B-38: Micropropagation of *Dendrocalamus giganteus* Munro (giant bamboo) from single node segments

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Dendrocalamus giganteus is an introduced species to Sri Lanka. It has became naturalized mainly in the wet highlands, unlike in most other Asian countries bamboos are underutilized locally, but there is a high demand for this species in housing and construction and for handicrafts . Further it has a beneficial effect on the environment in preventing soil erosion. Therefore, large scale planting is recommended. Planting material is limited due to the difficulty of vegetative propagation in this species and the unpredictable nature of flowering and seed set. Therefore tissue culture techniques to micropropagate *D.giganteus* using single node segments were investigated.

Single node segments from secondary branches of selected juvenile and mature *D. giganteus* clumps were surface sterilized with calcium hypochlorite, benomyl and mercuric chloride. They were cultured in a basal (Murashige and Skoog 1962), medium (MS) supplemented with 2.0 mg/1 6-benzylaminopurine (BAP), 0.1 mg/1 kinetin, 1 g/1 benomyl and gelled with agar, in order to induce bud break and sprouting. Nodes were initially incubated in the dark until bud break. The sprouted nodes were exposed to light at a photoperiod of 16 h. They were transferred to fresh medium every 2 weeks until the shoots elongated.

Elongated shoots were transferred to a shoot multiplication medium, which was a basal MS supplemented with 6 mg/1 BAP and 0.1 mg/l kinetin in liquid form. Benomyl was incorporated in this medium initially. Shoots that multiplied were separated and subcultured every 10 to 15 days. Clusters of 2 to 4 shoots were induced to root. The root induction medium was a modified. MS with 2 to 10 mg/1 3-indolebutyric acid (IBA). When roots initiated, they were transferred to bormone-free MS medium for root elongation.

The number of axillary shoots that were induced to sprout in the semi solid medium ranged from to 4 per node. A mean bud break of 16.95% was observed in nodes from juvenile clumps and 9.61% in nodes from mature clumps. Nodes of juvenile clumps showed bud break throughout the year, but in April and September 1994 bud break was high 87% and 63% respectively. In mature tree nodes percentage bud break was zero during most months, but a higher bud break of 32% & 38% was observed in June 1994 & February 1995 respectively. Sprouts from juvenile tree nodes elongated faster than those of mature tree nodes. They were therefore transferred to liquid medium earlier than the mature tree explants. The rate of shoot proliferation varied among nodes transferred to liquid medium. In juvenile tree nodes a maximum of 366 shoots developed from a single node in a period of 196 days, while in mature tree nodes a maximum of 73 shoots developed in 120 days. Out of 25 shoot clusters, roots were initiated in 5 within 14 to 30 days in culture. When they were transferred to hormone-free medium roots elongated.

It was possible to induce bud break in juvenile tree clump during the period April and September 1994 and in mature ones, during June 1994 and February 1995, indicating seasonal effects on bud break. A higher level of cytokinin induced shoot multiplication. Juvenile nodes responded better than mature nodes in shoot multiplication.

Culture media need to be improved further to get a consistent and high shoot multiplication and rooting so that this method could be used to micropropagate *D.giganteus*.