ABSTRACT

Mass Propagation and Conservation of Some Endangered Orchid Species in Sri Lanka

In Sri Lanka, Orchids (orchidaceae) are among prominent flora, which is adapted to a wide range of eco-climatological zones. However their existence has been endangered due to various pressures on the environment imposed by man. Orchids with showy flowers encounter an added disadvantage due to over-collection from the wild. Although, legislative measures play an important role the most effective measure to conserve orchids is to make available the species in the required amounts and reintroduce them to their natural habitats.

Ipsea speciosa, Rhynchostylis retusa, Dendrobium maccarthiae and *Vanda spathulata* were identified as endangered species. The suggested approach to preserve these orchids requires high capacity multiplication techniques to generate the required plants. The present studies investigate two methods in generating the required plants for the proposed conservation plan, by tissue culture multiplication techniques such as *in-vitro* vegetative propagation and embryo culture.

Experiments were carried out to identify the correct maturity stage for *in-vitro* seed germination of *Ipsea* and *Rhynchostylis*. Results showed that 2 months after pollination was the best stage for *Ipsea* and 2-month-old-pods took 20 days to germinate.100% germination was observed in basal MS medium with charcoal (2g/l) and PVP (2g/l), V&W with banana extracts (75g/l) and coconut water (100ml/l) and KNC with banana extracts (75g/l). 6 months after pollination was the correct maturity stage for *Rhynchostylis* and 6-month-old-pods took 20 days to germinate. 100% germination was observed in KNC medium with banana extracts (75g/l), coconut water (100ml/l), and V& W with banana extracts (75g/l), coconut water (100ml/l). 100% germination was observed in basal MS, KNC and V&W with banana extracts and coconut water in *Dendrobium* and *Vanda* 70% germination was successful in V&W medium.

In *in- vitro* vegetative propagation experiments growing rhizome tips on Ms medium with charcoal (2g/l) showed the better establishment (60%) for *Ipsea* and 5mg/l NAA and 0.5mg/l BAP gave the highest proliferation (1:6). Nodal segments of *Dendrobium* took 4 weeks for bud break on MS medium. Addition of GA3 (0.3mg/l) to the medium did not accelerate the bud break of *Dendrobium*.

Key words: Conservation, Embryo rescue, Endangered orchids, Multiplication techniques, Showy flowered orchids, Tissue culture, and