PROJECT PROFILE
STARCH FROM TAMARIND SEED

1. INTRODUCTION

Tamarind trees are grown almost in all parts of the country with states like Karnataka, Orissa, Uttar Pradesh, Madhya Pradesh, West Bengal and Tamil Nadu being the major cultivation centres. Tamarind fruits are used for edible purposes and seeds are generally thrown away. These seeds could be used for producing starch which is used for sizing in textile industry and as a general adhesive material. This is one of the cheapest available non-edible starch. Production process is simple and easy and no special skill is required. It is necessary that adequate arrangement for procurement of tamarind seeds are made.

2. OBJECTIVES

The objective of the profiles is to encourage and assist prospective entrepreneurs in MSME sector in and guiding making them aware of the opportunities of this sector. It is also being developed by the Directorate of the Food Processing Industries, Government of West Bengal to help entrepreneurs with knowledge about raw materials availability, knowledge of market, source of technology and plant and machinery suppliers. M/s ITV Agro & Food Technologies Pvt. Ltd., New Delhi has helped in developing the project profile.

3. RAW MATERIAL AVAILABILITY

The most critical material would be tamarind seeds. Monthly requirement at 100% utilization would be 75 tonnes which is not a small quantity. Hence, it is necessary that a proper survey is undertaken and proper arrangements are made before finalizing the location of the factory. Starch is packed in polythene-lined new gunny bags.

4. MARKET OPPORTUNITIES

Starch made from tamarind seeds is considered to be the cheapest non edible starch with many industrial applications. Tamarind fruits are used for edible purposes and seeds are wasted. Processing of these seeds results in substantial value addition. This starch is used by textile units and industries manufacturing starch based adhesives. Plywood industry is yet another bulk consumer. Thus, this product has growing market and with the anticipated growth in textile and plywood industry in coming years, demand is bound to go up.

5. PROJECT DESCRIPTION

a) Product & Its uses

Starch made from tamarind seeds is non-edible . These seeds are generally thrown away and hence their use results in substantial value addition.

b) Capacity

The proposed capacity of the plant is to process 900 MT / annum of tamarind seed.

c) Manufacturing process

Tamarind seeds are roasted in oil-fired roaster and then they are decorticated to remove skin. Seeds are then broken into small pieces in a grinder. These broken pieces are finally pulverized to make starch. Starch is packed in polythene lined gunny bags. The yield is around 60%.

6. PROJECT COMPONENTS & COST

a) Land & Building

A building of around 125 sq. mtrs. can accommodate production area as well as storage and packing departments. Cost of such a building is assumed to be Rs. 7.50 lacs.

b) Plant & Machinery

Production capacity of processing 75 tonnes seeds every month or 900 tonnes per year and 300 working days would require the following machines.

Item	**Qty**	**Price (Rs. in lacs)**
Oil-fired Roaster complete with accessories and electricals	1	5.00
Decorticator	1	1.40
Elevator with conveyor	1	2.30
Beater type pulveriser with cyclone separator dust collector and electric motor	1	4.60
Weighing –scales , miscellaneous tools, storage drums etc.	-	1.00
Total		**14.30**

c) Miscellaneous Assets

Some other assets like furniture and fixtures, storage facilities, electrical. shall be required for which a provision of Rs. 1.80 lacs is made.

d) Utilities

Power requirement shall be 20 HP whereas daily water requirement would be 5000 ltrs Roaster will need oil as fuel. The cost of utilities is estimated to be Rs. 2.30 lacs.

e) Prel. & Pre Operative Expenses

A provision of Rs. 1.60 lacs is made towards certain pre-production expenses like establishment registration, administrative and travelling charges, interest during implementation, trial run expenses etc.

f) Working Capital Assessment

(Rs. in lacs)

Particulars	**Period**	**Margin**	**Total**	**Bank**	**Promoters**
Stock of raw material & packing material	½ month	30%	1.92	1.32	0.58
Stock of finished goods	½ month	25%	2.65	1.99	0.66
Receivable	½ month	25%	3.15	2.36	0.79
Total			7.72	5.69	2.03

g) Project cost & Means of finance

Item	**Amount (Rs. in lacs)**
Land and Building	7.50
Plant and Machinery	14.30
Miscellaneous Assets	1.80
P & P Expenses	1.60
Contingencies @ 10% on building and plant & machinery	2.18
Working capital margin	2.03
Total	**29.41**
Means of Finance	
Promoters' contribution	11.76
Term loan from Bank/ FI	17.65
Total	**29.41**
Debt Equity Ratio	1.5:1
Promoters contribution	40%

7) PROJECTED PROFITABILITY

a) Production Capacity

The rated production capacity of the plant is 900 tonnes per year whereas actual capacity utilization is expected to be 60% and 75% during 1st year and 2nd year respectively.

b) Sales Revenue at 100%

Assuming selling price of Rs. 14000/ ton and yield of 60%, total sales revenue at 100% utilization would be Rs. 126.00 lacs

c) Raw Material Required at 100%

(Rs. in lacs)

Product	**Qty (Tons)**	**Selling Price (Rs. / Ton)**	**Sales**
Tamarind seeds	900	8000	72.00
Chemicals	-	-	2.30
Polythene-lined Jute Bags	11000 nos	Rs. 34 per piece	3.75
Total			**77.05**

d) Projected Profitability

(Rs. in lacs)

S. No.	Particulars	1st year	2nd year
A.	**Installed capacity**	**900 Tons**	
	Capacity Utilisation	60%	75%
	Sales Realisation	75.60	94.50
B.	**Cost of Production**		
	Raw & packing Materials	46.20	57.75
	Utilities	1.38	1.72
	Salaries	6.60	7.26

	Stores and Spares	0.90	1.12
	Repairs and Maintenance	1.20	1.50
	Selling admn. expenses @ 10%	7.50	9.45
	Total	63.78	78.80
C.	**Profit before Interest & Depreciation**	**11.82**	**15.70**
	Interest on Term Loan	1.76	1.36
	Interest on Working Capital	0.68	0.85
	Depreciation.	2.18	1.96
	Net Profit	7.88	11.53
	Profit after tax	7.88	11.53
	Cash Accruals	10.06	13.49
	Repayment of Term Loan	Nil	4.00

e) Break Even Point Analysis

S. No.	**Particulars**	**Amount (Rs. in lacs)**	
(A)	**Sales**		**75.60**
(B)	**Variable Costs**		
	Raw Material	46.20	
	Utilities(70%)	0.96	
	Salaries (60%)	4.62	
	Stores and Spares	0.90	
	Selling and admn. exps. (70%)	3.75	
	Interest on WC	0.68	**57.11**
(C)	**Contribution (A) – (B)**		**18.49**
(D)	**Fixed Costs**		**9.11**
(E)	**Break Even Point**		**49%**

f) Debt Service Coverage Ratio (DSCR) *(Rs. in lacs)*

Particulars	1st year	2nd year	3rd year
Cash Accruals	10.06	13.49	16.18
Interest on TL	1.76	1.36	0.97
Total (A)	11.82	14.85	17.15
Interest on TL	1.76	1.36	0.97
Repayment of TL	Nil	4.00	4.00
Total (B)	1.76	5.36	4.97
DSCR (A) / (B)	6.71	2.77	3.45
Average DSCR	3.87		

g) Internal Rate of Return (IRR)

Cost of the project is Rs. 29.41 lacs

(Rs. in lacs)

Year	**Cash Accruals**	**24%**	**28%**
1	10.06	8.04	7.84
2	13.49	8.76	8.22
3	16.18	8.41	7.60
4	16.18	6.79	5.98
Total		32.00	29.64

The IRR is 28%

h) Manpower requirement

Particulars	**Nos.**	**Monthly**	**Total Monthly Salary (Rs.)**
Skilled workers	2	7500	15,000
Semi Skilled Workers	2	6000	12,000
Helpers	4	5000	20,000
Salesman	1	8000	8,000
		Total	**55,000**

8. ASSUMPTIONS

- The plant will work for 300 days in a year. :
- The operating capacity is 60% , 75%, 90 % during 1st year , 2nd year and 3rd year respectively.
- The interest on term loan is taken at 10% per annum and on working capital it is 12% per annum.
- Price of raw material and selling price of finished products is taken at Rs. 8,000 / ton and Rs. 14,000 / ton respectively.

9. SOURCES OF TECHNOLOGY

CFTRI, Mysore, has successfully developed the technical know-how for the product. BIS has laid down the quality standard.

10. PLANT & MACHINERY SUPPLIERS

1. D. P. Pulveriser Works,
   12, Nagindas Master Road,
   Fort Mumbai – 400 023

2. B. Sen Barry & Co.
   65/11, Rohtak Road,
   Karol Bagh, New Delhi