

Title 1-MCP shortens peony vase life
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Abstract

Ethylene action and synthesis inhibitors were evaluated for their effects on cut peony flower longevity and quality. Field-grown 'Karl Rosenfield' and 'Sarah Bernhardt' cut peony flowers were treated for two hours with either 0.5 mM silver thiosulfate (STS) or 0.60 $\mu\text{l L}^{-1}$ 1-methycyclopropene (1-MCP) ethylene action inhibitors, Floralife[®] (FLO) at the label recommended dosage, 0.60 $\mu\text{l L}^{-1}$ ethylene (Eth), or deionized water (CON) before being stored for nine weeks. In addition, cut peony flowers temporarily held for three weeks in refrigerated storage were treated for two hours with either 100 $\mu\text{l L}^{-1}$ aminoethoxyvinylglycine (AVG), an ethylene synthesis inhibitor or deionized water and monitored for an additional seven week storage period. Vase life, flower weight, bud diameter, degree of petal openness, petal color, rate of ethylene and carbon dioxide (CO₂) evolution, and percent disease incidence were monitored. 'Karl Rosenfield' flowers were unaffected by all treatments over the storage time. 'Sarah Bernhardt' flowers responded to STS and 1-MCP treatments during CO₂ evolution, petal color and percent disease incidence measurements. Flowers treated with AVG had slowed reproductive organ development and increased disease incidence. The Floralife[®] treatment promoted the longest flower vase life; 1-MCP-treated flowers had the shortest vase life. Flowers treated with STS were lighter and less vivid in color, whereas FLO-treated flowers had darker and more vivid petal color. AVG had little to no effect on flower quality or vase life, with the exception of delayed flower development and increased disease incidence. The decline of vase life and flower quality was significantly related to the length of storage time. The ethylene antagonists used in this study were ineffective at increasing storage longevity and quality of cut peony flowers.