
Model Project on Cornflakes

Govt. of West Bengal

Submitted to
Directorate of Food Processing,
Government of West Bengal



Prepared By
NABARD Consultancy Services
Private Limited

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PROJECT PROFILE OF CORN FLAKES

I. INTRODUCTION

Corn flakes are the most popular breakfast cereals as people have become more conscious of health and about their daily intake of food. Maize is the major raw material used for manufacturing of corn flakes. Corn flakes are considered as health food and are consumed along with milk, sugar, fruits and dry fruits mainly.

Objectives:

The commercial corn flakes manufacturing will have a following objective

- Production of ready to eat or ready to serve cornflakes.
- Preservation of corn and also production of hygienic maize product.
- Export of the finished product such as cornflakes and by-products such as broken corns and broken corn flakes as animal feed.

II. RAW MATERIAL AVAILABILITY

In India, maize is the third most important food crop after rice and wheat. Maize in India contributes nearly 9% in the national food basket. It is also found that there is substantial increase in the area along with the production of maize in the country. West Bengal produces 35.23 Lakh .MT per year. The uses of maize are very wide, ranging from corn flakes to cattle feed. The products prepared from maize are Starch, Maize Vermicelli, Flakes, and Snacks etc. Corn flakes are very popular breakfast cereal in the western countries and now days it is becoming very popular in countries like India too. Corn flakes enriched with vitamins and mineral with popular flavours are widely accepted in children. Currently brands like Kellogg are present in market but cost of product is not economical for middleclass customer. Definitely there will be good demand for product with good quality and price within the range of middle class customer in near future.

III. MARKET OPPORTUNITIES

Setting up corn flakes manufacturing plant would help in value addition. The broken corn and flakes formed during the processing can be used in the preparation of the animal feed. Due to change in the lifestyle and increase in the standard of living, people are changing their breakfast habit. Hence there is lot of scope for corn flakes manufacturing.

IV. PROJECT DESCRIPTION

- **PRODUCT AND ITS USES**

Cornflakes are nutritious

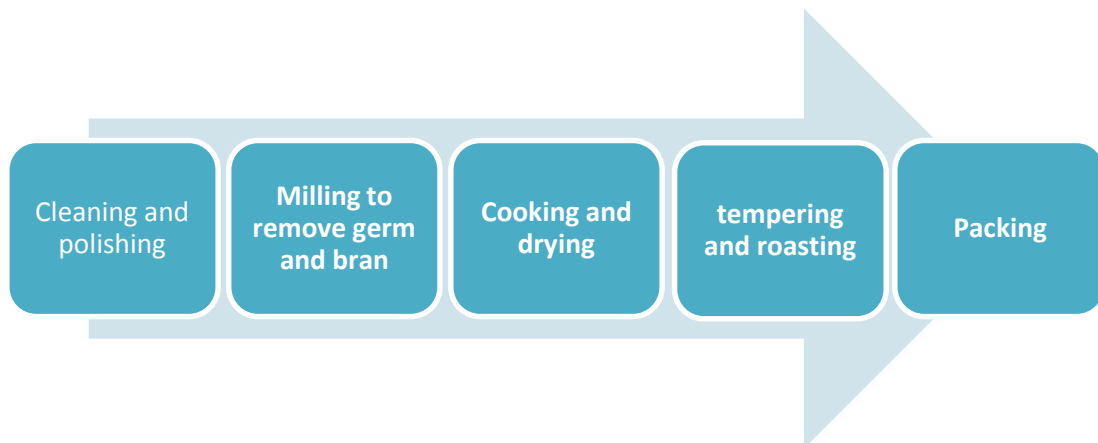
- Corn flakes can be consumed along with milk as a breakfast
- It can also be used as a pudding ingredient in novelty food products such as chocolates and ice cream

- **CAPACITY**

Capacity of corn processing plant is considered as 1200MT per year

- **MANUFACTURING PROCESS WITH FLOW CHART**

Maize is cleaned, polished and milled to remove the germ and bran. The broken pieces, which are comparatively big in size are cooked under pressure in a rotary steam cooker. Maize is cooked for about 2 hours along with the flavouring agents, if necessary. The cooked materials will have the moisture content up to 33%. Hence to reduce the moisture content to about 15% to 20%, pre heated air is blown. The dried material is kept in the tempering tank to enable the residual moisture to become distributed equally. The tempered material is now passed through the heavy duty flaking machine fitted with magnetic separator and water cooling system. The maize flakes are then roasted in suitable ovens. The roasted flakes are then graded and packed in polythene containers or other suitable packaging materials.



V. PROJECT COMPONENTS

- **Land and Building**

A plot of land of around 0.5 acre shall be required which would cost around Rs. 2.5 Lakh. The cost of land development will be Rs. 1.5 Lakhs.

- **Civil Works**

Main building and storage Area	600 sq. m
Other	400 sq. m

The construction cost is considered as Rs. 6000 per sq. meter. Hence the total construction cost for built up area is Rs. 40.00 Lakhs. An amount of Rs. 4 Lakhs is necessary to take care of miscellaneous civil work.

- **Plant and Machineries**

Plant and Machinery Details			
S.	NAME OF MACHINERY	QUANTITY	PRICE IN
PLANT & MACHINERY FOR DAL MILL CAPACITY 0.5 MT Per hour			
1	Feed Roll	1	10,20,000.00
2	Chilled Rolls 600Mm X 1000Mm, Balanced With 20	2	
3	Spherical Self Allied Bearing 22330 With Shaft Of	1	
4	Electronic Motor 30 - 40 Hp X 960 Rpm X 400 V Ac	1	
5	Hydraulic Cylinder	2	
6	Hydraulic Pump	1	
7	Lower Scrapper	1	
8	Main Pully And Rolls Bearing Blocks	1	
9	Full Length Magnet	1	
	Boiler 500 lb	1	3,00,000.00
	SS Cooker 500 lit capacity	1	4,50,000.00
	Emery Grinder cum challana	1	2,50,000.00
	Sub Total		20,20,000.00
	Excise duty	0.00%	-
	Total after Excise duty		20,20,000.00
	Transportation cost (lumpsum)		1.00
	VAT against C form	2.0%	40,400.00
	Entry tax (If Applicable)	1%	20,200.00
	Total invoice value		20,80,601.00
	Grand Total in INR Lakh		20.81

- **Miscellaneous Fixed Assets**

The cost of miscellaneous fixed assets is considered as Rs. 5.0 Lakhs. Cost of miscellaneous fixed assets includes cost of office furniture and other infrastructure, telephone installation, electrical infrastructure etc.

- **Preliminary Preoperative Expenses**

Provision of Rs. 2.00 Lakhs will be necessary to take care of the expenses like registration, travelling etc.

- **Contingency**

Contingency charges are considered as a 2 % of the cost of project excluding the pre-operative expenses and the land cost.

VI. PROJECT COST

SR. No	Particulars	Unit	Qty.	Rate in	Amount
1	Land	Acre	0.5	500000	2.50
2	Land Development	Sq. m	2200	LS	1.50
3	Civil Work	Sq. m	600	6000	36.00
4	Other Civil work	Sq. m	400	1000	4.00
5	Plant and Machinery				20.81
6	Miscellaneous Fixed Assets				5.00
7	Contingency				1.35
8	Working Capital Margin				11.25
9	Preliminary and				2.00
	TOTAL				84.40

VII. MEAN OF FINANACE

Share	25%	21.10
Bank loan	75%	63.30
Total in Rs. Lakh		84.40

VIII. WORKING CAPITAL ASSESMENT

Working capital required to run the plant is enlisted below:

Working Capital Assessment (Amount in Rs Lakh)				
Particulars	Days	Yr1	Yr2	Yr3
Raw material	15	12.00	19.20	21.60
WIP	2	1.72	2.75	3.09
Finished Goods	15	12.89	20.61	23.19
Debtors	21	18.39	30.01	33.61
Total		45.00	72.57	81.49
Creditors		0	0	0
Total		0	0	0
WCG		45.00	72.57	81.49
Margin	25%	11.25	18.14	20.37
MPBF		33.75	54.43	61.12
Interest	14%	4.73	7.62	8.56

IX. MANPOWER REQUIREMENT

Administrative and Supervisory

Designation	Quantity	Salary Per Month in Rs.
Factory Manager	1	30000.00
Clark	1	14000.00
Operator	1	10000.00
Store Keeper	1	11000.00
Skilled Worker	10	6000.00
Unskilled Worker	10	5000.00
Guard	1	5000.00
Peon	4	5500.00
Total Salary in Lakh Rupees		86500

X. PROJECT PROFITABILITY

- Installed Capacity and Capacity Utilization**

The capacity of corn flakes processing plant is to produce 1200 MT of corn flakes per year. During first year only 50% capacity will be utilized, second year 80% and from third year onwards 90% of total capacity will be utilized.

- Yield and Production**

At 90 % capacity utilization around 1080 MT of corn flakes per year will be produced.

- Sales Revenue**

The sale revenue at 90% capacity utilization will be,

Products	Price / MT (In Rupees)	Income (Rs in Lakhs)
Corn flakes	48550.00	524.34

- Profit Calculations**

Particulars	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Installed Capacity in MT							
Corn Flakes	1200.0	1200.0	1200.0	1200.0	1200.0	1200.0	1200.0
Total Installed capacity	1200.0	1200.0	1200.0	1200.0	1200.0	1200.0	1200.0
Capacity Utilisation	50%	80%	90%	90%	90%	90%	90%
Corn Flakes	600.0	960.0	1080.0	1080.0	1080.0	1080.0	1080.0
Total Utilised capacity	600.0	960.0	1080.0	1080.0	1080.0	1080.0	1080.0
Sales Value In Rs Lakh							
Corn Flakes	291.30	466.08	524.34	524.34	524.34	524.34	524.34
Total income in Rs. lakh	291.30	466.08	524.34	524.34	524.34	524.34	524.34

Particulars	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Total expenditure in Rs.	264.99	431.92	483.80	483.93	484.07	484.04	484.01
PBDIT	26.31	34.16	40.54	40.41	40.27	40.30	40.33
Depreciation	7.64	9.74	8.51	7.45	6.52	5.71	5.01
Interest on Term Loan	7.60	7.60	6.28	4.96	3.64	3.64	3.64
Interest On Working	4.73	7.62	8.56	8.56	8.56	8.56	8.56
Intangible assets written	0.00	0.40	0.40	0.40	0.40	0.00	0.00
Profit after depreciation	6.34	8.81	16.79	19.04	21.16	22.40	23.13
Tax	2.28	3.17	6.04	6.86	7.62	8.06	8.33
Profit after depreciation	4.06	5.64	10.75	12.19	13.54	14.33	14.80
Surplus available for	19.30	22.97	25.54	24.59	23.70	23.68	23.44
Net Cash Accrual	11.70	15.37	18.86	18.82	19.24	19.62	19.38

XI. FINANCIAL PARAMETERS

• Cash Flow Statement

The statement of cash flow is concerned with the flow of cash in and out of the business. Cash inflow means the source of cash which includes equity, Loan from bank and the cash accruals from the business. Cash outflow is a sum of cash required for the applications like increase in fixed assets, for repayment of term loan, preoperative expenses and cash required for the payment of dividend.

Sources	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
Cash inflow	96.11	15.37	19.26	19.64	20.06	20.04	19.81
Cash out flow	84.40	11.00	11.00	11.42	11.42	11.42	8.72
Opening Balance	0.00	11.70	16.07	24.33	32.55	41.19	49.81
Surplus	11.70	4.37	8.26	8.22	8.64	8.62	11.08
Closing Balance	11.70	16.07	24.33	32.55	41.19	49.81	60.90

• Break Even Analysis

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
Sales Revenue	291.30	466.08	524.34	524.34	524.34	524.34	524.34
Total Variable Cost	257.82	412.24	463.77	463.77	463.77	463.77	463.77
Total Fixed Cost	14.77	27.21	26.14	24.78	23.43	23.43	23.43
Contribution	33.48	53.84	60.57	60.57	60.57	33.48	53.84
Break Even Point	264.72	485.17	466.07	441.86	417.75	417.75	417.75
Break Even Point (%)	44.12%	50.54%	43.15%	40.91%	38.68%	38.68%	38.68%

- **Debt Service Coverage Ratio (DSCR)**

DSCR	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Coverage Available	19.30	22.97	25.54	24.59	23.70	23.68	23.44
Debt	7.60	18.60	17.28	15.96	14.64	14.64	14.64
Value	1.00	1.00	1.00	1.00	1.00	1.00	1.00
DSCR Ratio	2.541	1.235	1.478	1.541	1.619	1.618	1.602
Average DSCR Ratio	1.52						

The debt service coverage ratio based on the assumed techno economic parameters is found satisfactory. The average DSCR is 1.52.

- **Internal Rate of Return (IRR)**

The financial indicators like Net Present Worth (NPW), Benefit Cost Ratio (BCR), Internal Rate of Return (IRR) etc. were analysed by discounting cash flow @15% discounting rate. The internal rate of return is found to be more than 50 per cent and BCR is about 1.05.

- **Projected Balance Sheet**

Liabilities		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
Equity	21.10	21.10	21.10	21.10	21.10	21.10	21.10	21.10
Term Loan	63.30	63.30	52.30	41.30	30.30	19.30	8.30	0.00
Reserve &		4.06	9.69	20.04	31.41	44.13	58.04	72.42
Total	84.40	88.46	83.10	82.44	82.81	84.53	87.44	93.52
Assets								
Gross Fixed Assets		82.40	82.40	82.40	82.40	82.40	82.40	82.40
Less Depreciation		7.64	17.38	25.89	33.34	39.86	45.58	50.58
Net Fixed Assets		74.76	65.02	56.51	49.06	42.54	36.83	31.82
Intangible Assets		2.00	2.00	1.60	1.20	0.80	0.80	0.80
Cash & Bank		11.70	16.07	24.33	32.55	41.19	49.81	60.90
Total		88.46	83.10	82.44	82.81	84.53	87.44	93.52
TNW	105.50	109.56	104.20	103.54	103.91	105.63	108.54	114.62
TOL	63.30	63.30	52.30	41.30	30.30	19.30	8.30	0.00
TOL/TNW	0.60	0.58	0.50	0.40	0.29	0.18	0.08	0.00

XII. ASSUMPTIONS

- The unit will work for 8 hours a day for 300 days per annum.
- Capacity utilization: First year -50%, second year- 80% and from third year onwards - 90%.
- The wages for unskilled workers are taken as per prevailing rates in this type of industry.

- d. Interest rate for term loan is 12% per annum and that is for working capital is 14% per annum.
- e. Margin money considered at 25% of the financial outlay.
- f. Insurance charges for the fixed assets considered as 0.5% of the depreciated cost of the assets.
- g. Repayment period of seven years with one year grace period for repayment of principal.
- h. Costs of machinery and equipment are based on average prices of machinery manufacturers.
- i. Power cost is considered as Rs. 6.0 per unit and that for the fuel is Rs. 55 per litre.
- j. The cost of water is considered as 30 paisa per litre.
- k. Depreciation rate of 10%, 13.91% and 15% has been considered for civil structures, plant & machineries and miscellaneous fixed assets respectively.
- l. Repair and maintenance is considered as a percentage of total project cost excluding preliminary preoperative expenses, land and land development cost. The percentages are 0.10, 0.25 and 0.5 for first three years respectively and 0.75 for fourth year onwards.
- m. The administrative expenses will be considered as Lump sum Rs. 50 thousand per annum.
- n. The 0.5% of total income would be considered to take care of promotion and marketing expenses.
- o. Insurance of the fixed assets is a function of their depreciated cost. It is considered as a 0.5% of depreciated cost (WDV method) of assets.
- p. Land cost is considered as Rs.5 Lakh per acre.

XIII. ADDRESS OF SUPPLIER OF PLANT AND MACHINERY

- **Heavy Machine,**
196-B & 197 B, Industrial area,
Dewas road, near Parshwanath city, Ujjain (MP).
- **M/s Larson & Toubro Ltd., I.C.**
House Ballard Estate, P.B. No. 278, Mumbai.
- **M/s Textile Machinery Corporation Ltd.**
Boiler factory royal exchange place, Kolkatta.
- **M/s A P V Enginnering Co Ltd.,**
P. B No. 2492, 2- Jessore road, Dum Dum, resubmitted