Thesis Title  
Effect of Nitrogen on Nitrogenous Compound Contents, Growth and Development of Glory Lily

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Abstract

Studies on the effect of nitrogen on growth and development of glory lily were divided into two experiments. The first experiment was focused on the effect of nitrogen concentrations. Glory lily tubers were cultivated in Hoagland and Arnon nutrient solution supplemented with different levels of nitrogen i.e., 0, 210 (control), 420 and 630 mg/L. It was found that nitrogen concentration at 210 mg/L was optimal for glory lily cultivation which resulted in significantly better plant height and tuber fresh weight. This treatment yielded higher numbers of flowers and pods trended to higher than the other treatments, and significantly higher contents of amino acid and protein in tuber. Glory lily supplemented with 210 mgN/L became dormant later than those with 420 and 630 mgN/L. The plants also contained cumulative nitrogen content of 38.66 mg in leaves, tubers and roots. Colchicine in seeds was highest at 28.65 mg/gDW. Glory lily harvested at 29 DAP contained the highest colchicine content.

The second experiment was carried out by cultivating glory lily in Hoagland and Arnon nutrient solution supplemented with nitrogen in the forms of nitrate and/or ammonium. Treatments were NO$_3^-$N 196 mg/L + NH$_4^+$N 14 mg/L, NO$_3^-$N 210 mg/L and NH$_4^+$N 210 mg/L. The results showed that cultivation of glory lily in solution
supplemented with only nitrate gave better plant height, numbers of flowers and pods, fresh weight. In addition, amino acid and protein contents in this treatment trended to be higher than the others. However, tuber size and weight of dormant plants were higher when treated with nitrate and ammonium (treatment 1). Glory lily treated with ammonium (treatment 3) had the lowest nitrogen content. Plants were stunt and eventually dead. High colchicine concentration of 177.16 mg was found in leaves at 49 DAP.