

**Title** Use of AVG and MCP to sustain 'Gala' apple fruit quality in cold storage  
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**Citation** ISHS Acta Horticulturae 857:405-410. 2010.  
**Keyword** *Malus × domestica*; postharvest; aminoethoxyvinylglycine; 1-methylcyclopropene; ethylene; firmness; volatiles; esters

### **Abstract**

AVG (aminoethoxyvinylglycine) is a valuable preharvest tool for fruit drop control with apparent postharvest benefits. Postharvest effects of MCP (1-methylcyclopropene) on apple fruit quality are being widely documented. However, there is not much information about the possible interaction between AVG and MCP. Our goal was to determine if AVG and MCP interact to influence ripening traits and postharvest storability of 'Gala' apple. An aqueous solution of AVG was applied to 'Gala' apple trees 4 weeks before normal harvest (H1) at 124 g ha<sup>-1</sup> a.i. Subsamples of control and AVG-treated fruit were treated with MCP for 20 h at room temperature (RT) and a final headspace concentration of 1 µl·L<sup>-1</sup>. Fruit were ripened for 7 days at RT immediately after harvest and treatment or after storage at 4°C for 6 and 12 weeks. Fruit treated with AVG were also harvested 2 weeks after normal harvest (H2), and a sub-sample was treated with MCP. After 7 days of ripening after harvest, control fruit had the greatest ethylene production, while all treatments resulted in very low ethylene production. After 6 and 12 weeks in cold storage following both harvest dates, fruit treated with AVG plus MCP had the lowest ethylene and total ester production and the highest flesh firmness while fruit treated with either one alone recovered some capacity for ethylene and ester production. The effects of AVG alone were not evident in fruit from H2. Respiration rate varied between treatments and ripening times, though AVG plus MCP generally repressed it more than the other treatments. Overall, the combination of AVG and MCP had the greatest sustained effect through 12 weeks of cold storage with very low ethylene production, maintenance of fruit firmness and low ester production.