

Title Characterization of a marker of mechanical damage in Clemenules
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Abstract

The main objective of this work was to determine a marker that may characterize the fruit that has experienced mechanical damage. Clemenules fruit (*Citrus reticulata* Blanco ‘Clemenules’) were artificially damaged; more specifically, the different kinds of damage tested were: scratching, severe and moderate compression and puncture. Physiological changes were recorded during 8 days of storage at 20°C. The changes in ethylene production, respiratory rate, rind colour, internal maturity, weight and texture loss were assessed to determine their ability to characterize the damaged fruit. Ethylene production and respiration rates were determined using a flow-trough system at 20°C. Ethylene levels were analysed by gas chromatography and CO₂ levels by infrared spectrophotometry. External rind colour (commercial IC index) was determined with a colorimeter in L*a*b* coordinates and compression firmness with a texturometer. Change in internal maturity was determined as the ratio between soluble solids content and titratable acidity. Scratch damage and severe compression caused significant increases in ethylene production. Scratch damage also caused a significant increase in weight and texture loss probably because of water loss through the bruised rind. None of the types of mechanical damage resulted in a change in rind colour, but all caused an increase in internal maturity after 3 and 8d of storage at 20°C as well as significant increases in respiratory rates during the entire experimental period. We proposed to use this last physiological marker to characterize the damaged fruit and to determine the impact that the different processes in the postharvest chain may have.