

### Abstract

The potential of controlled atmospheres using 1, 3, and 5 kPa oxygen concentrations (balance N<sub>2</sub>) to extend the storage life and maintain the quality of two mandarin cultivars was investigated. Low oxygen atmospheres at 5°C for 8 weeks of storage decreased respiration rates but had no effect on appearance, peel color, soluble solids content, titratable acidity, and flavor compared to the air control after being transferred to air at 20°C for 3 days of simulated marketing condition. 'Clementine' and 'Murcott' mandarins (*Citrus reticulata*) kept in 1, 3, and 5 kPa O<sub>2</sub> had higher ethanol and acetaldehyde concentrations and similar amounts of ethyl acetate compared to control treatment. The 1 kPa and 3 kPa O<sub>2</sub> atmospheres reduced decay incidence in 'Clementine' and 'Murcott' fruits during storage at 5°C for up to 7 and 8 weeks, respectively. However, the potential negative effects of low O<sub>2</sub> atmospheres on flavor may negate the beneficial effects on reduced respiration rate and decay incidence. Thus, 'Clementine' and 'Murcott' mandarins are best stored in air at 5°C and 90-95% relative humidity. If waxing or film wrapping are used, their effects on internal O<sub>2</sub> concentrations should be evaluated to minimize potential negative effects on mandarin flavor.