

**Title** Influence of cultivar and harvest method on postharvest storage quality of pepper (*Capsicum annuum* L.) fruit

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### **Abstract**

The principal physiological factors that negatively impact pepper fruit during shipment and storage and subsequent marketing are water loss and chilling injury. The current study evaluated the effect of harvest methodology on postharvest water loss from sweet bell pepper fruit and the potential relationship between water loss and chilling injury in cold-stored fruit. The influence of cultivar, epicuticular wax, and AOX gene expression on water loss and chilling injury were examined. Our results demonstrated that the degree of water loss in pepper fruit is subject to effects of genotype and pre- and postharvest environments as evidenced by year to year variation in fruit storage attributes. A comparison of pepper fruit harvest methods, wherein peduncles were either torn or cut, showed that harvest method had little effect on percent water loss. Observations on fruit water loss in relation to fruit size suggested that fruit cuticles are the primary barrier to water loss. A clear relationship between epicuticular wax content and fruit water loss was not evident. Cultivars varied in their susceptibility to chilling injury and fruit water loss was positively correlated with the severity of chilling injury. No correlation was found between endogenous AOX transcript levels and cultivar-specific susceptibility to chilling injury. The results illustrate the difficulty of identifying indices correlated with water loss that could be used to develop or identify cultivars with improved storability. We did, however, find that there are significant differences in storage attributes of pepper cultivars and that routine screening for water loss and chilling injury are advantageous for selection of cultivars most suitable for cold-storage.