

**Title** Commercial application of 1-methylcyclopropene affects storability and disorders of 'Empire' apples

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#### **Abstract**

The objective of this study was to determine the effects of commercial 1-MCP treatment on the incidence of disorders and storability of 'Empire' apples. 'Empire' fruit were commercially harvested from 21 orchards in southwest Ontario and delivered to two storage operations during the 2003 season. Samples were collected from each orchard and half of the fruit from each sample was placed in the appropriate CA room for 1-MCP treatment (SmartFresh™, 0.7–0.8 µl L<sup>-1</sup>, 24 hours at 1.1–1.4°C), while the other half was placed at a similar temperature during the treatment period and then returned to the matching CA room for storage. 'Empire' apples treated with 1-MCP had significantly less internal ethylene and were firmer than non-treated fruit after 14 days at 22°C following treatment. These effects were also observed after CA storage, although there was no significant effect on fruit firmness at storage A where apples had also maintained good firmness (>15 lb) without 1-MCP treatment. Internal browning developed after 9 months in 'Empire' apples at storage A and treatment with 1-MCP did not significantly affect the incidence. External CO<sub>2</sub> injury was observed on some 'Empire' fruit at storage B and the incidence was higher in apples treated with 1-MCP. It is important to note that no CO<sub>2</sub> injury was observed at storage A, where all apples were drenched with DPA prior to storage.