

Title Temperature dependent quality changes in peach fruit during storage determined using destructive and non-destructive (acoustic, VIS) techniques

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Abstract

To help growers, wholesalers and retailers make decisions regarding storage conditions for peach fruit it is important to have a good idea of how the fruit behave during storage. The objective of our research was to quantitatively follow the quality of fruit from different harvest maturities during storage at different temperatures using different measurement techniques. Peach fruit was harvested in 2008 at 4 different dates and followed during storage at 10°C. Additionally, fruit from the optimal harvest date was stored at 4 different temperatures (20°C, 10°C, 4°C and 0.5°C). The measurement interval depended on the temperature and measurements continued until no firmness changes were noted. The common methodology to measure firmness, soluble solids content (SSC) and titratable acidity (TA) were combined with several non-destructive techniques, specifically acoustic (AFS) and spectrophotometric (VIS) techniques. Changes in firmness followed a sigmoidal curve with a clear temperature dependence and different lag time for fruit with different harvest maturity. Stiffness changes did not follow the same pattern and there was no temperature dependence. SSC content did not change noticeably whereas acidity gradually decreased. The changes in the spectrophotometrically determined quality indices added an additional level of information. These results indicate that a combination of non-destructive techniques is capable of following quality changes in peach fruit and will provide similar information as the destructive measurements.