

Effect of Conditioning Temperatures, Intermittent Warming and High CO₂ on Ripening and Chilling Injury Control in 'Hass' Avocado

C. Saucedo-Veloz

Centro de Fruticultura-Colegio de Postgraduados, Chapingo, Mexico, 56230 Mexico

J.M. Martinez-Javega and M. Mateos-Otero

Institute Valenciano de Investigaciones Agrarias (IVIA), Apdo. Oficial 46071, Moncada, Valencia Spain

Abstract. The world volume of avocados exported annually is 100,000 tons. The major export market is the EEC, however, the long transport distances may result in loss of fruit quality due to avocado's sensitivity to low temperature storage (chilling injury). The effect of chilling injury on ripening and quality of the avocado has been studied, however, certain aspects related to ethylene metabolism during chilling are still unknown. Recently, techniques have been introduced to reduce the severity and incidence of chilling injury.

Our results indicate that two peaks of ACC accumulation occur during ripening. The peaks coincide with the ethylene peak production and senescence, respectively. EFE activity diminishes due to chilling injury. This decrease occurs prior to a decline in ACC synthesis or ACC accumulation. Chilling injury symptoms were observed after 4 to 6 weeks of storage at 2C and 4 days at 20C. Less chilling injury was observed when the fruit were conditioned (10C for 1 week + 5C for 1 week + 2C storage) compared to either an intermittent warming treatment (5 hr/week at 20C during 2C storage) or high CO₂ exposure (20% CO₂ for 1 week at 5C + storage at 5C).