Impact test as a tool for evaluation of peach firmness

L. Severa, S. Nedomová, J. Buchar, J. Trnka, P. Dvořáková

Acta Horticulturae 962: 577-584. 2012.

Abstract

The paper involves experimental results on the peaches' firmness evaluation. The 'Red Heaven' peaches have been used. The firmness has been evaluated by two independent methods: penetration test and non-destructive impact of the peach. Penetration method was based on resistance of the fruit flesh to deformation by the puncture probe. Non-destructive impact was carried out as free fall of the bar from defined height. After impacting the peach, the response has been measured in terms of surface displacement and/or surface velocity. The peach response has been evaluated both in the time and frequency domain. The analysis shown, that response dominant frequency was significantly affected by peach firmness and mass. Impact orientation, detected orientation, and impact velocity did not significantly affect the dominant frequency. Dominant frequency increased with increasing peach firmness, and decreased with increasing peach mass. The acoustic technique was found to be very effective and its sensitivity to firmness was evaluated as greater than the classic method. The correlation between both methods varied according to the freshness.