

PROJECT PROFILE ON MANGO PULP & CONCENTRATE

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INTRODUCTION

Mango is known as the ‘King of fruits’. India is one of the major mango producing countries, produces about 41% of the total mango production in the world. Major mango producing states are Uttar Pradesh, Andhra Pradesh, Karnataka, Bihar, Gujarat, Tamil Nadu, West Bengal. India is the home of about 1,000 varieties. However, only a few varieties are commercially cultivated throughout India. Most of the Indian mango varieties have specific eco - geographical requirements for optimum growth and yield. As per Ministry of Agriculture the output of mango, stood at 20.26 million tonne during the 2019-20 crop year (July-June) and it is estimated to increase 4.24 per cent to 21.12 million tonnes in the crop year 2020-21 ending June. The important commercial varieties are as

Andhra Pradesh	Banganapalli, Suvarnarekha, Neelum and Totapuri
Bihar	Bombay Green, Chausa, Dashehari, Fazli, Gulabkhas, Kishen Bhog, Himsagar, Zardalu and Langra
Gujarat	Kesar, Alphonso, Rajapuri, Jamadar, Totapuri, Neelum, Dashehari and Langra
Haryana	Chausa, Dashehari, Langra and Fazli
Himachal Pradesh	Chausa, Dashehari and Langra
Karnataka	Alphonso, Totapuri, Banganapalli, Pairi, Neelum and Mulgoa
Madhya Pradesh	Alphonso, Bombay Green, Dashehari, Fazli, Langra and Neelum
Maharashtra	Alphonso, Kesar and Pairi
Punjab	Chausa, Dashehari and Malda
Rajasthan	Bombay Green, Chausa, Dashehari and Langra
Tamil Nadu	Alphonso, Totapuri, Banganapalli and Neelum
Uttar Pradesh	Bombay Green, Chausa, Dashehari and Langra
West Bengal	Fazli, Gulabkhas, Himsagar, Kishenbhog, Langra and Bombay Green

Mango is also perishable in nature. Due to poor post-harvest management every year, around 15 percent of the mangos are wasted in the whole supply chain. Maximum produces are consumed as raw fruits. Almost 1,000 varieties of the mango varieties only 30 types are used commercially,

including Alphonso that forms the bulk of exports from the country. Other popular varieties include Kesar, Langra and Chausa.

Mango is a seasonal fruit. During off-season, the mangos are available through processing. Basically, two major products of mango processing – pulp and juice. The pulp is usually removed from fruit juice by filtering it out. The colour of the pulp depends on the species and the ripening stage.

Usually, it has the colour of the fruit's peel. The juiciness of the pulp depends on the species, variety, season, and even the tree on which it grew. Mango Pulp is prepared from selected varieties of Fresh Mango like Alphonso, Kesar, Langra, Totapuri, Chausa, etc.

PRODUCTS AND ITS APPLICATION

- Mango pulp is widely used in preparing juices, drinks & nectars.
- It is used as a base in various jams & marmalades.
- Mango puree is mostly used to make juices, nectars, drinks, jams, fruit cheese and various other kinds of beverages. It is also used in puddings, bakery fillings, fruit meals for children and flavors for the food industry, and also to make the ice creams, yogurt, and confectionery items.
- It is used to make Aamras which goes very well with purees.
- Use to make delicious milkshakes which can be prepared in a jiffy.

DESIRED QUALIFICATION FOR PROMOTER

For processing of mangos, require proper skills. Now latest technology are available in the market and for dehydration process few institute like National Skill Development Corporation, Indian Institute of Horticulture Research, MSME ministries, etc. give training. They give training on mechanical drying through electricity/solar power. Below are some of the suggested training for the entrepreneur, however, these are not mandatory.

- Food standards for fruits and vegetables
- Methods of drying/dehydration of vegetables
- Handling, packaging and storage techniques
- Quality assessment of raw material, packaging materials and finished products
- Operation and maintenance of processing machineries and equipment
- Waste management
- GMP
- HACCP
- QMS
- Computer basics and ERP
- Training in Food Safety Standards and Regulations (as per FSSAI) (Mandatory)

INDUSTRY OUTLOOK/TREND

India is also a prominent exporter of fresh mangoes to the world. The country has exported 21,033.58 MT of fresh mangoes to the world for the worth of Rs. 271.84 crores/ 36.23 USD Millions during the year 2020-21. The value of India's mango exports slumped from \$56 million in 2019-20 to \$28.3 million in April-Feb 2020-21, due partly to the impact of Covid-19. Major Export Destinations in the year 2020-21 were United Arab Emeritus, U.K., Qatar, Oman, Kuwait. India's Export of Mango Pulp (HS Code: 8045040) is give below:

Year	Export Value (INR Lakh)
2017-18	67,392.14
2018-19	65,767.02
2019-2020	58,431.95
2020-2021	71,440.84
2021-2022 (Apr-Jun)	11,569.23

MARKET POTENTIAL AND MARKETING ISSUES, IF ANY

Global Mango Puree Market is estimated to reach \$2110 Million by 2026. Due to the rise on Indian middle class the consumption of processed mangos are rising. Indians are become more and more health conscious, therefore, demand for processed mangos are rising throughout the year. There are several benefits of mango puree such as it prevents cancer, prevents heart disease, helps lower cholesterol, improves digestion, prevents asthma, improves eye health, regulates blood pressure, improves immunity and many other benefits. It has a high amount of vitamin A, vitamin C, potassium, protein and fiber due to which it helps prevents infection in pregnant women and also helps prevent eye problem in newborns. It also enhances skin health due to the presence of carotenoids. Because of these benefits, mango puree market is expected to grow on a higher scale in the coming years.

BASIS AND PRESUMPTIONS

- i) This project is based on single shift basis and 240 working days in a year.
- ii) The wastage of the fruits is 50%.
- iii) The cost of machinery and equipment/materials indicated refer to a particular make and the prices are approximate and those ruling at the time of the preparation of scheme.
- iv) Non refundable deposits-project preparation cost, trial production, fees, etc., are considered under pre-operative expenses.

RAW MATERIAL REQUIREMENTS

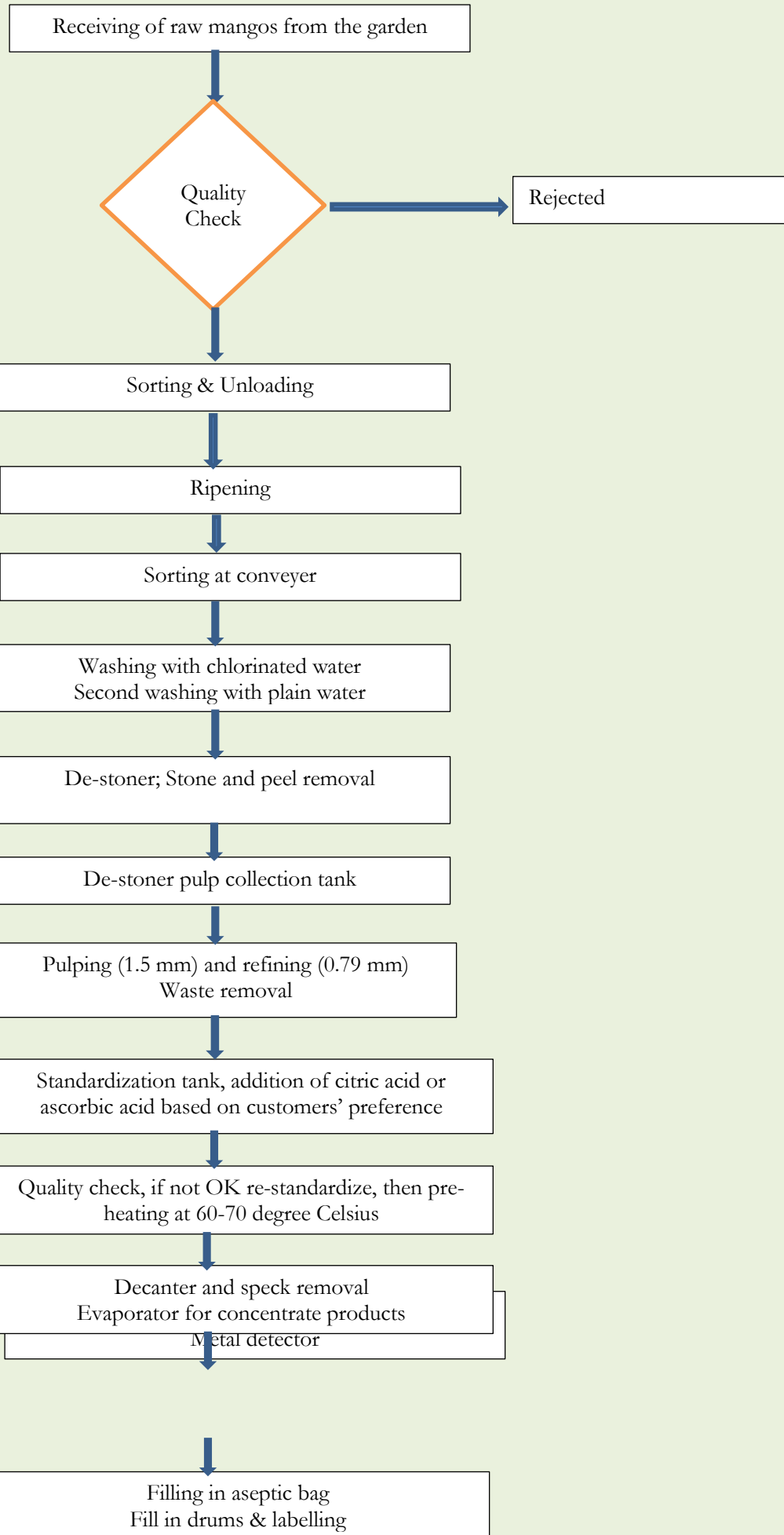
Mango is required as the only raw material for the Mango Pulp unit. Average raw material (cost per KG): Rs. 50-60.

Machine capacity	300 kg/hour
Wastage	5%
Output per hour	285 kg/hour
Output per annum (240 days)	574200 kg
Raw material requirement	576000 kg

Raw Materials	Capacity Utilization	Rate (per Kg)	Total amount (INR Lakh)
1 st year	50%	55.00	158.40
2 nd year	53%	56.00	170.96
3 rd year	55%	57.00	180.58
4 th year	58%	58.00	193.77
5 th year	60%	60.00	203.90

MANUFACTURING PROCESS

Mango Pulp is prepared from selected varieties of Fresh Mango. Fully matured Mangoes are harvested, transported to the fruit processing plant, inspected and washed. Selected high quality fruits go to the controlled ripening chambers; Fully Ripened Mango fruits are then washed, blanched, pulped, deseeded, centrifuged, homogenized, concentrated when required, thermally processed and aseptically filled maintaining sterility. The preparation process includes cutting, de-stoning, refining and packing. In case of aseptic product the pulp is sterilized and packed in aseptic bags. The refined pulp is also packed in cans, hermetically sealed and retorted. Frozen pulp is pasteurized and deep-frozen in plate freezers. The process ensures that the natural flavour and aroma of the fruit is retained in the final product.



MANPOWER REQUIREMENT (PER MONTH)

Plants

Type	Number	Cost (Rs.)
Labour (skilled)	2	30,000
Labour (unskilled)	3	36,000
Total per month		66,000

Office staff

Type	Number	Cost (Rs.)
Supervisor	1	20,000
Accountant	1	18,000
Helper	2	16,000
Total per month		54,000

LAND

Particulars	Units	Total Area	Total rent (INR)
Land & building (rent)	Sq. Mt.	2500	50000

MACHINERY SPECIFICATIONS

Types of machinery	Quantity	Price (INR)
Fruit washing machine	1	4,86,000
Sorting conveyor	1	1,80,000
Working table	1	1,12,500
Screw feeder	1	2,70,000
Fruit crusher	1	36,000
Pulp collection tank	1	36,000
Transfer Pump	1	81,000
Steam Jacketed kettle	1	90,000
Twin Pulper	1	2,25,000
Filling Tank	1	75,000
Steam boiler	1	6,30,000
Total*		22,21,500

* Cost of the machine is exclusive of GST & other than transportation cost.

Office furniture and fixtures

5.00 (Lakh)

UTILITIES (per month)

Sl. No	Particulars	Cost (Rs. Lakh)
1	Electricity (3 phase) 30 KWH	0.34

WORKING CAPITAL ASSESSMENT (per month)

COMPUTATION OF WORKING CAPITAL REQUIREMENT					
TRADITIONAL METHOD					
Particulars	Amount	Own Margin		Bank Finance	
Finished Goods & Raw Material	11.52				
Less : Creditors	2.64				
Paid stock	8.88	15%	1.33	85%	7.55
Sundry Debtors	24.58	15%	3.69	85%	20.89
	33.46	5.02		28.44	
WORKING CAPITAL LIMIT DEMAND (from Bank)				22	

CAPITAL INVESTMENT

Sl. No	Particulars	Cost (Rs. Lakh)
1	Land	6.00
2	Plant & Machinery and Furniture	27.21
3	Preoperative Expenses	1.00
	Total Fixed Capital	34.21
4	Working Capital (for 3 months)	33.46
	Total	77.67

IMPLEMENTATION SCHEDULE

Project Stages	Months...			
	1	2	3	4
Acquisition of Land				
Ordering of Machinery				
Delivery of Machinery				
Term/Wkg Loan Sanction				
Installation of Machinery				
Commissioning of Plant				
RM/Inputs Procurement				
Manpower Appointments				
Commercial Production				

SALES REVENUE

Computation of sale					
Particulars	1st year	2nd year	3rd year	4th year	5th year
Op Stock	-	11,400	12,084	12,540	13,224
Production	2,73,600	2,90,016	3,00,960	3,17,376	3,28,320
Less : Closing Stock	11,400	12,084	12,540	13,224	13,680
Net Sale	2,62,200	2,89,332	3,00,504	3,16,692	3,27,864
sale price per KG	90	91	92	93	94
sales (in Lacs)	235.98	263.29	276.46	294.52	308.19

PROFITABILITY CALCULATION

Profitability Statement					
PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
Capacity Utilisation %	50%	53%	55%	58%	60%
Sales					
Gross Sale					
Mango Pulp	235.98	263.29	276.46	294.52	308.19
Total	235.98	263.29	276.46	294.52	308.19
Cost of Sales					
Raw Material Consumed	158.4	170.96	180.58	193.77	203.9
Electricity Expenses	4.03	4.64	5.33	6.13	7.05
Repair & Maintenance	7.08	7.9	8.29	8.84	9.25
Labour & Wages	7.92	8.71	9.58	10.54	11.6
Depreciation	4.43	3.79	3.25	2.78	2.38
Consumables	6.61	7.37	7.74	8.25	8.63
Packaging Charges	6.37	7.11	7.46	7.95	8.32
Other direct expense	2.36	2.63	2.76	2.95	3.08
Cost of Production	197.2	213.11	225	241.2	254.21
Add: Opening Stock /WIP	-	8.22	8.88	9.38	10.05
Less: Closing Stock /WIP	8.22	8.88	9.38	10.05	10.59
Cost of Sales	188.99	212.45	224.51	240.52	253.67
GROSS PROFIT	46.99	50.84	51.96	54	54.52
Staff charges	6.48	7.13	7.84	8.62	9.49
Interest on Term Loan	2.84	2.49	1.77	1.05	0.33
Interest on working Capital	2.64	2.64	2.64	2.64	2.64
Selling & Adm Expenses Exp.	10.38	12.37	12.44	12.96	11.71
Rent	6.0	6.9	7.94	9.13	10.49
TOTAL	28.35	31.54	32.63	34.4	34.67

BREAK EVEN POINT ANALYSIS

Sl. No	Particulars	Cost (Rs. Lakh)
1	Depreciation on machineries @ 15%	4.43
2	Interest on capital investment @10%	2.64
3	40% of salary and wages	5.76
4	40% of the utilities and contingent expense	1.61
5	Insurance	0.15
7	Total Fixed Cost	14.59
8	Net profit per year	18.64
9	BE Point: $\text{Net profit} \times 100 / \text{Net Profit} + \text{Fixed Cost}$	56.09%

References

- IIFPT Reports on Mango Pulp
- Report on Mango Pulp by Institute for Industrial development
- MOFPI Report on Mango Pulp

Video Link – Mango Pulp

<https://youtu.be/NyaWR41wuOc>

MANUFACTURES/ SUPPLIERS OF MACHINERY

- M/S. Sanjivan Industries, Vasai East, Mumbai, Maharashtra
- Sahyadri Retails, 684, Sadguru Chambers, Ganpati Peth, Sangli, Maharashtra IndiaM/s. International Food Machinery Corporation, Krishna Opp. Deep Bhavan, Pandit Nehru Marg, Jamnagar - 361 008, (Gujarat)
- B No. 401, Hari Darshan Arcade, Nr. Ranuja Temple, Kothariya Road, Rajkot, Gujarat - 360002 India5.

RAW MATERIAL SUPPLIERS

- Local Market

STATUTORY/ GOVERNMENT APPROVALS

- Obtain the GST registration.
- Additionally, obtain the Udyog Aadhar registration Number.
- FSSAI License Required.
- IEC Code for Export of end products and local authority clearance may be required for Shops and Establishment.
- Obtain ESI, PF and Labour laws may be required if applicable

- Fire/ Pollution Registration as required.
- Choice of a Brand Name of the product and secure the name with Trademark if required

DISCLAIMER:

This is an indicative illustration of project profile; the above calculation can vary with the locations. 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.

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