



## Monitoring avocado softening in low-temperature storage using ultrasonic measurements

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### Abstract

The objective of the present work was to study the effects of storage time and temperature on the softening process of avocado fruits, by means of non-destructive ultrasonic measurements. The attenuation of the ultrasonic waves, transmitted through the fruit tissue changes as a result of the ripening and softening of the fruit during storage. Several batches of avocado fruits, each stored at a different temperature, were examined until their designated storage time was completed. The fruits were subjected to non-destructive ultrasonic tests as well as to destructive penetration measurements of the tissue firmness. Statistical analysis applied to the attenuation of ultrasonic signals of avocado fruits stored at several low temperatures yielded quite good linear fit curves. This suggests that for a given temperature, the ultrasonic method can be used as a non-destructive firmness monitoring technique during low-temperature storage. © 2000 Elsevier Science B.V. All rights reserved.

*Keywords:* Ultrasonic transducers; Firmness; Temperature measurements; Avocado

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