

**TRAINING
MANUAL**

TM 03 11/04

Propagating Bamboo



NATIONAL MISSION ON BAMBOO APPLICATIONS

Technology Information, Forecasting, and Assessment Council (TIFAC)
Department of Science and Technology, Government of India

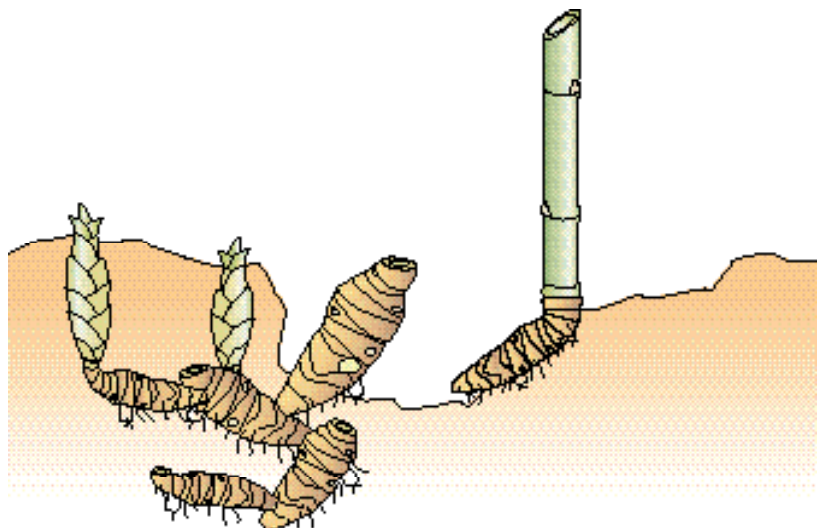
Vegetative Propagation: Rhizome-based

IN THIS TIME-TESTED and widely practised method, a segment of the rhizome is severed or separated from the parent rhizome, and nurtured to develop into an independent source of planting material.

The detached portion of the rhizome carries all the elements needed for the growth of a new plant. It may be separated with other parts of the plant, such as rhizome offsets, roots and culm.

Common to all methods of rhizome-based propagation is the cutting away of a part of the rhizome from a healthy and mature clump.

The rhizomes should be separated with care, using sharp and clean cutting instruments. Care should be taken while severing, to ensure that the rhizome system, on which the plant is dependent for its growth and health, is not damaged. The steps involved are as follows.



VEGETATIVE PROPAGATION: RHIZOME-BASED

The best time of the year to dig out rhizomes is from February to April. In this period the food reserves in the rhizome are at their peak. They will help sustain the new plant as well. In the preceding months the rhizome would have built up reserves of food and nutrients. After this, with the onset of rains, new shoots emerge, and the food and nutrients will be transferred to the new shoots.

- Gently push aside the surrounding and covering soil, till enough of the rhizome can be seen to identify a suitable point for cutting/severing.
- A healthy rhizome is normally straw-coloured or yellow; rust colouration, or patches of deep brown to black, indicate poor health. Do not use such rhizomes to prepare plant material.
- Detach the rhizome segment from the mother rhizome at the neck, without damaging the parent rhizome, buds or roots. Do not cut away from the middle.
- After separating the needed portion, cover the mother rhizome with soil, taking care not to bruise other parts of the plant.

Precautions

- Carry out a prior visual inspection of the clump 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 rhizomes during the growing season. Survival reduces drastically in rhizome offsets taken from a clump where new culm emergence has already taken place. This is due to the diversion of food material for the development of new culms in the mother clump.

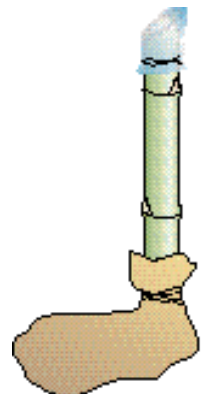
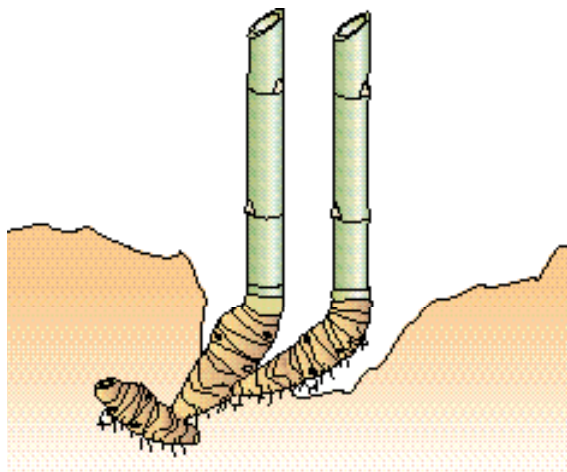


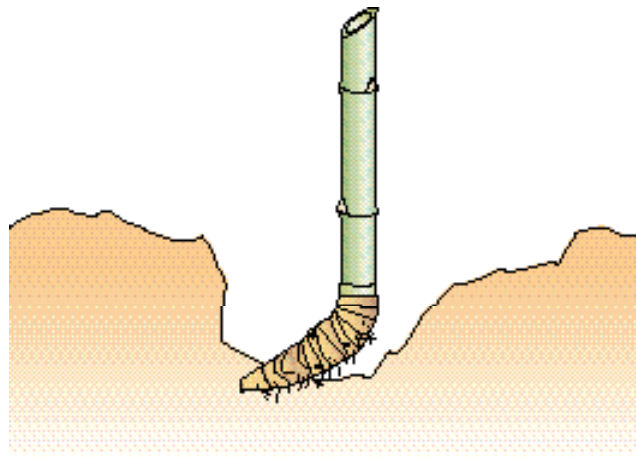
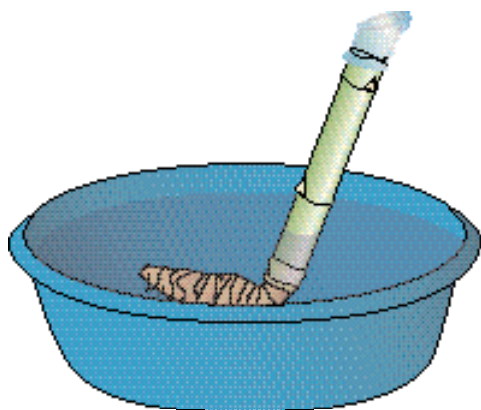
RHIZOME OFFSETS

This is the traditional and most commonly practised form of rhizome-based propagation. It has a high rate of success because, in effect, a complete plant system is being transplanted.

Method

- Dig out rhizome offsets with only two nodes; discard the rest of the culm above. No dressing is required.



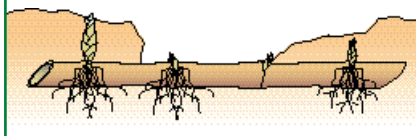


Rhizome with Roots

In this method, rhizomes with the accompanying root system are severed from the parent rhizome in sections that are around 50–60 centimetres long, and containing about 10–15 nodes.

This method, which uses rhizomes that are 2–3 years old, is appropriate when the rhizomes have to be carried over a long distance. In such cases, some of the soil clinging to the rhizome should be loosened or washed off. It should then be wrapped in moss and encased in moist gunny sacking before being transported.

This method works well for monopodial bamboo species. Since most Indian bamboos are sympodial, it is rarely practised or recommended.



- Immediately cover the rhizome and root portion with a wet gunny bag. Bamboo in cut condition desiccates and dries up very quickly. Cover the top of the culm with a polythene strip or seal with paint, to prevent desiccation.
- Transport the offsets to the planting area or nursery, as soon as possible.
- Before planting, dip/drench the rhizome in a fungicidal solution like Bavistin, appropriately diluted (1 gram/litre) or a similar fungicide. Measure the amount of fungicide and water accurately, to avoid wastage and unnecessary use of expensive fungicide.
- For field planting, the pit size should be 50 x 50 x 50 centimetres as a norm for medium-sized bamboos like *Bambusa balcooa* and *Bambusa polymorpha*. Smaller pit sizes will do for smaller species like *Bambusa pallida* and *Ochlandra travancorica*, and larger bamboos like *Dendrocalamus giganteus* will need deeper pits.
- The dug-out soil should be fortified with farm yard manure (FYM – 5 kilograms) and chemical fertilizer (100 grams urea, 100 grams SSP and 50 grams MOP).
- Planting should be done vertically.
- In the event of delayed planting, plant the offsets in gunny bags and place them in a nursery.

Precautions

- It is advisable to seal the slant cut of the culm with earth.
- Some weeding may be necessary after transplanting.

Limitations

- Only a small number of offsets can be extracted from each mother clump.
- Extraction of rhizome offsets is time-consuming and expensive.

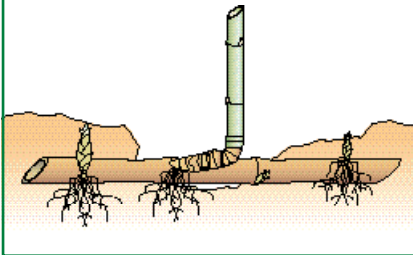
VEGETATIVE PROPAGATION: RHIZOME-BASED

Rhizome with Roots and Culm

In this case, a healthy culm that is a year old, or older, is identified, and its rhizome is severed along with the lower part of the culm. The upper part of the culm is removed, so that only some (at least 4–6) nodes and the corresponding branches and leaves are retained.

Rhizome with Culm Stock

The procedure followed is similar to that in propagation through rhizome and roots with culm. The difference is that only the base or lowermost portion of the culm is retained.



- The mother clump and rhizome buds could be damaged during extraction.
- Rhizomes can be heavy – a rhizome offset of *Dendrocalamus giganteus* can weigh up to 30–35 kilograms. They are therefore difficult to carry. A farmer can typically carry only 2–3 rhizomes from his grove to the collection point or market.
- Transportation of the bulky rhizome offsets is expensive because of their weight and volume, and the requirements of careful packing and handling.
- Damage to rhizome buds during extraction and transportation leads to failure of propagation.
- The method is not suitable for large-scale plantations.

PART-CLUMP PLANTING

This is very similar to the offset method, the only difference being that a rhizome assembly with 2 or 3 offsets connected to each other is collected as the propagule. Individual rhizomes in a part-clump propagule should not be separated or damaged at the time of collection from the soil. The culm part of each rhizome member should be 3-4-nodes high, with viable branch buds. During transportation, care should be taken to avoid injury to the rhizome parts. Planting should be done during the rainy season. As the propagule contains more than one rhizome, the planting pit should be suitably large. This method of propagation is well-suited to thin-walled bamboo species like *Melocanna baccifera* and *Schizostachyum dullooa*.

SPECIES INFORMATION

Rhizome offsets can easily be utilised for propagation in most of the commercially significant species. The exceptions are *Melocanna baccifera*, where rhizome offsets have been rarely successful and are not therefore ordinarily practised, and *Bambusa bambos*, in which such methods are only occasionally used, because of practical difficulties in accessing and severing the rhizome, especially in congested and extremely thorny clumps. If and once secured, however, rhizome offsets work reasonably well, even in *Bambusa bambos*.

Rhizome with roots, rhizome with culm and roots and rhizome with offsets as described in the manual are mainly recommended for monopodial bamboos and are not suitable for any of the sympodial bamboos.

Part clump methods have been successfully established for *Melocanna baccifera* and *Schizostachyum dullooa*. ■