

Title Genotypic differences in vase life and ethylene production of cut carnation flowers under high temperature conditions

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Abstract

The postharvest physiology of standard cut carnation flowers under high-temperature conditions remains unclear. Cut carnation flowers of ten cultivars ('Moutarde', 'Pink Exerea', 'Mambo', 'Marlo', 'Corsa', 'Peachy Mambo', 'Praha', 'Michelle', 'Zebah', and 'Magny Cours') were kept under 24°C or 32°C conditions. Based on vase life differences, the tested cultivars were clustered into three groups: those for which the vase life at 32°C was longer than at 24°C ('Moutarde' and 'Zebah'); those with equivalent vase life at 24°C and 32°C ('Pink Exerea', 'Marlo', 'Peachy Mambo', 'Michelle' and 'Magny Cours'); and those for which the vase life at 32°C was shorter than at 24°C ('Mambo', 'Corsa', and 'Praha'). Signs of ethylene production such as petal in-rolling or petal wilting and closing were less severe at 32°C than for flowers kept at 24°C. Petal color fading and browning were the main reasons for vase life termination at 32°C. These results indicate that the typical signals of ethylene production were reduced and that the vase life of cut flowers is extensible under high temperature conditions, depending on the cultivar. Furthermore, we confirmed that high temperature inhibited ethylene production in standard cut carnation flowers. Ovary and seed development was also depressed under high-temperature conditions, indicating that these developments involved ethylene production of cut carnation flowers. Results of this study showed that high temperature has some merit for extending the vase life of cut carnation flowers by depressing ethylene production.