

Taratip Sonsud 2015: Effect of Water Salinity on Growth and Photosynthesis in *Dendrobium* Sonia 'Earsakul'. Master of Science (Horticulture), Major Field: Horticulture, Department of Horticulture. Thesis Advisor: Assistant Professor Patchareeya Boonkorkaew, Ph.D. 94 pages.

This study observed the effect of water salinity on growth and photosynthetic rate of *Dendrobium* Sonia 'Earsakul' in difference age at Building Information for 50 years in the Department of Horticulture, Faculty of Agriculture, Kasetsart University, Bang Khen Campus from June 2013 to March 2014. Different age (3, 9 and 24 months old) *Dendrobium* Sonia 'Earsakul' from tissue culture were grown in nursery 60% shading and watered with concentration of 0, 2, 4 and 8 dS m⁻¹ water salinity every morning for 3 months. The results showed that growth, pigment content, stomatal characteristic and new shoot growth of 3 months old *Dendrobium* Sonia 'Earsakul' decreased with the increasing in concentration of salinity. Nine months old plants showed decreasing in growth and pigment content at concentration of 4 and 8 dS m⁻¹. Twenty-four months old plants showed decreasing in growth, pigment content and flowering, when concentration was EC 4 and 8 dS m⁻¹. Net photosynthetic rate was measured by LI-6400XT in *Dendrobium* Sonia 'Earsakul'. The 9 and 24 months old plants showed decreasing in net photosynthetic rate at 4 and 8 dS m⁻¹. In maximum quantum efficiency (PS II) was measured by LI-6400XT using leaf chamber fluorometer (LCF) showed that the highest concentration of salinity at 8 dS m⁻¹ had the highest stress on *Dendrobium* Sonia 'Earsakul' in both 9 and 24 months old plants. After watering salinity for 3 month on *Dendrobium* Sonia 'Earsakul' age 3 months old plants showed the symptoms at EC 2 dS m⁻¹. On the other hand, 9 and 24 months old plants showed the symptoms at EC 4 dS m⁻¹. Anatomy of leaf showed decreasing in cell, upper-lower epidermis and mesophyll sizes at EC 8 dS m⁻¹. Therefore, both 9 and 24 months old plants can use saline water at EC 2 dS m⁻¹ in everyday for 3 months due to there were no significant difference in growth and flowering with water salinity at 0 dS m⁻¹.

Student's signature

Thesis Advisor's signature