



Model Detailed Project Report

FROZEN SWEET CORN MAKING UNIT

Prepared by

National Institute of Food Technology

Entrepreneurship and Management(NIFTEM)

Plot No. 97, Sector 56, HSIIDC, Industrial Estate, Kundli,

Sonipat, Haryana 131028

Ministry of Food Processing Industries, Government of India

1. INTRODUCTION

FROZEN SWEET CORN



Sweet corn (otherwise known as Etkorn or sweet corn, it is also known as sugar corn), is a hybridized variety of maize, specifically bred to increase the sugar content. Corn originated in Mesoamerica and spread to the rest of the world after European contact with the Americas in the late 1400s and early 1500s. Sweet corn is commonly known as simply corn in the United States, Canada, Australia and New Zealand. Sweet corn is commonly eaten as a vegetable, rather than a grain. The cobs are picked for relatively rapid distribution (or frozen in this 'soft' state) before the fruits mature into hard grains. The kernels are boiled or steamed and eaten as a side dish, sometimes with butter or salt, and are sometimes used as a pizza topping. Sweet corn provides useful amounts of vitamins A, B3 (supports metabolism, the nervous and digestive systems) and C. It also contains folic acid and fiber. Sweet corn, a grass, is a form of the cereal crop maize, harvested at a young age while the kernels are tender and sweet. The advantage of sweet corn is its better taste. Field corn has been bred for use as dry grain, whereas in sweet corn emphasis has been placed on the quality of the fresh kernels. The quality parameters are the thickness of the pericarp, taste, texture, tenderness and uniformity of the kernels.

2. MARKET POTENTIAL

Indians are fond of table enrichers, which are regularly used along with main course of meals as well as snacks. Apart from individual households, restaurants, roadside eateries, clubs, hostels, caterers etc. are bulk consumers of Sweet Corn products. Branded products available in the market are costly. Therefore, new comers need to work on competitive pricing. The real competition would be from age-old practice of making pulps, jam, jelly, pickles or chutneys at home by the

housewives. Many Indian households make these items during season and store them for remaining part of the year. But this practice is gradually disappearing due to changing lifestyles, hassles of making these items and their availability throughout the year from market. There are many variants of these products. New comers may introduce new flavour with certain change in the ingredients to alter taste of the products.

3. PRODUCT DESCRIPTION

3.1 Raw Material sources

Major raw material that is used are fresh harvested corns and packing material.
Average raw material (cost per Kg): Rs. 20-25

3.2 Manufacturing process

Step by Step process is mentioned below:

- Raw materials (Sweet corn ear) are procured from farmer field and are stored in the processing unit.
- The ear of sweet corn is covered with husk; the next process involved removing the husk and kernels separation.
- After separation of husk and kernels the kernels are taken to blanching for inactivating the enzymatic reactions.
- After the blanching process, the corn kernels are passed via a cooling tank where they are cooled and water is used as a cooling medium.
- In the next process the wet corns are dried and are frozen via a blast freezer.
- These frozen corns are now packed in large sacks and stored in a cold chamber below -18 degree Celsius.
- These Corns at the time of marketable packaging are separated & packed into packets of different weights (250gm, 500gm, 1Kg).
- The product is ready for sale in the market & is supplied via cold chain.





4. PROJECT COMPONENTS




4.1 Land

Land required 2000-2500square feet approx.

Approximate rent for the same is Rs.30000-35000 per month.

4.2 Plant & Machinery

Name	Description	Image
Vegetable & Fruit washing machine	This machine is used to wash the corns and remove impurities.	 A stainless steel vegetable and fruit washing machine with a conveyor belt and a water spray system. A bowl of yellow corn cobs is shown next to it.
Blanching Machine	This machine is used to blanch corns in boiling water.	 A stainless steel blanching machine with a hopper for corn cobs and a conveyor belt leading to a blanching tank.
Cooling Tank	It is used to cool the product and bring it to a normal temperature.	 A stainless steel cooling tank with a vertical cylindrical body and a conical bottom.
Blast Freezer	This is used to freeze the product in short duration of time to avoid large crystal formation, thus deterioration.	 A stainless steel blast freezer with a large door and a fan inside.

Weighing Machine	This equipment is used to weight the final product.	
Packaging Machine	This machine is used to pack the final product in required sizes.	
Cold Chamber	It's a type of cold storage, used to maintain given product at required low temperature during its storage. In this case cold chamber used must be able to achieve -18 degree Celsius temperature.	

Note: Cost of the machinery is approx. Rs. 28,00,000 excluding GST and other transportation cost.

4.3 Misc. Assets

S.N.	Item Description	Rate
1	Electricity connection	60,000
2	Furniture & Fixtures	60,000
3	Material handling equipments	80,000

4.4 Power Requirement

The borrower shall require power load of 25 KW which shall be applied with Power Corporation. However, for standby power arrangement the borrower shall also purchase DG Set.

4.5 Manpower Requirement

10-11 Manpower are required for the Cumin Biscuits manufacturing unit.

Includes:

4 Skilled Labour

6 Unskilled Labour

2 Sales Personal

1 Accountant

5. FINANCIALS

5.1 Cost of Project

COST OF PROJECT	
	(in Lacs)
PARTICULARS	Amount
Land & Building	Owned/rented
Plant & Machinery	28.00
Miscellaneous Assets	2.00
Working capital	6.11
Total	36.11

5.2 Means of Finance

MEANS OF FINANCE	
PARTICULARS	AMOUNT
Own Contribution (min 10%)	4.11
Subsidy @35%(Max. Rs 10 Lac)	10.00
Term Loan @ 55%	16.50
Working Capital (bank Finance)	5.50
Total	36.11

5.3 Projected Balance Sheet

<u>PROJECTED BALANCE SHEET</u>						(in Lacs)
PARTICULARS	1st year	2nd year	3rd year	4th year	5th year	
<u>Liabilities</u>						
Capital						
opening balance		14.46	15.31	17.02	19.45	
Add:- Own Capital	4.11					
Add:- Retained Profit	3.35	4.85	6.72	8.42	10.55	
Less:- Drawings	3.00	4.00	5.00	6.00	8.00	
Subsidy/grant	10.00					
Closing Balance	14.46	15.31	17.02	19.45	21.99	
Term Loan	14.67	11.00	7.33	3.67	-	
Working Capital						
Limit	5.50	5.50	5.50	5.50	5.50	
Sundry Creditors	1.26	1.42	1.58	1.76	1.94	
Provisions & Other						
Liab	0.40	0.50	0.60	0.72	0.86	

TOTAL :	36.28	33.73	32.04	31.09	30.30
<u>Assets</u>					
Fixed Assets (Gross)	30.00	30.00	30.00	30.00	30.00
Gross Dep.	4.40	8.15	11.35	14.07	16.40
Net Fixed Assets	25.60	21.85	18.65	15.93	13.60
<u>Current Assets</u>					
Sundry Debtors	3.59	4.24	4.74	5.26	5.82
Stock in Hand	4.13	4.62	5.10	5.59	6.12
Cash and Bank	2.96	3.02	3.55	4.31	4.76
TOTAL :	36.28	33.73	32.04	31.09	30.30

5.4 Projected Cash Flow

<u>PROJECTED CASH FLOW STATEMENT</u>					(in Lacs)
PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
<u>SOURCES OF FUND</u>					
Own Margin	4.11				
Net Profit	3.35	5.39	7.46	9.91	12.41
Depreciation & Exp. W/off	4.40	3.75	3.20	2.73	2.32
Increase in Cash Credit	5.50	-	-	-	-
Increase In Term Loan	16.50	-	-	-	-
Increase in Creditors	1.26	0.16	0.17	0.18	0.18
Increase in Provisions & Oth lib	0.40	0.10	0.10	0.12	0.14
Sunsidy/grant	10.00				

TOTAL :	45.52	9.40	10.92	12.93	15.06
<u>APPLICATION OF FUND</u>					
Increase in Fixed Assets	30.00				
Increase in Stock	4.13	0.49	0.48	0.49	0.53
Increase in Debtors	3.59	0.65	0.50	0.53	0.55
Repayment of Term Loan	1.83	3.67	3.67	3.67	3.67
Drawings	3.00	4.00	5.00	6.00	8.00
Taxation	-	0.54	0.75	1.49	1.86
TOTAL :	42.56	9.34	10.39	12.17	14.61
Opening Cash & Bank Balance	-	2.96	3.02	3.55	4.31
Add : Surplus Closing Cash & Bank Balance	2.96	0.06	0.53	0.76	0.45
	2.96	3.02	3.55	4.31	4.76

5.5 Projected Profitability

<u>PROJECTED PROFITABILITY STATEMENT</u>						(in Lacs)
PARTICULARS	1st year	2nd year	3rd year	4th year	5th year	
Capacity Utilisation %	70%	75%	80%	85%	90%	
<u>SALES</u>						
Gross Sale						
FROZEN SWEET CORN	71.82	84.77	94.74	105.26	116.32	
Total			94.74		116.32	

	71.82	84.77	105.26		
COST OF SALES					
Raw Material Consumed	25.20	28.35	31.68	35.19	38.88
Electricity Expenses	7.50	8.63	9.92	11.41	12.55
Depreciation	4.40	3.75	3.20	2.73	2.32
Wages & labour	13.92	15.31	16.84	17.85	19.28
Repair & maintenance	3.59	4.24	4.74	5.26	5.82
Packaging	2.87	3.81	3.98	4.21	4.65
Cost of Production	57.48	64.09	70.35	76.65	83.50
Add: Opening Stock /WIP		- 2.87	3.20	3.52	3.83
Less: Closing Stock /WIP	2.87	3.20	3.52	3.83	4.18
Cost of Sales	54.61	63.76	70.04	76.33	83.16
GROSS PROFIT	17.21	21.01	24.70	28.93	33.16
GROSS PROFIT (%)	23.96%	24.78%	26.07%	27.48%	28.51%
Salary to Staff	6.96	8.35	10.02	11.53	12.91
Interest on Term Loan	1.62	1.43	1.03	0.62	0.22
Interest on working Capital	0.61	0.61	0.61	0.61	0.61
Rent	3.60	3.96	4.36	4.79	5.27
selling & adm exp	1.08	1.27	1.23	1.47	1.74
TOTAL	13.86	15.62	17.24	19.02	20.75
NET PROFIT	3.35	5.39	7.46	9.91	12.41
NET PROFIT(%)	4.66%	6.36%	7.88%	9.41%	10.67%
Taxation		- 0.54	0.75	1.49	1.86
PROFIT (After Tax)	3.35	4.85	6.72	8.42	10.55

5.6 Production and Yield

Production of FROZEN SWEET CORN		
Production	Capacity	KG
1st year	70%	1,26,000
2nd year	75%	1,35,000
3rd year	80%	1,44,000
4th year	85%	1,53,000
5th year	90%	1,62,000

Raw Material Cost			
Year	Capacity Utilisation	Rate (per KG)	Amount (Rs. in lacs)
1st year	70%	20.00	25.20
2nd year	75%	21.00	28.35
3rd year	80%	22.00	31.68
4th year	85%	23.00	35.19
5th year	90%	24.00	38.88

5.7 Sales Revenue

<u>COMPUTATION OF SALE</u>					
Particulars	1st year	2nd year	3rd year	4th year	5th year
Op Stock	-	6,300	6,750	7,200	7,650
Production	1,26,000	1,35,000	1,44,000	1,53,000	1,62,000
Less : Closing Stock	6,300	6,750	7,200	7,650	8,100
Net Sale	1,19,700	1,34,550	1,43,550	1,52,550	1,61,550
sale price per KG	60.00	63.00	66.00	69.00	72.00
Sales (in Lacs)	71.82	84.77	94.74	105.26	116.32

5.8 Working Capital Assessment

COMPUTATION OF CLOSING STOCK & WORKING CAPITAL					(in Lacs)
PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
<u>Finished Goods</u>					
	2.87	3.20	3.52	3.83	4.18
<u>Raw Material</u>					
	1.26	1.42	1.58	1.76	1.94
Closing Stock	4.13	4.62	5.10	5.59	6.12

COMPUTATION OF WORKING CAPITAL REQUIREMENT					
TRADITIONAL METHOD			(in Lacs)		
Particulars	Amount	Own Margin		Bank Finance	
Finished Goods & Raw Material	4.13				
Less : Creditors	1.26				
Paid stock	2.87	10%	0.29	90%	2.59
Sundry Debtors	3.59	10%	0.36	90%	3.23
	6.47		0.65		5.82
MPBF					5.82
WORKING CAPITAL LIMIT DEMAND (from Bank)					5.50
Working Capital Margin					0.61

5.9 Power, Salary & Wages Calculation

Utility Charges (per month)		
Particulars	value	Description
Power connection required	25	KWH
consumption per day	250	units
Consumption per month	6,250	units
Rate per Unit	10	Rs.
power Bill per month	62,500	Rs.

<u>BREAK UP OF LABOUR CHARGES</u>			
Particulars	Wages Rs. per Month	No of Employees	Total Salary
Skilled (in thousand rupees)	14,000	4	56,000
Unskilled (in thousand rupees)	10,000	6	60,000
Total salary per month			1,16,000
Total annual labour charges	(in lacs)	10	13.92

<u>BREAK UP OF Staff Salary CHARGES</u>			
Particulars	Salary Rs. per Month	No of Employees	Total Salary
Sales Personal	18,000	2	36,000
Accountant	22,000	1	22,000
Total salary per month			58,000
Total annual Staff charges	(in lacs)	3	6.96

5.10 Depreciation

COMPUTATION OF DEPRECIATION			(in Lacs)
Description	Plant & Machinery	Miss. Assets	TOTAL
Rate of Depreciation	15.00%	10.00%	
Opening Balance	-	-	-
Addition	28.00	2.00	30.00
Total	28.00	2.00	30.00
Less : Depreciation	4.20	0.20	4.40
WDV at end of Year	23.80	1.80	25.60
Additions During The Year	-	-	-
Total	23.80	1.80	25.60
Less : Depreciation	3.57	0.18	3.75
WDV at end of Year	20.23	1.62	21.85
Additions During The Year	-	-	-
Total	20.23	1.62	21.85
Less : Depreciation	3.03	0.16	3.20
WDV at end of Year	17.20	1.46	18.65
Additions During The Year	-	-	-
Total	17.20	1.46	18.65
Less : Depreciation	2.58	0.15	2.73
WDV at end of Year	14.62	1.31	15.93
Additions During The Year	-	-	-
Total	14.62	1.31	15.93
Less : Depreciation	2.19	0.13	2.32
WDV at end of Year	12.42	1.18	13.60

5.11 Repayment schedule

REPAYMENT SCHEDULE OF TERM LOAN							
						Interest	11.00%
Year	Particulars	Amount	Addition	Total	Interest	Repayment	Closing Balance
1st	Opening Balance						
	1st month	-	16.50	16.50	-	-	16.50
	2nd month	16.50	-	16.50	0.15	-	16.50
	3rd month	16.50	-	16.50	0.15	-	16.50
	4th month	16.50	-	16.50	0.15	-	16.50
	5th month	16.50	-	16.50	0.15	-	16.50
	6th month	16.50	-	16.50	0.15	-	16.50
	7th month	16.50	-	16.50	0.15	0.31	16.19
	8th month	16.19	-	16.19	0.15	0.31	15.89
	9th month	15.89	-	15.89	0.15	0.31	15.58
	10th month	15.58	-	15.58	0.14	0.31	15.28
	11th month	15.28	-	15.28	0.14	0.31	14.97
	12th month	14.97	-	14.97	0.14	0.31	14.67
					1.62	1.83	
2nd	Opening Balance						
	1st month	14.67	-	14.67	0.13	0.31	14.36
	2nd month	14.36	-	14.36	0.13	0.31	14.06
	3rd month	14.06	-	14.06	0.13	0.31	13.75
	4th month	13.75	-	13.75	0.13	0.31	13.44
	5th month	13.44	-	13.44	0.12	0.31	13.14
	6th month	13.14	-	13.14	0.12	0.31	12.83

	7th month	12.83	-	12.83	0.12	0.31	12.53
	8th month	12.53	-	12.53	0.11	0.31	12.22
	9th month	12.22	-	12.22	0.11	0.31	11.92
	10th month	11.92	-	11.92	0.11	0.31	11.61
	11th month	11.61	-	11.61	0.11	0.31	11.31
	12th month	11.31	-	11.31	0.10	0.31	11.00
					1.43	3.67	
3rd	Opening Balance						
	1st month	11.00	-	11.00	0.10	0.31	10.69
	2nd month	10.69	-	10.69	0.10	0.31	10.39
	3rd month	10.39	-	10.39	0.10	0.31	10.08
	4th month	10.08	-	10.08	0.09	0.31	9.78
	5th month	9.78	-	9.78	0.09	0.31	9.47
	6th month	9.47	-	9.47	0.09	0.31	9.17
	7th month	9.17	-	9.17	0.08	0.31	8.86
	8th month	8.86	-	8.86	0.08	0.31	8.56
	9th month	8.56	-	8.56	0.08	0.31	8.25
	10th month	8.25	-	8.25	0.08	0.31	7.94
	11th month	7.94	-	7.94	0.07	0.31	7.64
	12th month	7.64	-	7.64	0.07	0.31	7.33
					1.03	3.67	
4th	Opening Balance						
	1st month	7.33	-	7.33	0.07	0.31	7.03
	2nd month	7.03	-	7.03	0.06	0.31	6.72
	3rd month	6.72	-		0.06	0.31	6.42

				6.72			
4th month	6.42	-	6.42	0.06	0.31	6.11	
5th month	6.11	-	6.11	0.06	0.31	5.81	
6th month	5.81	-	5.81	0.05	0.31	5.50	
7th month	5.50	-	5.50	0.05	0.31	5.19	
8th month	5.19	-	5.19	0.05	0.31	4.89	
9th month	4.89	-	4.89	0.04	0.31	4.58	
10th month	4.58	-	4.58	0.04	0.31	4.28	
11th month	4.28	-	4.28	0.04	0.31	3.97	
12th month	3.97	-	3.97	0.04	0.31	3.67	
				0.62	3.67		
5th	Opening Balance						
1st month	3.67	-	3.67	0.03	0.31	3.36	
2nd month	3.36	-	3.36	0.03	0.31	3.06	
3rd month	3.06	-	3.06	0.03	0.31	2.75	
4th month	2.75	-	2.75	0.03	0.31	2.44	
5th month	2.44	-	2.44	0.02	0.31	2.14	
6th month	2.14	-	2.14	0.02	0.31	1.83	
7th month	1.83	-	1.83	0.02	0.31	1.53	
8th month	1.53	-	1.53	0.01	0.31	1.22	
9th month	1.22	-	1.22	0.01	0.31	0.92	
10th month	0.92	-	0.92	0.01	0.31	0.61	
11th month	0.61	-	0.61	0.01	0.31	0.31	
12th month	0.31	-	0.31	0.00	0.31	-	

			0.22	3.67
DOOR TO DOOR	60	MONTHS		
MORATORIUM PERIOD	6	MONTHS		
REPAYMENT PERIOD	54	MONTHS		

5.12 DSCR

<u>CALCULATION OF D.S.C.R</u>					
PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
CASH ACCRUALS	7.75	8.60	9.91	11.15	12.87
Interest on Term Loan	1.62	1.43	1.03	0.62	0.22
Total	9.37	10.03	10.94	11.77	13.09
<u>REPAYMENT</u>					
Instalment of Term Loan	1.83	3.67	3.67	3.67	3.67
Interest on Term Loan	1.62	1.43	1.03	0.62	0.22
Total	3.46	5.10	4.69	4.29	3.89
DEBT SERVICE COVERAGE RATIO	2.71	1.97	2.33	2.74	3.37
AVERAGE D.S.C.R.	2.62				

5.13 Break Even Point Analysis

BREAK EVEN POINT ANALYSIS					
Year	I	II	III	IV	V
Net Sales & Other Income	71.82	84.77	94.74	105.26	116.32
Less : Op. WIP Goods	-	2.87	3.20	3.52	3.83
Add : Cl. WIP Goods	2.87	3.20	3.52	3.83	4.18
Total Sales	74.69	85.10	95.06	105.57	116.66
Variable & Semi Variable Exp.					
Raw Material Consumed	25.20	28.35	31.68	35.19	38.88
Electricity Exp/Coal Consumption at 85%	6.38	7.33	8.43	9.70	10.67
Wages & Salary at 60%	12.53	14.20	16.12	17.63	19.31
Selling & administrative Expenses 80%	0.86	1.02	0.99	1.18	1.40
Interest on working Capital	0.605	0.605	0.605	0.605	0.605
Repair & maintenance	3.59	4.24	4.74	5.26	5.82
Packaging	2.87	3.81	3.98	4.21	4.65
Total Variable & Semi Variable Exp	52.03	59.55	66.54	73.77	81.33
Contribution	22.66	25.54	28.52	31.80	35.33
Fixed & Semi Fixed Expenses					
Electricity Exp/Coal Consumption at 15%	1.13	1.29	1.49	1.71	1.88
Wages & Salary at 40%	8.35	9.47	10.75	11.75	12.88
Interest on Term Loan	1.62	1.43	1.03	0.62	0.22
Depreciation	4.40	3.75	3.20	2.73	2.32
Selling & administrative Expenses 20%	0.22	0.25	0.25	0.29	0.35
Rent	3.60	3.96	4.36	4.79	5.27
Total Fixed Expenses	19.31	20.15	21.06	21.90	22.92
Capacity Utilization	70%	75%	80%	85%	90%
OPERATING PROFIT	3.35	5.39	7.46	9.91	12.41
BREAK EVEN POINT	60%	59%	59%	59%	58%
BREAK EVEN SALES	63.66	67.14	70.19	72.69	75.68

6. LICENSE & APPROVALS

- Obtain the GST registration.
- Additionally, obtain the Udyog Aadhar registration Number.
- Fire/pollution license as required.
- FSSAI License
- Choice of a Brand Name of the product and secure the name with Trademark if required.

7. ASSUMPTIONS

1. Production Capacity of Frozen Sweet Corn is 600 Kg per day. First year, Capacity has been taken @ 70%.
2. Working shift of 10 hours per day has been considered.
3. Raw Material stock is for 15 days and finished goods Closing Stock has been taken for 15 days.
4. Credit period to Sundry Debtors has been given for 15 days.
5. Credit period by the Sundry Creditors has been provided for 15 days.
6. Depreciation and Income tax has been taken as per the Income tax Act, 1961.
7. Interest on working Capital Loan and Term loan has been taken at 11%.
8. Salary and wages rates are taken as per the Current Market Scenario.
9. Power Consumption has been taken at 25 KW.
10. Selling Prices & Raw material costing has been increased by 5% respectively in the subsequent years.

Limitations of the Model DPR and Guidelines for Entrepreneurs

Limitations of the Model DPR

- i. This model DPR has provided only the basic standard components and methodology to be adopted by an entrepreneur while submitting a proposal under the Formalization of Micro Food Processing Enterprises Scheme of MoFPI.
- ii. This is a model DPR made to provide general methodological structure not for specific entrepreneur/crops/location. Therefore, information on the entrepreneur, forms and structure (proprietorship/partnership/cooperative/ FPC/joint stock company) of his business, details of proposed DPR, project location, raw material base/contract sourcing, entrepreneurs own SWOT analysis, detailed market research, rationale of the project for specific location, community advantage/benefit from the project, employment generation and many more detailed aspects not included.
- iii. The present DPR is based on certain assumptions on cost, prices, interest, capacity utilization, output recovery rate and so on. However, these assumptions in reality may vary across places, markets and situations; thus the resultant calculations will also change accordingly.