Technology package

on

Macropropagation technique for raising *Dendrocalamus stocksii*

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Abstract

Bamboo is also a one of the ideal economic species that can be utilized in many ways and has enormous potential for mitigating many social problems facing the world. It is one of the most important forestry species having major contribution to the rural economy of India. Bamboo also plays a very important role in conserving soil and water.

Dendrocalamus stocksii is one such species which has enormous commercial advantages. Availability of planting stock of this species has been a major drawback. As seed setting does not take place in this species, it can only be propagated by vegetative propagation. IWST has standardized procedure for large scale clonal production through culm cuttings which may be commercially viable for large scale production of this important species.

Introduction

Dendrocalamus stocksii earlier known as *Oxytenanthera stocksii*/ *Pseudoxytenanthera stocksii* occurs naturally in Western Ghats. It is a medium sized solid bamboo with stout and strong culms. Locally known as "Marihal bamboo" it is a solid bamboo and grows even in semiarid to arid areas. The culms are used for construction purposes, umbrella handles, walking sticks and also in basket making. Innovative indoor furniture in attractive designs is now increasingly seen in upmarket furniture shops using this species. It is also an important agroforestry species and ideal for watershed and coastal plantations. It is being increasing used in furniture making as a substitute for cane after suitable heat treatment.

The Problem

Though sporadic flowering in this species has been reported, but seed setting does not take place and the clumps do not die off completely which can be a blessing for cultivators. Being a thornless species and with loosely spaced culms, this species has potential in homesteads to meet immediate farm needs like staking for banana cultivation, thatching of farm houses, small implements etc. However, availability of planting material of this species has been a problem for farmers/cultivators which have hampered the commercial cultivation of this species. Vegetative methods of propagation has to be standardized to make available quality planting stock for potential cultivators which have to be developed in R&D institute like ICFRE and be cost effective also so that it can be adopted by SFD's, nurserymen and other user agencies.

Macropropagation technique in *D.stocksii*

IWST has standardized an easy method of propagation by using the culm cuttings. The Institute has standardized the infrastructure requirement and standardized methods for selection, collection, preparation of cutting for rooting and finally obtaining quality rooted stock of bamboo plants. Double and triple noded culm cuttings are collected from 1-2 year old culms from healthy identified Candidate plus clumps (CPC's) from bamboo germplasm bank of IWST in Gottipura have been used. The cuttings are collected in February-march (which is the most ideal time) after removing side branches with secateurs and dipping in 0.25% Bavistin for 10-15 minutes as prophylactic measure. The cuttings are treated with 2500 ppm IBA in powder form or in solution as pulse treatment and laid horizontally in 1x 5m sand beds and covered with 2cm of sand layer and watered regularly. Sprouts appear in 10-15 days and rooting is completed in 45-60 days. The cuttings are then transferred to 1000cc or 1500cc polybags containing FYM: sand: soil in the ratio 40:50:10 enriched with neem cake, SSP and Bavistin as prophylactic measure. The plants are initially kept in agro-shade net for 2-3 weeks and further in open nursery. Using this technique >90% rooting success can be expected. Plants with 2-3 tillers and well developed miniature rhizomes in 1500cc polybag are ready in 6 months for out planting.

Different stages of macropropagation of *D.stocksii* for QPM production

Preparation of three nodal cuttings

Sprouting of rooted cuttings after 10-15 days

Root formation cuttings after 45 days

Maintaining of plants in 1500 cc polybags

Economics of production and cultivation

The cost of production of planting material from culm cuttings using this technology works out to around Rs 8 /plant. This bamboo can be grown in homesteads or as pure plantations or planted along farm boundaries. At 4x4 m spacing around 625 plants/ha can be accommodated in one hectare. The initial cost of plantation works out to around one lakh with drip irrigation. Culms can be harvested from 5th year onwards after maturity marking. At current farm gate price single culm can fetch around Rs 30-35/-. On an average around 6-8 culms can be harvested from the fifth year onwards per clump under managed conditions in semiarid and sub-humid conditions and 8-10 culms under humid conditions. At low maintenance costs a profit of around one lakh/ha can be reasonably expected.

Plantation of *D.stocksii* in Hoskote, Bangalore

How this technology has benefitted clients/farmers

Around 10,000 *D. stocksii* plants have been supplied to various end users during the past four years. Regular training is being given to Forest Department officials, NGO's, farmers and private entrepreneurs to establish quality planting material of *D. stocksii* through low cost methods standardized by IWST. Once a plantation has been established, the cultivators can raise their own planting stock using the macro propagation technology developed by IWST to expand the area under plantation.

Technology transfer

IWST has vast experience in raising quality planting material of various commercially important species, as a policy IWST encourages entrepreneurs/ farmers/ plantation companies/ SFDs to join hand with IWST to commercially exploit the technique developed at this institute for raising QPM of bamboo to commercial advantage.

For detailed terms and conditions and negotiation of cost of technology, the interested parties may contact Marketing Cell of IWST. Email Id: groupco_iwst@icfre.org Phone: 080-23340115 Office Hours- 9.00 A.M. to 5.30 P.M.