

**Title** Nondestructive examination of tomato during the course of shelf life  
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#### **Abstract**

A nondestructive ultrasonic method was used to monitor the firmness and sugar content of greenhouse tomatoes (cv. 870) during their shelf life. This method is based on measurement of acoustic wave attenuation in the fruit tissue, by means of ultrasonic probes in contact with the fruit peel. The differences in the acoustic signals transmitted through the tissue of fruits of various degrees of firmness were measured and analyzed. The fruits for measurement were transferred from a greenhouse to a controlled-temperature room, and experiments were carried out at intervals throughout the storage period. The fruits were subjected to nondestructive ultrasonic tests and also to destructive penetration measurements of firmness. The results were analyzed statistically to determine the changing relationships between the ultrasonic attenuation measurements and the destructive measurements, during the course of shelf life. The measured attenuation was found to be significantly decreased and the firmness was obviously found to decrease significantly in the course of shelf life. A linear relationship between the attenuation and the firmness was observed until the end of the softening process. This suggests that this ultrasonic method might be used as a nondestructive means of monitoring the firmness of tomatoes during various stages of storage.