Land and building (20 x 32 x 12 ft. - LxBxH)	8
ii. Plant and machinery	23.16
iii. Utilities & Fittings	0.6
iv. Other Fixed assets	0.8
v. pre-operative expenses	0.60
vi. Contingencies	1.20
vii. Working capital margin	2.51
Total project cost (i to vii)	37.47
Means Of finance	
i. Subsidy	9.74
ii. Promoters Contribution	7.49
iii. Term Loan (@10%)	20.23

Manpower Requirement

Manpower Requirement				
Total Monthly Salary (Rs.)	No	Wages	Total Monthly	Annual Amount
Supervisor (can be the owner)	1	15000	15000	180000
Technician	1	12000	12000	144000
Semi-skilled	2	6000	12000	144000
Sales man	1	8000	8000	96000
Total			47000	564000

13.EXPENDITURE, REVENUE & PROFITABILITY ANALYSIS.

	Particulars	Year						
		1	2	3	4	5	6	7
A	Total Installed Capacity (MT)	63 MT Jamun Fruit / year	33	39	45	51	57	60
	Capacity utilization (%)	Under Const.	55%	65%	75%	85%	95%	100%
B	Expenditure (Rs. in Lakh)	0						
	Jamun wine (Av. Price @ Rs. 30/Kg)	0.00	74.87	88.48	102.09	115.71	129.32	136.13
	Packaging materials	0.00	18.15	4.68	5.40	6.12	6.84	7.20
	Utilities (Electricity, Fuel)	0.00	4.74	5.60	6.46	7.32	8.18	8.61
	Salaries (1st year only manager's salary)	1.80	5.64	5.64	5.64	5.64	5.64	5.64
	Repair & maintenance	0.00	0.70	0.80	0.90	0.90	0.90	0.90
	Insurance	0.30	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	2.30
	Total Expenditure	2.60	106.69	107.80	123.09	138.28	153.48	161.08
C	Total Sales Revenue (Rs. in Lakh)	0.00	148.50	175.50	202.50	229.50	256.50	256.50
	Sale of Jamun Wine (Av. Sale Price @ Rs.450/Bottle)	0.00	148.50	175.50	202.50	229.50	256.50	256.50

D	PBDIT (Total exp.- Total sales rev.) (Rs. in Lakh)/Cash Inflows	-2.60	41.81	67.70	79.41	91.22	103.0 2	95.42
	Depreciation on civil works @ 5% per annum	0.40	0.38	0.36	0.34	0.33	0.31	0.31
	Depreciation on machinery @ 10% per annum	2.32	2.08	1.88	1.69	1.52	1.37	1.37
	Depreciation on other fixed assets @ 15% per annum	0.18	0.15	0.13	0.11	0.09	0.08	0.08
	Interest on term loan @ 12%	2.07	1.99	1.91	1.83	1.73	1.02	1.62
	Interest on working capital @ 12%	0.00	0.90	1.07	1.46	1.46	1.46	1.46
E	Profit after depreciation and Interest (Rs. in Lakh)	-7.56	37.19	63.42	75.44	87.55	100.2 4	92.04
F	Tax (assumed 30%) (Rs. in Lakh)	0.00	11.16	19.03	22.63	26.26	30.07	27.61
G	Profit after depreciation, Interest & Tax (Rs. in Lakh)	-7.56	26.04	44.39	52.81	61.28	70.17	64.43
H	Surplus available for repayment (PBDIT-Interest on working capital-Tax) (Rs. in Lakh)	2.07	1.99	1.91	1.83	1.73	1.02	1.62
I	Coverage available (Rs. in Lakh)	2.07	1.99	1.91	1.83	1.73	1.02	1.62
J	Total Debt Outgo (Rs. in Lakh)	0.69	0.76	0.84	0.93	1.02	15.62	1.13
K	Debt Service Coverage Ratio (DSCR)	3.00	2.62	2.28	1.97	1.69	0.07	1.44
	Average DSCR	2.18						
L	Cash accruals (PBDIT-Interest-Tax) (Rs. in Lakh)	-4.67	28.65	46.76	54.95	63.22	71.93	66.19
M	Payback Period	2.5 Years						
	(On Rs. 26.36 Lakhs initial investment)							

14. REPAYMENT SCHEDULE

Year	Beginning	PMT	Interest	Principal	Ending Balance
1	19,85,880.09	2,75,479.66	2,06,531.53	68,948.13	19,16,931.96
2	19,16,931.96	2,75,479.66	1,99,360.92	76,118.74	18,40,813.22
3	18,40,813.22	2,75,479.66	1,91,444.57	84,035.09	17,56,778.13
4	17,56,778.13	2,75,479.66	1,82,704.93	92,774.74	16,64,003.39
5	16,64,003.39	2,75,479.66	1,73,056.35	1,02,423.31	15,61,580.08
6	15,61,580.08	2,75,479.66	1,62,404.33	1,13,075.34	14,48,504.75
7	14,48,504.75	2,75,479.66	1,50,644.49	1,24,835.17	13,23,669.58
8	13,23,669.58	2,75,479.66	1,37,661.64	1,37,818.03	11,85,851.55
9	11,85,851.55	2,75,479.66	1,23,328.56	1,52,151.10	10,33,700.45
10	10,33,700.45	2,75,479.66	1,07,504.85	1,67,974.82	8,65,725.63
11	8,65,725.63	2,75,479.66	90,035.47	1,85,444.20	6,80,281.43
12	6,80,281.43	2,75,479.66	70,749.27	2,04,730.39	4,75,551.04
13	4,75,551.04	2,75,479.66	49,457.31	2,26,022.36	2,49,528.68
14	2,49,528.68	2,75,479.66	25,950.98	2,49,528.68	(0.00)
		38,56,715	18,70,835	19,85,880	(19,85,880)

15.ASSETS' DEPRECIATION (DOWN VALUE METHOD)

Particulars	Year							
	1	2	3	4	5	6	7	8
Civil works	6.00	5.70	5.42	5.14	4.89	4.64	4.41	4.19
Depreciation	0.30	0.29	0.27	0.26	0.24	0.23	0.22	0.21
Depreciated value	5.70	5.42	5.14	4.89	4.64	4.41	4.19	3.98
Plant & Machinery	7.86	7.07	6.37	5.73	5.16	4.64	4.18	3.76
Depreciation	0.79	0.71	0.64	0.57	0.52	0.46	0.42	0.38
Depreciated value	7.07	6.37	5.73	5.16	4.64	4.18	3.76	3.38
Other Fixed Assets	1.20	1.02	0.87	0.74	0.63	0.53	0.45	0.38

Depreciation	0.18	0.15	0.13	0.11	0.09	0.08	0.07	0.06
Depreciated value	1.02	0.87	0.74	0.63	0.53	0.45	0.38	0.33
All Assets	15.06	13.79	12.65	11.61	10.67	9.82	9.04	8.33
Depreciation	1.27	1.15	1.04	0.94	0.85	0.78	0.71	0.64
Depreciated value	13.79	12.65	11.61	10.67	9.82	9.04	8.33	7.69

16.FINANCIAL ASSESSMENT OF THE PROJECT

Benefit Cost Ratio (BCR) and Net Present Worth (NPW)									
Particulars	Year								
	1	2	3	4	5	6	7	8	
Capital cost (Rs. in Lakh)	37.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Recurring cost (Rs. in Lakh)	2.60	106.69	107.80	123.09	138.28	161.08	161.08	161.08	
Total cost (Rs. in Lakh)	40.07	106.69	107.80	123.09	138.28	161.08	161.08	161.08	999.16
Benefit (Rs. in Lakh)	0.00	148.50	175.50	202.50	229.50	256.50	256.50	256.50	
Total Depreciated value of all assets (Rs. in Lakh)								15.60	
Total benefits (Rs. in Lakh)	0.00	148.50	175.50	202.50	229.50	256.50	256.50	272.10	1541.10
Benefit-Cost Ratio (BCR): (Highly Profitable project)	1.542								
Net Present Worth (NPW):	541.94								

17.BREAK-EVEN ANALYSIS

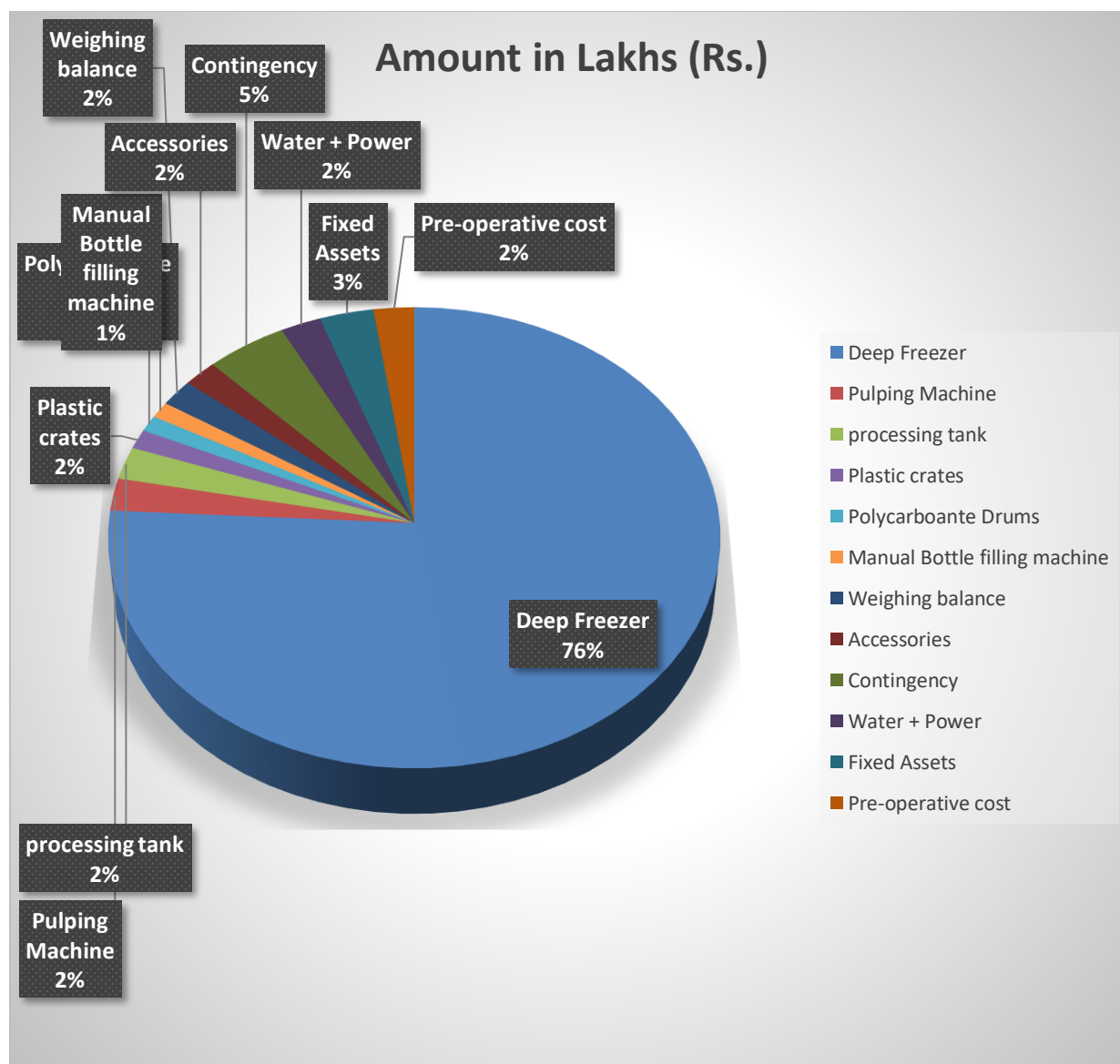
Sr. No.	Particulars	1st Yr	2nd Yr	3rd Yr	4th Yr	5th Yr	6th Yr	7th Yr	8th Yr
	Capacity utilization (%)	Under Const.	55%	65%	75%	85%	95%	100%	100%
	Production MT/Annum		33	39	45	51	57	57	57
A	Fixed Cost (Rs. in Lakh)								
	Permanent staff salaries	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64
	Depreciation on building @ 5% per annum	0.40	0.38	0.36	0.34	0.33	0.31	0.29	0.28
	Depreciation on machinery @ 10% per annum	2.32	2.08	1.88	1.69	1.52	1.37	1.23	1.11
	Depreciation on other fixed assets @ 15% per annum	0.18	0.15	0.13	0.11	0.09	0.08	0.07	0.06
	Interest on term loan	2.07	1.99	1.91	1.83	1.73	1.62	1.51	1.38
	Insurance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	Total Fixed Cost (Rs. in Lakh)	10.901	10.551	10.221	9.909	9.610	9.321	9.039	8.761
B	Sales Revenue (Rs. in Lakh)	0	148.5	175.5	202.5	229.5	256.5	256.5	256.5
C	Variable Cost (Rs. in Lakh)								
	Jamun Fruits (Av. Price @ Rs.30/Kg)	0.00	74.87	88.48	102.09	115.71	129.32	129.32	129.32
	Packaging materials	0.00	18.15	21.45	24.75	28.05	31.35	31.35	31.35
	Casual staff salaries	0.00	4.14	4.14	4.14	4.14	4.14	4.14	4.14
	Utilities (Electricity, Fuel)	0.00	4.74	5.60	6.46	7.32	8.18	8.18	8.18
	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	0.90	1.07	1.46	1.46	1.46	1.46	1.46
	Total Variable Cost (Rs. in Lakh)	0.50	105.50	123.54	141.80	159.57	177.34	177.34	177.34
D	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)	-	17.82	17.55	16.20	18.36	17.96	17.96	15.39
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18. RAW MATERIAL REQUIREMENTS FOR THE UNIT

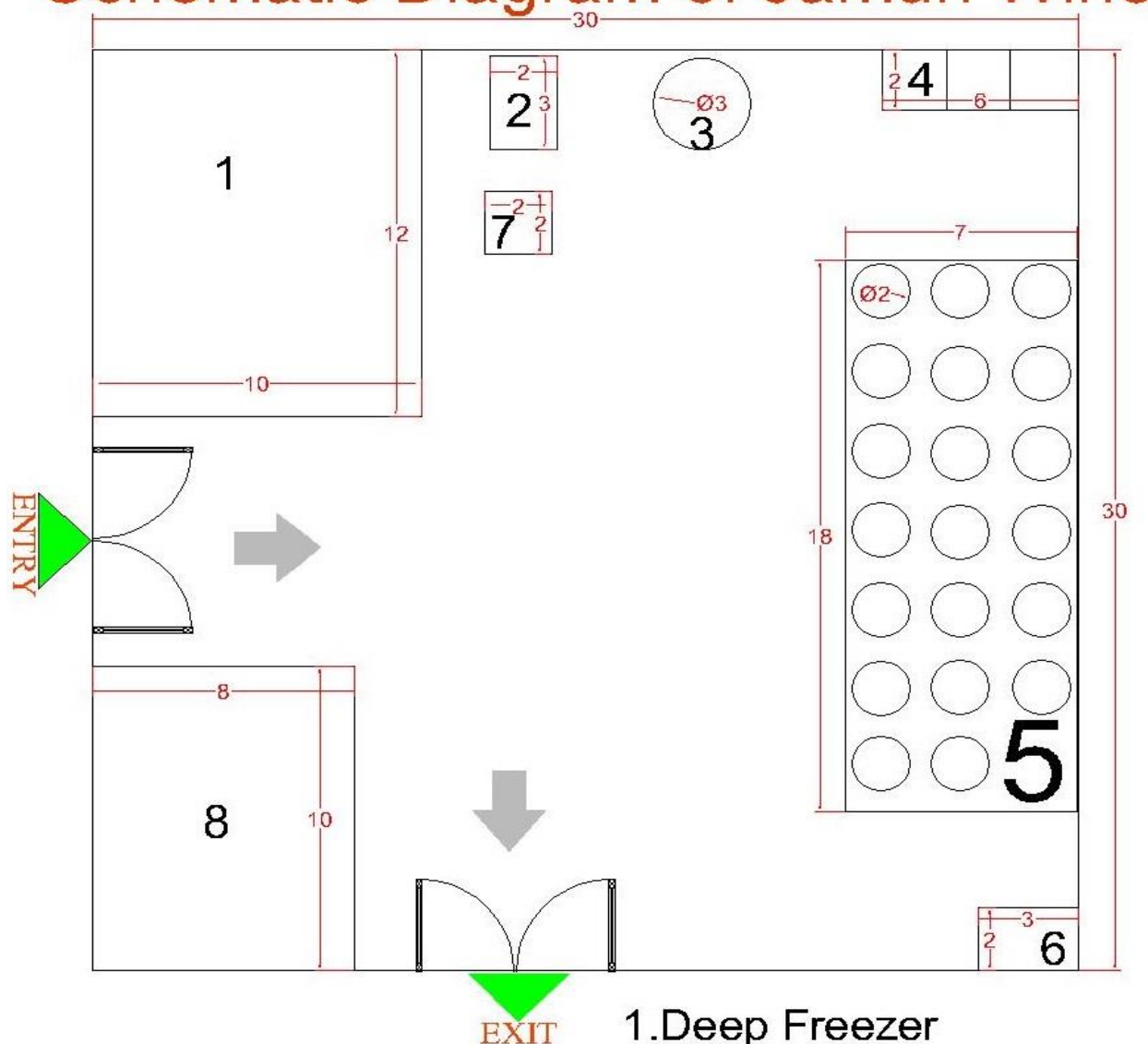
- ✓ A sustainable food processing unit must ensure maximum capacity utilization and thus requires an operation of minimum 280-300 days per year to get reasonable profit. Therefore, ensuring uninterrupted raw materials supply requires maintenance of adequate raw material inventory.
- ✓ The processor must 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 Jamun wine manufacturing project, the unit requires 300 kg/day, 320 kg/day and 325 kg/day raw ripened fruit pulp at 55, 65 and 75 percent capacity utilization, respectively.
- ✓ If there are shortages in supply, then the entrepreneur can use other seasonal seeds / Spices for same purpose to achieve maximum capacity utilization for higher economic efficiency.
- ✓ The fruit must be plucked from plant at mature stage; and then stored below 25°C temperature.

a. Pie chart for better understanding of expenses of each head.



19. TYPICAL JAMUN WINE MANUFACTURING UNIT LAYOUT

Schematic Diagram of Jamun Wine



1. Deep Freezer
2. Pulping M/C
3. Processing Tank
4. Plastic Crates
5. Polycarbonate Drums
6. Manual bottle filling M/C
7. Weighing Balance
8. FG Store

may vary across places, markets and situations; thus, the resultant calculations will also change accordingly.

20.MACHINERY SUPPLIERS

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

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

21. 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

22. 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.



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