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Callus induction and plant regeneration in *Dendrocalamus giganteus* (giant bamboo)

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Dendrocalamus giganteus is a bamboo with a high potential for income generation in Sri Lanka. Tissue culture techniques have been developed for the mass propagation of the species by axillary shoot proliferation. Another method is somatic embryogenesis, where a separate step for rooting is not required. Somatic embryogenesis is not reported in this species. Encapsulation of somatic embryos to form artificial seeds could overcome the unpredictable and rare seeding in nature. Callus induction and somatic embryogenesis in this species was investigated with these objectives in view. Single shoots of 1 to 1.5 cm length from continuously proliferating in vitro axillary shoots were innoculated in a basal MS medium with 2,4-dichlorophenoxyacetic acid (2,4-D)(0, 4,12, 20,30 μ M L^{-1}) and kinetin (0, 1.25, 2.5, 5.0. μ M L^{-1}), 2g L^{-1} phytagel and 4% sucrose with six replicate jars per treatment. A translucent soft white callus developed after three weeks, which further developed into a friable soft callus. 2,4-D was essential for callus induction and development, as callus developed in all treatments with 2,4-D but not in the control without growth regulators. When transferred to fresh medium after two months, the friable callus proliferated and a hard creamy white callus developed after a further two months. The treatment with 20 μ M L^{-1}2, 4-D and 2.5 μ M L^{-1} kinetin gave rise to the highest percentage of hard callus. The hard callus was separated and cultured in medium with lower levels of 2,4-D (2, 4 μ M L^{-1}) and kinetin (2.5μ M L^{-1}) or without growth regulators. After a week friable hard globular structures that resembled somatic embryos developed in all these. Shoots and roots regenerated after a month from the globular structures. On exposure to light, the globular structures turned green. Plantlets developed further on exposure to light. Thus, it was not necessary to have a

separate rooting step as required during axillary shoot proliferation for producing plants. However, further studies on verification of somatic embryogenesis and scaling up the different stages are required for application of this method for commercial production.

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