

Title Relationship of soluble solids, acidity and aroma volatiles to flavor in late-season Navel oranges

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Abstract

Navel orange flavor development during early fruit maturation is strongly dependent on changes in soluble solids concentration (SSC) and titratable acidity (TA), while later in the season other factors, such as aroma volatiles, also become important. The flavor of individual oranges can differ greatly, even among oranges of the same strain harvested from the same location, and the basis of these flavor differences is often unclear. In late-season navel oranges especially, where the fruit are often very sweet due to high SSC and low TA, there are many questions as to the internal quality factors that impact flavor. Oranges were harvested in May, which is late in the navel orange season in California, and a portion of each fruit juiced to analyze for SSC, TA and aroma volatiles, the latter being determined by gas chromatography/olfactometry. The remaining portion of each fruit was tasted using semi-trained sensory panelists and rated for old, rich, tart and sweet flavor and given a likeability score. In this manner the flavor for each individual fruit evaluated (n=189) could be related directly to the quality measurements. Among the oranges evaluated there was a large range of likeability scores ranging from 3.7 (dislike slightly/moderately) to 8.7 (like very much/extremely). Sweetness, richness and old flavor were positively related to likeability, while tartness was unrelated. Both SSC and BrimA (SSC - 4*TA) were weakly correlated to likeability. Twenty different odor-active compounds were consistently identified and quantification of the associated peaks revealed large fruit-to-fruit variability in amount. A number of these compounds tended to be higher in amount in fruit with higher SSC, T A and BrimA although there was no obvious association with likeability or the other sensory parameters.