CULTIVAR AND PLANT ORGAN TYPE DIFFERENCES IN INFLUENCING SOMATIC EMBRYOGENESIS IN UGANDAN SWEETPOTATO

A. Sefasi[1], G. Ssemakula[2], J. Kreuze[3], M. Ghislain[3], A. Kiggundu[4] and S. Mukasa[1]

[1]Department of Agricultural Production, School of Agricultural Sciences, College of Agricultural and Environmental Sciences, Makerere University, Box 7062, Kampala, Uganda, abelsefasi@yahoo.co.uk
[2]NaCRRI, Namulonge Research Station, Box 7084, Kampala, Uganda, nankingag@yahoo.com
[3]International Potato Center CIP, P.O. Box 1558, Lima 12, Peru, M.GHISLAIN@CGIAR.ORG
[4]National Agricultural Biotechnology Centre, National Agricultural Research Laboratories Institute, Kawanda, P. O. Box 7065, Kampala, Uganda, akiggundu@kari.go.ug

Resistance to weevils, *Cylas puncticollis* and *C. brunneus*, is very low in the available sweetpotato germplasm. Two cry genes are now accessible in Uganda for the improvement of resistance to weevils in sweetpotato through genetic transformation. The objective of the reported research is to develop an in vitro method of regenerating Ugandan sweetpotato for application of genetic transformation. For establishment of *in vitro* stock plants, the use of 15% JIK(R) for 25 minutes showed a higher efficiency (85%) of reducing contaminations with 79% of the clean vines able to form shoots. The clean plants were used to provide 'petiole', 'leaf' and 'leaf with petiole' explants for initiation of callus on Murashige and Skoog media supplemented with 1.3mg/L 2,4,5-trichlorophenoxyacetic acid, followed by formation of embryogenic tissue on media with 1mg/L abscisic acid and subsequent regeneration of plants on media with 1mg/L gibberellic acid. Sweetpotato Cv. Huachano showed ability to form both shoots (11%) and roots (20%) from callus derived from 'leaf with petiole' explants. It has also been possible to produce embryogenic callus (≥60%) in 5 of the 15 tested Ugandan cultivars using 'leaf with petiole' explants. Three of these 5 Ugandan cultivars namely Magabali, UNK Luwero-2 and Kyebandula, have shown ability to form roots (4%, 25% and 20%, respectively). This protocol is being optimized to enable regeneration of shoots from the Ugandan cultivars. Significantly low embryogenic responses were observed with both 'petiole' (0.5%) and 'leaf disc' (1.7%) explants. Our results show that both cultivar and type of plant organ are significant factors affecting somatic embryogenesis. These findings pave the way for application of genetic transformation to improve resistance to weevils in Ugandan sweetpotato germplasm.