Abstract:

Quality assurance throughout the value chain can be enhanced by the availability of non-destructive methods that can be repeatedly used to track individual fruit quality and so alleviate some of the challenges arising from the natural variation that occurs between fruit. Penetrometer measurements have been widely used to measure fruit firmness and may be well correlated with consumer perception of texture but are destructive. Compression tests are less destructive and can provide information on other aspects of texture. The acoustic impulse response technique was compared to penetrometer and compression techniques to assess its utility as a measure of firmness for Zespri™ Gold kiwifruit since it is a truly non-destructive technique. Acoustic stiffness and compression firmness correlated reasonably well at all times and for all harvests. The correlation between penetrometer firmness and acoustic stiffness was lower and dependent on the harvest date, with later harvest showing a better correlation than the earlier harvests. During storage the correlation improved slightly for approximately the first half of the storage period but then declined markedly. The reason for this change in relationship is unknown but did not appear to be due to weight loss.