

ORANGE JUICE AND SQUASH



1.0 INTRODUCTION

India produces many varieties of juicy fruits but on account of inadequate storage and transportation facilities, substantial quantities are wasted. Further, fruits are perishable having limited shelf life. Lack of proper processing facilities results in considerable losses and invariably fruit growers are at the receiving end. Concerned government departments and agencies are seized of this problem and consequent monetary losses. Good quality oranges are grown in large quantities in the Nagpur district of Maharashtra and they are famous all over the country. Reportedly, there are very few orange processing units in the region and new units can certainly come up in Nagpur and the adjoining district of Amravati.

2.0 PRODUCTS

2.1 Applications

Fruits are perishable and they need to be processed in time to make juice, squashes, nectar, jams etc. These products have longer shelf life and they also provide substantial value-addition. This note discusses the prospects of processing fresh oranges to make juice and squash.

2.2 Availability of know-how and compliances

CFTRI, Mysore, has successfully developed the process know-how. Certification under FPO and PFA Act is necessary.

3.0 MARKET POTENTIAL

3.1 Demand and Supply

Fruits are generally liked by majority of the people irrespective of age. Oranges from Nagpur region (also known as Nagpuri Mandarins) are popular over the country. There are certain

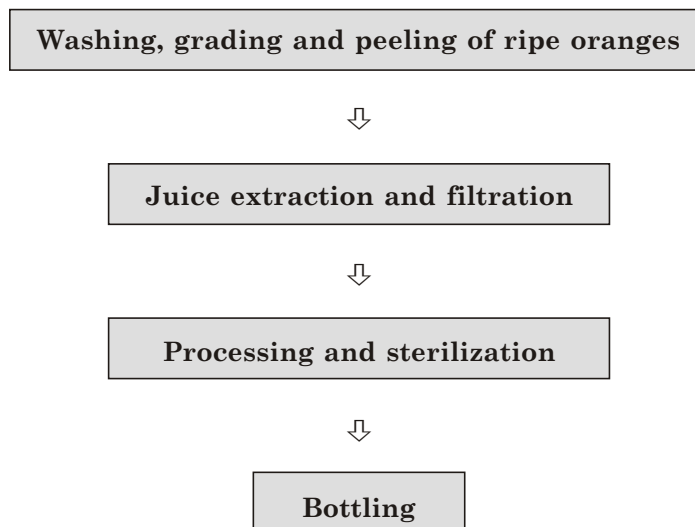
big companies offering natural as well as synthetic products, like Haldiram, Pepsi, Rasna, Birla Products, Godrej Foods etc. But invariably their products are highly priced and more than 70% of the population cannot afford it on a regular basis. Thus, there is a vacuum in the market and low cost good quality product has ample space.

3.2 Marketing Strategy

The project aims at this unexplored market. Concentrated and systematic efforts shall be required to enter this market but once the consumers are convinced about the quality, they would certainly prefer a natural product than the synthetic ones. Retail grocery shops, restaurants, ice-cream and cold drink parlours, departmental stores, shops at picnic spots, bus-stands and railway stations etc. shall be the potential selling points.

4.0 MANUFACTURING PROCESS

It is standardised and not complicated. Fully ripe oranges are washed, cleaned and graded and then peeled. Thereafter juice is extracted from oranges and filtered to remove seeds, fibres etc. This pure juice is then processed, sterilised and bottled after adding some preservatives. In case of squash, sugar syrup is added and this mixture is stirred till uniform solution is formed and then it is bottled. Process loss is in the range of 8% to 10%. The process flow chart is as under:



5.0 CAPITAL INPUTS

5.1 Land and Building

A plot of land of about 200 sq.mtrs. with built-up area of 100 sq.mtrs. will be adequate. Land may cost Rs.50,000/- whereas construction cost would be Rs. 2.15 lacs. There will be main production hall of 60 sq.mtrs. and in rest of the 40 sq.mtrs, a packing room and storage facilities could be accommodated.

5.2 Plant and Machinery

This is a seasonal business and the factory would work for around 6-7 months. It is suggested to have rated production capacity of 150 tonnes for which following machines shall be required.

Item	Qty.	Price (Rs.)
Fruit Washing Tanks	2	10,000
Juice Extractors	2	1,10,000
Steam Jacketed Kettles- 50 Ltrs.	1	20,000
Stirrer	1	15,000
Baby Boiler- 50 Kgs.	1	60,000
Bottle Washing and Filling Machine	1	70,000
Testing Equipments & Weighing Scale	--	45,000
	Total	3,30,000

5.3 Miscellaneous Assets

A provision of Rs. 60,000/- is made towards some other assets like furniture and fixtures, aluminium top tables, fruit crates, SS utensils, exhaust fans etc.

5.4 Utilities

Power requirement shall be 30 HP whereas hard coke of around 25 tonnes will be required every year for boiler. Water of around 1000-1200 ltrs will be needed every day for washing of oranges and for potable and sanitation purposes.

5.5 Raw and Packing Material

The most important raw material will be fresh and ripe oranges which will be available for 6-7 months. Nagpur and surrounding areas are famous for oranges with total production in excess of 3.00 lac tonnes every year. Against this, the actual requirement of the unit even at 100% utilisation will be less than 165 tonnes. Other items like sugar, salt and preservatives shall be available locally without any difficulty. Packing materials like food grade plastic or glass bottles, labels, corrugated boxes, BOPP tape etc. shall be required for which proper arrangements shall have to be made.

6.0 MANPOWER REQUIREMENTS

Particulars	Nos.	Monthly Salary (Rs.)	Total Monthly Salary (Rs.)
Skilled Workers	2	2,000	4,000
Semi-skilled Workers	2	1,500	3,000
Helpers	4	1,250	5,000
Salesman	1	2,000	2,000
		Total	14,000

7.0 TENTATIVE IMPLEMENTATION SCHEDULE

Activity	Period (in months)
Application and sanction of loan	2
Site selection and commencement of civil work	1
Completion of civil work and placement of orders for machinery	4
Erection, installation and trial runs	1

8.0 DETAILS OF THE PROPOSED PROJECT

8.1 Land and Building

Particulars	Area (Sq.Mtrs)	Cost (Rs.)
Land	200	50,000
Building	100	2,15,000

8.2 Machinery

As discussed earlier, the total cost of machinery is estimated to be Rs. 3.30 lacs.

8.3 Miscellaneous Assets

A provision of Rs.60,000/- is adequate under this head as explained earlier.

8.4 Preliminary & Pre-operative Expenses

There will be certain expenses which will be incurred prior to commercial production viz. registration and establishment charges, interest during implementation, trial runs expenses etc. An amount of Rs. 45,000/- would take care of these expenses.

8.5 Working Capital Requirement

The factory is expected to operate at 65% in the first year and the working capital needs to achieve this target shall be as under:

(Rs. in lacs)

Particulars	Period	Margin	Total	Bank	Promoters
Stock of Packing Material	1 Month	30%	1.65	1.15	0.50
Stock of Finished Goods	½ Month	25%	1.00	0.75	0.25
Receivables	½ Month	25%	1.45	1.10	0.35
Working Expenses	1 Month	100%	0.30	--	0.30
		Total	4.40	3.00	1.40

8.6 Cost of the Project and Means of Financing

(Rs. in lacs)

Item	Amount
Land and Building	2.65
Machinery	3.30
Miscellaneous Assets	0.60
P&P Expenses	0.45
Contingencies @ 10% on Building and Plant & Machinery	0.60
Working Capital Margin	1.40
Total	9.00
Means of Finance	
Promoters' Contribution	2.70
Term Loan from Bank/FI	6.30
Total	9.00
Debt Equity Ratio	2.33 : 1
Promoters' Contribution	30%

Financial assistance in the form of grant is available from the Ministry of Food Processing Industries, Govt. of India, towards expenditure on technical civil works and plant and machinery for eligible projects subject to certain terms and conditions.

9.0 PROFITABILITY CALCULATIONS

9.1 Production Capacity and Build-up

The rated capacity of the plant will be 150 tonnes whereas actual capacity utilisation during first two years is assumed to be 65% and 75% respectively.

9.2 Sales Revenue at 100%

(Rs. in lacs)

Product	Qty. (Tonnes)	Selling Price/Ton (Rs)	Sales Value
Orange Juice	75	30,000	22.50
Orange Squash	75	42,000	31.50

9.3 Raw Materials Required at 100%

(Rs. in lacs)

Product	Qty. (Tonnes)	Price/Ton (Rs)	Value
Oranges	170	10,000	17.00
Sugar	-	-	2.55
Preservatives, Flavours, etc.	--	--	0.75
Packing Materials @ Rs.7,000/Ton	--	--	10.50
		Total	30.80

9.4 Utilities

Utilities like power, water and hard coke shall be required as explained earlier. Annual cost at 100% is likely to be Rs.1.00 lac.

9.5 Selling Expenses

A provision of 17.5% of sales income is made towards selling commission, transportation, sampling, publicity etc.

9.6 Interest

Interest on term loan assistance of Rs. 6.30 lacs is computed @ 12% per annum considering repayment of loan in 4 years including a moratorium period of 1 year whereas on bank assistance for working capital it is taken at 14% per annum.

9.7 Depreciation

It is calculated on WDV basis @ 10% on building and 20% on machinery and miscellaneous assets.

10.0 PROJECTED PROFITABILITY

(Rs. in lacs)

No.	Particulars	1st Year	2nd Year
A	Installed Capacity	--- 150 Tonnes ---	
	Capacity Utilisation	65%	75%
	Sales Realisation	35.10	40.50
B	Cost of Production		
	Raw and Packing Material	20.02	23.10
	Utilities	0.65	0.75
	Salaries	1.40	1.70
	Stores & Spares	0.30	0.45
	Repairs & Maintenance	0.48	0.60
	Selling and Distribution @ 17.5%	6.14	7.10
	Administrative Expenses	0.60	0.78
	Total	29.59	34.48
C	Profit before Interest & Depreciation	5.51	6.02
	Interest on Term Loan	0.69	0.46
	Interest on Working Capital	0.42	0.47
	Depreciation	0.96	0.78
	Net Profit	3.44	4.31
	Income-tax @ 20%	0.70	0.86
	Profit after Tax	2.74	3.45
	Cash Accruals	3.70	4.23
	Repayment of Term Loan	--	1.90

11.0 BREAK-EVEN ANALYSIS

(Rs. in lacs)

No	Particulars	Amount	
[A]	Sales		35.10
[B]	Variable Costs		
	Raw and Packing Materials	20.02	
	Utilities (60%)	0.37	
	Salaries (60%)	0.84	
	Stores & Spares	0.30	
	Selling Expenses (65%)	4.00	
	Administrative Expenses (50%)	0.30	
	Interest on Working Capital	0.42	26.25
[C]	Contribution [A] - [B]		8.85
[D]	Fixed Cost		5.41
[E]	Break-Even Point [D] ÷ [C]		61%

12.0 [A] LEVERAGES

Financial Leverage

$$= \text{EBIT/EBT}$$

$$= 4.35 \div 3.44$$

$$= 1.32$$

Operating Leverage

$$= \text{Contribution/EBT}$$

$$= 8.85 \div 3.44$$

$$= 2.57$$

Degree of Total Leverage

$$= \text{FL/OL}$$

$$= 1.32 \div 2.57$$

$$= 0.51$$

[B] Debt Service Coverage Ratio (DSCR)

(Rs. in lacs)

Particulars	1st Yr	2nd Yr	3rd Yr	4th Yr
Cash Accruals	3.70	4.23	4.57	4.96
Interest on TL	0.69	0.46	0.30	0.13
Total [A]	4.39	4.69	4.87	5.09
Interest on TL	0.69	0.46	0.30	0.13
Repayment of TL	--	2.10	2.10	2.10
Total [B]	0.69	2.56	2.40	2.23
DSCR [A] ÷ [B]	6.36	1.83	2.02	2.28
Average DSCR	----- 3.12 -----			

[C] Internal Rate of Return (IRR)

Cost of the project is Rs. 9.00 lacs.

(Rs. in lacs)

Year	Cash Accruals	24%	28%	32%
1	3.70	2.98	2.89	2.80
2	4.23	2.75	2.58	2.43
3	4.57	2.39	2.18	1.99
4	4.96	2.10	1.85	1.63
	22.77	10.22	9.50	8.85

The IRR is around 33%.

The machinery is available from following suppliers:

1. Marathe Corporation, Pimpri, Pune
2. Raylons Metal Works, PB NO. 17426, Andheri (E), Mumbai- 400059
3. Auric Techno Services Pvt. Ltd. C/101, Shreenath Hermitage, Baner Road, Pune 411008
Tel. No. : 25898072/9113 Fax No. 25899113
4. FMC Technologies Hong Kong Ltd. 2, Bhuvaneshwar Housing Society, Pashan Road,
Pune 411008 Tel. No. : 25893700
5. PRS Technologies Pvt. Ltd. D/26, NDSE Part 2, New Delhi 110049.
Tel. No. : 26252176/77, Fax : 26252178