

Abstract:

Water vapour permeance (P'_{H_2O}) is a measure of the ease with which water vapour can escape from fruit. The water vapour permeance of apples (*Malus domestica* Borkh. cv. Braeburn) changes as fruit develop and continues to change during the commercial harvest period. There have been no reports of changes in water vapour permeance after harvest when held in a constant environment. This work investigates changes in water vapour permeance in 'Braeburn' apples after harvest from different harvest times. 'Braeburn' apples were harvested at 8 am and at 3:30 pm from the Fruit Crops Unit research orchard, Massey University. Water vapour permeance ($\text{nmol}\cdot\text{s}^{-1}\cdot\text{m}^{-2}\cdot\text{Pa}^{-1}$) was determined for each fruit at intervals over a 72 h period. Water vapour permeance of 'Braeburn' apples harvested in the early morning declined rapidly within the first 10 h and was more or less constant during the remaining 60-70 h. In contrast fruit harvested in the mid afternoon had lower initial starting points and declined less within the first 10 hours. The decline over time and differences between harvest time are likely to be related to changes in water status and volume of the fruit. A simple model based on the diurnal changes on tree water status is used to explain the decline in permeance after harvest and the effect of harvest time on (P'_{H_2O}).