

THE EFFECT OF MACRONUTRIENT LEVELS IN A DEFINED MEDIUM TO ENDANGERED ORCHID SPECIES SEEDLINGS

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ABSTRACT

Recently, numerous works reported enhance growth of orchid seedlings corresponding to high nitrogen concentration. However, these may be vigorous seedlings selected to respond to high nitrogen concentration. Growth of wide spectrum of genotypes of *Phalaenopsis* species was found to be supported at lower nitrogen concentration. However, the optimum nitrogen concentration in the culture medium is not known for the selected species. Hence, it is important to analyse orchid seedling growth on different nitrogen concentration. This could be achieved by choosing a defined medium and dilute it accordingly. In this experiment, the macronutrient content of CCT medium was modified to 1/3 \times , 1/2 \times , 1 \times , 2 \times and 3 \times , with 1 \times concentration serving as the control. Fresh weight and dry weight of roots and shoots was measured and compared between the treatments after 90 days with one subculture at day 45. Control medium (1 \times macronutrient or 14.4 mM nitrogen) showed the best seedling growth while 2 \times macronutrient stimulated highest shoot growth for *P. deliciosa* seedling. However, different macronutrient level has no significant effect on the seedling yield of *P. primulinum*, although the highest seedling growth was measured at 3 \times macronutrient level. The RFW/SFW and RDW/SDW for both the species produced more shoot growth and lesser root growth at higher macronutrient levels. For both the species, macronutrient level did not affect root yield. The present results contribute to our understanding of optimum nitrogen concentration for *P. deliciosa* and *P. primulinum*, which is useful for improving propagation of orchid species in terms of size and growth rate for conservation or commercial purposes.