

Investigating the quantitative and qualitative indices of growth and postharvest life of *Zinnia elegans* in different rations of nitrogen and calcium in soilless culture

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Abstract

A soilless cultivation experiment, in a medium containing sand, perlite and peat, based on Hoagland nutrient solution, was designed and carried out to investigate the growth and postharvest response of *Zinnia* to different concentrations of nitrogen (N) and calcium (Ca). Treatments included control 1 (without nutrient solution), control 2 (nutrient solution without N and Ca), and the mixtures of 15 and 30 mM N and 5 and 10 mM Ca, arranged as a completely randomized design with six treatments, each treatment in three replicates and three pots in every replicate. The studied traits were plant height, stem diameter, flower diameter, root length, stem dry and fresh weight, flower dry and fresh weight, vase life and concentration of N and Ca in shoots. Results revealed that increasing N concentration in nutrient solution increased the height and fresh weight of the plants; but using 10 mM Ca and 30 mM N had the highest effect on plant height. Significant reduction of stem dry weight in 30 mM N and 5 mM Ca treatment in comparison with stem fresh weight of this treatment was observed. The lowest vase life (4.8 days) was observed in control 1 treatment. The highest vase life (17 days) was resulted by using 10 mM Ca in nutrient solution, and the highest Ca uptake was also in this treatment. Ca uptake in this treatment (85 mg/pot) was significantly more than other treatments. In conclusion, to have suitable yield and higher vase life, using 15 mM N (standard N concentration in Hoagland nutrient solution) and 10 mM Ca (twice the Ca concentration in Hoagland nutrient solution) was the best treatment.

Keywords: Nutrition, Perlite, Yield, Soilless culture, Nutrient solution, Hoagland.

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