

Title Firmness, respiration, and weight loss of 'Bing', 'Lapins' and 'Sweetheart' cherries in relation to fruit maturity and susceptibility to surface pitting.

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Abstract

A convenient and reliable method that used a specially designed tool to apply a uniform bruising force in situ was developed to assess the relative susceptibility to fruit surface pitting in sweet cherry, *Prunus avium*, cultivars Bing, Lapinus and Sweetheart. Assessment of pitting with a visual scale after 2 weeks storage at 1 deg C was found to be in close agreement with measurements of pit diameter. Using this method Bing showed the greatest susceptibility to pitting in both years of the study and Bing, Lapins, and Sweetheart cherries showed a decline in susceptibility as the fruit matured. The predictive value of fruit firmness at harvest, fruit respiration at harvest, and weight loss in storage was assessed in relation to the severity of pitting. The model to best describe pitting was found to include all 3 physiological variables (firmness, respiration and weight loss). While an acceptable model was obtained when combining all 3 cultivars, the best models were achieved when each cultivar was considered separately. It was concluded that there are likely unmeasured variables involved in determining susceptibility to pitting. Hence, the best approach to predicting pitting susceptibility is the application of the pit-induction method described in this work.