Abstract

A study was conducted to detect differences in sensory and chemical characteristics of melting-(MF) and nonmelting-flesh (NMF) peach genotypes intended for the fresh market. Sensory results showed that the NMF fruit ('Oro A' and FL 86-28C) were rated as "harder," less "juicy," and more "rubbery" than their MF (FL 90-20 and 'TropicBeauty') counterparts. A principal component analysis of the sensory data showed a clear distinction between the textural aspects of MF and NMF fruit, but not between their flavor aspects. Likewise, chemical analysis showed that while differences in pH, titratable acidity, and soluble solids were detected among the four genotypes, no consistent grouping could be made based on the MF/NMF nature of the fruit.

Individual linear correlations were conducted between each genotype's fruit attributes at harvest and their respective sensory first principal components (PC1s) after storage and ripening. Following are the three attributes that best correlated with PC1, and thus, they are the most promising maturity indices; for FL 90-20: ground color (GC) hue, GC L, and cheek (CH) texture; for 'TropicBeauty': peel L, CH texture, and blossom-end (BE) texture; for 'Oro A': CH texture, BE texture, and CH chroma; for 86-28C: BE texture, CH hue, and CH texture. BE and CH texture were highly correlated with PC1s in both MF and NMF genotypes, thus highlighting texture as a potential maturity index.

A study to compare the response to postharvest chilling of MF (FL 90-20, FL 90-21, and FL 91-16) and NMF ('Oro A', FL 90-35C, and FL 90-47C) genotypes revealed that while all MF genotypes developed symptoms of mealiness in 1 or 2 weeks, the NMF genotypes did not show this disorder. Mealiness in the MF genotypes was apparently related to an increase in cell separation. Histologically, chilling of MF fruit brought about an impressive expansion of the intercellular spaces in mesocarp tissue, but did not affect NMF fruit. Sensory evaluation to assess chilling injury showed that while chilled MF fruit were scored as significantly more "mealy," less "sweet," and with less "peach character" than non-chilled fruit, no major differences in those notes occurred between chilled and non-chilled NMF fruit. On the other hand, chilled fruit of both MF and NMF types were scored as significantly less "juicy" and "harder" than non-chilled fruit. An analysis of aroma volatiles revealed that the most relevant changes occurring in both MF and NMF fruit with chilling were an

increase in (E)-2-hexenal and a decrease in the levels of γ- and δ-decalactones. However, the extent of the drop in both decalactones was significantly less in NMF than MF fruit.