



Full Length Research Paper

## Cost effective slow growth *in vitro* conservation of potato (*Solanum tuberosum* L.) using table sugar as an alternative carbon source

Charles Lung'aho<sup>1\*</sup>, George Chemining'wa<sup>2</sup>, Solomon Shibairo<sup>2</sup>, Margaret Hutchinson<sup>2</sup> and Miriam Mbiyu<sup>1</sup>

<sup>1</sup>Kenya Agricultural Research Institute -Tigoni, P.O. Box 338-00219 Limuru, Kenya.

<sup>2</sup>University of Nairobi, Department of Plant Science and Crop Protection, P.O. Box 29053-00625 Kangemi, Nairobi, Kenya.

Accepted 19 December, 2011

The potential of table sugar as an alternative low cost carbon source for potato *in vitro* conservation media at normal propagation temperature was investigated using a two factor experiment in a randomized complete block design. Three types of carbon sources: (1) white sugar, (2) brown sugar and (3) laboratory grade sucrose, were investigated using three varieties (Arka, Dutch Robijn and Tigoni). Plantlet survival after 18 months of conservation was similar for all the three carbon sources evaluated for cultivars Arka and Dutch Robijn but was significantly lower for cultivar Tigoni (65.0 to 68.8%). Cultivar Tigoni had the poorest condition of plantlets for all media evaluated (1.8 to 1.9). The number of usable single node cuttings/culture ranged from 5.3 to 11.2. Cultivars Tigoni and Dutch Robijn gave the highest number of usable single node cuttings/culture for each of the three media evaluated. Conservation costs were reduced by 96.4% when both white and brown sugar were used as the source of carbon instead of laboratory grade sucrose. All plantlets that survived the 18-month conservation period had 100% viability irrespective of the type of carbon source used in the conservation media. Table sugar may therefore be used as a cheaper substitute for laboratory grade sucrose in potato conservation media.

**Key words:** Table sugar, carbon source, *in vitro* conservation, normal propagation temperature, potato, slow growth, single node cultures.