

Title Investigation of ripening process of fruit and vegetable samples by acoustic method
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Abstract

The non-destructive acoustic test offers an excellent possibility to measure the stiffness of individual produces during their maturation or ripening. A method was developed and a new mechanical parameter was introduced for the in vivo characterization of mechanical properties of fruits and vegetables. Both repeatability and reproducibility of the method were tested under field conditions, and results were found to be very encouraging. Repeated tests of individual fruit (apple and pear) and vegetable (cucumber) samples during ripening were performed with high resolution and without any destruction. Ambient temperature and relative humidity were recorded in parallel with the stiffness tests. Superposition of a short period stiffness fluctuation (related to the daily fluctuation of temperature and humidity) and a long-term softening (related to the physiological changes) were recognised based on the experiments. This latter was modelled as a function of the cumulative effect of the ambient conditions to find a prediction model for the optimum harvest date.