

# TAMARIND CONCENTRATE



## 1.0 INTRODUCTION

India is one of the major producers of tamarind fruits with cultivation throughout the country. But states like Madhya Pradesh, Andhra Pradesh, Uttar Pradesh, Karnataka, Tamil Nadu and Orissa are the major producers. This note considers UP as the preferred location. Fresh and dried Tamarind is usually not used directly in preparing food items but its pulp is generally used. Usually, dried tamarind is soaked in water for a while, then it is squeezed and its filtrate is used. This method is unhygienic and many households have switched over to using tamarind concentrate.

## 2.0 PRODUCT

### 2.1 Applications

Tamarind is an important item in Indian households. It is used in many food and snack preparations to impart sour taste. It is a mass consumption item being used in all parts of the country. Tamarind concentrate is neat and clean and a hygienic product.

### 2.2 Availability of know-how and Compliances

CFTRI, Mysore, has successfully developed the technological know-how. Compliance under the PFA Act is mandatory.

## 3.0 MARKET POTENTIAL

### 3.1 Demand and Supply

Tamarind fruits are used in Indian culinary since ages. It is commonly used in all households in making food preparations as well as many items of snacks. Restaurants, roadside eateries, dhabas, hostels, caterers, canteens and some of the food processing units are the bulk consumers while most of the tamarind fruits are consumed in domestic market, a part of the

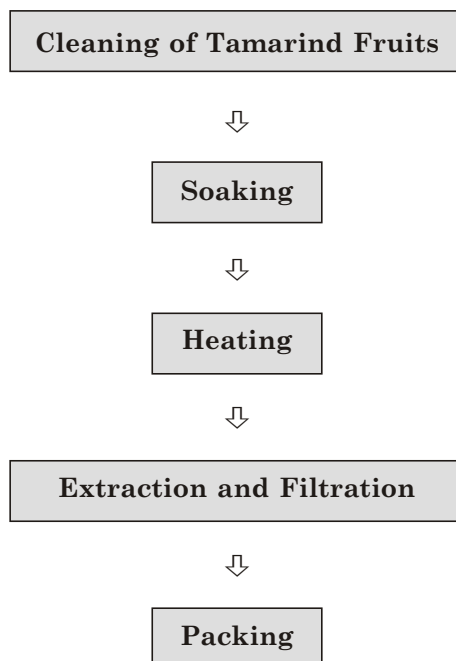
quantity is exported and balance is processed and converted into concentrate form. Because of high acidity of around 90%, tamarind has longer shelf life.

### 3.2 Marketing Strategy

Apart from large and growing domestic market, there are good prospects of exporting tamarind concentrate to countries like the USA, UK and some of the African and Middle East countries.

## 4.0 MANUFACTURING PROCESS

The process of manufacture is very simple. Cleaned and dried tamarind fruits are soaked in water and then they are heated in an SS jacketed kettle for about an hour. Then pulp is extracted in pulper and concentrate is packed after filtration. Similar process is repeated twice for residue. Recovery or yield is 60%. The process flow chart is as under:



## 5.0 CAPITAL INPUTS

### 5.1 Land and Building

Requirement of built-up area is around 80 sq.mtrs. Half of this area shall be used for production and remaining half for storage and packing. A readymade shed may be bought which may cost Rs.2.00 lacs.

## 5.2 Machinery

Processing capacity of 180 tonnes per year with 2 shifts and 300 working days would need following machinery:

Item	Qty.	Price (Rs.)
SS Jacketed Kettle	1	1,20,000
Pulper	1	60,000
Coal-fired Baby Boiler	1	60,000
Bottle washing, filling & capping machine	1	70,000
Weighing Scales, SS utensils etc.	--	20,000
	<b>Total</b>	<b>3,30,000</b>

## 5.3 Miscellaneous Assets

Some other assets like furniture and fixtures, packing tables, plastic tubs etc. would cost Rs. 35,000/-.

## 5.4 Utilities

Power requirement shall be 15 HP whereas daily water requirement will be 1500 ltrs. Coal shall be required for boiler and annual quantity will be about 30 tonnes.

## 5.5 Raw and Packing Materials

Dried tamarind fruits is the only raw material. It is cultivated in many parts of the state as well as in adjacent state of Madhya Pradesh. Monthly requirement even at 100% utilisation would be 15 tonnes which is not a very large quantity. Bottles with caps, labels and cartons would be the packing materials.

## 6.0 MANPOWER REQUIREMENTS

Particulars	Nos.	Monthly Salary (Rs.)	Total Monthly Salary (Rs.)
Skilled Workers	2	2,500	5,000
Helpers	4	1,250	5,000
Salesman	1	2,500	2,500
		<b>Total</b>	<b>12,500</b>

## 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 Building

Particulars	Area (Sq.Mtrs)	Cost (Rs.)
Building	80	2,00,000

### 8.2 Machinery

Machines worth Rs. 3.30 lacs shall be needed as explained earlier.

### 8.3 Miscellaneous Assets

A provision of Rs.35,000/- is adequate under this head as stated before.

### 8.4 Preliminary & Pre-operative Expenses

An amount of Rs. 50,000/- would take care of pre-operative expenses like registration, establishment and administrative charges, interest during implementation, trial runs etc.

### 8.5 Working Capital Requirements

Capacity utilisation of 60% in the first year would need following working capital:

(Rs. in lacs)

Particulars	Period	Margin	Total	Bank	Promoters
Stock of Raw and Packing Materials	1 Month	30%	1.60	1.10	0.50
Stock of Finished Goods	½ Month	25%	1.00	0.75	0.25
Receivables	½ Month	25%	1.20	0.90	0.30
Working Expenses	1 Month	100%	0.30	--	0.30
		<b>Total</b>	<b>4.10</b>	<b>2.75</b>	<b>1.35</b>

### 8.6 Cost of the Project & Means of Financing

(Rs. in lacs)

Item	Amount
Building	2.00
Machinery	3.30
Miscellaneous Assets	0.35
P&P Expenses	0.50
Contingencies @ 10% on Building and Plant & Machinery	0.55
Working Capital Margin	1.35
<b>Total</b>	<b>8.05</b>
<b>Means of Finance</b>	
Promoters' Contribution	2.35
Term Loan from Bank/FI	5.70
<b>Total</b>	<b>8.05</b>
Debt Equity Ratio	2.43 : 1
Promoters' Contribution	29%

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 & Build-up**

As against annual processing capacity of 180 tonnes, actual utilisation in first year is expected to be 60% and thereafter 75%.

### **9.2 Sales Revenue at 100%**

Assuming selling price of Rs. 45/- per kg and yield of 60%, sales revenue at 100% would be Rs. 48.60 lacs.

### **9.3 Raw and Packing Materials Required at 100%**

(Rs. in lacs)

<b>Product</b>	<b>Qty. (Tonnes)</b>	<b>Price/Ton (Rs.)</b>	<b>Value</b>
Dried Tamarind Fruits	180	15,000	27.00
Packing Material @ Rs.5000/Ton	--	--	5.40
		<b>Total</b>	<b>32.40</b>

### **9.4 Utilities**

Annual expenditure on utilities at 100% utilisation would be Rs. 70,000/-.

### **9.5 Selling Expenses**

A provision of 12% of sales income every year would take care of selling commission, transportation, sampling etc.

### **9.6 Interest**

It is computed @ 12% per annum on term loan of Rs. 5.70 lacs assuming repayment in 4 years including a moratorium period of 1 year and on working capital from bank it is taken @ 14% per annum.

### **9.7 Depreciation**

It is computed 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
<b>A</b>	<b>Installed Capacity</b>	--- 180 Tonnes ---	
	Capacity Utilisation	60%	75%
	Sales Realisation	29.15	36.45
<b>B</b>	<b>Cost of Production</b>		
	Raw and Packing Materials	19.44	24.30
	Utilities	0.42	0.53
	Salaries	1.50	1.75
	Stores and Spares	0.18	0.30
	Repairs & Maintenance	0.24	0.36
	Selling Expenses @ 12%	3.50	4.37
	Administrative Expenses	0.48	0.60
	<b>Total</b>	<b>25.76</b>	<b>32.21</b>
<b>C</b>	<b>Profit before Interest &amp; Depreciation</b>	<b>3.39</b>	<b>4.24</b>
	Interest on Term Loan	0.63	0.48
	Interest on Working Capital	0.39	0.49
	Depreciation	0.93	0.76
	Profit before Tax	1.44	2.51
	Income-tax @ 20%	0.29	0.51
	Profit after Tax	1.15	2.00
	Cash Accruals	2.08	2.76
	Repayment of Term Loan	--	1.75

## 11.0 BREAK-EVEN ANALYSIS

(Rs. in lacs)

No	Particulars	Amount	
<b>[A]</b>	<b>Sales</b>		<b>29.15</b>
<b>[B]</b>	<b>Variable Costs</b>		
	Raw and Packing Materials	19.44	
	Utilities (70%)	0.29	
	Salaries (70%)	1.05	
	Stores & Spares	0.18	
	Selling Expenses (70%)	2.45	
	Admn Expenses (50%)	0.24	
	Interest on WC	0.39	<b>24.04</b>
<b>[C]</b>	<b>Contribution [A] - [B]</b>		<b>5.11</b>
<b>[D]</b>	<b>Fixed Cost</b>		<b>3.00</b>
<b>[E]</b>	<b>Break-Even Point [D] ÷ [C]</b>		<b>59%</b>

## 12.0 [A] LEVERAGES

### Financial Leverage

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

$$= 2.46 \div 1.44$$

$$= 1.71$$

### Operating Leverage

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

$$= 5.11 \div 1.44$$

$$= 3.55$$

### Degree of Total Leverage

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

$$= 1.71 \div 3.55$$

$$= 0.48$$

## [B] Debt Service Coverage Ratio (DSCR)

(Rs. in lacs)

Particulars	1st Yr	2nd Yr	3rd Yr	4th Yr
Cash Accruals	2.08	2.76	3.22	3.52
Interest on TL	0.63	0.48	0.27	0.12
<b>Total [A]</b>	<b>2.71</b>	<b>3.24</b>	<b>3.49</b>	<b>3.64</b>
Interest on TL	0.63	0.48	0.27	0.12
Repayment of TL	--	1.90	1.90	1.90
<b>Total [B]</b>	<b>0.63</b>	<b>2.38</b>	<b>2.17</b>	<b>2.02</b>
<b>DSCR [A] ÷ [B]</b>	<b>4.30</b>	<b>1.35</b>	<b>1.68</b>	<b>1.87</b>
<b>Average DSCR</b>	----- <b>2.30</b> -----			

**[C] Internal Rate of Return (IRR)**

Cost of the project is Rs. 8.05 lacs.

(Rs. in lacs)

Year	Cash Accruals	16%	18%	20%	24%
1	2.08	1.79	1.76	1.73	1.68
2	2.76	2.05	1.98	1.92	1.79
3	3.22	2.06	1.96	1.86	1.69
4	3.52	1.94	1.82	1.70	1.49
5	3.86	1.84	1.69	1.55	1.32
	<b>15.44</b>	<b>9.68</b>	<b>9.21</b>	<b>8.76</b>	<b>7.97</b>

The IRR is around 24%.

**Some of the machinery suppliers are**

1. B. Sen Barry & Co, Karol Bagh, New Delhi
2. S P Engg. Works, Fazalgunj, Kanpur
3. Nagpal Bros., C-127, Phase II, Mayapuri Industrial Area, New Delhi-110064  
Tel No. 25400407/02631
4. Gardeners Corp., 158, Golf Links, New Delhi-110003