

### Abstract

Ethylene action and synthesis inhibitors were evaluated for their effects on cut peony flowers. 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-methylcyclopropene (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. After this storage treatment, flower longevity and quality were evaluated. In addition, 'Sarah Bernhardt' 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 ( $\text{CO}_2$ ) 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  $\text{CO}_2$  evolution, petal color, and percent disease incidence measurements. 'Sarah Bernhardt' flowers treated with AVG had slowed reproductive organ development and increased disease incidence. The Floralife® treatment promoted the longest vase life in 'Sarah Bernhardt' flowers, whereas 1-MCP-treated flowers had the shortest vase life. 'Sarah Bernhardt' 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 'Karl Rosenfield' and 'Sarah Bernhardt' peony flowers.