

Title Effect of transport vibration levels on mechanical damage and physiological responses of Huanghua pears (*Pyrus pyrifolia* Nakai, cv. Huanghua)

Author Ran Zhou, Shuqiang Su, Liping Yan and Yunfei Li

Citation Postharvest Biology and Technology, Volume 46, Issue 1, October 2007, Pages 20-28

Keywords Pears; Fruit; Vibration; Mechanical damage; Bruise; Firmness; Enzyme; Hydrolase; Cell wall; Electrical conductivity

Abstract

The effect of transport vibration on the quality of Huanghua pears (*Pyrus pyrifolia* Nakai, cv. Huanghua) during commercialization (room temperature) after transport was tested. Different vibration levels on the front and rear floors in a 2-tonne truck with leaf-spring suspensions were evaluated for their effect on mechanical damage to fruit during transport. Changes in color and cell membrane permeability of pear skin, flesh firmness, hydrolase activities and cell wall constituents were examined in fruit stored for up to 36 days after transport. Our data suggest that the damage levels of pears loaded on different positions in the truck were significantly different ($p < 0.05$) and pears in top containers of columns were damaged more heavily than this in bottom containers ($p < 0.05$). Physical and chemical results showed that mechanical damage caused by different vibration levels to pears affected plasma membrane integrity of skin cells and contents of the polysaccharide components in the cell walls of pear tissue, which contributed to color change and softening of pears during subsequent commercialization after transport.