

## Development of a Protocol for Effective Acclimatization of *In-Vitro* Propagated *Dendrobium* Orchids

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*Dendrobium* orchids are popular flowering potted and cut flowers around the world. The success of *in vitro* propagation of *Dendrobium* is high, but when transplanted into the natural environmental condition (acclimatization), their survival is minimal. Therefore, this study was aimed to develop a protocol to evaluate the effect of acclimatization of *Dendrobium* after ten weeks of transplanting under the protected environment conditions. As the first experiment, the success of the acclimatization was evaluated with different root numbers. In the second experiment, two acclimatization media were tested with different media compositions, common acclimatization media (M1) - sand: coir dust: charcoal: tile pieces, alternative media (M2) - granite chips: coir dust: charcoal: tile pieces (1:1:1:1). The direct transplanting method and non-direct transplanting method were followed in the third experiment. Under experiment four, the number of plantlets was changed including in a community pot and single propagators were done just after transplanting. Four and 3.5-inch diameter clay/plastic community pots were applied to the same plant numbers (25 plantlets per pot) in experiment five. Survival percentage and visual appearances at weekly and height of the plantlets at two weeks intervals were recorded in each replicate. The highest survival and height were recorded in well-rooted plantlets (10 roots). M1, M2 both showed the same performances. The direct planting method showed the best performances. Four-inch diameter/clay community pots with higher amounts of plant numbers (30, 35) showed the highest survival and growth. The propagator application was positively contributed to the height of the plantlets. Community pots in 3.5-inch diameter were recorded the best survival and height. Plastic community pots were the possible alternative for clay pots. In conclusion, applying the complete protocol can be considered as a clear solution to increase the survival of tissue cultured *Dendrobium* orchids at acclimatization.

**Keywords:** Acclimatization, *Dendrobium* orchids, *In-vitro* propagation, Survival percentage