

Effects of bruising and storage duration on physiological response and quality attributes of pomegranate fruit

Zaharan Hussein, Olaniyi Amos Fawole and Umezuruike Obia Opara

Scientia Horticulturae 267: 109306. (2020)

Abstract

This study examined the effects of impact bruise damage on the postharvest physiological, response, physicochemical quality and antioxidant properties of pomegranate fruit. Fruit were subjected to low (20 cm), medium (40 cm) and high (60 cm) drop impacts by falling freely once onto the cheek position to a hard surface. Bruised and control (non-dropped) fruit were further stored at 5 ± 0.5 °C for 90 d plus 4-day shelf storage at 20 ± 2 °C. Fresh arils were obtained from the bruise-damaged and control fruit at 14 d intervals for physico-chemical and phytochemical quality evaluation. Impact bruising induced resulted in a 2-fold fruit respiration rate at least during the first 4 weeks of storage. Changes in total soluble solids (TSS) and titratable acidity (TA) were significantly ($p < 0.05$) induced by bruising at medium and high drop impact. Furthermore, high impact bruising resulted in 30 % of both decay incidence and internal fruit decay of fruit after 12-week storage. Furthermore, the combination of drop impact and storage significantly ($p < 0.05$) affected peel hue angle (h°), as well as aril lightness (L^*), redness (a^*), chroma (C^*) and h° . The radical scavenging activity and total phenolic content were higher in bruised-damage fruit at medium and high impacts.