

Plant Growth Regulators for *In-vitro* Direct Plant Regeneration from Sugarcane (*Saccharum* spp. hybrid) Leaf Tissues

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Abstract

Four treatment combinations with two levels of 2, 4-dichlorophenoxyacetic acid (2, 4-D) (0.2 and 0.5 mg/L) and two levels of indole acetic acid (IAA) (1 and 4 mg/L) with kinetin (0.1 mg/L), selected from 150 combinations of the above hormones tested initially for direct plant regeneration from leaf tissues, were further tested in a completely randomized layout with 30 replicates. Leaf *ex-plants* of sugarcane variety SL 96 328 were used for all cultures in modified MS medium added with cysteine hydrochloride, 40 mg/L. After 3 weeks, culture survival/ mortality and the number of plantlets directly regenerated from *ex-plants* were recorded in one-week interval. Logistic regression was used to model the survival rates of *ex-plants* of different hormone combinations. The culture medium with kinetin (0.1 mg/L), 2, 4-D (0.5 mg/L), IAA (1 mg/L) and cysteine hydrochloride (40 mg/L) showed the best plant regeneration directly from leaf spindle disks after 4 weeks in culture. An average of 21 plantlets were obtained from an immature leaf spindle disk of 2 mm thickness and 3 mm in diameter taken from 5- to 7- month old sugarcane plants.

Keywords: Direct Plant Regeneration, *In-vitro* Culture, Plant Growth Regulators, Sugarcane

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