



Bamboo Propagation Techniques

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Bamboos are an integral part of the civilization and tradition in almost all parts of India. At present the main constrains for expansion of area of bamboo plantation is inadequacy of quality plantation materials. Bamboo plantation is a good source of income for the farmers. Bamboo can be propagated by the following methods. Traditional methods are based on seeds and vegetative methods. Availability of quality seed is the main constrain for multiplication and available only in bamboos flowering year i.e. once in life time. Most of the bamboo flower in long cycles ranging from 30 to 120 years depending upon species. Plantation from seed is lengthy process time consuming process due to that vegetative propagation help a lot in bamboo plantation material easily available and easy to farmers. But some technically sound people needed for the vegetative propagation to selection and collection of rhizome. The rhizome age is near about 1-2 years old culms are cut about 1.0-1.5 m height. Precaution measure need during rhizome selection the clumps to make sure that it is healthy, and has a good growth of culms that are free from disease. Lightly press the buds on the rhizome to make sure that they are not rotten. Do not dig out rhizome during the growing season.

Introduction: with the gradual increase of demand of timber species to meet the present requirement, there is a tremendous pressure on raw material in the last few decades and people are forced to look forward for the search of non-timber forest product to substitute the wood. In this process during later part of the last century bamboo has emerged as a material for the ecological, economic and social upliftment, because of its ability to grow in the wasteland, amazing growth rate, high yield and multiple uses. They are now considered as world's greatest natural and renewable vegetable resources, which may be considered as cash crop to generate income needs for the rural communities.



To meet the growing demand, there is a need for quality planting stock to enhance productivity is a need for quality planting stock to enhance productivity and large scale commercial cultivation. Therefore, an ideal nursery is a per requisite for fulfil the demand of planting materials for large scale plantation. Bamboo can be propagated through seeds, stem, roots, and rhizome vegetative means.

Creation of Nursery:

Nursery has to be started early in the month of Feb-Mar so that plants can be ready for planting during rainy season. Propagules, be it cuttings or offsets, need to be collected in Feb-Mar just before the emergence of new culms. Offsets should be maintained in soil filled gunny bags till planting in the field. Polypot nursery of seed origin should also be started during this period of time. To establish a new nursery, necessary care must be taken about the following points:



Site and Accessibility:

The area for establishment of Nursery should be nearer to the road or near the planting site and free from logged conditions.

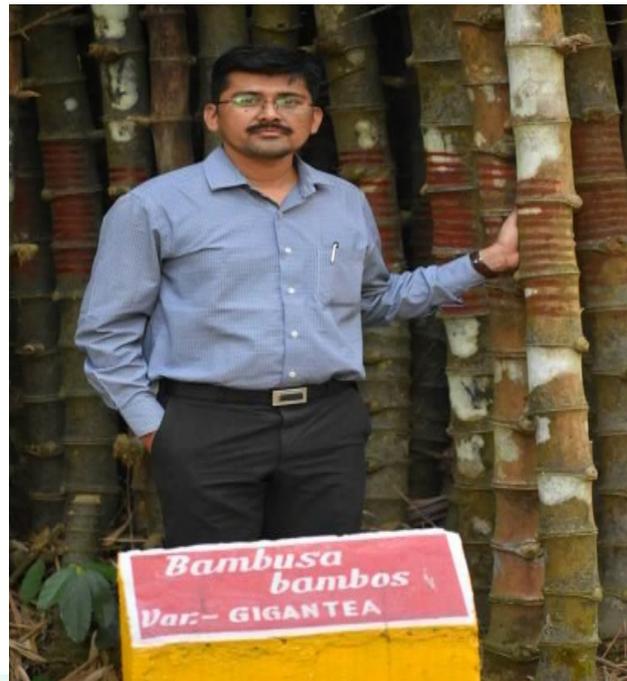
Soil: Soil should be sandy loam and well drained

Shade: Provision of natural or artificial shade should be made.

Protection: The nursery area should be protected through fencing/live fence/ cattle trench etc.

Preparation of Nursery bed:

The size of the nursery depends on scale of Activity, Plant material, propagation Methods, species to be propagated. The size of nursery bed is with a width of 1.2 m, length of 8-10 m and 15 cm raised bed. The beds should be levelled to ensure that seeds or plant material are not washed away into gullies. A space of 0.5 m should be provided in between two nursery beds. The bed should be of Soil, Sand & FYM mixture in the 2:1:1 ratio.



Propagation with seeds: Propagation with seeds:

Seeds should be collected from selected superior clump and viability can be tested chemically by TTZ (Tetrazolium) test. Seed fallen on the ground should preferably be avoided. However, big matured seeds. Which fall on ground may be picked up and planted in the poly bag directly.

Keep the seeds into cold water for 1-2 days and discard the floating seeds. Seeds may be sown in line in germination beds and cover it by a thin layer of fine soil. Pricking out the seedling should be carried out at the four leaf stage. Plant the pricked out seedlings in multiplication bed keeping space 20cm x 20cm. or in the polybags. Watering must be provided regularly depending on prevailing weather conditions. The seedlings are ready for macro proliferation after 4 months. While transplanting, care must be taken that roots are well placed inside the poly bags and soil is compacted up to the collar regions.

Propagation through rhizome/offset:

This is one of most popular traditional method of bamboo propagation. The rhizomes/offset may be separated from mother clump just before the emergence of new culms. Collection time is very crucial for subsequent survival of rhizome/ offset. Once the new shoot emerges, the survival percentage reduces drastically. The best time of collection of rhizome/offset is during the period of March to early part of May.

1. The age of the culm is not more than 2 years.
2. Cut the selected culm with a sharp instrument keeping two prominent nodes.
3. Dig out soil around from the selected rhizome and detach it from the mother clump at the neck portion with sharp instrument, so the buds are not damaged.
4. Wrap up the rhizome with roots with a wet gunny bag and cut end should be covered with a plastic sheet or paint it to prevent drying.
5. The rhizome may be planted directly in the field in a pit of size 50x50x50cm fortified dug out soil with FYM and chemical fertilizer.



6. The rhizome can also keep in nursery for some time by putting in a soil filled gunny bag.
7. Dip the rhizome with roots into 0.1% Bavistin solution before planting.
8. Plant the rhizome vertically or in slightly in a slanting position, cover with soil, compact it and mulching around it.

Propagation through culm cuttings:-

Three main factors are responsible for propagation through culm cuttings viz. season of culm collection, age of the culms and root growth hormones. The best time for the preparation of cuttings is March- April. Generally, healthy, disease free clump should be selected either from homestead garden or from natural forests. 1.5 to 2 years old culm should be cut with sharp instrument leaving only the lower most nodes.

1. Discard the upper thin portion of the culm.
2. The culm should be shifted immediately to the nursery site and cut into 2 noded or single noded cutting keeping 10cm. on the either side.
3. Trim the branches keeping only one node and care should be taken not to damage the dormant buds.
4. Drill two holes in the centre of internodes and pour 200ml hormonal solution i.e. 200ppm IBA, 2 gms. Indole Butyric Acid in 10 lit water) to the culm cavity, close the hole by wrapping polythene strip or by cellophane tape.
5. In case of solid bamboo or thick walled bamboo dip the cuttings into hormonal solution for 24 hours.
6. Dip cut ends before placing in the nursery beds in 0.1% Bavistin solution (1 gm. 1 liter water).
7. Place the cuttings with soil in such a way that the cuttings are just below the soil.
8. Cover the cuttings with soil in such a way that the cuttings are just below the soil.
9. Regular irrigation should be done twice in a day upto 21 days and later on daily once or depends on prevailing climatic condition.

Propagation through branch cuttings:

Some of the thick walled bamboo species viz. Bambusa balcooa, B.bambos, D.strictus, D. Hamiltoni, D.asper etc having very stout primary branches and such branched can also be used as planting material. In this case many branches may be obtained from a single clump without damaging the mother clump. However, in case of bamboos having thin branches are not suitable for this process.

1. Select pre-rooted branches from 1.5-2 year healthy and disease free mother clump from natural forest or from the homestead garden.

2. Cut the branches with the rhizomatous swelling along with the aerial roots with the help of hacksaw during March to May.

3. Make two noded branch cutting with the basal swelling.

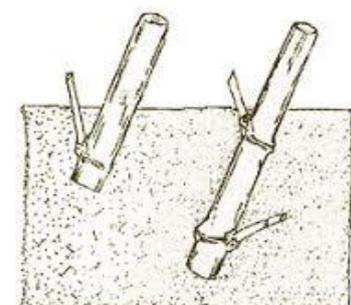
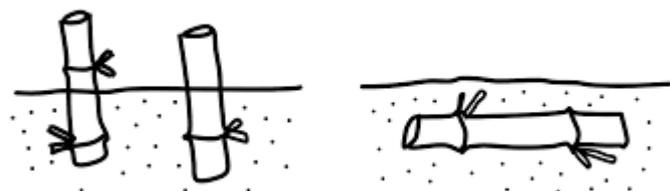
4. Transport the cuttings immediately to the nursery by wrapping with wet gunny bag.

5. Dip the cuttings in hormonal solution for 24 hr.

6. Seal the cut end with wax to prevent water loss

7. Dip in 0.1% Bavistin solution before planting.

8. Plant the cuttings vertically in raised beds or



Direct Planting with single or double nodes



polybags such way that the rhizomatous swelling and a lower node remains under the soil.

9. Regular watering is done twice for three week and once daily afterwards.

10. Keep the cuttings under shade.

11. Root development takes place after 30-65 days and gradually new shoots appear and will be ready for planting after six month.

