

# POTATO

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**EFFECT OF DIFFERENT LEVELS OF SUGAR AND INCUBATION TEMPERATURE ON MICROTUBERIZATION OF POTATO (*Solanum tuberosum* L.)**

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**ABSTRACT**

Production of potato microtubers is used as a strategy to minimize handling and subculture during maintenance. Several protocols have been developed for potato microtuberization. The present study was conducted to determine the effect of sucrose and incubation temperature on microtuber production. The experiment was conducted at the Tissue Culture laboratory at Agricultural Research Station, Sita Eliya. Eight weeks old *in-vitro* cultures of Desiree plantlets were treated with 40 ml of MS liquid medium supplemented with four different concentrations of sugar (80,100,120 and 140g/l) and cultures were incubated at 2 different incubation temperatures (15±1°C and 25±1°C) in all possible combinations to promote microtuberization. Each treatment consisted of six replicates and the cultures were maintained at 15±1°C in a pharmaceutical refrigerator and in the culture room at 25±1°C under complete darkness. Experiment was set in Completely Randomized Design (CRD). The results showed that the highest number of microtubers per culture vessel was achieved in the treatment combination of 80 g/l sugar level and 15±1°C incubation temperature. However, the treatment combinations did not show significant differences on the duration of microtuber initiation in 50% of the cultures, fresh weight, diameter and the number of eyes per microtuber. According to our results, the most suitable sugar concentration was 80 g/l and an incubation temperature of 15±1°C for *in-vitro* microtuberization.

**KEYWORDS:** Incubation temperatures, Microtubers, Potato, Sucrose levels.

**INTRODUCTION**

Micropropagation was introduced to seed potato production programmes more than two decades ago. *In-vitro* plantlets, which are free from pathogens, are used as initial materials for potato seed programmes, and for the collection and distribution of germplasm throughout the world. The Department of Agriculture implemented a national seed potato production programme in 1998 with the objectives of producing pathogen free potato planting materials through tissue culture and to supply quality seed potatoes to the farmers at a relatively low cost. Another approach of potato micropropagation is the *in-vitro* induction of tubers. Though considerable research has been done on microtubers (Tover *et al.*, 1985; Abbott and Belcher, 1986), it's used rarely on a commercial basis (Wang and Hu, 1982). Even though, it's time consuming, labour intensive and costly, the use of microtubers offers several advantages over *in-vitro* plantlets, that they can be