

**PROJECT PROFILE
ON
LEMONGRASS OIL
MAKING UNIT**



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INTRODUCTION

Lemongrass is a tall perennial aromatic grass, native to the tropical and sub-tropical climates of Asia, Australia and Africa. India is the largest producer of lemongrass, where it is cultivated in Kerala, Tamil Nadu, Karnataka, Assam, Madhya Pradesh, West Bengal, Uttar Pradesh and Maharashtra.

Standard	Code	Description
HS	33012942	Lemon Grass Oil

PRODUCTS AND ITS APPLICATION

Lemongrass oil is used in perfumery, fragrance cosmeceutical, aromatherapy, and pharmaceutical industries. Citral is the main constituent of lemongrass oil, which used for production of fragrances for soaps & detergents, high quality perfumes. Citral is also used as a flavor and for fortifying lemon oil and in many values added products like Ionone's and Vitamin A. Leaves of lemongrass are also used for making lemongrass tea.

INDUSTRY OUTLOOK/TREND

The oil is distilled from leaves and flowering tops of Lemon grass. The oil has strong lemon-like odor, due to high percentage (over 75%) of citral in the oil. The characteristic smell of oil makes its use in scenting of soaps, detergents, insect repellent preparations. However, the major use of oil is as a source of citral, which goes in perfumery, cosmetics, beverages and is a starting material for manufacture of ionones, which produces vitamin – A. The Citral rich oil has germicidal, medicinal, and flavouring properties. An allied species called West Indian lemon grass (*C.citratus*) has low citral content in the oil and has meagre trade in the country.

PROCESS

The oil is extracted from the wilted herb by steam distillation in stainless steel units. The factors influencing the oil production during distillation are: (i) Storage of the plant material, (ii) Treatment (wilting and cutting into pieces) of the material and (iii) The method of distillation. The major source of loss is by oxidation and rectification of the essential oil. So, if the material is to be stored before processing, it should be kept in a dry atmosphere with limited air circulation. The essential oils are present in the oil glands, oil sacks and glandular hairs of the plant. Therefore, before distillation, the day wilted plant material is cut into small pieces enable them to expose directly as many oil glands as is possible. Once the plant material has been reduced in size, it must be distilled immediately to avoid oil loss. The wilted leaves are steam distilled which takes about 4- 5 hours.

One of the methods (molecular distillation) for lemongrass oil extraction is molecular distillation process, which yield increase citral concentration in lemongrass essential oil, without adding any extra components to

the system. Through this method higher concentration of bioactive compound (citral) can be obtained which is 2.1 time the concentration of steam distillation.

RAW MATERIAL REQUIREMENTS

Sl. No.	Particulars	Quantity (Ton)	Value (Rs.)
1	Lemongrass (90%-98%) Citral	1000	8,50,000
2	Packaging material (Bottles & Caps, Chemicals)	Lumpsum	50000

MANPOWER REQUIREMENT (per month)

Type	Number	Cost (Rs.)
Manager	1	20,000
Accountant	1	15000
Labour (2 skilled and 3 unskilled)	5	80,000
Total	7	1,15,000

IMPLEMENTATION SCHEDULE

Particulars	Units	Details
Land	0.5 Acre	50,00,000
Building/Unit Shed	Lumpsum	1,00,000
Plant & Machinery		
Two steam distillation units (Capacity 10 Q)	INR	4,00,000
One rectification unit	INR	12,00,000
One molecular distillation unit	INR	20,00,000
Utilities (Boiler, Chiller, Pulverize, Chaff-cutter, Cooling tower etc.)	INR	50,00,000
Genset (Power Backup)	INR	10,00,000
Total		1,47,00,000

OTHER EXPENSES (PER MONTH):

Sl. No	Particulars	Cost (Rs.)
1	Electricity	10,000
2	Advertising & Traveling	10,000
3	Transport	20,000
4	Misc. Fixed assets (Furniture, etc.)	15,000
5	Contingencies, Communication & Stationery	10,000
	Total	65,000

WORKING CAPITAL (per month)

Sl. No	Particulars	Cost (Rs.)
1	Raw Material	8,50,000
2	Salaries & Wages	1,15,000
3	Other expenses	65,000

	Total	10,30,000
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TOTAL CAPITAL INVESTMENT

Sl. No	Particulars	Cost (Rs.)
1	Working Capital	10,30,000
2	Machinery	96,00,000
	Total	1,06,30,000

COST OF PRODUCTION

Sl. No	Particulars	Cost (Rs.)
1	Total recurring cost per annum	1,23,60,000
2	Depreciation on machinery & equipment (10%)	9,60,000
3	Interest (10%)	12,36,000
	Total	1,45,56,000

IMPLEMENTATION SCHEDULE

Project Stages	Months					
	1	2	3	4	5	6
Rent Agreement						
Ordering of Machinery						
Delivery of Machinery						
Term/Working Loan Sanction						
Installation of Machinery						
Commissioning of Plant						
RM/Inputs Procurement						
Manpower Appointments						
Commercial Production						

COST OF THE PROJECT

Sr. No	Costing Heads	Cost (in INR)
1	Land+ Building Expenses	51,00,000
3	Plant & Machinery	1,04,00,000
4	Contingency	1,00,000
	Total Cost of Project	1,48,00,000

SALES PROCEEDS (PER ANNUM)

Sl. No	Particulars	Quantity (Kg)	Value (Rs.)
1	Lemongrass Oil	7200	1,62,00,000
	Total		1,62,00,000

PROFITABILITY (BEFORE INCOME TAX)

Sl. No	Particulars	Profit
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1	Annual Gross Profit (INR) = Annual Sales – Annual Recurring Cost	16,44,000
2	% of profit on sales	10.15%
3	Break-even point analysis	
A.	Net sales (in Rs. lakh)	162
B.	Variable cost	
B1	Raw Materials	8.5
B2	Other expenses	0.65
B3	Interest on Working Capital Loan	12.36
	Total variable cost	21.51
C.	Contribution (A-B)	140.49
D.	Fixed & Semi-fixed Costs	
D1	Salary	13.4
D2	Repair & maintenance	1.0
D3	Interest on Term Loan	12.36
D4	Depreciation	9.6
	Total fixed cost	36.36
E.	BREAK EVEN POINT	72.60%

Break-even point

$$\frac{\text{Annual Fixed Cost} \times 100}{\text{Annual Sales} - \text{Annual Variable Cost}} = \%$$

PROFITABILITY CALCULATIONS

Sr. No.	Particulars	Year 1	Year 2	Year 3	Year 4	Year 5
	Gross Sales (Lakh)	162	178.2	196.02	196.02	196.02
A	Less: (Lakh)					
1.	Recurring Cost	102	112.2	123.42	123.42	123.42
2.	Depreciation	9.60	10.56	11.62	11.62	11.62
3.	Interest	12.36	13.60	14.96	14.96	14.96
B	Production cost	145.50	160.05	176.06	176.06	176.06
C	Gross Profit	16.44	18.08	19.89	19.89	19.89
	Taxes @ 30%	4.9	5.4	6.0	6.0	6.0
	Net Profit	11.5	12.7	13.9	13.9	13.9

References

- Lemongrass oil-Eiriindia.org
- Rastriya krishi vikash yojana-Lemon grass oil
- Director of horticulture, Odisha- Lemon Grass Project-<http://odihort.nic.in>
- Video Link- <https://youtu.be/pgQ51oTDL0M>

MACHINERY SPECIFICATIONS

Product Name: Steam Distillation Unit

- Power 5KW
- Grass storage shed 35' x 30'
- Distillation Shed
- Distillation Unit - Hydro-steam and lifting type, capacity 1.0 MT/batch made of 304 grade stainless steel with all accessories
 - Lid lifting gear
 - Furnace, Accessories and Chimney
 - Condenser
 - Bore Well with Water pump (STW boring, 3HP Pump Set, pipes & fittings)

MANUFACTURES/ SUPPLIERS OF MACHINERY

- Arkchem Systems Private Limited, Office No. 308, Garden Plaza, Aundh-Ra BRT Road, Wakad, Pune - 411057, Maharashtra, India
- Ylem Energy, 29/21, Gali no -6, Anand Parbat Industrail Area, New Delhi - 110005, Delhi, India

STATUTORY/ GOVERNMENT APPROVALS

There is statutory requirement of FSSAI license for setting up of food processing industry. Moreover, MSME & GST registration, IEC Code for Export of end products and local authority clearance may be required for Shops and Establishment, for Fire and Safety requirement and registration for ESI, PF and Labour laws may be required if applicable. Entrepreneur may contact State Pollution Control Board wherever it is applicable.

DISCLAIMER:

This is an indicative illustration of project profile; the above calculation can vary with the locations. Only few machine manufacturers are mentioned in the profile, although many machine manufacturers are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of knowledge and contacts. However, no responsibility is admitted, in case any inadvertent error or incorrectness is noticed therein. Further, the same have been given by way of information only and do not carry any recommendation.

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