

IN VITRO PROPAGATION OF NUTMEG  
(Myristica fragrans)

By

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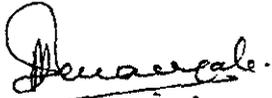
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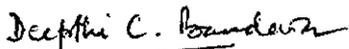
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## ABSTRACT

Responses to in vitro culture of explants taken from shoot tips from juvenile and adult shoot tips, axillary buds, and embryo or endosperm of clonal selections of nutmeg were tested. Complete plant regeneration with higher rate of multiplication was achieved with shoot tip culture of juvenile plants. Partial success was achieved in axillary bud culture in clonal selections.

Shoot tips from three year old nutmeg plants were used as juvenile explants. Actively growing shoot tips were more suitable than dormant shoot tips for culture establishment. Culture establishment occurred on Anderson's medium supplemented with 2.0 mg/l BA with or without 0.1 mg/l NAA. The effects of four different cytokinins BA, kinetin, 2iP and zeatin each used at five different concentrations (0.0, 0.5, 1.0, 1.5 and 2.0 mg/l) were compared for their effect on axillary bud proliferation. The highest number of shoots/explant about four to five were achieved within an eight week period on medium containing 1.0-2.0 mg/l BA. The evaluation of axillary bud proliferation in an expanded range of BA within 0.0 mg/l to 5.0 mg/l also resulted the maximum number of axillary bud production in 1.5 mg/l BA. Agitated liquid medium containing 1.5 mg/l BA resulted in greater multiplication (6.2) and more vigorously growing shoots than solid medium (2.8), whereas stationary liquid medium produced a smaller number of axillary shoots (1.4). Regeneration of shoots were comparatively higher (4.6) from the buds located in shoots 1.6-2.5 cm from the apex and the

best subculture period was about four weeks. Shoots were successfully rooted in a basal medium containing 0.2% activated charcoal with 0.5 mg/l IBA. Plantlets were transferred to soil.

Shoot tips or nodal explants from plagiotropic or trunk-sprouted orthotropic shoots of field grown clonal trees of nutmeg at different stages gave negative results not only due to a higher rate contamination but also probably to the unsuitability of the physiological stage of the explants.

Clonal grafted materials maintained in the greenhouse gave a very low rate of contamination but in all the attempts shoot tip cultures failed to regenerate plantlets. Single nodal explants from the grafted plants could be established in 1/3 Anderson's medium supplemented with 0.01 mg/l yeast extract, 0.05 mg/l glutamine, 0.01 mg/l biotin and 1.5 mg/l BA. Nodal explants at two different physiological stages were tested , and it was found that nodes with emergence of axillary buds (about 5-15 mm long) were more suitable for culture establishment. Initial incubation for three weeks in complete darkness was not effective for axillary bud elongation.