

Title Responses of ‘Clemenules Clementine’ and ‘W. Murcott’ mandarins to low oxygen atmospheres

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Abstract

The potential of controlled atmospheres (CA) of 1, 3, and 5 kPa oxygen (balance N₂) to extend the storage life and maintain the quality of two mandarin cultivars was investigated. Low oxygen (O₂) atmospheres at 5 °C for 8 weeks of storage slightly decreased respiration rates but had no effect on ethylene production rates, soluble solids content (SSC), titratable acidity (TA), or flavor compared to the air control after being transferred to air at 20 °C for 3 days of simulated marketing conditions. ‘Clemenules Clementine’ and ‘W. Murcott Afourer’ mandarins (*Citrus reticulata*) kept in 1, 3, and 5 kPa O₂ generally had higher ethanol and acetaldehyde concentrations than those kept in air. However, fruit kept in 3 and 5 kPa O₂ showed similar amounts of ethyl acetate compared to fruit kept in air. The 1 kPa O₂ atmosphere reduced decay incidence in ‘Clemenules Clementine’ fruit during storage at 5 °C for up to 4 weeks but enhanced the decay incidence in ‘W. Murcott’ fruit. Based on these findings, ‘Clemenules Clementine’ and ‘W. Murcott’ mandarins (waxed and fungicide-treated) could best be stored in air at 5 °C and 90–95% relative humidity for up to 5 and 7 weeks, respectively.