

Abstract:

During the last years, the use of controlled atmosphere (CA) storage has considerably contributed towards improving the quality of South African avocados exported to Europe. Significant progress has also been made with the quantification of the effect that preharvest factors have on the storage potential of the fruit. Due to the sensitivity of cv. Pinkerton, studies on this cultivar have greatly contributed towards understanding the relationship between CA storage and the role of preharvest factors. In this cultivar, the physiological disorders grey-pulp and black cold injury proved to be the most important quality impairing factors. Grey-pulp is a discolouration of the mesocarp and in certain cases it only becomes visible upon ripening of the fruit. High fruit nitrogen levels and delayed harvesting proved to be the most important preharvest factors causing the disorder. As the inhibition of ripening is the most marked effect brought about by CA storage of avocados, it is to be expected that we found both CA and modified atmosphere (MA) storage to delay but not stop the manifestation of grey-pulp in predisposed fruit. After grey-pulp, the second most important ailment afflicting the 'Pinkerton' cultivar is black cold injury. This type of chilling injury is induced by too low storage temperatures. In contrast with grey-pulp, it is inversely related to harvest maturity while orchard temperatures have also been shown to play a role. Increasing the storage temperature of the fruit was found to effectively reduce the incidence of black cold injury in good quality fruit. We are presently investigating the use of CA in combination with the ethylene inhibitor 1-methylcyclopropene, in an attempt to further increase storage temperatures while still delaying ripening.