

Title Postharvest rind breakdown of 'Nules Clementine' mandarin is influenced by ethylene application, storage temperature and storage duration

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Abstract

The progressive postharvest disorder of 'Nules Clementine' mandarin (*Citrus reticulata* Blanco), referred to as rind breakdown (RBD), starts to develop during storage, about 3–5 weeks after harvest. Variation within the tree canopy, i.e. inside or outside canopy positions, as well as postharvest handling practices such as ethylene degreening, storage temperature and storage duration, were investigated for their influence on RBD incidence. Two experiments were conducted wherein fruit were subjected, in the first experiment, to ethylene degreening and a delay in commencement of cold storage (2004), and, in the second experiment, fruit were sampled from the inside and outside of the canopy and cold-stored at either -0.5 °C or 7.5 °C during 2005 and 2007. Rind pigment and carbohydrate contents as well as rind colour and RBD incidence were recorded during prolonged storage. The senescence-promoting treatments resulted in an increase in RBD incidence, except for storage at -0.5 °C, which resulted in a lower occurrence of RBD. Overall, results indicated that the incidence of RBD was aggravated by senescence-promoting factors during the postharvest handling of fruit and this is thought to lead to the premature senescence of the flavedo. In addition, fruit position in the tree canopy during fruit development contributed significantly to RBD sensitivity, with inside fruit having significantly higher RBD incidence compared to outside fruit.