

Title Effects of controlled atmosphere cold storage on woolliness and pectic enzyme activity in 'Douradão' peaches

Author L.R.R. Santana, B.C. Benedetti, H.H. Sato and J.M.M. Sigrist

Citation ISHS Acta Horticulturae 872:211-220. 2010.

Keyword *Prunus persica*; chilling injury; quality

Abstract

The high incidence of woolliness is one of the main causes that reduce 'Douradão' peaches quality, during long term cold storage. Experiments were performed to study the effects of controlled atmosphere (CA) cold storage ($1\pm 1^{\circ}\text{C}$ and $90\pm 5\%$ UR) on the postharvest preservation, the occurrence of woolliness and the activities of pectic enzymes. The following CA conditions were tested: CA1 - 3,0% CO_2 + 1,5% O_2 ; CA2 - 5,0% CO_2 + 1,5% O_2 ; CA3 - 10,0% CO_2 + 1,5% O_2 ; CONTROL - 0,03% CO_2 + 21,0% O_2 . The experiment design was entirely randomized with 3 replications of 10 fruits. After 14, 21 and 28 days of cold storage the samples of peaches were withdrawn from CA and kept in air at $25\pm 1^{\circ}\text{C}$ for 2, 4 and 6 days, being evaluated for weight loss, pulp firmness, woolliness index, soluble solids content (SS), titratable acidity (TA), exo-polygalacturonase (exo-PG), endo-polygalacturonase (endo-PG) and pectin methylesterase (PME). The results showed that CA reduced weight loss and had a little effect on SS and TA. The CA modified the activities of the three enzymes. The induction of exo-PG and endo-PG activity and the repression of PME activity reduced the occurrence of woolliness. The fruits from CA2 treatment maintained good quality for 4 weeks; PME activity was reduced and the activities of exo-PG and endo-PG, which were low after cold storage, effectively increased at the 4th day post-storage ripening. The control fruits maintained good quality less than 14 days.