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In vitro plantlet regeneration of Apple (*Malus domestica*Borkh.) from field grown plants in Sri Lanka

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Apple (*Malus domestica*), is a popular fruit crop in Sri Lanka. Favourable climatic conditions for apple cultivation exist in the local upcountry region where fruit bearing trees are reported. In this study, conditions for successful *in vitro* establishment of apple shoot tip cultures were evaluated using juvenile shoots from field-grown plants. Initial pre treatment with a systemic fungicide (0.2% w/v Captan) prior to shoot collection and a subsequent surface disinfection procedure using a fungicide (0.05% v/v Carbendazim) and different sterillants (20% Sodium Hypochlorite/Clorox and Tween20) was performed on shoot tip and nodal explants. Surface sterilized shoots were aseptically established on Murashige and Skoog's (MS) media having 0%, 0.05%, 0.10% v/v Carbendazim, with 10 replicates each for shoot tip and 20 replicates each for nodal explants. Assessment of contamination rate and survival percentages indicated that use of MS + 0.10% v/v Carbendazim is more suitable ($p < 0.05$) for *in vitro* culture establishment. Shoot multiplication experiments were conducted using different levels (0.0,0.5,1.0,1.5 and 3.0 mgL^{-1}) of 6-Benzylaminopurine (BAP). Out of the treatments tested, $3mgL^{-1}$ BAP is the most suitable ($p < 0.05$) for multiple shoot induction (4.72 + 1.71) but produces dwarf shoots. However, $1mgL^{-1}$ BAP gives the highest mean number of shoots per explant (2.39+1.91) without reducing shoot height (2.58 + 1.31 cm). While further studies on root induction and acclimatization are ongoing, the present findings indicate the possibility to use *in vitro* techniques for producing apple plants locally as a promising prerequisite for establishing field cultivations.

Keywords: *Apple, BAP, carbendazim, shoot tip culture*

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