Package of Practice

Brahmi Cultivation

ADVANCING NORTH EAST

An Initiative of North Eastern Council (NEC)

Implemented by North Eastern Development Finance Corporation Limited (NEDFi)

BRAHMI

Figure 1 :Brahmi plant

SCOPE OF THE CROP:

The whole plant is used in indigenous system of medicine as a nerve tonic and for epilepsy and insanity. Because of its inherent potential of enhancing memory and vitality, this miracle plant is gaining attention for its commercial cultivation globally. This plant is considered among one of the **'celestrial drugs'** (*Divya ausadhi*), when consumed with milk for six months. In siddha system of medicine, the plant is useful against painful joints, swelling in joints, peripheral neuritis, constipation and burning urination. Brahmi is known for enhancing memory, cognition, mood and other mental disorder.

IMAGE: BRAHMI

SOURCE: GOOGLE

Saponins are the major compounds in Brahmi which is responsible to enhance the nerve impulse transmission. It has many long researched and proven for many beneficial medicinal and functional properties. Functional ingredients are the foods that have health benefits beyond normal nutrition. Brahmi has its own unique strong herbal taste and a bitter aftertaste. Due to change in lifestyles and growing consciousness for health there is a great demand of food products that are healthy as well as provide some functional benefits. An Ayurvedic herb such as Brahmi comes with many functional benefits.

BACKGROUND OF THE CROP:

A creeping succulent herb branches profusely and rooting at the nodes. The succulent leaves are sessile, opposite decussate, obovate-oblanceolate in shape, 1.0-2.5 cm x 0.4-1.0 cm in size. It is found in damp or marshy areas near streams or on the border of ponds, throughout India. Brahmi is found in humid and warmer parts of the world. It is a common creeping annual growing in damp and marshy areas.

Common names: Brambhi, Safed Kammi, Jal-Nim & Brami.

SCIENTIFIC NAME: *Bacopa monnieri*

FAMILY: Scorphulariaceae

ESSENTIAL PARTS: WHOLE PLANT

MEDICINAL USES:

- It is used in indigenous system of medicine as a nerve tonic and for epilepsy and insanity.
- It is also being used as diuretic and for treating rheumatisim, asthma and hoarseness.
- Besides, Brahmi also has good potency in controlling cough, fever and diabetes.
- In siddha system of medicine, the plant is useful against painful joints, swelling in joints, peripheral neuritis, constipation and burning urination.
- It is also used in convulsions, mental retardation, chest congestion and laryngitis.

CHALLENGES:

- Can’t grow well in high temperature
- Infested with scale and other major insects like grasshopper
- Sun – scorching is a major problem

PLANTATION AND MANAGEMENT:

- **SOIL:** This creeping herb is found growing along the canals and water bodies and in marshy area throughout India. The plant grows well in poorly drained soils. The plant prefers the soil of acidic nature for its congenial growth.

- **CLIMATE:** It is a plant that grows under sub-tropical and tropical climate. A temperature range of (33 – 40) ºC with relative humidity of (60-65) per cent has been found for its optimum vegetative growth.

- **PROPAGATION:** The plant is propagated by soft herbaceous cuttings. For mass propagation, whole plant is cut into small divisions and planted directly in the sunken beds. About 62,500 nos. of cuttings required for planting one hectare area

- **PLANTING TIME:** The cuttings of about 5-6 m long, each with a few leaves and nodes are ideal and establish easily. The cuttings are transplanted in wet soil at spacing of (10 x 10)cm to get maximum herbage yield. Flood irrigation is provided quickly just after planting. The cuttings should be transplanted **in the month of July-August to get maximum herbage yield.**

- **FERTILIZER:** The plant requires about 5t/ha of FYM which is to be applied as basal dose at the time of land preparation. Regarding the inorganic fertilizers application of 100:60:60 kg/ha of NPK is recommended.

- **IRRIGATION:** It is very essential to water the field after transplanting for the survival and establishment of the plants. Subsequently, the field should be irrigated at 7-8 days interval. Irrigation should be avoided during rainy season.

- **PEST AND DISEASES :** Grass hoppers are commonly observed and can be controlled by spraying of Neem based insecticide or 0.2% of Nuvocron or Rogar.
- **HARVESTING AND YIELD**: The best time for harvesting Brahmi is between **Oct-Nov** during which the maximum biomass is produced. After this month, senescence sets in and there is loss of plant biomass and alkaloid yield. The ratoon crop can be taken favourably. In that case the upper portions of the stem 4-5 cm from the base are removed and rest is left for further regeneration.

- On an average yield of **300q/ha of fresh and 60q/ha dry herbage** can be obtained respectively, from a single harvest. After the first harvest, 40q/ha additional dry herbage yield can be obtained from the ratoon.

- Generally the traditional method is followed to dry the harvested fresh material by spreading on the ground under shade at room temperature. The material should be turned over, alternatively during drying.

FARM ECONOMICS OF BRAHMI CULTIVATION IN 1 ACRE LAND AREA		
	CAPITAL INVESTMENT	
SL NO	PARAMETERS	APPROX AMOUNT IN Rs
A	INITIAL EXPENSES	
1	LAND HOLDING	Own land
2	LAND DIGGING	20,000
3	FENCING	5,000
4	COST OF POWER TILLER (BUY OR RENT OUT OPTIONAL)	160000
5	SOIL LEVELLING, TILLERING INCLUDING DIESEL COST	15000
6	STOREHOUSE CONSTRUCTION COST 100SQ FT@200/-PER SQ FT	20,000
	TOTAL	220,000
B	IRRIGATION AND IMPLEMENTS	
1	TUBEWELL/SUBMERSIBLE PUMP COST	10,000
2	PUMP AND ELECTRICAL INSTALLATION	20,000
3	AGRICULTURAL EQUIPMENTS	4,000
	TOTAL	34,000
	TOTAL CAPITAL INVESTMENT	**254,000**
	RECURRING COST	
C	ESSENTIAL CREDENTIALS	
1	COST OF LABOUR (1. LAND PREPARATION COST-12 MANDAYS@350/- PER MAN DAYS, 2.PLANTING-12 MAN DAYS@350/- PER MAN DAYS, 3. FENCING-12 MAN DAYS@350/- PER MAN DAYS, 4. HARVESTING(2 TIMES IN A YEAR)--12+12 MANDAYS@350/-PER MANDAYS PER HARVESTING (72 MANDAYS)	25,200
2	FERTILISER AND OTHER CHEMICALS	50,000
	TOTAL	**75,200**
D	PLANTING AND MULCHING MATERIAL	
1	CUTTINGS- 25,304/ACRE , Rs.3/CUTTING	75,912
2	MULCHING BY USING BLACK POLYTHENE MULCH	10,000

3	MISCELLANEOUS LUMPSUM	15,000
	TOTAL	**100,912**
	TOTAL RECURRING COST	**176,112**
	GRAND TOTAL(CAPITAL COST+ RECURRING COST)	**430,112**
	INCOME STATEMENT	
SL NO	**PARAMETERS**	**APPROX AMOUNT (Rs)**
1	TOTAL PRODUCTION OF FRESH HERBS - 12,146 KG/ACRE PER YEAR, PRICE-Rs70/KG TOTAL PRODUCTION OF DRY HERBS - 2,430 KG/ACRE PER YEAR , PRICE - Rs150/KG (12146X70+2430X150)	1,214,720
	PROFIT AND LOSS STATEMENT	
SL NO	PARAMETERS	APPROX AMOUNT (Rs)
1	CAPITAL INVESTMENT	254,000
2	RECURRING COST	176,112
3	TOTAL INVESTMENT UPTO 1 YEAR	430,112
4	TOTAL INCOME	1,214,720
5	TOTAL PROFIT AFTER ONE YEAR	1,038,608

NOTE The total yield can be obtained upto 1 year after planting successfully as it is an annual climber

MEANS OF FINANCE

Particulars	**Amount In Rs…….**
Margin Money ((25%)	107528
Bank Loan (75%)	322584
Total Project Cost	430112

Projected profitability statement

(Amount in Rs…..)

	PARTICULARS/YEAR	1ST YEAR	2ND YEAR	3RD YEAR
A	INCOME			
	TOTAL PRODUCTION OF FRESH HERBS - 12,146 KG/ACRE PER YEAR, PRICE-Rs70/KG TOTAL PRODUCTION OF DRY HERBS - 2,430 KG/ACRE PER YEAR , PRICE - Rs150/KG (12146X70+2430X150)	1214720	1214720	1214720
	TOTAL INCOME	1214720	1214720	1214720
B	EXPENDITURE			
B-1	CUTTINGS- 25,304/ACRE , Rs.3/CUTTING	75912	75912	75912
B-2	MULCHING BY USING BLACK POLYTHENE MULCH	10000	10000	10000
B-3	FERTILISER AND OTHER CHEMICALS	50000	50000	50000
B-4	COST OF LABOUR (1. LAND PREPARATION COST-12 MANDAYS, 2.PLANTING-12 MAN DAYS, 3. FENCING-12 MAN DAYS 4. HARVESTING--12 MANDAYS (2 TIMES) I.E. 72 MANDAYS @350/- PER MANDAYS	25200	25200	25200
B-5	MISCELLANEOUS LUMPSUM	15000	15000	15000
	TOTAL EXPENDITURE	176112	176112	176112
C	GROSS PROFIT (A-B)	1038608	1038608	1038608
D	Interest on bank loan	27420	25295	12647
E	Depreciation (10%-wdvm)	21400	19260	17334
F	Total D+E	48820	44555	29981
G	Net profit (C-F)	989788	994053	1008627

FINANCIAL ANALYSIS

(Amount in Rs…..)

Particular / Year	1st year	2nd year	3rd year
Expenses			
Initial Cost	254,000		
Recurring cost	176112	176112	176112
TOTAL COST	430112	176112	176112
BENEFIT			
TOTAL BENEFIT	1214720	1214720	1214720
NET BENEFIT	784608	1038608	1038608
DF @ 15 %	0.87	0.76	0.66
PWC	374197	133845	116234
PWB	1056806	923187	801715
NPW	**2157432**		
BCR (@15%DF)	**4.55:1**		
DF@50%	0.67	0.44	0.3
PWC	288175	77489	52834
PWB	813862	534477	364416
NPW	**1294257**		
IRR (%)	**>90%**		

REPAYMENT SCHEDULE

PROJECT PERIOD : 3 YEARS

Moratorium period : 8 months including project period

Bank RoI : 8.5% pa

(Amount in Rs….)

Particulars	1st year	2nd year	3rd year
Opening Balance	322584	297584	148792
Interest @8.50 p a	27420	25295	12647
Principal	25000	148792	148792
Total Return (Principal + Interest)	52420	174087	161439
Closing Balance	297584	148792	Nil

DEBT SERVICE COVERAGE RATIO

(Amount in Rs….)

PARTICULARS/ YEAR	1ST	2ND	3RD
(A) Total Income:			
Net Profit	989788	994053	1008627
Depreciation	21400	19260	17334
Interest on loan	27420	25295	12647
Total=	1038608	1038608	1038608

(B) Total Commitment:			
Bank Loan	25000	148792	148792
Interest loan	27420	25295	12647
Total =	52420	174087	161439
DSCR (A/B)=	19.81	5.97	6.43
Average DSCR=	10.74		

DEPRECIATION SCHEDULE

(Amount in Rs….)

Particulars	1st yr	2nd yr	3rd yr
Asset Value (On ITEM : A(4,6) B(1,2,3,4) capital cost)	214000	192600	173340
Depreciated value (10%-WDVM)	21400	19260	17334
Closing value	192600	173340	156006