Abstract:

A new internal browning disorder observed in 'Pacific Rose'™ apples stored in New Zealand coolstores in 1999 is characterised by randomly distributed patches of brown flesh between the locules of the core area out into the cortex. Data obtained from a large coolstore operation in Hawkes Bay, New Zealand showed that 6% of 180 lines assessed at the end of regular air storage exhibited the disorder while 37 % of the 180 lines assessed at the end of controlled atmosphere storage (2 % O_2 and 1-2 % CO_2) had the disorder. The disorder appeared to be linked to stress caused by low internal O_2 or high internal CO_2, similar to Braeburn Browning Disorder. As with BBD, an inherent susceptibility determined by orchard factors and O_2 or CO_2 stress are required for expression of the disorder. Analysis of 58 lines of CA fruit was completed to identify common characteristics in at-harvest fruit quality variables of susceptible lines of fruit. Lines that were more mature at harvest, as assessed by fruit firmness and starch pattern index, and showed more variation in maturity tended to have a greater incidence of the disorder. Further work needs to be undertaken to determine mechanisms for CA-induced internal browning, orchard factors affecting susceptibility and optimisation of fruit selection for CA storage of 'Pacific Rose'™