Annals of Tropical Research 34[1]:79-95(2012)
© VSU, Leyte, Philippines

Development of *In vitro* Slow Growth Culture for Yam (*Dioscorea alata* L.)

Villaluz Z. Acedo and Catherine C. Arradaza

Tissue Culture Laboratory, PhilRootcrops, Visayas State University, Baybay, Leyte, 6521-A Phillipines

ABSTRACT

Germplasm collections, the lifeblood of breeding programs, are traditionally maintained in the field. Field genebanks are expensive, subject to genetic erosion, and require several quarantine measures for safe movement of genetic materials. These problems are more serious in long-duration, non-flowering and vegetatively propagated crops like yam. This study aimed to develop a tissue culture technique for *in vitro* conservation of yam germplasm. 'VU-2' and 'Kinampay' varieties were used in establishing the *in vitro* conservation technique which was then tested to other genotypes. With the tissue culture protocol for yam propagation developed earlier, the plantlets became overgrown after 2-3 months, requiring frequent subculturing and increasing the cost of maintenance and the risk of microbial contamination. Slow growth culture was tested using MS medium added with 0-10 mg/L abscisic acid (ABA) or 0-7% mannitol or sorbitol. Expectedly, plantlet growth slowed down. However, ABA at higher levels increased mortality of cultures while sorbitol was less effective than mannitol in retarding growth. Mannitol at 4% was found to be the best slow growth medium to maintain the plantlets for 13 months, thereby saving at least 4 times the maintenance cost using the normal growth medium. Tissue viability, morphological stability and tuber yield were not affected. Other genotypes (VU-1, VU-3, VU-4, VU-5, PR5, PR7, PR10 and PR11) responded similarly to the slow growth culture condition.

Keywords: yam, *Dioscorea alata*, germplasm, mannitol, sorbitol, ABA, slow growth

Correspondence: V. Z. Acedo. *Address*: PhilRootcrops, VSU, Baybay, Leyte, 6521-A Philippines. *E-mail*: luzacedo@yahoo.com. *Tel. No*. 63-53-5637077. *Tel/Fax*: 63-53-335-2616