SESAME OIL

1.0 INTRODUCTION

India is one of the major producers of many oilseed crops like groundnut, mustard, rapeseed, sesame seed etc. Traditionally, Indians consume substantial quantity of edible oils mainly as a cooking medium. Oil extraction is an age-old activity in the country and with the advent of new techniques, the extraction process is now convenient as well as hygienic. Oil extracted from sesame seeds is not as popular as other edible oils like groundnut, cottonseed, mustard or rapeseed but it is used as a cooking medium in some parts of the country, while producing hydrogenated oil to restrict its adultration in some other products and in preparation of certain medicines.

2.0 PRODUCT

2.1 Applications

Sesame oil is extracted from sesame seeds. Recovery of oil from seeds is around 35% with the help of oil expeller, leaving around 4% oil in the cake which is sold to the cattle feed manufacturers. This product can be produced in western part of the country and this note considers Gujarat as the preferred location.

2.2 Availability of know-how, Quality Standards and Compliances

CFTRI, Mysore, has successfully developed the technical know-how. BIS has laid down quality standard vide IS 547:1968. Compliance under the PFA act

3.0 MARKET POTENTIAL

Edible oil is used in all Indian households since centuries as a cooking medium to make food as well as many snacks. In spite of very large production of many oilseeds, the country still imports very large quantities of semi-processed edible oils due to their ever increasing

demand. Apart from use in households, there is a vast market among of restaurants, dhabas, canteens and hostels, certain food processing units, farsan or snack makers, caterers and so on. Use of sesame seed oil is not as high as some other edible oils and hence a moderate production capacity has to be planned. But it has certain industrial applications as well and it is used while making hair oil, hydrogenated oil and certain medicines.

4.0 MANUFACTURING PROCESS

It is simple and standardised. Sun-dried seeds are cleaned on shaker screen to remove stone, dust etc. and then they are fed to expeller wherein oil is extracted. This process is repeated to extract maximum oil. Oil is then filtered on filter press and packed. About 35% oil is extracted and balance is known as de-oiled cake which is sold to cattlefeed producers.

5.0 CAPITAL INPUTS

5.1 Land and Building

Land measuring to around 200 sq.mtrs. with built-up area of 100 sq.mtrs. is enough for production, packing and storage. Cost of land is assumed to be Rs.60,000/- whereas construction cost is taken as Rs. 2.50 lacs.

5.2 Machinery

To install annual processing capacity of 200 tonnes with 300 working days and double shift working, following machinery shall be required:

Item	Qty.	Price (Rs.)
Oil Expellers complete with long heating kettle, other accessories and electricals	2	2,50,000
Filter Press with plunger pump, filter cloth etc.	1	40,000
Mini Boiler	1	40,000
Shaker Screen with Blower	1	20,000
Weighing Scale, Oil storage tanks etc.	--	25,000
	Total	**3,75,000**

5.3 Miscellaneous Assets

Other assets like furniture and fixtures, electrical, working tables etc. would cost Rs. 60,000/-.

5.4 Utilities

Total power requirement shall be 40 HP whereas water requirement per day would be 1000 ltrs.

5.5 Raw and Packing Materials

The most important raw material would be good quality sesame seeds. Annual production of the state is around 75,000 tonnes with Botad, Dhaari, Rajkot being the major centres. Availability of sesame seeds would be sesonal and hence factory would work for 8 months. Oil will be packed in plastic containers of different sizes whereas packing of de-oiled cake would be in second-hand gunny bags.

6.0 MANPOWER REQUIREMENTS

Particulars	Nos.	Monthly Salary (Rs.)	Total Monthly Salary (Rs.)
Machine Operators	2	3,000	6,000
Skilled Workers	2	2,500	5,000
Unskilled Workers	4	1,250	5,000
Salesman	1	2,500	2,500
		Total	**18,500**

7.0 TENTATIVE IMPLEMENTATION SCHEDULE

Activity	Period (in months)
Application and sanction of loan	2
Site selection and commencement of civil work	1
Completion of civil work and placement of orders for machinery	4
Erection, installation and trial runs	1

8.0 DETAILS OF THE PROPOSED PROJECT

8.1 Land and Building

Particulars	Area (Sq.Mtrs)	Cost (Rs.)
Land	200	60,000
Building	100	2,50,000
	Total	**3,10,000**

8.2 Machinery

The total cost of machinery is expected to be Rs. 3.75 lacs as discussed earlier.

8.3 Miscellaneous Assets

A provision of Rs. 60,000/- would take care of other assets as stated before.

8.4 Preliminary & Pre-operative Expenses

A provision of Rs. 75,000/- would take care of pre-production expenses like registration, administrative and travelling expenses, interest during implementation and trial-runs, etc.

8.5 Working Capital Requirements

At 65% working in the first year, the working capital needs would be as under.

(Rs. in lacs)

Particulars	Period	Margin	Total	Bank	Promoters
Stock of Raw Materials	½ Month	30%	1.20	0.85	0.35
Stock of Finished Goods	½ Month	25%	1.35	1.00	0.35
Receivables	½ Month	25%	1.60	1.20	0.40
Working Expenses	1 Month	100%	0.30	--	0.30
		Total	**4.45**	**3.05**	**1.40**

8.6 Cost of the Project & Means of Financing

(Rs. in lacs)

Item	Amount
Land and Building	3.10
Machinery	3.75
Miscellaneous Assets	0.60
P&P Expenses	0.75
Contingencies @ 10% on Land and Building & Plant & Machinery	0.70
Working Capital Margin	1.40
Total	**10.30**
Means of Finance	
Promoters' Contribution	3.20
Term Loan from Bank/FI	7.10
Total	**10.30**
Debt Equity Ratio	2.21 : 1
Promoters' Contribution	31%

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 200 tonnes, actual utilisation during season of 8 months is envisaged to be 65% and second year onwards at 75%.

9.2 Sales Revenue at 100%

(Rs. in lacs)

Product	Qty. (Tonnes)	Price/Ton (Rs.)	Value
Sesame Oil	70	75,000	52.50
Doiled Cake	120	5,000	6.00
		Total	**58.50**

9.3Raw and Packing Materials Required at 100%

(Rs. in lacs)

Product	Qty. (Tonnes)	Price/Ton (Rs.)	Value
Seasame Seeds	200	21,000	42.00
Packing Material and others	--	--	2.23
		Total	**44.23**

9.4 Utilities

Annual cost of utilities at 100% would be Rs. 80,000/-.

9.5 Interest

Interest on term loan of Rs. 6.60 lacs is calculated @ 12% per annum assuming repayment in 4 years including a moratorium period of six months. On working capital loan from bank it is taken at 14% per annum.

9.6 Depreciation

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

10.0 PROJECTED PROFITABILITY

(Rs. in lacs)

No.	Particulars	1st Year	2nd Year
A	**Installed Capacity**	**--- 200 Tonnes ---**	
	Capacity Utilisation	60%	75%
	Sales Realisation	38.00	43.90
B	**Cost of Production**		
	Raw and Packing Materials	28.75	33.20
	Utilities	0.52	0.60
	Salaries	1.48	1.70
	Stores and Spares	0.12	0.18
	Repairs & Maintenance	0.18	0.27
	Selling Expenses @ 5%	1.90	2.20
	Administrative Expenses	0.42	0.54
	Total	**33.37**	**38.69**
C	**Profit before Interest & Depreciation**	**4.63**	**5.21**
	Interest on Term Loan	0.78	0.63
	Interest on Working Capital	0.43	0.54
	Depreciation	0.90	0.77
	Profit before Tax	2.52	3.27
	Income-tax @ 20%	0.50	0.65
	Profit after Tax	2.02	2.62
	Cash Accruals	2.92	3.39
	Repayment of Term Loan	0.95	1.90

11.0 BREAK-EVEN ANALYSIS

(Rs. in lacs)

No	Particulars		Amount
[A]	**Sales**		**38.00**
[B]	**Variable Costs**		
	Raw and Packing Materials	28.75	
	Utilities (70%)	0.36	
	Salaries (70%)	1.04	
	Stores & Spares	0.12	
	Selling Expenses (70%)	1.33	
	Admn Expenses (50%)	0.21	
	Interest on WC	0.43	**32.24**
[C]	**Contribution [A] - [B]**		**5.76**
[D]	**Fixed Cost**		**3.24**
[E]	**Break-Even Point [D] ÷ [C]**		**56%**

12.0 [A] LEVERAGES

Financial Leverage

= EBIT/EBT

= 3.73 ÷ 2.52

= 1.48

Operating Leverage

= Contribution/EBT

= 5.76 ÷ 2.52

= 2.29

Degree of Total Leverage

= FL/OL

= 1.48 ÷ 2.29

= 0.65

[B] Debt Service Coverage Ratio (DSCR)

(Rs. in lacs)

Particulars	**1st Yr**	**2nd Yr**	**3rd Yr**	**4th Yr**
Cash Accruals	2.92	3.39	3.78	4.12
Interest on TL	0.78	0.63	0.37	0.19
Total [A]	**3.70**	**4.02**	**4.15**	**4.31**
Interest on TL	0.78	0.63	0.37	0.19
Repayment of TL	1.00	2.00	2.00	2.10
Total [B]	**1.78**	**2.63**	**2.37**	**2.29**
DSCR [A] ÷ [B]	**2.14**	**1.59**	**1.83**	**2.11**
Average DSCR	**---------- 1.92 ----------**			

[C] Internal Rate of Return (IRR)

Cost of the project is Rs. 10.30 lacs.

(Rs. in lacs)

Year	Cash Accruals	20%	24%	28%	32%
1	2.92	2.43	2.35	2.28	2.21
2	3.39	2.35	2.20	2.07	1.95
3	3.78	2.19	1.98	1.80	1.64
4	4.12	1.99	1.74	1.54	1.36
5	4.39	1.76	1.50	1.28	1.10
	18.60	**10.72**	**9.77**	**8.97**	**8.26**

The IRR is around 22%.

Some of the machinery suppliers are

1. Chempro Engg. & Consultants, 43, Shukhshine Complex, Sunrise Park, Drive-in Road, Ahmedabad-380054, Tel. No. 26851135-9010, Fax: 26851154
2. Sifler International, Plot No. 83, Sector 6, Faridabad-121006
   Tel. No. 2231154-4540, Fax: 2230039
3. Osaw Agro Industries Pvt. Ltd., Osaw Complex, Jagadhri Road, Ambala Cant.-133001,
   Tel. No. 2699167-354-547, Fax: 2699018
4. Sahyog Steel Fabrication, 28, Bhojrajpara, Gondal-360311. Tel No. 224075