

Package of Practice

Lemon grass Cultivation



ADVANCING
NORTH EAST

An Initiative of North Eastern Council (NEC)

Implemented by North Eastern Development Finance Corporation Limited (NEDFi)

LEMONGRASS

SCOPE:

There is a wide scope of MAP cultivation in Assam especially in the Upper Brahmaputra Valley (Sivasagar, Jorhat, Dibrugarh, Tinsukia) due to suitable weather condition and availability of seeds. Market price of Lemon grass ranges from 200/---250/- per kg of herbage and oil price ranges from 350/- -400/- per liter

VARIETIES:

1. C.K.P-25 released by RRL, Jammu
2. Jor Lab L-2 suitable for NE region developed by RRL, Jorhat

BACKGROUND OF THE CROP

Lemon grass also called Cochin grass or Malabar grass is native to India and Tropical Asia. It is grown and found in different parts of India and is used in perfume business and also for medicinal purposes.

Two species of it are popular namely *Cymbopogon citratus* and *flexuosus*.

ESSENTIAL PART: Stalk and leaves

MAIN USES OF LEMONGRASS:

1. Lemongrass oil
2. Lemongrass leaves

OIL EXTRACTION: The oil is distilled from the leaves and flowering tops of Lemon Grass. The oil has strong lemon-like odour due to high percentage (over 75%) of citral in the oil. The citral rich oil has germicidal, medicinal and flavoring properties.

OPPORTUNITIES:

- Export
- Drug manufacturing companies
- Pharmacognosist
- Cosmetics
- Economic development

USES AND MEDICINAL VALUES OF LEMONGRASS OIL AND LEAVES:

- Lemongrass oil extracted from the leaves and stems is used in making soaps, perfumes, scents and incense sticks



FIG1: LEMON GRASS
SOURCE: GOOGLE



FIG2: LEMON GRASS OIL
SOURCE: GOOGLE

- Lemongrass oil is used as a medicinal herb in the pharmaceutical industry.
- Lemongrass has a wide role: lowers cholesterol, cold, flue and fevers, joint pains, anti-cancer, diabetes, healthy skin, weight loss etc
- It is also used to kill germs and as a mild astringent. Lemongrass is used for treating digestive tract spasms, stomachache, high blood pressure etc.

CULTIVATION AND MANAGEMENT:

- **Soil:** Rich loams to poor laterite, best on sandy loam.
- **Temperature:** High temperature and plenty of sunshine.
- **Rainfall:** Warm humid; 1800 to 3000mm; water-logged condition should be avoided

PREPARATION OF ROOTSLIPS:

Vegetative propagation: Slips

Spacing: 45x45 cm in plains or 60x45 cm in sloppy land with a requirement of slips 45,000-50,000/ha

Planting time: May-June

Planting depth: 5-8 cm, 2 slips/ hole- transplanted

Planting method: Ridges and furrow

Manure and fertilizer application:

FYM :10t/ ha at the time of final land preparation, N: P:K @ 150: 60: 60 kg/ha/year.

Irrigation: Irrigation is given immediately after planting

Weeding: One hand weeding at 25-30 days followed by one hoeing at 40-60 days after planting.

Mulching: Distillation waste also known as spent grass is applied as organic mulch @ 3 tonnes/ ha in between the rows is found effective.

Pest and disease: Common pest that attacks lemongrass are - stem boring caterpillar and nematodes.

The common diseases found in lemon grass are- smut, Red leaf spot, leaf blight, rust etc.

HARVESTING: The grass is harvested when individual tiller has 4-5 fully opened leaves. The plants are cut about 10-20 cm above the ground.

YIELD: On an average, **25 to 30 tonnes** of fresh herbage are harvested per hectare per annum from 4 -6 cuttings, which yields about **80 kg of oil**

CHALLENGES:

- The plant needs bright sunlight for the development of oil content.

Model Project Profile

- Frost and cold weather are not suitable for cultivating lemongrass.
- Marketing and market linkage development.
- Technical knowledge and farming inputs.
- Oil extraction and marketing

FARM ECONOMICS:

FARM ECONOMICS OF LEMON GRASS CULTIVATION IN 1 ACRE LAND AREA

	ITEM	Amount in Rs...
A	INITIAL EXPENSES	
1	LAND HOLDING (OWN)	0
2	LAND DIGGING	20000
3	FENCING	10000
4	COST OF POWER TILLER	160000
5	SOIL LEVELLING AND TILLERING INCLUDING DIESEL COST	15000
6	STORE HOUSE CONSTRUCTION COST 100 SQ FT@200/- PER SQ FT	20000
	SUBTOTAL A	225000
B	IRRIGATION AND IMPLEMENTS	
1	TUBE WELL/ SUBMERSIBLE PUMP COST AND IRRIGATION COST	15000
2	PUMP AND ELECTRICAL INSTALLATION	20000
3	AGRICULTURAL EQUIPMENTS	4000
4	DRYING PLATFORM (OIL EXTRACTION)	25000
	SUBTOTAL B	64000
C	ESSENTIAL CREDENTIALS	
1	COST OF LABOUR (1. LAND PREPARATION COST-12 MAN DAYS@350/- PER MAN DAYS, 2. PLANTING-12 MAN DAYS@350/- PER MAN DAYS, 3. FENCING-12 MAN DAYS@300/- PER MAN DAYS, 4. HARVESTING (5 TIMES A YEAR)-12 MAN DAYS@350/- PER MAN DAYS PER HARVESTING, SO TOTAL-60 MAN DAYS, 5. OIL EXTRACTION-12 MAN DAYS@350/- PER MAN DAYS)	16800
2	FERTILIZERS AND OTHER AGRO CHEMICALS LUMPSUM	15000
	SUBTOTAL C	31800
D	PLANTING AND MULCHING MATERIAL	
1	LEMON GRASS SLIPS (20,250slips/acre) (3/- /Slips=20250)	60750

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2	MULCHING (by using black polythene mulch)	30000
3	MISCELLENOUS LUMPSUM	15000
	SUBTOTAL D	105750
	TOTALPROJECT COST (A+B+C+D)	426550

INCOME STATEMENT

SL NO	PARAMETERS	APPROX. AMOUN IN RS
1	TOTAL PRODUCTION OF OIL- 60 kg/ACRE AFTER ONE YEAR, SELLING PRICE- @350/- PKG (FROM 2ND YR)	21,000
2	FRESH HERBAGE PRODUCTION, 8.0 TONNES/ACRE AFTER 4-6 CUTTINGS IN A YEAR, SELLING PRICE OF HERBAGE@200/- PKG (DEDUCT THE INCOME OF OIL AS IN 8 TONNES 60 KG OIL IS INCLUDED) (2TN IN FIRST YEAR AND 8 TN IN 2 ND YEAR)	1979000
	TOTAL INCOME	19,79,000
PROFIT AND LOSS STATEMENT		
SL .NO	PARAMETERS	APPROX. AMOUN IN RS
1	CAPITAL INVESTMENT	2,89,000
2	RECURRING COST (1ST YR)	1,37,550
3	TOTAL INVESTMENT	4,26,550
4	TOTAL INCOME (in 2 YRS)	19,79,000
5	TOTAL PROFIT IN 2 YEAR	18,41,450

MEANS OF FINANCE

Particulars	Amount In Rs.....
Margin Money (25%)	106638
Bank Loan (75%)	319913
Total Project Cost	426550

PROJECTED PROFITABILITY STATEMENT

Model Project Profile

(Amount in Rs...)

	PARTICULARS/YEAR	1ST YEAR	2ND YEAR	3RD YEAR
A	INCOME			
	SALE OF OIL - 60 kg/ACRE@Rs.350PKG FROM 2ND YEAR ONWARDS	0	21000	21000
A-2	SALE OF FRESH HERBAGE 8 TON/ACRE@Rs.200 PKG (2 TON IN 1ST YR)	400000	1600000	1600000
	TOTAL INCOME	400000	1621000	1621000
B	EXPENDITURE			
B-1	LEMON GRASS SLIPS (20,250slips/acre) (3/- /Slips=20250)	60750	0	0
B-2	MULCHING (by using black polythene mulch)	30000	0	0
B-3	MISCELLENOUS LUMPSUM	20000		
B-4	FERTILIZERS AND OTHER AGRO CHEMICALS LUMPSUM	15000	10000	10000
B-5	MANPOWER (48NOS@RS.350)	16800	12600	12600
	TOTAL EXPENDITURE	142550	22600	22600
C	GROSS PROFIT (A-B)	257450	1598400	1598400
D	Interest on bank loan	27193	25101	12550
E	Depreciation (10%-wdvm)	25400	22860	20574
F	Total D+E	52593	47961	33124
G	Net profit (C-F)	204857	1550439	1565276

FINANCIAL ANALYSIS

(Amount in Rs...)

Particular / Year	0 year	1st year	2nd year	3rd year
Expenses				
Initial Cost	289000			
Recurring cost	137550	142550	22600	22600
TOTAL COST	426550	142550	22600	22600
BENEFIT				
TOTAL BENEFIT	0	400000	1621000	1621000
NET BENEFIT	0	257450	1598400	1598400
DF @ 15 %	1	0.87	0.76	0.66

Model Project Profile

PWC	426550	124019	17176	14916
PWB	0	348000	1231960	1069860
NPW	2067160			
BCR (@15%DF)	4.55:1			
DF@50%	1	0.67	0.44	0.3
PWC	426550	95509	9944	6780
PWB		268000	713240	486300
NPW	928758			
IRR (%)	78.55			

REPAYMENT SCHEDULE

PROJECT PERIOD: 3 YEARS

MORATORIUM PERIOD: 1 YEAR INCLUDING PROJECT PERIOD

BANK ROI: 8.5%

(Amount in Rs...)

Particulars	1st year	2nd year	3rd year
Opening Balance	319913	319912.5	159956
Interest @8.50 p a	27193	27193	13596
Principal	0	159957	159956
Total Return (Principal + Interest)	27193	187150	173552
Closing Balance	319913	159956	Nil

DEBT SERVICE COVERAGE RATIO

(Amount in Rs...)

PARTICULARS/ YEAR	1ST	2ND	3RD
(A) Total Income:			
Net Profit	204857	1548347	1564230
Depreciation	25400	22860	20574
Interest on loan	27193	27193	13596
Total=	257450	1598400	1598400
(B) Total Commitment:			
Bank Loan	0	159957	159956
Interest loan	27193	27193	13596
Total =	27193	187150	173552
DSCR (A/B)=	9.47	8.54	9.21
Average DSCR=	9.07		

DEPRECIATION SCHEDULE

(Amount in Rs...)

Particulars	1st yr	2nd yr	3rd yr
Asset Value (On ITEM : A(3,4,6) B(1,2,3,4) capital cost)	254000	228600	205740
Depreciated value (10%-WDVM)	25400	22860	20574
Closing value	228600	205740	185166