Title Prediction of stem browning and quality loss in table grapes (cv. Thompson Seedless) using preharvest and postharvest factors

Author J. Lopresti, O. Villalta, M. Welsh, B. Tomkins and D. Partington

Citation Abstracts Book, 6th International Postharvest symposium, 8-12 April 2009, Antalya, Turkey. 256 pages.

Keyword Storage; grape; quality

Abstract

Australian-grown table grapes may be stored for up to 12 weeks before marketing to minimise over-supply in domestic markets d increase marketing flexibility. Although a non-climacteric fruit with a low rate of physiological activity, eating and visual quality can be significantly reduced by excessive moisture loss. Symptoms of water loss in table grapes include stem browning, berry shrivel, berry shatter and localised browning at the junction between berry and pedicel. Our aim was to determine the effects of preharvest and postharvest factors on development of quality loss symptoms in table grapes during long-term storage d develop a prediction model for use at harvest. Experimental data was collected over three seasons using 'Thompson Seedless' grapes harvested from six commercial vineyards in Victoria, Australia. Data was collected on production practices, weather conditions and bunch morphology. Storage trials were conducted at 0, 2, 4 and 8°C and fruit assessed over a 10 week storage period. Factors that had an effect on the rate of quality loss were determined using a restricted maximum likelihood method L). A prediction model for stem browning was developed using multiple linear regression and non-linear regression techniques. Storage temperature and length of storage were important factors determining the rate of stem browning after harvest. temperatures above 4°C significantly accelerated the development of stem browning. Bunch morphology as measured by pedicel diameter at harvest was a good indicator of browning in stems and incidence of berry shatter. Stems with mean pedicel diameters of greater than 4mm were significantly less susceptible to browning. At a storage temperature of 0°C the combined effect of storage time and pedicel diameter accounted for 70% of the variation in stem browning. Using a prediction model at harvest may allow batches of low-risk fruit to be identified for long-term storage or export, and high-risk fruit marketed domestically. Further validation of this model is necessary to test its robustness over several seasons.