

Title The effect of impact and fruit properties on the bruising of peach

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Abstract

Peach fruit quality is adversely affected by bruise damage. In order to reduce this damage, it is necessary to know the influence of fruit properties on bruise susceptibility. Two bruise prediction models were constructed for the damage susceptibility of peach fruit (measured by bruise volume) using multiple linear regression analyses. In the first model, peak contact force and three fruit properties (acoustic stiffness, fruit temperature and radius of curvature) were used as independent variables. In the second model, peak contact force was replaced by the impact energy. Peaches were subjected to dynamic loading by means of a pendulum at three levels of impact. Significant effects of acoustic stiffness, temperature and the radius of curvature and some interactions on bruising were obtained at 5% probability level with the coefficient of determination of 0.97 and 0.98 for models 1 and 2, respectively. It was concluded that lowering the temperature and increasing the radius of curvature and acoustic stiffness will reduce the bruise damage of the peach fruit.