

POTATO PRODUCTS



1.0 INTRODUCTION

Potato is considered to be one of the traditional food items of India. It is very popular all over the country and there are many food preparations where potato is an important ingredient. With high percentage of water content, its quality is adversely affected with the passage of time. Dehydration process reduces the water contents substantially resulting in enhanced shelf life.

2.0 PRODUCTS

2.1 Applications

In most Indian households, potatoes are used for many purposes round the year. The proposed project envisages dehydrated potato products like potato cubes, sticks, slices and powder. Dehydration would impart higher shelf life and would also reduce size as well as weight resulting in savings in transportation costs. This would also enable the consumers to use potatoes during off-season when fresh-ones are either not easily available or they are costly. These are the most common products produced all over the country and this note contemplates Meghalaya as the location.

2.2 Availability of know how and compliances

CFTRI, Mysore, has successfully developed the technical know-how. Compliance with PFA Act is mandatory.

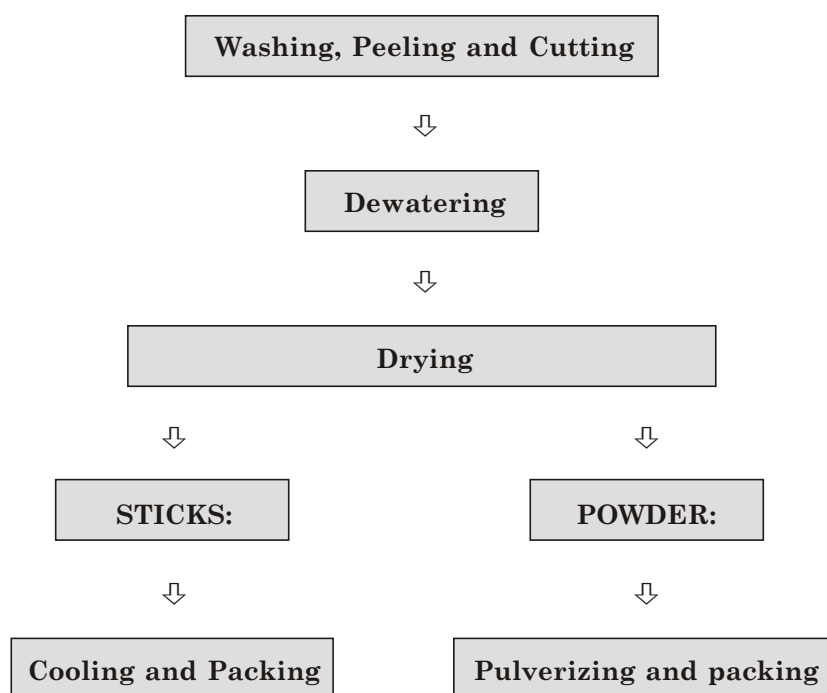
3.0 MARKET POTENTIAL

Dehydrated potato products in different forms like cubes, slices, sticks or powder are in vogue since long and they are considered to be tasty and easy to make. Since they are dehydrated, their shelf-life is longer. Preparations made from these products are popular during the days of religious fasting. There also exists a large institutional market. Hotels, restaurants, clubs,

the Indian railways and defence establishments are some of the major consumers. Potato powder has ready market in inaccessible hilly/mountainous areas.

4.0 MANUFACTURING PROCESS

Fully ripe and matured potatoes are selected and they are thoroughly washed in either soak tanks or rotary washers to remove dust and dirt. Then they are peeled and cut into cubes or slice or stick form. Then they are dewatered and dried for a period of 3 to 4 hours to bring down the moisture level to around 10%. Further drying is carried out in a bin dryer to bring down the moisture level to around 5%. Then they are cooled and packed. To make potato powder, dehydrated slices are pulverised to the required mesh size and during this process, a small quantity of aluminium silicate is added to avoid formation of cake. CFTRI, Mysore, has successfully developed the process know-how. Process Flow Chart is as under:



5.0 CAPITAL INPUTS

5.1 Land and Building

There is no need to buy a piece of land and then undertake construction work. Instead a readymade premise of around 75-80 sq.mtrs. can be bought which may cost about Rs. 1.25 lacs.

5.2 Plant and Machinery

It is suggested to install a plant with rated manufacturing capacity of 200 tonnes per year with working of two shifts and 300 working days. To achieve this capacity, following equipments are required:

Item	Qty.	Price (Rs)
Potato Washer	1	20,000
Potato Peeling Machine	1	60,000
Potato Slicing Machine	1	15,000
Potato Cubing Machine	1	15,000
Bin or Spin Dryer	1	1,00,000
Pulveriser- 50Kgs/Hr	1	75,000
Heat Sealing Machines	2	10,000
Steam Boiler- 100Kgs capacity	1	70,000
Weighing Scale, Handling Vessels etc.	--	35,000
	Total	4,00,000

5.3 Miscellaneous Assets

A provision of Rs. 25,000/- would take care of storage facilities, furniture and electricals.

5.4 Utilities

The power requirement will be 35 HP in case of electrically operated boiler. Water required every day for factory, potable and sanitation purposes will be 1000-1200 ltrs. Annual expenditure at 100% operations would be around Rs. 60,000/-.

5.5 Raw Material

Potatoes are grown all over the country and the state of Meghalaya is not an exception. It is estimated that the total cultivated area for potatoes in Meghalaya is around 240 hectares with annual production in excess of 2000 tons. Hence availability should not be a problem. Annual requirements at 100% activity level of plastic bags of different sizes will be Rs. 15,000/- which can be procured locally.

6.0 MANPOWER REQUIREMENTS

Particulars	Nos.	Monthly Salary (Rs.)	Total Monthly Salary (Rs.)
Skilled Workers	2	1,800	3,600
Semi-skilled Workers	3	1,500	4,500
		Total	8,100

7.0 TENTATIVE IMPLEMENTATION SCHEDULE

Activity	Period (in months)
Application and sanction of loan	1.5
Site selection and commencement of civil work	0.5
Completion of civil work and placement of orders for machinery:	1.5
Erection, installation and trial runs:	0.5

8.0 DETAILS OF THE PROPOSED PROJECT

8.1 Building

Built up area of 75-80 sq.mtrs. with one large and two small rooms shall be adequate. A provision of Rs. 1.25 lacs is made.

8.2 Machinery

Detailed list is already furnished earlier. The total cost is estimated to be Rs. 4,00,000/-.

8.3 Miscellaneous Assets

An adequate provision of Rs. 25,000/- has been made.

8.4 Preliminary & Pre-operative Expenses

To take care of expenses like registration and establishment charges, trial runs and interest during implementation period, it is necessary to set apart an amount of Rs. 45,000/-.

8.5 Working Capital Requirement

As per the expected capacity utilisation of 60% in the first year, the total working capital finance is likely to be Rs.1.30 lacs consisting of bank loan of Rs. 0.80 lacs and promoters share of Rs. 0.50 lacs.

(Rs.in lacs)

Particulars	Period	Margin	Total	Bank	Promoters
Stock of Raw Material	1 Month	30%	0.30	0.20	0.10
Stock of Finished Goods	½ Month	25%	0.25	0.20	0.05
Receivables	1 Month	30%	0.55	0.40	0.15
Working Expenses	1 Month	100%	0.20	--	0.20
		Total	1.30	0.80	0.50

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

Item	Amount
Building	1.25
Plant and Machinery	4.00
Miscellaneous Assets	0.25
P&P Expenses	0.45
Contingencies @ 10% on Building and P&M	0.53
Working Capital Margin	0.50
Total	6.98
Means of Finance	
Promoters' Contribution	2.10
Loan from Bank/FI	4.88
Total	6.98
Debt Equity Ratio	2.32 : 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

The rated annual capacity would be 200 tonnes. It is assumed that the plant shall operate at 60% and 75% respectively during first two years.

9.2 Sales Revenue at 100% (Rs. in lacs)

Product	Qty. (Tonnes)	Selling Price (Rs/Ton)	Sales
Potato Cubes	12	35,000	4.20
Potato Sticks	10	38,000	3.80
Potato Slices	12	40,000	4.80
Potato Powder	10	40,000	4.00
		Total	16.80

9.3 Raw Materials Required at 100%

200 tonnes of potatoes shall be required annually. Price of potatoes @ Rs.4,000/- per ton would mean that yearly expenditure of Rs.8.00 lacs. A small quantity of aluminium silicate shall be required for which a provision of Rs. 25,000/- is made. If we include packing materials of Rs. 75,000/-, then the total cost of raw materials comes to Rs. 9.00 lacs.

9.4 Utilities

Yearly cost of utilities at 100% activity level would be Rs.60,000/-.

9.5 Interest

Interest on working capital finance from bank is taken at 14% per annum. In case of term loan of Rs. 4.88 lacs, interest is calculated @ 12% per annum assuming that the loan shall be repaid in 5 years including grace period of 1 year.

9.6 Depreciation

The method adopted is WDV and rates assumed are 10% for building and 20% in case of plant and machinery.

10.0 PROJECTED PROFITABILITY

(Rs. in lacs)

No.	Particulars	1st Year	2nd Year
A	Installed Capacity	--- 200 Tonnes ---	
	Capacity Utilisation	60%	75%
	Sales Realisation	10.10	12.60
B	Cost of Production		
	Raw and packing Materials	5.40	6.75
	Utilities	0.36	0.45
	Salaries	0.97	1.10
	Stores & Spares	0.12	0.18
	Repairs & Maintenance	0.15	0.24
	Selling and Distribution	0.60	0.75
	Administrative Expenses	0.18	0.21
	Total	7.78	9.68
C	Profit Before Interest & Depreciation	2.32	2.92
	Interest on Term Loan	0.54	0.41
	Interest on Working Capital	0.11	0.14
	Depreciation	0.93	0.75
	Net Profit	0.74	1.62
	Income-tax @ 20%	--	0.32
	Profit after Tax	0.74	1.30
	Cash Accruals	1.67	2.05
	Repayment of Term Loan	--	1.10

11.0 BREAK-EVEN ANALYSIS

(Rs. in lacs)

No	Particulars	Amount	
[A]	Sales		12.60
[B]	Variable Costs		
	Raw & Packing Materials	6.75	
	Utilities (70%)	0.32	
	Salaries (70%)	0.78	
	Stores & Spares	0.18	
	Selling Expenses (70%)	0.53	
	Administrative Expenses (50%)	0.10	
	Interest on Working Capital	0.14	8.80
[C]	Contribution [A] - [B]		3.80
[D]	Fixed Cost		2.18
[E]	Break-Even Point [D] ÷ [C]		58%

12.0 [A] LEVERAGES

Financial Leverage

$$\begin{aligned} &= \text{EBIT/EBT} \\ &= 3.25 \div 0.74 \\ &= 4.33 \end{aligned}$$

Operating Leverage

$$\begin{aligned} &= \text{Contribution/EBT} \\ &= 3.27 \div 0.74 \\ &= 4.42 \end{aligned}$$

Degree of Total Leverage

$$\begin{aligned} &= \text{FL/OL} \\ &= 4.33 \div 4.42 \\ &= 0.97 \end{aligned}$$

[B] Debt Service Coverage Ratio (DSCR)

(Rs. in lacs)

Particulars	1st Yr	2nd Yr	3rd Yr	4th Yr	5th Yr
Cash Accruals	1.67	2.05	2.37	2.69	3.00
Interest on TL	0.54	0.41	0.28	0.17	0.08
Total [A]	2.21	2.46	2.65	2.86	3.08
Interest on TL	0.54	0.41	0.28	0.17	0.08
Repayment of TL	--	1.20	1.20	1.20	1.20
Total [B]	0.54	1.61	1.50	1.39	1.30
DSCR [A] ÷ [B]	4.09	1.50	1.76	2.05	2.36
Average DSCR	----- 2.35 -----				

[C] Internal Rate of Return (IRR)

Cost of the project is Rs. 6.98 lacs.

(Rs. in lacs)

Year	Cash Accruals	16%	18%	20%
1	1.67	1.44	1.41	1.39
2	2.05	1.52	1.47	1.42
3	2.37	1.52	1.44	1.37
4	2.69	1.48	1.39	1.30
5	2.98	1.42	1.30	1.20
	11.76	7.38	7.01	6.68

The IRR is around 18%.

The machines will be easily available from local fabricators and agents. There are suppliers like Industrial Equipments and Archana Machinery Stores at Guwahati as well.