

**Title** The residual effect of 1-methylcyclopropene in protecting *Phalaenopsis* flowers against ethylene injury

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#### Abstract

Flowers of *Phalaenopsis* are generally sensitive to ethylene. 1-methylcyclopropene (1-MCP) has been found effective in protecting flowers against ethylene injury in many crops. Evaluating the period of 1-MCP protection on *Phalaenopsis* could offer critical information on postharvest process. For this purpose, we pretreated *Phal. amabilis* with  $0.8 \mu\text{L-L}^{-1}$  1-MCP for 8 hours and, then, at various times following 1-MCP treatment, some of these plants were fumigated with  $2 \mu\text{L-L}^{-1}$  ethylene for 12 hours to determine the residual protection. In the first experiment, flowers were exposed to ethylene at 0, 5, 10, 15, 20, or 30 days after 1-MCP treatment; and in a repeated experiment, after 0, 4, 6, 8, 10, 12, or 14 days. The results indicated 1-MCP could completely protect flowers and buds from ethylene for at least six days, which is longer than the average marketing needs. There was no residual protection 12 days after 1-MCP treatment. During the 6-12 days after treatment, 1-MCP had partial protection on *Phalaenopsis*, the inflorescence still lasted much longer than those that were not pretreated with 1-MCP but were exposed to ethylene. Fumigating *Phalaenopsis* with ethylene during this period, larger variation was found within one treatment: The individual plant responded differently to ethylene depending on its physiological condition. We suggest the use of 1-MCP as a standard procedure before potted blooming *Phalaenopsis* are shipped.