

STANDARD CULTIVATION PROCEDURE FOR BRAHMI (BACOPA MONNIERI) IN ODISHA

Introduction: → The botanical name of Brahmi is *Bacopa monnieri* and belongs to family Scrophulariaceae. It is mainly found in warmer and humid conditions. It is a common creeping annual growing plant grows in damp and marshy areas with average height of 2-3 feet with branched roots at the nodes. Flowers are of whitish or pale blue in color with small and oval shaped fruit. Seeds are 0.2-0.3mm in size with dark brown in color. Whole herb i.e. seeds, roots, leaves, rhizomes etc. are used for preparing various drugs. Drugs prepared from Brahmi is used as anticancer and used to cure anemia, asthma, diuretic, tumours and epilepsy. It is also used as an antidote for snake bite. It is also used in convulsions, mental retardation, chest congestion and laryngitis.

Though the climatic condition of Odisha is also quite suitable for this crop, but commercial cultivation is yet to begin in our state. Considering the huge demand of Brahmi in herbal market this cultivation should be given priority.

CLIMATIC CONDITIONS FOR BRAHMI CULTIVATION

It is a plant that grows under sub-tropical and tropical climate. A temperature range of 33⁰ – 40⁰C with relative humidity of 60 to 70 percent has been found for its optimum vegetative growth.

Temperature	Rainfall	Sowing Temperature	Harvesting Temperature
33 ⁰ to 40 ⁰ C (Ideal)	650 to 1200 MM (with at least some source of Irrigation)	25 ⁰ to 30 ⁰ C (Ideal)	20 ⁰ to 25 ⁰ C (Ideal)

SOIL CONDITION

It grows in variety of soils. It can even tolerate poor drainage system. It gives best result in alluvial marshy soil. It can be grown in marshy areas, canals and several water bodies. It requires acidic soil for its good growth. The growth of Plant is optimum when the soil pH ranges between 5.0 to 6.5.

STEP BY STEP CULTIVATION PROCESS

Soil Testing: → As this crop requires moderately high nutrition (about 100 KG Nitrogen, 60 KG Phosphorous and 60 KG of Potash per Ha) during various phases of cultivation, it is advised to test the soil to determine the exact quantities of nutrients and micronutrients those prevail in the soil and this has to be done during the months of February to March.

Soil Preparation: → For Brahmi plantation, it required well pulverized and levelled soil. To bring soil to fine tilth, ploughing and harrowing is to be done. The land should be deep ploughed during the 1st to 2nd week of April and left under sun for minimum 15 days so that soil generated pathogens and bacteria will get destroyed. During the Khariff 2nd ploughing to be done just after the onset of 1st Pre-Monsoon Showers with 5 to 8 Tones of FYM per hectare along with 25 KG of Neem Cake Powder as per the need. Irrigation is done immediately when land is converted to plots.

Planting Material & Seed Variety: → In India mostly 2 varieties of Brahmi being cultivated and some of the important characteristics is given below.

Sl. No.	Variety	Released By	Characteristics	Planting Material	Planting Material Requirement per
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					Hectare
1	Pragyashakti	Central Institute of Medicinal and Aromatic Plants, Lucknow	Contains 1.8% to 2% Bacoside	Stem Cuttings	55000 Nos to 62500 Nos
2	Subodhak				

Sowing / Transplanting of Vines / Stems: → 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. The cuttings of about 5-6 cm 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 10cm 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.

SOIL HEALTH & NUTRITION MANAGEMENT

Nutrition Requirement during the whole cropping cycle: → The following table depicts the nutritional requirement during the whole cycle of cropping. At the time of Land Preparation 5 Tonnes of well decomposed FYM is applied which more or less equivalent to 50% of the basal dose as is specified below. Apart from this 25 KG Neem Cake Powder to be applied to soil during the ploughing.

Nitrogen (KG / Ha)	Phosphorous (KG / Ha)	Potash (KG / Ha)
100	60	60

Nutritional Requirement in between the Cropping Cycle: → Primarily, hand weeding is needed at every 15-20 days interval but later on as plants proliferate and form a dense mat of vegetation, weeding may be done occasionally. The Balance of basal doses to be applied in the form of of Amrit Jal (30 ltrs to be diluted with 300 ltrs of water per Hectare) or application of Amrit Ghol (50 ltrs to be diluted with 300 ltrs of water per Hectare) followed by flooded irrigation after each application.

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 to 8 days interval. Irrigation should be avoided during rainy season. But during any period of time if the Rain stops for more than 14 days, then it is advised to irrigate the crop for proper growth of plants. In summer season it is advised to irrigate the standing crop in every 2 to 3 days depending upon the water-holding capacity of the land.

PLANT PROTECTION & PEST MANAGEMENT

Pests and Diseases are not seen in Brahmi crop. The only pest that attacks Bramhi crop is the Grasshopper and the remedy is listed in the following table.

Sl. No.	Name of Disease	Cause	Symptom	Treatment
1	Grass Hopper	Grasshoppers are the insects that feed on green plants.	The leaves & other soft stem parts start spoiling and decaying.	❖ Immediately spray 70% Neem Oil solution. Then after each 7 Days spray 50% Neem Oil Solution to the whole crop for 5 times.

HARVEST & POST HARVEST MANAGEMENT

Plant starts yielding by 5 to 6 months after transplantation. Harvesting is done in the month of October – November when the maximum biomass is obtained from Brahmi Crop. After this month, senescence sets in and there is loss of plant biomass and alkaloid yield. The upper portion from the base i.e. 4 to 5 cm from the base is cut for harvesting. 2 to 3 harvestings are done in one year and rest is left for further regeneration.

After harvesting, drying of fresh material is done under shade by spreading on the ground under shade at room temperature. The material should be turned over, alternatively during drying. Then packing is done in airtight bags for long distance transportation. From dry material several products are made such as Brahmighrtam, Sarasvataristam, Brahmitailam, Misrakasneham, Memory plus and Megamind plus are made after processing.

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