

Abstract

Superficial scald is an important postharvest disorder of apples and pears. Currently it is controlled by ' postharvest application of Diphenylamine (DPA). However, some countries no longer accept DPA treated fruit and there are concerns regarding disposal of waste and residue levels. Models have been developed to predict superficial scald at harvest that incorporate measurements of fruit maturity, temperature in the orchard prior to harvest and the intended storage period. Forecasting models can be useful for choosing the type of treatment needed that may include a reduced DPA rate, alcohol fumigation, ultra low oxygen storage or use of 1Methylcyclopropene (1-MCP). Seven pomes fruit growing districts in Australia were included as part of trials between 1995 and 2002. The relationship between scald incidence and accumulated preharvest hours below 10°C, starch score at harvest and storage period in CA was determined by fitting linear mixed models using a REML analysis. No single model predicted scald incidence for a specific cultivar across more than one district. Prediction models were developed for eight apple cultivar-district combinations. In cooler districts, accumulated preharvest hours was the most important predictor of scald susceptibility and an accumulation of more than 150 hours below 10°C was usually required before significant scald resistance was encountered. In contrast, fruit maturity usually increases significantly before and during harvest in warmer climates so that starch score was a more important scald predictor under these conditions. Scald forecasting can potentially eliminate or reduce DPA dipping or drenching requirements for fruit with low scald susceptibility.