

Tissue culture for rapid propagule production of a large-culmed bamboo

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Micropropagation of a bamboo species of high economic potential was attempted. Single node-segments of secondary branches collected in October 2002 were surface sterilized and cultured on MS medium supplemented with kinetin (0.1 mg/L), benzylaminopurine (BAP) (2 mg/L) and benlate (0.1%) to induce bud break. Culture contaminants of a systemic nature appeared within three weeks of culture initiation. Uncontaminated explants were selected for further studies. Initially, the development of axillary shoots that sprouted was slow. However, on transfer to liquid medium shoots proliferated rapidly and continuously. A variation in the rate of axillary shoot proliferation among nodes was also evident. To investigate the effect of BAP and TDZ on axillary shoot proliferation, shoots were cultured in a liquid MS medium with BAP (1, 2 and 4 mg/L) or TDZ (0.05, 0.1 and 0.5 mg/L) and 3% sucrose. Five replicate jars with 50 mL medium and 15-20 shoots were used. Shoot proliferation in all levels of BAP was higher than in TDZ. The rate of shoot proliferation and shoot length decreased with increasing BAP or TDZ levels. A liquid MS medium with the optimum level of 1 mg/L BAP is recommended for rapid and continuous shoot proliferation. Clusters of 2-3 shoots that proliferated in this medium were used to induce rooting in a liquid MS medium with macro elements reduced to half strength and supplemented with 2% sucrose and 3 mg/L indole butyric acid (IBA). The effect of light on root induction was studied by incubating these shoots in continuous dark or light and at a 12-hour photoperiod. Although root induction took place in all cultures kept under these conditions, browning of shoots occurred in those kept in continuous light or darkness. Root induction was early (10 days) in continuous light compared to others (15 days). When rooted shoots in all these treatments were transferred to conditions of a 12-hour photoperiod, new buds developed and the browned plantlets recovered. These were successfully acclimatized and established in the nursery with 100% survival.

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