

## **Abstract**

Stress-induced enzymatic browning is one of the most important limiting factors in producing quality soft fruit (apples, cherries, pears, etc.) and soft vegetables (e.g. potato tubers). This can result from bruising, and the bruise extent is expressed by bruise volume depending on the total work of loading and/or the energy absorbed during loading. Pears of 22 varieties were analysed, most of them tested in loading–unloading compression tests between two flat rigid plates to determine variety sensitivity to bruising. The bruises were cut and their volume was determined from the observed cross sections. The analysis of the obtained results shows that from a mechanical point of view, the susceptibility of the fruit to bruising increases with both the decreasing fruit degree of fruit elasticity and hysteresis losses. Because both the parameters are negatively correlated, a new suitable mechanical parameter was defined as a measure of the variety resistance to bruising: Bruising harmonic index ( $BHI_{0.5}$ ) the harmonic mean value of characteristic hysteresis losses and degree of elasticity at formation of bruise spots of  $0.5 \text{ cm}^3$  in volume. Fruit mass and shape effects were accounted for in normalised loading. The results were compared with panel results in seven seasons.