

Production and postharvest quality of chrysanthemum flowers grown in hydroponic system under different N:K ratios

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Acta Horticulturae 1060: 281-287. (2015)

Abstract

In a hydroponic system of production, the knowledge of the requirements of the plants improves the conditions for growth and development. For the success of this system, the knowledge of composition of the nutrient solution is crucial, which depends not only on the concentration and relationship between nutrients, but also on factors related to the crop, including the type of hydroponic system and cultivar in production. The assimilation of K is attached to N, with a specific relationship between them, which varies depending on the soil type, climate and cultivar. The objective of this work was to evaluate the effect of different N:K ratios, the production and postharvest life of inflorescences in six cultivars of chrysanthemums for cut flower production. A randomized block design was used in a 4 × 6 factorial arrangement with four ratios of N:K w/w (1.0:2.5; 1.0:3.0; 1.0:3.5; 1.0:4.0) and six cultivars ('Calabria', 'Dark Flamengo', 'White Reagan', 'Dark Orange Reagan', 'Dragon' and 'Yellow Sheena') comprising three replications. For vegetative growth, the plants were maintained in a regime of 35 long days (LD) with 16 h of light, followed by 35 short days (SD) for flowering induction, which was achieved by covering the tops with a black tarp. After the induction, plants were kept under normal day until harvest (2/3 open inflorescence). The fresh and dry weights of inflorescence and shoots, total number of inflorescences, diameter of the largest inflorescence, diameter and length of the stem, and longevity were determined. Data were subjected to analysis of variance (ANOVA) and regression, and the means were compared by Tukey test at 5% of probability for qualitative traits. For quantitative traits, regression models were adjusted. The cultivar 'Calabria' was more productive in relation to the others. A linear increase in longevity of inflorescences was found as potassium concentration increased and the cultivar 'Calabria' showed longer postharvest life than the others.