

MUSTARD OIL

QUALITY AND STANDARDS : As per BIS/PFA specifications

PRODUCTION CAPACITY : 300 tpa



1.0 PRODUCT AND ITS APPLICATIONS

The edible oils of vegetable origin are the most important sources of cooking oil. The country produces nearly 25 million tonnes of such oilseeds out of which mustard alone constitutes $\frac{1}{4}$ of the production. Mustard oil is the popular cooking oil in Northern, Central, Eastern and North Eastern Region. Natural unrefined mustard oil extracted through cold process is quite pungent. The consumers of traditional product prefer pungent oil. Till now the extraction of pungent oil could be possible only by Rotary Ghani due to mustard seed moisture range of 10-12%, low temperature of extraction in wooden bowl wherein the pungent principle - allyl isothiocyanate does not evaporate. However, the expeller made of metallic components and high compression ratio raises the seed temperature upto 80-100°C resulting in loss of pungent principles. The "Modern" oil expeller provides high pungency mustard oil by low temperature crushing through incorporation of a water cooled chamber and processing at critical moisture levels of oilseed.

2.0 MARKET POTENTIAL

Mustard seed is produced in large quantities in Rajasthan, U.P, Punjab, Haryana, J&K, M.P., Bihar, West Bengal. In North Eastern Region, the main mustard producing states are Assam, Meghalaya, Manipur and Tripura. There exists a large scope to set up a number of small scale mustard expellers for local production of high pungency oil, which fetches a premium price.

3.0 BASIS AND PRESUMPTIONS

- The unit proposes to work at least 300 days per annum on single shift basis.
- The unit can achieve its full capacity utilization during the 2nd year of operation.
- The wages for skilled workers is taken as per prevailing rates in this type of industry.
- Interest rate for total capital investment is calculated @ 12% per annum.
- The entrepreneur is expected to raise 20-25% of the capital as margin money.
- The unit proposes to construct own building.
- Costs of machinery and equipment are based on average prices enquired from machinery manufacturers.

4.0 IMPLEMENTATION SCHEDULE

Project implementation will take a period of 8 months. Break-up of the activities and relative time for each activity is shown below:

❖ Scheme preparation and approval	:	01 month
❖ SSI provisional registration	:	1-2 months
❖ Sanction of financial supports etc.	:	2-5 months
❖ Installation of machinery and power connection	:	6-8 months
❖ Trial run and production	:	01 month

5.0 TECHNICAL ASPECTS

5.1 Location

The unit can be set up in oilseed producing regions or near the consumption centres. However, availability of power and road connectivity should be ensured.

5.2 Process of Manufacture

The seeds are cleaned to remove dust, dirt and foreign particles. These are cured to bring the moisture level of 10-12% and passed through 'Modern' Oil expeller. The oil cake is conveyed automatically and pressed to achieve maximum oil recovery, which is about 35% depending upon the variety and quality of seed. The oil is filtered and filled into 1 kg Pet bottles or 16 kg tins

5.3 Quality Control and Standards : As per BIS/PFA requirements

6.0 POLLUTION CONTROL

There is no major pollution problem associated with this industry except for disposal of waste which should be managed appropriately. The entrepreneurs are advised to take "No Objection Certificate" from the State Pollution Control Board.

7.0 ENERGY CONSERVATION

The fuel for the steam generation in the boiler is coal or LDO depending upon the type of boiler. Proper care should be taken while utilising the fuel for the steam production. There should be no leakage of steam in the pipe lines and adequate insulation should be provided.

8.0 PRODUCTION CAPACITY

Quantity	:	300 tpa
Installed capacity	:	1200 kg/day
Optimum capacity utilization	:	70%
Working days	:	300/annum (3 shifts)
Manpower	:	22

Utilities

Motive Power	:	8 kW
Water	:	10 kL/day

9.0 FINANCIAL ASPECTS

9.1 Fixed Capital

9.1.1 Land & Building

Amount (Rs. lakh)

Land 400 sq.m.	:	1.20
Built up Area 250 sq. m..	:	7.50

Total cost of Land and Building	:	8.70

9.1.2 Machinery and Equipment

Description	Amount (Rs. lakh)
• 'Modern' Oil Expeller (developed by MERADO, Ludhiana) cap 1 tpd in 3 shifts) with 7.5 HP motor, starter	
• Filter press with pump and filter cloth	
• Baby boiler, cap 200 kg steam	
• Shaker screen with blower	
• Weighing scale	
• Shrink wrapping machine for PET bottles	: 2.00
Erection & electrification @10% cost of machinery & equipment	: 0.20
Office furniture & fixtures	: 0.30
Total :	----- 2.50

9.1.3 Pre-operative Expenses

Consultancy fee, project report, deposits with electricity department etc.	: 0.50
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9.1.4 Total Fixed Capital : 11.70 (9.1.1+9.1.2+9.1.3)

9.2 Recurring expenses per annum

9.2.1 Personnel

Designation	No.	Salary Per month	Amount (Rs.lakh)
Factory Manager	1	4000	0.48
Supervisor	3	3000	1.08
Office Assistant	2	2500	0.60
Technician	1	2500	0.30
Skilled workers	3	2000	0.72
Unskilled workers	12	1800	2.60
			5.78
Perquisites @15%			0.86
Total :	22		----- 6.64

9.2.2 Raw Material including packaging materials

Particulars	Qty.(MT)	Rate/MT	Amount (Rs. lakh)
Mustard seeds	860	13,000	112.00
Pet bottles with cap	3 lakh	3.60 each	10.80
Shrink wrapping rolls	-LS-	-LS-	0.30
Labels	3 lakh	0.50 each	1.50
Cartons, cap 24 bottles	12,500	20 each	2.50
Gunny bags	-	-	0.50

Total:			127.60

9.2.3 Utilities

	Amount (Rs. lakh)
Power 55000 kWH	1.74
Water 3000 kL	0.10
Fuel for boiler	0.46

Total:	2.30

9.2.4 Other Contingent Expenses

	Amount (Rs. lakh)
Repairs and maintenance@10%	0.25
Consumables, filter cloth, spares	0.44
Transport & Travel	0.30
Publicity	0.30
Postage & stationery	0.18
Telephone	0.12
Insurance	0.05

Total:	1.64

9.2.5 Total Recurring Expenditure

	Amount (Rs. lakh)
(9.2.1+9.2.2+9.2.3+9.2.4)	138.18

9.3 Working Capital

Recurring Expenditure for 3 months	34.50
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9.4 Total Capital Investment

	Amount (Rs. lakh)
Fixed capital (Refer 9.1.4)	11.70
Working capital (Refer 9.3)	34.50

Total:	46.20

10.0 FINANCIAL ANALYSIS

10.1 Cost of Production (per annum) Amount (Rs. lakh)

Recurring expenses (Refer 9.2.5)	138.18
Depreciation on building @5%	0.38
Depreciation on machinery @10%	0.22
Depreciation on furniture @20%	0.06
Interest on Capital Investment @12%	5.54

Total:	144.38

10.2 Sale Proceeds (Turnover) per year

Item	Qty. (MT)	Rate per MT	Amount (Rs.lakh)
Mustard Oil, packed in 1 kg bottle	300	45,000	135.00
Mustard cake	540	5,000	27.00

Total			162.00

10.3 Net Profit per year

= Sales - Cost of production
= 162.00 - 144.38
= Rs. 17.62 lakh

10.4 Net Profit Ratio

= $\frac{\text{Net profit} \times 100}{\text{Sales}}$
= $\frac{17.62 \times 100}{162}$
= 10.9%

10.5 Rate of Return on Investment

= $\frac{\text{Net profit} \times 100}{\text{Capital Investment}}$
= $\frac{17.62 \times 100}{46.2}$
= 38.14%

10.6 Annual Fixed Cost	Amount (Rs. Lakh)
All depreciation	0.66
Interest	5.44
40% of salary, wages, utility, contingency	4.25
Insurance	0.05
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Total:	10.40

10.7 Break even Point

$$= \frac{\text{Annual Fixed Cost} \times 100}{\text{Annual Fixed Cost} + \text{Profit}}$$

$$= \frac{10.4 \times 100}{10.4 + 17.62}$$

$$= 37\%$$

11.0 ADDRESSES OF MACHINERY AND EQUIPMENT SUPPLIERS

Nandy Eng. Works
139, Benaras Road
Howrah-711 106

Lyallpur Engg. Co.
G.T.Road, P.B. No. 8,
Ghaziabad (U.P.)

Azad Eng. Co.
C-83, B.S.Road Industrial Area
Ghaziabad-201 009

Delhi Iron and Steel Co. Pvt. Ltd.
G.T.Road,
Ghaziabad (UP)

Guru Tegh Eng. Co.
G.T.Road, Millerganj, Near Fire
Brigade
Ludhiana

Swastik Engg. Works,
198, Panjara Pole Road
Mumbai – 400 004

Punjab Engg. Works
32, Ram Krishna Samadhi Road
Kolkata – 700 054

Parekh Machine Tools
5, Khetra Das Lane,
Behind Broadway Hotel
Kolkata-700 012

S.P.Engg. Co.
79/9, Latouche Road,
P.B. No. 218,
Kanpur – 208 001

Mecpro Heavy Eng; Ltd.
610, Somdutt Chambers II
Bhikaji Cama Place,
New Delhi – 110 066

Chemical Construction International (P) Ltd.
J-12, Basement, Saket, New Delhi – 110 017

Japro International (P) Ltd.
Flower Valley Complex
Tower No. T-2, First Floor
Off Eastern Express Highway
Thane (West) – 400 601

Muez-Hest Process Technologies (P) Ltd.,
231, Blue Road Industrial Estate,
New Cable Corporation, Western Express Highway,
Borivalli East, Mumbai – 400 066

12.0 OTHER SPECIAL FEATURES

A careful selection of product mix is necessary based on the local market demand and availability of raw materials. The facilities can also be utilised to manufacture oil from copra, groundnut, sunflower etc. for fuller utilisation of capacity.