Nonsymbiotic Seed Propagation of Two Japanese Native Orchids for Native Restoration

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INTRODUCTION

According to the Red Data Book there are 5300 species of native plant in Japan. However, 895 of these species are threatened with extinction; of these 144 species are orchids (Japan Society of Plant Taxonomists, 1993).

In Mito Municipal Horticulture Center two Japanese native orchids, *Pecteilis radiata* (syn. *Habenaria radiata*), which is categorized as endangered in Red Data Book and *Vandopsis luchuensis,* have been propagated by nonsymbiotic seed propagation for the restoration.

PROPAGATION OF THE SPECIES

Pecteilis radiata. In Mito City, Ibaraki Pref., there were several native populations of *P. radiata* about 20 years ago. These have been decimented because of changes in the environment around their native growing locations and over-collecting by heartless collectors. However, from 1990 *Pecteilis* has been conserved and propagated by nonsymbiotic seed propagation. Currently, there is a marshland which was formerly the home of this species and its environment is still satisfactory for growth of this orchid. The marshland is part of an agricultural reservoir and a local association, which maintains the reservoir, has been interested in restoration of the habitat for *P. radiata*. Therefore, the Horticulture Center has been cooperating with the local association for habitat restoration.

Non-symbiotic Propagation Methology.

- ***Medium.*** Hyponex 0.3%, sucrose 3%, hormone free.
- ***Method of Seeding*:** Nonmature seeds are routinely collected from nondehisced pods 25 to 30 days after pollination. The seeds from one pod are distributed into three 300-ml culture flasks.
- ***Acclimatization***. Tubers develop in the flask by April to May. These tubers are easily planted without acclimatization.

Vandopsis luchuensis. *Vandopsis luchuensis* is the only large vanda-type orchid native to Japan and it is found on Iriomote Island, Ishigaki Island, and the Senkaku Archipelago. This *Vandopsis* species is also threatened with extinction by over collecting, therefore, two plants were transported to the Horticulture Center for propagation on June 1994. These plants are growing in a greenhouse and one of them flowered in Feb. 1995; it was pollinated for seed propagation.

Propagation was successful and 1000 young plants were transported to Iriomote Island in 1997. They were planted in their native tropical forest by the Forest Tree Breeding Center.

Non-symbiotic Propagation Methology.

- ***Hybridization.*** March 1995.
- ***Seeding.*** 30 Nov. to 22 Dec. 1995.
- ***Micropropagation Medium.*** Hyponex 0.3%, peptone 0.2%, sucrose 3.5%, hormone free.
- ***Enhancement of Seed Germination.*** Purelux 3% (sodium hypochrorite solution, 0.18% as available chlorine) for 5 min.
- ***Method of Seeding*:** Nonmature seeds were collected from nondehisced pods 250 to 270 days after hybridization.
- ***Acclimatization.*** April 1997.

LITERATURE CITED

Japan Society of Plant Taxonomists. 1993. Red data book. (in Japanese). Nouson Bunka-Sha, Tokyo.

Studies on Micropropagation of *Phalaenopsis* Alliance

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Micropropagation of *Phalaenopsis* through flower stalk explant culture was investigated.

Bracts of flower stalks were removed before or after sterilization. Decontamination rate of nodal sections was higher when they were sterilized with bract. Subsequent growth of lateral buds was affected by the timing of bract removal. More lateral buds developed vegetative shoots when bracts were removed before sterilization.

Micropropagation from a plantet was also investigated using in vitro cloned plantlets. The basal 1.5-cm part of a plantlet was cut into 2.5-mm or 5-mm sliced segments which were cultured on new phalaenopsis medium (Hirose, 1998) with or without coconut water (CW) and/or 6-benzylaminoprine (BA). Regeneration of shoot(s) and callus-like body was dominant in the slice segments derived from 5 to 10 mm part from the base of the shoot and was promoted by addition of CW and/or BA.

LITERATURE CITED

Hirose, M., S. Sigemura, and **S. Ichihashi.** 1998. Plant regeneration from protoplasts derived from callus of Phalaenopsis alliance. Comb. Proc. Intl. Plant Prop. Soc. 48:552.