

**Title** Effects of 1-methylcyclopropene (1-MCP) and Modified Atmosphere Packaging (MAP) treatments during transportation on the quality of Potted Impatiens (*Impatiens walleriana*)

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### Abstract

Ethylene-induced petal and flower abscission is a significant problem in potted impatiens during commercial transportation. Abscised flowers reduce visual impact of the potted plant and can increase the incidence of botrytis and other saprophytic pathogens. The aim of this study was to determine the effect of 1-methylcyclopropene (1-MCP), modified atmosphere packaging (MAP) and their combined treatment on the quality of potted impatiens after simulated transportation at 23 °C for 48 h. The results revealed that carbon dioxide (CO<sub>2</sub>) increased while oxygen (O<sub>2</sub>) decreased inside the MAP packages during treatments. Final ethylene concentration was highest in those treated with MAP (0.06 μL·L<sup>-1</sup>), lowest concentration was found in MAP combined with 1 μL·L<sup>-1</sup> of 1-MCP treatment (0.02 μL·L<sup>-1</sup>). Treatments of MAP combined with 0.1, 1 μL·L<sup>-1</sup> 1-MCP and 1 μL·L<sup>-1</sup> 1-MCP combined with ethylene delayed flower abscission and increased plant and floret longevity of potted impatiens cv. 'Rouge' and 'Peach'. MAP combined with 1-MCP treatment significantly retarded decreasing of SPAD values in leaves in cv. 'Purple Stripe' and 'Peach' on 4 days after treatments. The results clearly indicated that MAP combined with 1-MCP treatment during transportation may provide a feasible technique for extending the display life maintaining the quality and aesthetic value of potted impatiens.