

**THE EFFECT OF DIFFERENT CARBON SOURCES ON THE
GROWTH AND DEVELOPMENT OF AMBAN BANANA (*Musa
acuminata*) SHOOT TIPS**



By

P.H.O.R.Sewwandi



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Department of Biosystems Technology, Faculty of Technology,

Eastern University Sri Lanka

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ABSTRACT

Banana (*Musa acuminata*) is a tropical fruit, which has high international demand due to its nutrition value and potential use in various industries. Micropropagation of Banana focused on mass production of Banana plants in *in vitro* using artificial nutrient medium providing fast and efficient way to produce large number of plants with consistence characteristics. Micropropagation is highly relying on the artificial chemical and nutrient components for the growth and proliferation of explant. This study investigates the effect of different carbon sources on the growth and development of Amban banana (*Musa acuminata*) shoot tips in tissue culture.

Banana shoot tips were selected from the third sub culturing cycle obtained from the Fruit Research and Development Institute (FRDI). An artificial nutrient media was prepared for the establishment of shoot tips using Murashige and Skoog (MS) media included Glucose and Sucrose, Ferrous sodium EDTA, micronutrients, macronutrients, my-inositol, Vitamin, BAP 5 mg/l, NAA 0.2 mg/l and agar. The media was prepared with nine different treatments, where glucose and sucrose were tested at four different concentrations such as media with glucose 20 g/l, glucose 30 g/l, glucose 40 g/l, glucose 50 g/l and media with sucrose 20 g/l, sucrose 30 g/l, sucrose 40 g/l, sucrose 50 g/l and a control was included without any carbon source. The data was analyzed under four criteria such as number of shoots, weight of shoots, and height of shoot. These data were analyzed by considering two subculture cycles.

The findings from ANOVA and LSD tests confirmed that the significant effects of the different carbon sources, highlighting glucose (30 g/l) as the most effective treatment for both shoot number and weight, while sucrose (20 g/l) was identified as the most effective for shoot height. The study concludes with recommendations for the optimal use of carbon sources in an in-vitro propagation of Amban banana shoot tips, emphasizing the robustness of glucose (30 g/l) for shoot multiplication and weight, and sucrose (20 g/l) with 5 mg/l BAP and 2 mg/l NAA containing MS media for shoot elongation.

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