

Title Evaluation of ethylene production by ten Mediterranean carnation cultivars and their response to ethylene exposure

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Abstract

Vase life is one of the most important characters of postharvest cut flower quality. The onset of ethylene production and the amount of ethylene produced by flowers vary with the carnation cultivar, and thus influence their vase life. In the present study, differences in ethylene production and the response to exogenous ethylene among carnation cultivars were evaluated. Ten different cultivars: "Baltico", "Domingo", "Exotica", "Famosa", "Kiro", "Madame Augier", "Master", "Mundo", "Pilar" and "Reina" were studied. Five flowers for each cultivar were exposed for 8 hours to 1 microL/L exogenous ethylene concentration. Ethylene production, fresh weight and water uptake was measured daily throughout the experiments. The 10 different cultivars studied showed clear differences in vase life, ethylene production, onset time in ethylene production and response to exogenous ethylene. The shortest vase life was for "Exotica" flowers which was only 11.6 days, while "Baltico" and "Pilar" lasted 2.5-3 times longer than "Exotica". Most of the investigated cultivars showed notable increases in the amount of ethylene. However, "Baltico" and "Pilar" flowers produced only a trace amount of ethylene and had the longest vase life. Results showed that cultivars with a long vase life ("Baltico" and "Pilar") display high ethylene responsiveness and, in contrast, cultivars with a short vase life ("Exotica" and "Mundo") present low responsiveness. The decline in fresh weight of cut flowers observed in the last phase of their vase life occurred earlier in short-lived cultivars than in the longer-lived ones.