

# Macroproliferation in Bamboos

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Propagation of bamboos through seed is not a practical approach due to rare availability and less viability of seeds. The gestation period of most of the bamboos is 30-70 years. Seeds also lose their viability within 6 months and hence cannot be stored for long period. Research into innovative and rapid methods of propagation are thus urgently required to meet the infinite requirements for industrial plantations.

Plant Physiology, Forest Research Institute, Dehra Dun has developed technologies for clonal propagation applicable to many bamboos. Of these, macroproliferation is the most feasible, simple, farmer's friendly and cost effective technique.

**Macroproliferation :** Bamboo seedlings possess remarkable inherent proliferating capacity to reproduce itself. This capability of bamboos can be utilized for production of field plantable saplings vegetatively for sympodial bamboos. The technology is low cost, simple, easy, farmer's friendly and involves the use of locally available material.

The technique can be applied to bamboo species viz. *Bambusa arundinaceae*, *B. nutans*, *B. balcoa*, *B. multiplex*, *B. tulda*, *Dendrocalamus strictus* and *D. hamiltonii*, *D. asper*, and sympodial Ringal species for mass production of field planting stocks. The dependence of bamboo seed production in nature is totally eliminated from second year onwards for production of field plantable bamboo saplings in massive numbers. Protocol has been developed for all species mentioned above for continuous production of field plantable saplings (*Bambusa arundinaceae* –49,000; *B. tulda* -25,000, and *Dendrocalamus hamiltonii* –16,000 and *D. strictus* –36,000 or in multiples) vegetatively every year for any desired number of years depending upon the targets and the facilities available. The planting stock thus produced remain small in size which is an additional advantage as these are easy to handle and transport.

Seeds of *Bambusa arundinaceae*, *B. nutans*, *B. balcoa*, *B. multiplex*, *B. tulda*, *Dendrocalamus hamiltonii*, *D. strictus*, *D. asper* and *D. membranaceous* are sown in July in germination trays containing soil mixture medium of soil, sand and farm yard manure (1:1:1 ratio). When the seedlings reach 3-5 leaves stage, one seedling is planted in each polybag after 25-30 days. Similarly, young seedlings of *D. strictus* pricked up from forest floor are

transplanted in polybags of 24 x 18cm. size in August. Each polybag is filled with a mixture of sieved soil, sand and farm yard manure in 1:1:1 ratio weighing 2 kg. in each polybag. These polybags are treated with NPK. The first dose consisted of urea 0.05g, super phosphate 0.59gm and muriate of potash 0.04gm mixed with 30ml. of H<sub>2</sub>O and added 10-12cm. deep into planting hole of each polybag prior to planting of young seedlings. One seedling is planted in each of the polybag and kept in shade for 3-5 days. When the seedlings get established, they are then transferred in open under direct sun light. The second dose of fertilizer is added as urea 0.12gm, muriate of potash 0.12gm. at the interval of one month from day of planting of seedlings in polybags. The seedlings are maintained by regular watering and weeding upto 8 months i. e. upto April when the young culms ranging 3-8 in number are produced in each of the polybag. Melathion 0.2% is lightly sprayed at an interval of 2 months as prophylactic treatment for protection against insect attack. In the first week of April, the propagules having culms, rhizome and roots are carefully removed from the polybags. Each proliferating culm along with some rhizome and roots is separated and again planted in fresh polybags of 24X18 cm size containing soil mix 2 kg in each polybag for further growth and development. Out of these freshly planted propagules, 1/6 propagules are retained for future multiplication purposes in the nursery whereas 5/6 propagules are available for field planting during monsoon season. The whole of this macroproliferation technique is cited in figures below: