



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Effect of Storage Time on Some Mechanical Properties and Bruise Susceptibility of Pears and Apples

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Abstract: This research was conducted to evaluate the effect of storage time on some mechanical properties and bruise susceptibility of Williams and Ankara varieties of pear and Starkspur Golden Delicious and Starking varieties of apple. The research was performed in 2 stages. Firstly, compression tests were conducted to determine the mechanical properties of fruits. Secondly, an impact test was used to determine the bruise susceptibility of test materials. Impact tests were performed using a pendulum with 50 cm arm length. The tests were carried out at 5 storage times (harvest day, 1st, 2nd, 3rd and 4th month) and 3 drop heights for the impact tests (10, 15 and 20 cm). During the compression tests, a curve-ended cylindrical probe with 8 mm diameter was used to compress the fruit at 7 mm min⁻¹ load velocity. Results of the compression tests indicate that the bioyield point force, modulus of elasticity and deformation energy of the pear and apple varieties decreased with increasing storage time. Modulus of elasticity decreased from 1.68 to 0.51 MPa for Williams, from 1.34 to 0.8 MPa for Ankara, from 1.45 to 0.88 MPa for Starkspur Golden Delicious and from 1.51 to 1.1 MPa for Starking with increasing storage time. The impact test results show that the bruise susceptibility values of Ankara and Starking are higher than those of the other varieties when a comparison is made between 2 varieties. The bruise susceptibilities of Williams and both apple varieties tended to decrease with increasing storage time, whereas that of Ankara increased. According to the analyses of variance results, variety and storage time are significant for the bioyield point force, modulus of elasticity, bruising volume, absorbed energy and bruise susceptibility. Furthermore, drop height significantly affected the bruise susceptibility of Ankara, while there was no significant effect on bruise susceptibility for Williams or the 2 apple varieties.

Key Words: Mechanical Properties, Modulus of Elasticity, Bruise, Bruise Susceptibility, Pear, Apple

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