

Title Combined pre-storage heat treatment and controlled atmosphere storage reduced internal breakdown of 'Flavorcrest' peach

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Abstract

Chilling injury is a limiting factor for commercial life of peach fruit (*Prunus persica* (L.) Batsch). High CO₂ controlled atmosphere storage (CA) is a proven technology to overcome the disorder, while pre-storage heat treatment appear like an emerging alternative although showing some undesirable side effects. The objective of this experiment was to combine both CA and pre-storage heat treatment to improve control of chilling injury. 'Flavorcrest' fruit were heat treated for 24 h at 39 ± 1 °C (HT) or maintained at 0 ± 1 °C (HC) followed by cold storage with two levels of CA, 5% O₂ + 15% CO₂ (MI); 5% O₂ + 20% CO₂ (MA) or air (AIR). Firmness, juice content and flesh color were evaluated 4 days after harvest and after 3 and 4 weeks of storage. Control fruit (HC + AIR) showed "leatheriness" after 3 weeks; by this time HT, MI and MA, alone or combined were enough to overcome the problem; by 4 weeks only fruit receiving MI or MA softened adequately. Combined treatments were useful for improving juiciness and were the only alternative to reach 4 weeks with commercial quality. Although heat treated fruit had generally redder flesh than others, this side effect was reduced by CA.