

MILLED MAIZE PRODUCTS



1.0 INTRODUCTION

Maize is a coarse grain and after initial resistance, it is now being accepted as staple diet and its demand is increasing. Maize soji and flour are now used regularly in many households and eateries. CFTRI has developed a compact mini maize mill which gives very good output and is economical as well.

2.0 PRODUCT

2.1 Applications

Maize flour is consumed as main food in the country especially by poor people and is regularly used for making roti. It is also used for making many popular dishes normally made from wheat or rice. Maize is cultivated in many states and the preferred locations could be Bihar, Maharashtra, UP etc.

2.2 Availability of Technology & Compliance

CFTRI has developed a mini maize mill. License under the PFA Act is compulsory.

3.0 MARKET POTENTIAL

Maize soji and flour are now accepted as staple diet items across the country especially by the rural and semi-urban population. Maize flour is used to make rotis, balis, upma etc. Apart from individual households, dhabas, hostels, restaurants etc. are the bulk consumers.

4.0 MANUFACTURING PROCESS

The process is simple and standardised. Pre-cleaned maize is conditioned and then germ and husk fractions are removed mechanically. Maize grits are processed to make different varieties like coarse and fine soji and fine flour. Germ, husk and some high fat grits can be used for food preparations.

5.0 CAPITAL INPUTS

5.1 Land & Building

A plot of about 300 sq.mtrs. with built-up area of 100 sq.mtrs. can accommodate the machinery. A large yard of around 100 sq.mtrs. can be utilised for storage. Cost of land could be Rs. 90,000/- whereas factory building and covered yard may cost Rs. 3.25 lacs.

5.2 Machinery

Maize processing capacity of 75 tonnes per shift per month or 900 tonnes per year would need following equipments:

Particulars	Qty	Rs.
Elevators	--	75,000
Aspirators	--	60,000
Destoners	2	70,000
Conditioners	2	1,00,000
Degermere	2	50,000
Grinders	2	1,00,000
Sifters	4	80,000
	Total	5,35,000

5.3 Miscellaneous Assets

Some other assets like storage bins, furniture & fixtures, working tables, weighing scales, sealing machines etc. would cost Rs. 1.50 lacs.

5.4 Utilities

Power requirement shall be 40 Kw and water requirement per day shall be around 3000 ltrs.

5.5 Raw and Packing Materials

The all-important raw material will be maize. Many states of the country cultivate maize and with proper prior arrangements, availability round the year can be ensured. Finished product can be packed in paper bags or poly-lined jute bags.

6.0 MANPOWER REQUIREMENTS

Particulars	No	Monthly Salary (Rs.)	Total Monthly Salary (Rs.)
Skilled Workers	1	2,500	2,500
Semi-skilled Workers	2	1,750	3,500
Helpers	6	1,500	9,000
Salesman	1	2,500	2,500
		Total	17,500

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

Total expenditure under this head is expected to be Rs. 4.15 lacs.

8.2 Machinery

Total cost of machinery is likely to be Rs.5.35 lacs as explained earlier.

8.3 Miscellaneous Assets

It is estimated that other support assets would need Rs. 1.50 lacs.

8.4 Preliminary and Pre-Operative Expenses

An amount of Rs. 1.50 lacs would take care of pre-production expenses.

8.5 Working Capital Requirement

Working funds required at 60% capacity utilisation in the first year shall be as under:

(Rs. in lacs)

Particulars	Period	Margin	Total	Bank	Promoters
Stock of Raw Materials	½ Month	30%	1.50	1.05	0.45
Stock of Finished Goods	½ Month	25%	1.75	1.30	0.45
Receivables	½ Month	25%	2.40	1.80	0.60
Working Expenses	1 Month	100%	0.40	--	0.40
		Total	6.05	4.15	1.90

8.6 Cost of the Project and Means of Financing (Rs. in lacs)

Items	Amount
Land and Buildings	4.15
Machinery	5.35
Miscellaneous Assets	1.50
Preliminary and Pre-operative Expenses	1.50
Contingencies @ 10% on land and building and machinery	0.95
Working Capital Margin	1.90
Total	15.35
Means of Finance	
Promoter's Contribution	4.60
Term Loan from Bank/FI	10.75
Total	15.35
Debt Equity Ratio	2.34 : 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

As against the rated capacity of 900 tonnes per year, actual utilisation in the first year is taken as 60% and thereafter it is limited to 75%.

9.2 Sales Revenue at 100%

Considering selling price of Rs. 12,000/- per ton, the annual sales is likely to be Rs.97.20 lacs considering 10% process loss.

9.3 Raw and Packing Materials Required at 100%

Price of maize is taken at Rs.7,000/- per ton and thus annual cost at 100% comes to Rs.63.00 lacs whereas packing materials would cost Rs. 6.00 lacs.

9.4 Utilities

Annual cost of utilities at 100% is estimated to be Rs. 2.00 lacs.

9.5 Interest

Interest on Term Loan of Rs. 10.75 lacs is calculated @ 12% per annum considering complete repayment in 5 years including a moratorium period of 1 year. Interest on working capital assistance is computed @ 14% per annum.

9.6 Depreciation

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

10.0 PROJECTED PROFITABILITY

(Rs. in lacs)

No	Particulars	1st Year	2nd Year
A	Installed Capacity	--- 900 tonnes ---	
	Capacity Utilisation	60%	75%
	Sales Realisation	58.30	72.90
B.	Cost of Production		
	Raw and Packing Materials	41.40	51.75
	Utilities	1.20	1.50
	Salaries	2.10	2.50
	Stores and Spares	0.36	0.48
	Repairs and Maintenance	0.42	0.54
	Selling Expenses @ 12.5%	7.28	9.11
	Administrative Expenses	0.75	1.00
	Total	53.51	66.88
C.	Profit before Interest & Depreciation	4.79	6.02
	Interest on Term Loan	1.29	1.04
	Interest on Working Capital	0.58	0.73
	Depreciation	1.70	1.39
	Profit before Tax	1.22	2.86
	Income tax @ 20%	0.22	0.56
	Profit after Tax	1.00	2.30
	Cash Accrual	2.70	3.69
	Repayment of Term Loan	--	2.70

11.0 BREAK-EVEN POINT ANALYSIS

(Rs. in lacs)

No.	Particulars	Amount	
A	Sales		72.90
B	Variable Cost		
	Raw and Packing Materials	51.75	
	Utilities (70%)	1.05	
	Salaries (70%)	1.75	
	Stores and Spares	0.48	
	Selling Expenses (70%)	6.38	
	Administrative Expenses (50%)	0.50	
	Interest on working capital	0.73	62.64
C	Contribution		10.26
D.	Fixed Cost		6.24
E.	Break-Even Point (D ÷ C)		61%

12.0 [A] LEVERAGES**Financial leverage**

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

$$= 4.63 \div 2.86$$

$$= 1.62$$

Operating Leverage

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

$$= 10.26 \div 2.86$$

$$= 3.59$$

Degree of Total Leverage

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

$$= 1.62 \div 3.59$$

$$= 0.45$$

[B] Debt Service Coverage Ratio (DSCR)

(Rs. in lacs)

Particulars	1st Yr	2nd Yr	3rd Yr	4th Yr	5th Yr
Cash Accruals	2.70	3.69	4.11	4.40	4.86
Interest on Term Loan	1.29	1.04	0.72	0.40	0.22
Total (A)	3.99	4.73	4.83	4.80	5.08
Interest on Term Loan	1.29	1.04	0.72	0.40	0.22
Repayment of Term Loan	--	2.70	2.70	2.70	2.65
Total (B)	1.29	3.74	3.42	3.10	2.87
DSCR (A) ÷ (B)	3.09	1.27	1.41	1.55	1.77
Average DSCR	----- 1.82 -----				

[C] Internal Rate of Return (IRR)

Cost of the project is Rs. 15.35 lacs.

(Rs. in lacs)

Year	Cash Accruals	16%	18%	20%
1	2.70	2.33	2.29	2.25
2	3.69	2.74	2.65	2.56
3	4.11	2.63	2.50	2.38
4	4.40	2.43	2.27	2.12
5	4.86	2.31	2.12	1.95
6	5.31	2.18	1.96	1.78
7	5.90	2.09	1.85	1.65
	30.97	16.71	15.64	14.69

The IRR is around 18%.

Some of the machinery suppliers are

1. Lakhanpal Food Processing Machinery, 36/6 Balkashwar Road, Agra 282 004,
Tel. No.: 2540726, Fax : 2540789
2. Flour Tech Engineers Pvt Ltd, 16/5, Mathura Road, Faridabad 121 002,
Tel. No.: 2263017, 2291556, Fax: 2291556
3. Vashist Fodo Pvt Ltd, 315 Ambika Vihar, New Delhi 110 087
Tel. No.: 25271619, 25271636
4. Sahyog Steel Fabrication, 28 Bhojrajpara, Gondal 360 311, Gujarat
Tel. No.: 224075
5. Universal Poly Pack, 2 Old ESI Road, Ambattur, Chennai 600 053
Tel. No.: 26358050, 26359707