

Pakdee Tipkrailad 2015: Studies on the Appropriate Inflorescence Stage, Photosynthetic Parameters and 1-MCP Affecting Potted *Dendrobium* Orchid Quality for Simulated Shipping. Master of Science (Horticulture), Major Field: Horticulture, Department of Horticulture. Thesis Advisor: Assistant Professor Patchareeya Boonkorkaew, Ph.D. 105 pages.

In this study, appropriate inflorescence stage, photosynthetic parameter and the effect of 1-MCP on potted *Dendrobium* orchid quality for simulated shipping were investigated. Three inflorescence stages for *Dendrobium* 'Emma White' namely flower initiation stage (stage 1), bud flower stage (stage 2) and 1-2 open flowers stage (stage 3) were studied. The orchids were simulated for shipping by keeping in a dark container with under $20\pm 1^{\circ}\text{C}$ and 70% relative humidity condition. The results from the first experiment illustrated that the appropriate inflorescence stages were stage 2 and 3. After spending 2 weeks in simulated shipping, bud flower could develop to good quality open flower. In the second experiment, the results indicated that the appropriate inflorescence stage was stage 2 after spending 2 weeks for simulated shipping. Besides, photosynthetic parameter values of them showed negative CO_2 exchange rate during day and night time, stomatal conductance and transpiration rate were low as F_v/F_m values were decreased after simulated shipping. For assessment on post-shipping performance, leaf greenness increased and the photosynthetic parameter values returned to the usual i.e. positive CO_2 exchange rate during night time, stomatal conductance and transpiration rate were high during night time and F_v/F_m values increased. This indicated that they utilized CAM plant pathway. In the third experiment, the effect of 1-MCP on leaf and flower quality and photosynthetic parameters on potted *Dendrobium* orchid for simulated shipping by using stage 2 of inflorescence stage were carried out. Results showed that the appropriate 1-MCP concentrations were 1,000 and 1,500 ppb which caused low leaf and flower senescence as CO_2 exchange rate, stomatal conductance, transpiration rate and F_v/F_m values slowly decreased after 4 weeks of simulated shipping, and the orchids could return photosynthetic parameter values to normal quickly after simulated shipping. In addition, ethylene production and transpiration rate decreased as well.

Student's signature

Thesis Advisor's signature