

**Title** Stem end russet browning of 'Cox's orange pippin' apples, an undesired side effect from the application of 1-MCP

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#### **Abstract**

Stem end russet browning symptoms develop sporadically in some years in 'Cox's Orange Pippin' apples after 1-MCP treatment, especially when fruit are exposed to a higher temperature break during post treatment cool storage. Symptoms are superficial and largely confined to the russet area in and around the stem cavity where the russet becomes very dark brown or black. It is hypothesised that this damage to the fruit skin is due to the action of polyphenol oxidase on polyphenol compounds to form brown coloured polymer compounds when the membrane integrity in the fruit skin cells is damaged. 1-MCP treatment may result in a stress response in the skin cells that somehow weakens the cell membrane defence systems and browning symptoms then develop, especially when treated fruit are exposed to additional stress with temperature changes. Evidence to support this hypothesis is presented where browning symptoms are correlated with changes observed under different post 1-MCP storage conditions (low O<sub>2</sub> atmospheres and temperatures). In contrast, ascorbic acid seems to play a relatively minor role in preventing stem end russet browning.