

Title Shelf life extension and reduction of chilling injury of 'Hass' avocados stored at ultra-low temperatures

Author John P. Bower and Isa Bertling

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Abstract

A number of disorders are prevalent in avocados when shipped long distances, including external chilling injury and internal collapse manifested as physiological mesocarp discoloration or pathological decay. In order to decrease postharvest stress, and extend shelf life, the concept of minimizing water loss and decreasing rate of carbohydrate reserve usage, was studied. The use of wax fruit coatings was compared to untreated controls and packaging fruits in micro-perforated polypropylene bags. Storage temperatures of 2°C, 5.5°C and 8°C were investigated. Low temperature (2°C) storage for 30 days resulted in internally sound fruit, and by minimizing fruit mass loss during storage, the potential for chilling injury could be decreased. A threshold value of mass loss relating to external damage at 2°C is suggested. The lower storage temperature resulted in lower CO₂ exchange after discharge of fruit, and such fruit also took longer to soften, extending shelf life. In addition, it is possible to ship avocados at a temperature suitable for phytosanitary mitigation, extending marketing opportunities. The most successful treatment was packing the fruit in micro-perforated polypropylene bags. It is suggested that this technology could be extended to cartons and even pallets.