Fruit quality traits of ten California-grown pomegranate cultivars harvested over three months

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Abstract

Pomegranate (*Punica granatum* L.) is a deciduous tree crop. Its fruit are known to have relatively high concentrations of polyphenolic compounds and antioxidant properties. The USDA-ARS pomegranate germplasm collection maintains over 250 cultivars, but most have not been evaluated for optimal harvest dates or fruit quality. In the following investigation, pomegranate germplasm was evaluated to determine optimal harvest windows, identify cultivars with consumer-friendly traits, and to compare fruit quality with the industry standard, 'Wonderful.' Fruit from ten cultivars were analyzed for the following traits: fruit weight, fruit diameter, fruit length, calyx diameter, calyx length, weight of 100 arils, weight of all arils, edible portion of fruit, ºBrix, titratable acidity (TA) (% in citric acid equivalents), maturity index (MI) (sugar to acid ratio), antioxidant activity (AA) (% inhibition of DPPH), and total phenolics (mg/L in gallic acid equivalents). Cultivars selected from the germplasm included those similar to 'Wonderful' as well as cultivars with other traits, such as softer seeds, which could meet wider consumer demand. Many trait values increased over time (ºBrix, MI, etc.), while some decreased over time (AA, TA). Sugar to acid ratio was used as the MI and there were significant differences among cultivars. Lower acid, sweet cultivars had higher MI than sweet-tart, tart, and sour cultivars. For cultivars with high sugar to acid ratios, growers may need a different MI from 'Wonderful' to determine fruit maturity for commercial production.