

FRUIT JAMS, SQUASHES & COCKTAIL

1. INTRODUCTION:

Jam, Jelly, Juice & squash are made from fruits and these are food items. This food processing industry has thus far developed as a demand - based industry and hence only about 1.5 percent of fruits of the country is processed so far. If promoted as a local resource based industry its growth may be much larger especially because of fast increase in export. India is second to only Brazil in fruit production. In fruit and vegetable production India can boast of not only the quantity but also variety. Besides, the country is get to exploit large part of horticultural land in the form of hill slopes. Transport, storage and processing are the needs for fruit and vegetable, production in the country. At present about 40 percent of Indian horticultural produces go waste due to lack of these facilities. Fruits can be processed to produce juice squash Jam, Jelly and Marmalades. Jam jelly making is simply a profitable business. In addition, you can initiate the business as a small scale with low capital investment. Food processing industry has started receiving a great deal of attention from the policy makers. The current industrial policy in food processing is also favourable for food processing industry. India is the 2nd largest producer of fruits and vegetables in the world, and the food processing sector in the country is expected to double in the next decade. The ever-growing consumer demands have opened up huge investment opportunities for foreign and private entities in the food processing industry currently.

2. PRODUCT & ITS APPLICATION:

Generally, jam and jelly from almost every type of fruit and some vegetables. Fruit jam contains rich fruit pulp and available in mango, apple, mixed fruit, pineapple and orange flavors. Jelly is a clear, bright mixture made from fruit juice, sugar and sometimes pectin. Generally, people use jelly and jam as the bread spread and as a filling for some cakes and cookies.

3. DESIRED QUALIFICATIONS FOR PROMOTER:

Anyone can start this project. Successful running of this project does not require any specific qualification. Promoter should have knowledge of ingredients, recipe, production process, packaging etc.

4. INDUSTRY LOOKOUT AND TRENDS

The FRUIT JAMS, SQUASHES & COCKTAIL market is expected to register a CAGR of 3.5% during the forecast period, 2018 to 2023. The global retail sales are set to reach 1.53 billion USD by 2023. The jam, jelly, and preserves market is driven by the convenience of food supplement items, preference for ready-to-eat products, and multiple distribution channels. With the increasing popularity of gourmet varieties the market is likely to have a positive outlook in the forecast period. Consumers consider gourmet jams and preserves as luxuries and thus are popularly used for gifting.

Innovative product development with new flavors of untraditional fruits and organic products is driving the jam, jelly and preserve market growth. Increasing health consciousness and the inclusion of organic ingredients is driving the market. The market growth is particularly evident in the non-traditional spreads segments of chocolate spreads and nut/seed-based spreads, largely at the expense of jams and other fruit-based products. Although the market is growing at a decent pace, the high cost of raw materials and ingredients and government regulations on processed food and food additives are slowing it down.

During 2017, the jams segment dominated the market and accounted for more than 40% of the market share in terms of revenue. There is a huge versatility in jams, and many consumers and vendors are experimenting different flavors. Example: The Girl and the Fig Café sell Black Mission Fig Jam, which is a mix of fig

and jam.

5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY:

Generally, domestic households, restaurants, and other eateries are the major consumers of these items. It is estimated that the total production of processed fruit & vegetable in India is about 15.0 lakh ton. Out of various products fruit juices and fruit pulp accounts for 27 percent, followed by jams & jellies only 10 percent and synthetics 8 percent. This is obvious that the processed products of fruit & vegetable business will remain a growth industry for a long time. One of the main reasons for the expectation of growth is that the consumption of jam jelly is gaining popularity day by day owing to the growing change in the food habits and increased consumption of bread and other convenient snack foods. Apart from Pickles & Chatneys, preserved fruits are consumed primarily by urban and tourist oriented markets in India. The limited domestic market for preserved fruits has been the primary cause of slow progress of fruit preservation industry.

6. RAW MATERIAL REQUIREMENTS:

The major raw materials required for the production of mixed fruit jam & jelly, marmalade is different fruits and vegetables. These are orange, pineapple, guava, papaya, jackfruit and banana. The consumables are sugar, citric acid, preservatives, food grade colors, chemicals, pectin, flavors, common salt etc. Additionally, you will need to procure the packaging consumables. First of all, you have to pack the product glass bottle or jars, And finally in cartons. The unit shall use locally available fruits like pineapple, orange, Banana, Lime & Lemon, Lichi and Guava, etc. are major fruits. it will need Sugar, Citric Acid, Polassium-Meta-Bi-Sulphate, Benzoic Acid, Sodium Benzoate, Bottles & Crown/ PP Caps.

7. MANUFACTURING PROCESS:

First of all, wash the fruits in water and remove the skins. After peeling, cut or slice them into small pieces. Then, boil these pieces with water. Add an appropriate quantity of sugar with the pulp. When the temperature is around 60 C; citric acid, colour, essence etc. are added. This mixture is then stirred for a while, cooled and then packed in bottles. The process flow chart is: Washing, peeling and slicing of fruits → Boiling → Mixing of sugar with pulp → Cooling → Packing.

Jelly: Washed and peeled fruits are fed to the hopper of a juice extractor and the juice so obtained is filtered. Certain fruits like Rosella or guava need to be boiled in water before extracting juice. Sugar is added to juice and then this mixture is boiled to convert it in jelly form and pectin, citric acid, color etc. are added in the required quantity. Boiling is done till jelly-like formation is obtained. Packing is done on cooling. The process flow chart is: Washing and peeling of fruits → Addition of sugar in juice → boiling → Cooling and Packing.

Fruits are washed manually. Bottles are washed by using Brushing, Rinsing, and Washing Machine. Washed Bottles are kept in Wire-Mesh Racks and Dried in Tray Capacity sterilizing Dryer. Fruits are then manually packed sliced, Trained and Cored by using knives and kept in stainless Steel Trays. Citrous fruits are halved and juices are extracted by using screw-type juice extractor. Juices are allowed to settle, filtered and pasteurized. Juices are than mixed with preservatives juices are the principal inputs for squashes cordial and jelly. For squashes Sugar & Citric Acid are heated with water. After Sugar Syrup is made, it is cooled and filtered. Clear Syrup is mixed with fruit juice, essence and permitted colors. In case of cordial Lime juice is first clarified by using gelatin and Tanin. After testing Juice and Squashes are filled in clean sterilized bottles by using filling machine. Bottles are capped by using P.P. cap sealing machine. Bottles are then wiped dry, Labelled and filled in Corrugated Cardboard boxes. Jams are prepared by open pan boiling of fruit pulp with sugar so that Gelatinous set of fruit & sugar is obtained by inviting about 40 percent of sugar. Pectin is added towards the end of the boiling process. Some fruits like Orange & plum need pre-cooking to soften fruit tissues. Jelly is prepared by boiling clear fruit juice with sugar, colour, pectin and citric acid so that a clear, sparkling, translucent fluid is obtained. Jam & Jelly are packed hot in glass jars and sealed when Jam or Jelly is hot. Marmalades are

Jam or Jelly with pieces of fruits & peels with slightly higher percentages of pectin & Citric Acid.

8. MANPOWER REQUIREMENT :

The enterprise requires 11 employees as detailed below:

Sr. No.	Designation	SALAR Y	Salary ₹ PER ANNUM	Number of Employees				
				Year-1	Year-2	Year-3	Year-4	Year-5
	Working Staff							
1	Production Manager	18000	18000	1	1	1	1	1
2	Operators	12000	12000	1	1	1	1	1
3	Helpers	10000	40000	4	4	5	5	6
			70000	6	6	7	7	8
1	Fixed Staff:							
2	Admin Manager	15000	15000	1	1	1	1	1
3	Accounts/Stores Assistant	12500	12500	1	1	1	1	1
	Office Boy	9000	9000	1	1	1	1	1
	<i>Sub-Total</i>		36500	3	3	3	3	3
	Total		106500	9	9	10	10	11

9. IMPLEMENTATION

SCHEDULE:

The project can be implemented in 4 months' time as detailed below:

Sr. No.	Activity	Time Required (in months)
1	Acquisition of premises	2.00
2	Construction (if applicable)	2.50
3	Procurement & installation of Plant & Machinery	2.50
4	Arrangement of Finance	1.00
5	Recruitment of required manpower	1.00
	Total time required (<i>some activities shall run concurrently</i>)	4.00

10. COST OF PROJECT:

The project shall cost ₹ 36.30 lacs as detailed below:

Sr. No.	Particulars	₹ in Lacs
1	Land	0.00
2	Building	0.00
3	Plant & Machinery	12.00
4	Furniture, other Misc Equipments	1.50
5	Other Assets including Preliminary / Pre-operative expenses	1.20
6	Margin for Working Capital	21.60
	Total	36.30

11. MEANS OF FINANCE:

Bank term loans are assumed @ 75 % of fixed assets.

Sr. No.	Particulars	₹ in Lacs
1	Promoter's contribution	9.08
2	Bank Finance	27.23
	Total	36.30

12. WORKING CAPITAL CALCULATION:

The project requires working capital of ₹ 21.60 lacs as detailed below:

Sr. No.	Particulars	Gross Amt	Margin %	Margin Amt	Bank Finance
1	Inventories	10.80	0.25	2.70	8.10
2	Receivables	5.40	0.25	1.35	4.05
3	Overheads	5.40	100%	5.40	0.00
4	Creditors	-		0.00	0.00

	Total	21.60		9.45	12.15
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13. LIST OF MACHINERY REQUIRED:

For a small scale conventional production process oriented unit you will need to have the following machinery. Pulpier, Juice Extractor, Mixer, Grinder, Slicer, Cap Sealing Machine, Bottle Washing Machine and Carton Sealing Machine. From this type of unit, you can expect 30 tons production output per year on 2 shift working and 300 working days. If you want to establish a large scale production unit you will need to establish a fully automatic production unit. According to the desired production output requirement, you can establish customized plant. Additionally, you will need to procure some other equipment and tools. The list includes weighing scale, glassware, working tables, canteen burners, stainless steel utensils, hand-gloves, cutters and graters, storage racks etc. Also, you will need to have Testing equipment like jell meter, refract meter etc.

Sr. No.	Particulars	UOM	Qty	Rate (₹)	Value (₹ in Lacs)
	Plant & Machinery / equipments				
a)	Main Machinery				
1	Pulp division	NOS	1	1.00	1.00
2	Mixer, grinder, slicer	NOS	1	2.50	2.50
3	Cooling chilling processing	NOS	1	1.50	1.50
4	Testing, Packing	L.S.	1	2.00	2.00
5	Utility Equipments	L.S.	1	3.00	3.00
	Installation, Taxes and Transportation	L.S.		2.00	2.00
	<i>sub-total</i>				12.00
	Furniture / Electrical installations				
a)	Office furniture	LS	1	50000	0.00
b)	Stores Cupboard	LS	1	50,000	0.50
c)	Computer & Printer	LS	1	50000	0.50
	<i>sub total</i>				1.50
	Other Assets				
a)	Preliminary and preoperative				1.20
	<i>sub-total Other Assets</i>				1.20

	Total				14.70
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All the machines and equipments are available from local manufacturers. The entrepreneur needs to ensure proper selection of product mix and proper type of machines and tooling to have modern and flexible designs. It may be worthwhile to look at reconditioned imported machines, dies and tooling. Some of the machinery and dies and tooling suppliers are listed here below:

1. Fry-Tech Food Equipments Private Limited

S. No. 4, Raviraj Industrial Estate,
Bhikhubhai Mukhi Ka Kuwa Bharwadvash,
Ramol, Ahmedabad - 380024,
Gujarat, India

2. Hindustan Vibrotech Pvt. Ltd.

Office No. 2, Ground Floor,
Vrindavan Building, Vile Parle East,
Mumbai - 400057,
Maharashtra, India

3. Electrons cooling systems Pvt. Ltd.

S-27, SIDCO Industrial Estate
Kakkalur Industrial Estate
Tiruvallur - 602003,
Tamil Nadu, India

4. Springboard Enterprises India Ltd.

1st, 2nd & 3rd Floor,
Plot No. 7, 8 & 9,
Garg Shopping Mall,
Service Centre, Rohini Sector 2
New Delhi - 110085,
Delhi, India

5. Flour Tech Engineers Private Limited

Plot No. 182, Sector 24,
Faridabad - 121005,
Haryana, India

6. P Square Technologies

3, Swami Mahal,
Gurunanak Nagar,
Off. Shankarsheth Road Bhavani Peth,
Pune - 411002,
Maharashtra, India

7. Ricon Engineers

10 To 13, Bhagwati Estate,
Near Amraiwadi Torrent Power,
Behind Uttam Dairy,
Rakhial, Ahmedabad - 380023,
Gujarat, India

8. Kamdhenu Agro Machinery

Plot No. 6, Near Power House,
Wathoda Road Wathoda,
Nagpur - 440035,
Maharashtra, India

14. PROFITABILITY CALCULATIONS:

Sr. No.	Particulars	UOM	Year-1	Year-2	Year-3	Year-4	Year-5
1	Capacity Utilization	%	60%	70%	80%	90%	100%
2	Sales	₹. In Lacs	64.80	75.60	86.40	97.20	108.00
3	Raw Materials & Other	₹. In Lacs	44.64	52.08	59.52	66.96	74.40

	direct inputs						
4	Gross Margin	₹. In Lacs	20.16	23.52	26.88	30.24	33.60
5	Overheads except interest	₹. In Lacs	3.90	4.15	4.64	4.78	4.88
6	Interest @ 10 %	₹. In Lacs	2.72	2.72	1.82	1.36	1.09
7	Depreciation @ 30 %	₹. In Lacs	3.60	2.52	1.84	1.44	1.08
8	Net Profit before tax	₹. In Lacs	9.93	14.13	18.59	22.66	26.55

The basis of profitability calculation:

This unit will have 3000 Kg/year capacity. The growth of selling capacity will be increased 10% per year. (This is assumed by various analysis and study, it can be increased according to the selling strategy.)

Energy Costs are considered at Rs 7 per Kwh and fuel cost is considered at Rs. 65 per litre. The depreciation of plant is taken at 10-12 % and Interest costs are taken at 14 -15 % depending on type of industry.

15. BREAKEVEN ANALYSIS:

The project shall reach cash break-even at % of projected capacity as detailed below:

Sr. No.	Particulars	UOM	Value
1	Sales at full capacity	₹. In Lacs	108.00
2	Variable costs	₹. In Lacs	74.40
3	Fixed costs incl. interest	₹. In Lacs	5.97
4	BEP = $FC/(SR-VC) \times 100 =$	% of capacity	17.77%

16. STATUTORY / GOVERNMENT APPROVALS

The Ministry of Food Processing Industries has been operating several plan schemes for the development of processed food sector in the country during the 10th Plan. One of the schemes relates to the Technology Up-gradation/ Establishment/ Modernization of food processing industries.

The Indian food processing industry is regulated by several laws which govern the aspects of sanitation, licensing and other necessary permits that are required to start up and run a food business. The legislation that dealt with food safety in India was the Prevention of Food Adulteration Act, 1954 (hereinafter referred to as "**PFA**"). The PFA had been in place for over five decades and there was a need for change due to varied reasons which include the changing requirements of our food industry. The act brought into force in place of the PFA is the Food Safety and Standards Act, 2006 (hereinafter referred to as "**FSSA**") that overrides all other food related laws.

FSSA initiates harmonization of India's food regulations as per international standards. It establishes a new national regulatory body, the Food Safety and Standards Authority of India (hereinafter referred to as "**FSSAI**"), to develop science based standards for food and to regulate and monitor the manufacture, processing, storage, distribution, sale and import of food so as to ensure the availability of safe and wholesome food for human consumption. Entrepreneur may contact State Pollution Control Board where ever it is applicable.

All food imports will therefore be subject to the provisions of the FSSA and rules and regulations which as notified by the Government on 5th of August 2011 will be applicable.

Key Regulations of FSSA

- A. Packaging and Labelling
- B. Signage and Customer Notices
- C. Licensing Registration and Health and Sanitary Permits

17. BACKWARD AND FORWARD INTEGRATIONS

The objective of the scheme is to provide effective and seamless backward and forward integration for processed food industry by plugging the gaps in supply chain in terms of availability of raw material and linkages with the market. Under the scheme, financial assistance is provided for setting up of primary processing

centres/ collection centres at farm gate and modern retail outlets at the front end along with connectivity through insulated/ refrigerated transport.

The Scheme is applicable to perishable horticulture and non-horticulture produce such as, fruits, vegetables, dairy products, meat, poultry, fish, Ready to Cook Food Products, Honey, Coconut, Spices, Mushroom, Retailers Shops for Perishable Food Products etc. The Scheme would enable linking of farmers to processors and the market for ensuring remunerative prices for agri produce.

The scheme is implemented by agencies/ organizations such as Govt./ PSUs/ Joint Ventures/ NGOs/ Cooperatives/ SHGs / FPOs / Private Sector / individuals etc.

Backward Linkage:

- Integrated Pack-house(s) (with mechanized sorting & grading line/ packing line/ waxing line/ staging cold rooms/cold storage, etc.)
- Pre Cooling Unit(s)/ Chillers
- Reefer boats
- Machinery & equipment for minimal processing and/or value addition such as cutting, dicing, slicing, pickling, drying, pulping, canning, waxing, etc.
- Machinery & equipment for packing/ packaging.

Forward Linkage:

- Retail chain of outlets including facilities such as frozen storage/ deep freezers/ refrigerated display cabinets/cold room/ chillers/ packing/ packaging, etc.
- Distribution centre associated with the retail chain of outlets with facilities like cold room/ cold storage/ ripening chamber.

18. TRAINING CENTERS AND COURSES

There are few specialised Institutes provide degree certification in Food Technology, few most famous and authenticate Institutions are as follows:

1. Indian Institute of Food Science & Technology,
Plot No.1, Near Maa-Baap ki Dargah,Opp to Nath Seeds,
Paithan Road Aurangabad
Aurangabad - 431005
Maharashtra, India
2. MIT College of Food Technology, Pune
Gate.No.140, Raj Baugh Educational Complex,
Pune Solapur Highway,
Loni Kalbhor, Pune - 412201
Maharashtra, India
3. CSIR - Central Food Technological Research Institute (CFTRI)
Cheluvamba Mansion, Opp. Railway Museum,
Devaraja Mohalla, CFTRI Campus, Kajjihundi, Mysuru
Karnataka - 570020

Udyamimitra portal (link : www.udyamimitra.in) can also be accessed for handholding services viz. application filling / project report preparation, EDP, financial Training, Skill Development, mentoring etc.

Entrepreneurship program helps to run business successfully is also available from Institutes like Entrepreneurship Development Institute of India (EDII) and its affiliates all over India.

Disclaimer:

Only few machine manufacturers are mentioned in the profile, although many machine manufacturers are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of knowledge and contacts. However, no responsibility is admitted, in case any

inadvertent error or incorrectness is noticed therein. Further the same have been given by way of information only and do not carry any recommendation.

Source:- Udyami Mitra/Sidbi