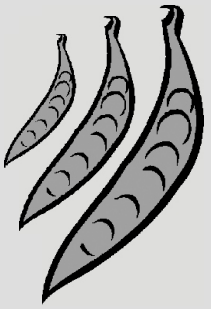
PIGEON PEA PROCESSING



1.0 INTRODUCTION

Use of pulses is very common in Indian diet. Apart from the most popular use of making "Dal", they are used in making many food as well as snack preparations. They provide proteins. Many types of pulses are used in the country and pigeon pea is one of them. Pulses are used only after de-husking and splitting. This activity is going on since decades and even today some farmers employ these traditional techniques. But with growing demand, manual operations are taken over by the machines which have increased production as well as recovery. Per capita consumption of pulses in India is still very low and thus there is a need to increase it to ensure adequate intake of nutrients.

2.0 PRODUCT

Pulses are used only after de-husking and splitting. Conventional methods have been replaced by machines and today it has become a regular commercial activity and is the third largest processing industry after wheat and paddy. This note deals with de-husking, cleaning and splitting of pigeon peas. This project can be started in several states as pulses are cultivated in most parts of the country. This note considers Gujarat as a prospective location in view of ever increasing demand.

2.1 Compliance with PFA Act is mandatory.

3.0 MARKET POTENTIAL

3.1 Demand and Supply

Various types of pulses are cultivated throughout the country and they are consumed only after cooking them. The most common use is preparation of curry, popularly known as "dal". It is prepared in most of the households as well as restaurants, dhabas, canteens, hostels and

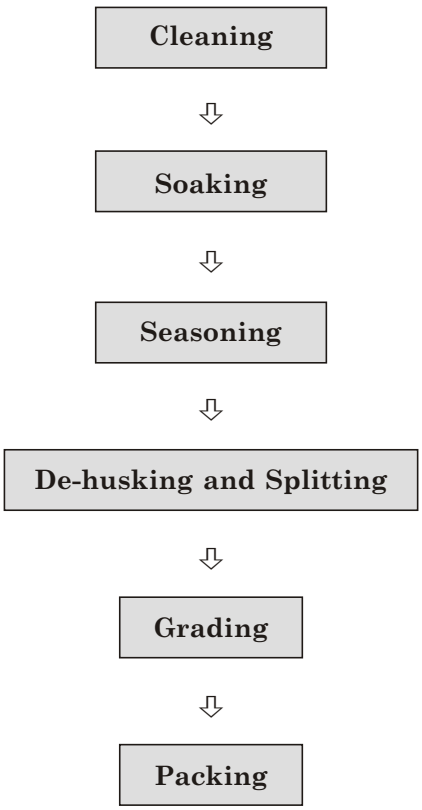
even during social ceremonies. Certain other food and snack preparations are also made from pulses. Different pulses are popular in different regions of the country.

3.2 Marketing Strategy

Pigeon peas are very popular in Gujarat. More than 30,000 tonnes of pigeon peas are produced every year in the district of Bharuch and more than 20,000 tonnes in nearby Narmada district but reportedly there are no processing facilities in these districts. Hence, pigeon-pea processing has good prospects in these districts. There are some existing brands in the state. But in view of growing market and the fact that there are no adequate processing facilities in these 2 districts, augurs well for any new unit. It is assumed that the processed pigeon peas shall be sold in bulk to traders as retailing would call for huge production capacity, elaborate marketing network and substantial advertisement budget.

4.0 MANUFACTURING PROCESS

It is very well standardised. Pigeon pea being an agricultural produce, it is cleaned to remove dust, stones, chaff etc. Then it is soaked in water. Then pigeon peas are kept in a shed for around 8-10 hours for seasoning. Subsequently, this lot is fed to the mill wherein de-husking and splitting operations are carried mechanically and then grading is done before packing. The weight loss during the process is 15% to 20%. At times, edible oil is mixed as pigeon peas with oil applied on them are more popular in Gujarat. The process flow chart is as under:



5.0 CAPITAL INPUTS

5.1 Land and Building

A plot of land of around 300 sq.mtrs. would cost about Rs.1.00 lac. Built-up area of 75 sq.mtrs. could accommodate production and packing area. This would cost around Rs. 1.90 lacs. Drying yard of 100 sq.mtrs. is estimated to cost Rs.1.00 lac.

5.2 Machinery

This is a seasonal activity and the mill would be operated only for 6 months during the season. A dal or pulse mill with processing capacity of 75 kgs/hour would mean daily capacity with 2 shift working of 1200 kgs. Considering functioning of the mill for about 150 days during the season, the rated production capacity would be 180 tonnes. A composite pigeon pea processing mill of this capacity would cost about Rs. 5.00 lacs including erection and installation charges. Some other equipments like weighing scales, jute bags sealing machines etc. would cost Rs. 30,000/-.

5.3 Miscellaneous Assets

Some other assets like furniture and fixtures, packing tables etc. shall be required for which a provision of Rs. 30,000/- is made.

5.4 Utilities

The total power requirement shall be 20 HP whereas water requirement will be about 1,500 ltrs. every day.

5.5 Raw and Packing Materials

The all-important material would be pigeon peas which are grown in large quantity in Bharuch and adjacent Narmada districts. Reportedly, there are no processing facilities in either of these districts. Edible oil will be required if that quality is to be processed. Jute bags of 10, 25 and 50 kgs. shall be required for packing.

6.0 MANPOWER REQUIREMENTS

Particulars	Nos.	Monthly Salary (Rs.)	Total Monthly Salary (Rs.)
Skilled Workers	2	2,250	4,500
Helpers	6	1,250	7,500
		Total	**12,000**

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 Land and Building

Particulars	Area (Sq.Mtrs)	Cost (Rs.)
Land	300	1,00,000
Building	75	1,90,000
Drying Shed	100	1,00,000
	Total	**3,90,000**

8.2 Machinery

Total expenditure is estimated to be Rs.5.30 lacs as explained earlier.

8.3 Miscellaneous Assets

A provision of Rs. 30,000/- is adequate under this head as discussed before.

8.4 Preliminary & Pre-operative Expenses

An amount of Rs. 45,000/- is provided for towards pre-production expenses like registration, establishment and administrative expenses, interest during implementation, trial runs etc.

8.5 Working Capital Requirements

The plant is expected to run at 60% of its rated capacity in the first year which would need following working capital:

(Rs. in lacs)

Particulars	Period	Margin	Total	Bank	Promoters
Stock of Raw Materials	½ Month	30%	0.75	0.55	0.20
Stock of Finished Goods	½ Month	25%	0.90	0.65	0.25
Receivables	½ Month	25%	1.00	0.75	0.25
Other Expenses	1 Month	100%	0.15	--	0.15
		Total	**2.80**	**1.95**	**0.85**

8.6 Cost of the Project & Means of Financing

(Rs. in lacs)

Item	Amount
Land and Building	3.90
Machinery	5.30
Miscellaneous Assets	0.30
P&P Expenses	0.45
Contingencies @ 10% on Land and Building & Plant & Machinery	0.90
Working Capital Margin	0.85
Total	**11.70**
Means of Finance	
Promoters' Contribution	3.40
Term Loan from Bank/FI	8.30
Total	**11.70**
Debt Equity Ratio	2.44 : 1
Promoters' Contribution	29%

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 & Build-up

As against the rated capacity of 180 tonnes during the season, actual utilisation is assumed to be 60% in the first year and 75% thereafter.

9.2 Sales Revenue at 100%

Since it is assumed that the mill would sale to traders or wholesalers, the selling price is taken at Rs. 27,000/- per ton. Hence, for 145 tonnes, the sales income would be Rs. 39.15 lacs.

9.3 Raw and Packing Materials Required at 100%

The yield is taken at 80%. Thus, processing of 180 tonnes of raw pigeon peas would yield processed peas of 145 tonnes. Price of raw pigeon peas is assumed to be Rs. 16,000/- per ton. In other words, raw material cost at 100% utilisation would be Rs. 28.80 lacs. Cost of packing materials is considered as Rs. 300/- per ton of finished goods.

9.4 Utilities

Cost of utilities at 100% capacity utilisation would be Rs. 4,000/- per month.

9.5 Interest

Interest on term loan assistance of Rs.8.30 lacs is calculated @ 12% per annum assuming complete repayment in 4 years including a moratorium period of 6 months. Interest on working capital assistance from bank is computed @ 14% per annum.

9.6 Depreciation

It is calculated @ 10% on building and 15% on machinery on WDV basis.

10.0 PROJECTED PROFITABILITY

(Rs. in lacs)

No.	Particulars	1st Year	2nd Year
A	**Installed Capacity**	**--- 180 Tonnes ---**	
	Capacity Utilisation	60%	75%
	Sales Realisation	23.50	29.35
B	**Cost of Production**		
	Raw and Packing Materials	17.54	21.93
	Utilities	0.14	0.18
	Salaries	0.72	0.85
	Stores and Spares	0.18	0.24
	Repairs & Maintenance	0.24	0.33
	Selling and Admn. Expenses	0.48	0.66
	Total	**19.30**	**24.19**
C	**Profit before Interest & Depreciation**	**4.20**	**5.16**
	Interest on Term Loan	0.85	0.58
	Interest on Working Capital	0.28	0.35
	Depreciation	1.08	0.94
	Profit before Tax	1.99	3.29
	Income-tax @ 20%	0.40	0.64
	Profit aAfter Tax	1.59	2.65
	Cash Accruals	2.67	3.59
	Repayment of Term Loan	1.10	2.20

11.0 BREAK-EVEN ANALYSIS

(Rs. in lacs)

No	Particulars		Amount
[A]	**Sales**		**23.50**
[B]	**Variable Costs**		
	Raw and Packing Materials	17.54	
	Utilities (70%)	0.10	
	Salaries (70%)	0.50	
	Stores & Spares	0.18	
	Selling & Adm. Expenses (75%)	0.24	
	Interest on WC	0.28	**18.84**
[C]	**Contribution [A] - [B]**		**4.66**
[D]	**Fixed Cost**		**2.67**
[E]	**Break-Even Point [D] ÷ [C]**		**57%**

12.0 [A] LEVERAGES

Financial Leverage

= EBIT/EBT

= 3.12 ÷ 1.99

= 1.57

Operating Leverage

= Contribution/EBT

= 4.66 ÷ 1.99

= 2.34

Degree of Total Leverage

= FL/OL

= 1.57 ÷ 2.34

= 0.67

[B] Debt Service Coverage Ratio (DSCR)

(Rs. in lacs)

Particulars	1st Yr	2nd Yr	3rd Yr	4th Yr
Cash Accruals	2.67	3.59	4.08	4.64
Interest on TL	0.85	0.58	0.32	0.14
Total [A]	**3.52**	**4.17**	**4.40**	**4.78**
Interest on TL	0.85	0.58	0.32	0.14
Repayment of TL	1.20	2.40	2.40	2.30
Total [B]	**2.05**	**2.98**	**2.72**	**2.44**
DSCR [A] ÷ [B]	**1.71**	**1.40**	**1.62**	**1.96**
Average DSCR	**---------- 1.68----------**			

[C] Internal Rate of Return (IRR)

Cost of the project is Rs. 11.70 lacs.

(Rs. in lacs)

Year	Cash Accruals	16%	18%	20%
1	2.67	2.30	2.26	2.22
2	3.59	2.67	2.58	2.49
3	3.08	1.97	1.88	1.78
4	4.64	2.56	2.39	2.24
5	5.18	2.47	2.26	2.08
	19.16	**11.97**	**11.37**	**10.81**

The IRR is around 17%.

The plant suppliers are:

1. M/s.Forberg Agrotech Pvt Ltd, Makarpura, Vadodara
2. Sahyog Steel Fabrication, 28 Bhojrajpare, Gondal 360311
   Tel. No. : 224075
3. Lakhanpal Food Processing Machinery, 36/6, Balkashwar Road, Agra 282004
   Tel. No. 2540726, Fax : 2540789