B-122: Artificial seed production from vegetable buds of vegetatively propagated crops

A Hettiarachchi, I P K Jayawardena, M H Mendis, P Ganashan

(Plant Genetic Resources Centre, Gannoruwa, Peradeniya)

The "term artificial seed" is used for embryos or vegetative buds that have been established in a synthetic polymer coating while retaining their ability to grow into a complete plant. Such artificial seeds have distinct advantages over micropropagation. It allows easy transport and transplantation of vegetative propagules and facilitates storage and germplasm conservation with a considerable reduction of overall expenditure. This study was conducted basically with a view to developing a simple and effective method for conservation and propagation of vegetatively propagated crops.

The crops used in this study were Sweet potato *(Ipomoea batatas* (L.) Lam., Potato *(Solanum tuberosum* L.) and Innala *(Solenostemon rotundifolius* (Poir) J.K. Morton). Apical and axiliary buds (2-3 mm) were obtained from shoots grown in a growth regulator-free MS (Murashige and Skoog, 1962) medium containing (3% w/v) sucrose at $26 \pm 1°C$ under fluorescent light (3000 Lux, 16 h). These buds were allowed to dry for 6 h on a sterile filter paper placed in a petri dish (closed) and immersed in a medium (pH 5.7) prepared with alginate, sucrose, calcium-free MS salts and vitamins. Subsequently each bud was encapsulated with a drop of this medium in a calcium chloride solution (100 mM). Encapsulated buds (artificial seeds) were then dried in a desiccator. The artificial seeds so produced were as hard as natural seeds and softened when they absorbed water. The dried seeds were transferred to a culture medium (MS) containing BAP (0.4 mg/1) and IBA (0.2 mg/1) for germination. Seeds germinated into complete plant within 1-2 weeks of incubation ($26 \pm 1°C$) under light.