Package of Practice

Tulsi Cultivation

ADVANCING NORTH EAST

An Initiative of North Eastern Council (NEC)

Implemented by North Eastern Development Finance Corporation Limited (NEDFi)

TULSI

SCOPE OF THE CROP: Tulsi is an alternative crop and means of livelihood for the rural poor. Tulsi is in much demand for its medicinal and aromatic properties especially in Ayurveda. Initially in 2013, 200 farmers cultivated Tulsi on 8.72 ha of un-irrigated and fallow land but by 2017, towards the end of intervention period, 400 farmers cultivated the crop on 19.6 ha of un-irrigated, fallow land in 19 villages in Chamoli district.

VARIETIES OF TULSI PLANT: Krishna tulsi (Purple type), Rama tulsi and Vana tulsi

BACKGROUND OF THE CROP:

- **SCIENTIFIC NAME**: Ocimum sanctum
- **FAMILY**: Lamiaceae
- **BOTANICAL DESCRIPTION**: The plant is an annual herb but can be grown for more than one year if it is protected well from extreme cold climatic condition. The plant is highly branched, sub-quadrangular, pubescent on both sides and flowers in raceme
- **COMMON NAMES**: Holy basil, Krishna Tulsi , Manjari
- **ESSENTIAL PARTS USED**: Leaves/ Whole plant
- **CHEMICAL COMPOSITION**: Oleanolic acid, ursolic acid, rosmarinic aci, eugenol, carvacrol, linalool and beta- caryophyllene. Tulsi leaves contain a bright yellow volatile oil which possess antibacterial properties and acts as insecticide.
- **ECONOMIC IMPORTANCE**: The oil extracted from Karpoora tulsi is used in herbal toiletry and against insects and bacteria. The Rama tulsi is effective remedy for Severe acute Respiratory Syndrome

USES AND HEALTH BENEFITS:

- ✓ Tulsi is used widely in Ayurvedic and folk medicine, often as herbal tea for variety of ailments
- ✓ It is used as a culinary herb with pungent flavor that intensifies with cooking
- ✓ It is a reminiscent of clove, Italian basil and mint and has peppery spiciness.
- ✓ Tulsi can help cure fever, treat skin problems, treat heart beat, treat respiratory problems, treat asthma etc
- ✓ Tulsi also helps adapt the body to stress and boost energy
- ✓ Tulsi is a rich source of vitamin C and vitamin K

CHALLENGES:

- ✓ Tulsi plants are highly frost-sensitive
- ✓ Water-logged condition of the soil can cause root-rot and result in stunted plant growth
- ✓ The tulsi plant can be grown under partially shaded conditions but with low oil contents
- ✓ Tulsi plant flourishes under fairly high rainfall and humid conditions

CULTIVATION AND MANAGEMENT:

- **SOIL:** Tulsi can be grown in all types of soil except the ones with highly saline or alkaline. Sandy loam soil with good organic matter is considered ideal.
- **CLIMATE**: Tulsi can be grown successfully in tropical and sub-tropical climates.
- **PROPAGATION**: Tulsi can be propagated by seeds. They can also be vegetatively propagated by using terminal cuttings .
- **WEEDING AND HOEING**: First weeding is done one month after planting and second one is 4 weeks after the first. One hoeing after two months of planting is sufficient.
- **MANURES AND FERTILISERS**: The plant requires 15t/ha of FYM which is to be applied as basal dose at the time of land preparation. NPK @ 120:60:60 kg/ha is recommended.
- **PLANT PROTECTION**: Tulsi is not prone to any serious disease or pest except some minor pests like leaf rollers which can be controlled by spraying 0.2 % Malathion or 0.1 % Methyl parathion. The pests can also be controlled by applying fish oil resin soap, botanicals like extract of garlic etc
- **HARVESTING AND YIELD**: The crop is harvested at full bloom stage by cutting the plants 15 cm from good level. The first harvest is done after 90 days of planting.

  On an average, tulsi gives about 10,000 kg of fresh herbage per ha per year and 10-20 kg of essential oil per ha.

TULSI PLANT AND TULSI PRODUCT

FARM ECONOMICS OF TULSI CULTIVATION IN ONE ACRE OF LAND AREA

CAPITAL INVESTMENT	
PARAMETERS	APPROX AMOUNT IN Rs
INITIAL EXPENSES	

LAND HOLDING	OWN LAND
LAND DIGGING	20,000
FENCING	10,000
COST OF POWER TILLER (Self Driven)	160,000
SOIL LEVELLING AND TILLERING INCLUDING DIESEL COST	15,000
STOREHOUSE CONSTRUCTION COST 100 SQ FT @ 200/-PER SQ FT	20,000
TOTAL	225,000
IRRIGATION AND IMPLEMENTS	
TUBEWELL/ SUBMERSIBLE PUMP COST	10,000
PUMP AND ELECTRICAL INSTALLATION	20,000
AGRICULTURAL EQUIPMENTS	4,000
DRYING PLATFORM (OIL EXTRACTION)	25,000
TOTAL	59,000
TOTAL CAPITAL INVESTMENT	284,000
RECURRING COST	
ESSENTIAL CREDENTIALS	
COST OF LABOUR (1. LAND PREPARATION COST-12 MANDAYS@ 350/-PER MANDAYS, 2. PLANTING-12 MANDAYS @350/-PER MANDAYS, 3.FENCING-12 MANDAYS @ 350/-PER MANDAYS, 4. HARVESTING (3 TIMES A YEAR)-12MANDAYS @ 350/-PER MANDAYS PER HARVESTING, TOTAL-36 MANDAYS, 5. OIL EXTRACTION-12 MANDAYS @ 350/-PER MAN DAYS (72 MANDAYS IN 1ST YEAR)	25200
FERTILISER ABD OTHER AGRO CHEMICALS LUMPSUM	15000
TOTAL	40,200
PLANTING AND MULCHING MATERIAL	
TULSI SEEDS (1200 KG / ACRE) (100/- PER KG OF SEEDS)	120,000
MULCHING (USING BLACK POLYTHENE MULCH)	10,000
MISCELLANEOUS	10,000
TOTAL	140,000
TOTAL RECURRING COST	180,200
GRAND TOTAL (CAPITAL COST + RECURRING COST)	464,200

INCOME STATEMENT	
PARAMETERS	APPROX AMOUNT IN Rs
TOTAL PRODUCTION OF OIL - 16.2 KG/ ACRE IN 2ND YEAR, SELLING PRICE-2800/ KG	45,360
FRESH HERB PRODUCTION, (7000-8000KG), CONSIDERING 7000 KG/ ACRE AFTER 3-4 CUTTINGS IN A YEAR, SELLING PRICE OF HERB- 100-150/- PKG (DEDUCTING THE INCOME OF OIL AS IN 7000 KG OF HERBS,16.2 KG OIL IS INCLUDED)	1050000
TOTAL INCOME	1050000
PROFIT AND LOSS STATEMENT	
PARAMETERS	APPROX AMOUNT IN Rs
CAPITAL INVESTMENT	284,000
RECURRING COST	180,200
TOTAL INVESTMENT UPTO 1 YEAR	464,200
TOTAL INCOME	1050000
TOTAL PROFIT AFTER 1 YEAR	585,800

NOTE: TULSI is ready for harvesting 90-95 days after planting and subsequent harvests can be done every 65-75 days upto 2years

Means of Finance

Particulars	**Amount In Rs…….**
Margin Money ((25%)	116050
Bank Loan (75%)	348150
Total Project Cost	464200

PROJECTED PROFITABILITY STATEMENT

(Amount in Rs…)

PARTICULARS/YEAR	1ST YEAR	2ND YEAR
INCOME		
TOTAL PRODUCTION OF OIL - 16.2 KG/ ACRE FROM 2ND YEAR, SELLING PRICE-2800/ KG	0	45,360
FRESH HERB PRODUCTION, (7000-8000KG), CONSIDERING 7000 KG/ ACRE AFTER 3-4 CUTTINGS IN A YEAR, SELLING PRICE OF HERB- 100-150/- PKG (DEDUCTING THE INCOME OF OIL AS IN 7000 KG OF HERBS,16.2 KG OIL IS INCLUDED FROM 2ND YEAR)	1050000	1,004,640
TOTAL INCOME	1050000	1,050,000
EXPENDITURE		
TULSI SEEDS (1200 KG / ACRE) (100/- PER KG OF SEEDS)	120,000	
MULCHING (USING BLACK POLYTHENE MULCH)	10,000	
MISCELLANEOUS	10,000	15000
LABOUR 1. 1. LAND PREPARATION -- MANDAYS 2. PLANTING-12 MANDAYS , 3.FENCING-12 MANDAYS, 4. HARVESTING (1 TIME IN 1ST YEAR/3 TIME IN REST YEARS)-12 MANDAYS PER HARVESTING , TOTAL-48 MANDAYS @Rs.350 /- FOR 1ST YEAR) 5. OIL EXTRACTION-12 MANDAYS @ 350/-PER MAN DAYS (72 MANDAYS PER YEAR))	25,200	25200
FERTILISER AND OTHER AGRO CHEMICALS LUMPSUM	15,000	15,000
TOTAL EXPENDITURE	180,200	55200
GROSS PROFIT (A-B)	869,800	994,800
Interest on bank loan	29593	14796
Depreciation (10%-wdvm)	23900	21510
Total D+E	53493	36306
Net profit (C-F)	816307	958494

FINANCIAL ANALYSIS

(Amount in Rs….)

Particular / Year	1st year	2nd year
Expenses		
Initial Cost	284,000	

Recurring cost	180,200	55200
TOTAL COST	464200	55200
BENEFIT		
TOTAL BENEFIT	869800	994800
NET BENEFIT	405600	939600
DF @ 15 %	0.87	0.76
PWC	403854	41952
PWB	756726	756048
NPW	**1066968**	
BCR (@15%DF)	**3.39:1**	
DF@50%		0.44
PWC		24288
PWB		437712
NPW	**685176**	
IRR (%)	**77.81**	

REPAYMENT SCHEDULE

Project period: 2 years

Moratorium period

Bank ROI: 8.5% PA

(Amount in Rs….)

Particulars	1st year	2nd year
Opening Balance	348150	174075
Interest @8.50 p a	29593	14796
Principal	174075	174075
Total Return (Principal + Interest)	203668	188871
Closing Balance	174075	0

DEBT SERVICE COVERAGE RATIO

(Amount in Rs…..)

PARTICULARS/ YEAR	1ST	2ND
(A) Total Income:		
Net Profit	816307	958494
Depreciation	23900	21510
Interest on loan	29593	14796
Total=	869800	994800
(B) Total Commitment:		
Bank Loan	174075	174075
Interest loan	29593	14796
Total =	203668	188871
DSCR (A/B)=	4.27	5.27
Average DSCR=	4.71	

DEPRECIATION SCHEDULE

(Amount in Rs….)

Particulars	1st yr	2nd yr
Asset Value (On ITEM : A(4,6,) & B of capital cost)	239000	215100
Depreciated value (10%-WDVM)	23900	21510
Closing value	215100	193590