

1 CARROT AND BABY CORN - COLD STORAGE

1.1 Introduction

The proposed project details about a cold storage facility to set up for carrots and baby corn. Nantes (variety of carrot) also known as English carrot requires high humidity and low temperature, thus special cold storage is proposed with controlled temperature and humidity conditions. Post harvest losses in the carrots is very high at 40-50 per cent during storage, hence to prevent these heavy losses it is very important to set up a high humidity cold store.

1.2 Objective

The primary objective of the model report is to facilitate the entrepreneurs in understanding the importance of setting up cold storage for carrots and other vegetables, technology and financial parameters of various components for preparation and submission of project proposal to bank for sanction of long term loan. This model report will serve as guidance to the entrepreneurs on starting up such a new project and basic technical knowledge for setting up such a facility.

1.3 Raw Material Availability

The maize is grown in MP with total production of 12.53 Mt (year 2004-05). The state stands at third position in the country with 12.39% of the India's total production.

1.4 Market Opportunities

The storage period of Nantes in the cold store lasts only for six to seven months i.e. March to August-September; hence for rest of the six months it is empty. However the proposed cold store because of adjustable systems of temperature and humidity control would also be used for other fruits for the rest of the year. This would lead to higher efficiency utilization of the infrastructure. The other products are:

- Baby corn
- Other Fresh Fruits –Vegetables

1.5 Project description

1.5.1 Applications

Demand of carrots is high owing to its nutritional properties; people are willing to use carrots even during the off season. Baby corns are also used in many preparations like soups, vegetables etc.

1.5.2 Capacity of the Project

The proposal is primarily conceived to overcome the shortfalls in the prevailing system of storage and setting up a high humidity cold store of capacity 2000 MT.

1.6 Potential Post-Harvest Losses

❖ Intact Roots

Bruising, shatter-cracks and tip-breakage are signs of rough handling. Nantes-type carrots are particularly susceptible. Sprouting will continue as carrot roots develop new shoots after harvest. This is one reason low temperature post harvest management is critical. Common associated disorders include wilting, shriveling, or rubberiness due to dessication. White Root is a physiologic disorder due to suboptimal production conditions which results in patchy or streaks of low color on the carrot roots.

❖ Intact or Fresh-cut

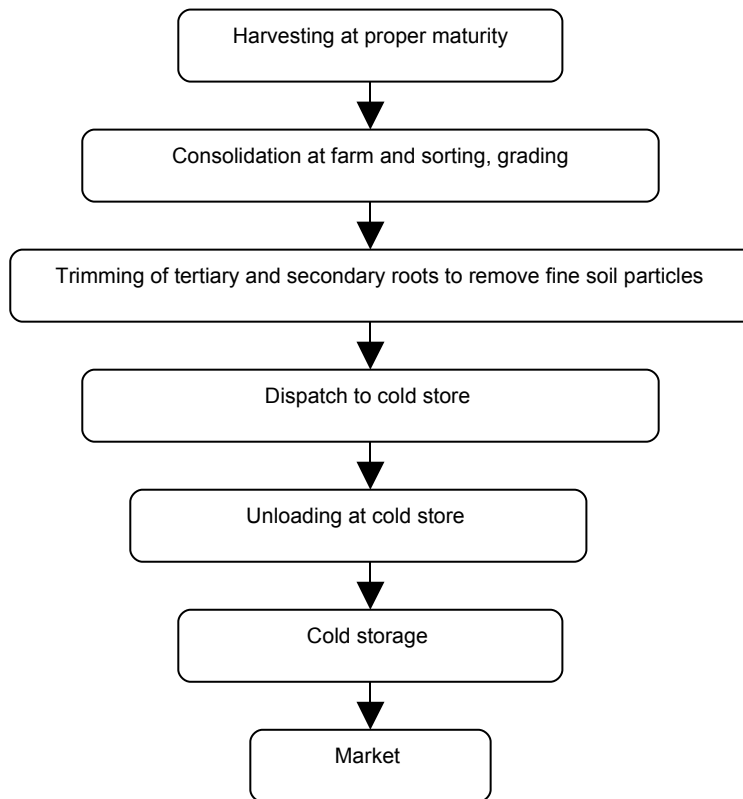
Bitterness may be caused by pre harvest stress (improper irrigation scheduling) or exposure to ethylene from ripening rooms or mixing with commodities such as apples. Freezing injury will likely result at temperatures of -1.2°C (29.5°F) or lower. Frozen carrots generally exhibit an outer ring of water-soaked tissue, viewed in cross section, which blackens in 2-3 days.

❖ Fresh-cut

White Blush, due to dehydration of cut or abrasion-peeled surfaces, has been a problem on fresh-cut carrots. Sharp cutting blades and residual free-moisture on the surface of the processed carrots will significantly delay the development of the disorder.

1.6.1 Process

Figure 1 Flow Chart –Cold store Operation



1.7 Project component and cost

Major components of the projects and their costs are described in the table hereunder:

1.8 Land and Building

LAND & SITE DEVELOPMENT	18.95
BUILDING, CIVIL WORKS	40.89
PLANT & MACHINERY	60.30
MISC. FIXED ASSETS	1.00
CONTINGENCIES	16.35
PRE-OPERATIVE EXPENSES	6.81
MARGIN MONEY FOR WORKING CAPITAL	3.38
TOTAL	147.68

1.9 Plant and Machinery

The total cost of the plant and machinery is Rs. 60.30 Lakhs.

1	Compressors Frick make complete with drive set base frame, suction -discharge valves, flanges, counter flanges hP/LT/Op cutouts ,pressure gauge, solenoid valve, tubing, tools, furrrels along with internal piping and pipe fittings.
2	Ammonia oil separator scrubber type with flanges and automatic oil drain arrangement
3	Crompton/Kirloskar make motors 40Hp- HP
4	Star delta starters
5	Ammonia receiver 24"dia x 20 " long 12 mm thick with gauge glass and valves
6	Evaporative condenser complete with coil section, blower section, drain pan, fan motor and spray nozzles
7	Centrifugal pump for evaporative condenser
8	Air handling units
9	Low pressure receiver/liquid ammonia pumps
12	ELECTRICALS: SECURITY, TRANSFORMER, OCB INC. MAIN PANELS
13	GENERATOR
14	Erection testing and commissioning
15	Forklift truck battery type

1.10 Building

The main production block will cost around Rs. 40.89 lakhs.

1.11 Miscellaneous Assets

A provision of Rs. 1 lakhs would take care of all the requirements.

1.12 Preliminary & Pre-operative Expenses

A provision of Rs. 6.81 lakhs would take care of pre-production expenses like establishment, professional charges, security deposits etc.

1.13 Working capital assessment

ITEMS	Year I	Year II	Year III
PROCUREMENT	0.84	1.04	1.25
PACKING MATERIAL	0.19	0.23	0.28
WORK IN PROGRESS	0.98	1.23	1.48
FINISHED GOODS	11.52	14.40	17.27
TOTAL	13.53	16.91	20.29
MARGIN (%)	3.38	4.23	5.07
MPBF (%)	10.15	12.68	15.22
INTEREST ON WC LIMIT	1.17	1.46	1.75

1.14 Means of finance

EQUITY			
Promotors		33.33	49.23
SUBSIDY			
NHB		20.00	29.54
TERM LOAN	10%		
Financial Institutions	6.90	46.67	68.92
	TOTAL	100.00	147.68

1.15 CASH FLOW STATEMENT

PARTICULARS	Year 1	Year 3	Year 5	Year 7
SOURCES				
INCREASE IN SHARE CAPITAL	-	-	-	-
INCREASE IN SUBSIDY				
NET PROFIT	18.00	39.05	36.81	27.33
(INTEREST ADDED BACK)				
DEPRECIATION	9.38	9.38	9.38	9.38
PRELIMINARY EXP.W/O	0.97	0.97	0.97	0.97
INCREASE IN TERM LOAN	-	-	-	-
INCREASE IN WC	10.15	2.54	-	-
	38.50	51.94	47.16	37.68

1.16 Projected balance sheet

PARTICULARS	Year 1	Year 3	Year 5	Year 7
LIABILITIES				
SHARE CAPITAL	49.23	49.23	49.23	49.23
CAPITAL SUBSIDY	29.54	29.54	29.54	29.54
RESERVES & SURPLUSES	10.28	47.75	97.44	131.81
TERM LOAN	55.12	27.52	-	-
WORKING CAPITAL LOAN	10.15	15.22	15.22	15.22
TOTAL	154.31	169.25	191.42	225.79

1.17 Projected profit and loss account

PARTICULARS	Year 1	Year 3	Year 5	Year 7
INCOME	143.95	215.93	215.93	215.93
EXPENDITURE	115.60	166.53	168.76	170.44
Variable Cost	91.49	134.32	134.32	134.32
Fixed Cost	24.12	32.20	34.44	36.11
GROSS PROFIT	28.35	49.40	47.16	45.49
PROFIT BEFORE TAX	10.28	33.51	34.03	33.39
PROFIT AFTER TAXES	10.28	33.51	34.03	25.58
RETAINED PROFIT	10.28	24.62	25.14	16.69

1.18 Key indicators

NET PROFIT AFTER TAX	25.58
INTERNAL RATE OF RETURN	20.39
DEBT SERVICE COVERAGE RATIO	3.06
BREAK EVEN POINT	57.89
PAY BACK PERIOD (YEARS)	4.91

1.19 Manpower Requirement

PARTICULARS	NO.
PRODUCTION STAFF	
Manager-Operation & Quality Control	1
Supervisor	2
Unskilled Labour	2
ADMINSTRATIVE STAFF	
Manager Administration & Procurement	1
Marketing Manager	1
Accountant	1

1.20 Assumptions

Project & Financing			
Contingencies on Building			10%
Contingencies on Equipment			20%
Term Loan			20%
Rate of Interest on Term Loan			10%
Subsidy Considered	Subject to ceiling		20%
Expected time of Installation		Months	8-10
Moratorium	Immediately after commercial production		
CAPACITY			
Rated Capacity Per Annum		TPA	2000
CAPACITY UTILIZATION			
Year I			60%
Year II			70%
Year III			90%
OTHER EXPENSE			
Marketing Expenses			5%
POWER			
Connected Load	HP		110
DEPRICIATION AS PER COMPANY'S ACT			
BUILDING			3.34%
PLANT & MACHINERY			10.34%
LAND & SITE DEVELOPMENT			1.63%
MAINTENANCE			
BUILDING			1.00%
PLANT & MACHINERY			2.00%
MISC. FIXED ASSETS			2.00%

1.21 Sources of technology

Technology of the project related material handling equipment is available with indigenous companies and could be set up at competitive prices. Major suppliers are understated -

- Techno Equipments, 31, Parekh Street, Goregaon, Mumbai 400 004
- Raylons Metal Works, P B No 17426, J B Nagar, Andheri (E), Mumbai 400059
- Auric Techno Services Pvt Ltd, C 101, Sgreenath Hermitage, Baner Rd, Pune 411008, Tel No – 25898072/99113, Fax No – 25899113
- Container Industries, C-299, Ghatkopar Industries Estate, 72, LBS Marg, Mumbai 400080

The actual cost of projects may deviate on change of any of the assumptions.