

Saowalak Banthoengsuk 2006: Relationships between Water Stress, Proline Production and Senescence of Cut *Dendrobium* Orchid Flowers. Master of Science (Agriculture), Major Field: Horticulture, Department of Horticulture. Thesis Advisor: Professor Saichol Ketsa, Ph.D. 133 pages ISBN 974-16-1341-5

The study of relationship between water stress and postharvest changes of *Dendrobium* flowers cvs. Anna, Wanna, Buranajade, Bom Jo Red, Sonia Bom Jo#17 and Miss Teen was carried out at 25 °C ( 60-65% RH ). It was found that postharvest changes of 6 cultivars of orchid flowers were not significantly different after exposure to different durations of water stress after cut compared to those orchid flowers exposed to water stress at room temperature by air movement at 2.5-3 m per second for 3, 6, 9 and 12 hours. Based on physiological changes, orchid flower cv. Wanna was the most sensitive, while orchid flower cv. Anna was the least sensitive to water stress. Both flower buds and open flowers of both orchid cultivars produced higher ethylene levels after exposure to water stress and ethylene production increased with increasing duration of water stress, while flower buds produced higher ethylene levels than open flowers regardless to cultivars. Both cvs. Wanna and Anna flowers produced more proline after exposure to water stress. Open flowers cv. Wanna with water stress produced proline slightly higher than that without water stress while open flowers cv. Anna with water stress produced proline considerably higher than that without water stress. Flowers cvs. Wanna and Anna held in distilled water produced higher ethylene levels than those held in a solution containing  $\text{AgNO}_3$  30 mg/L + HQS 225 mg/L + 4% glucose. In contrast, flowers cv. Wanna held in a solution containing  $\text{AgNO}_3$  30 mg/L + HQS 225 mg/L + 4% glucose produced more proline during 24 hour holding. Holding solution also increased considerably the vase life of both orchid cultivars. There was an interaction of cultivar and duration of water stress and cultivar and holding solution on vase life, while there was no interaction of cultivar, duration of water stress and holding solution on vase life.

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