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Res. Agr. Eng.

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Static and dynamic

tests of pear bruise sensitivity

Res. Agr. Eng., 50 (2004): 54-60

The paper is a continuation of the preceding research of bruising sensitivity applied to different pear varieties. This study was based on quasi-static fruit testing in compression between two plates. One part of the method is based on determining the hysteresis losses corresponding to the predetermined low level bruising. This paper contains an attempt to apply the hysteresis loss concept to dynamical impact tests, which are simpler and quicker then quasi-static ones. Moreover the impact tests are closer to the character of deformations that initiating the bruising process in real conditions. Nine pear varieties were tested quasi-statically by the method developed previously. The same varieties were tested also dynamically in a special pendulum with flat and round indentors. The results show that the dynamic test is less sensitive in determining the bruising susceptibility than the previous quasistatic one. Moreover the success of the dynamic test depends on the shape of the indentor. Acceptable results were obtained with a flat indentor in contrast to the round indentor. For the last modification of the indentor we obtained the results, from which it was practically impossible to determine the maximal value of the hysteresis losses at which no bruise spots were formed.

Keywords:

pears; bruising; compression; impact; bruise volume; absorbed energy; hysteresis losses; degree of elasticity; quality; indentor; spherical; indentor with a flat head

[fulltext]