

New study informs blueberry flavor selection

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Four developmental stages of each southern highbush blueberry cultivar were harvested for volatile analysis: green, breaker, red, and blue. Credit: Photo courtesy of James Olmstead

The University of Florida's (UF) Blueberry Breeding Program has been developing successful blueberry cultivars for more than 60 years. The

cultivars released from UF are credited with creating a Florida blueberry industry that was valued at \$48 million in 2010, and allowing rapid expansion of blueberry production in other subtropical areas of the world. In the past, blueberry flavor selection in the program was based on two standards: subjective ratings from breeders, and a berry's sugar-to-acid ratio. Recently, scientists have determined that the "eating quality" of blueberries has a much higher correlation to consumer acceptance and indication of "blueberry-like flavor intensity" than the traditional measures of sweetness, acidity, or sugar/acid ratios.

Identifying blueberry volatile components that correspond to the fruity, intense, sweet, and characteristic blueberry flavors could help blueberry breeders select for [cultivars](#) that produce a more desirable flavor. A new research study from University of Florida Institute for Plant Innovation scientists Jessica Gilbert, Michael Schwieterman, Thomas Colquhoun, David Clark, and James W. Olmstead (*HortScience*, July 2013) sought to measure the characteristics associated with the "blueberry eating experience" by prioritizing the traits that could help improve flavor.

The study compared volatile profiles of five southern [highbush blueberry](#) cultivars (Farthing, FL01-173, Scintilla, Star, and Sweetcrisp) using gas chromatography–mass spectrometry. "These five cultivars are significant in Florida and have been subjectively rated as having varied flavor characteristics," noted lead author James Olmstead. The research team harvested all five cultivars on four separate dates during the [harvest season](#), and fruit from each cultivar were also harvested at four developmental stages on the first harvest date. As expected, total volatiles showed dramatic increases as ripening progressed. 'Star' had the smallest statistical variation in volatile content over the 4-week harvest period, whereas 'Scintilla' had the largest variation in volatile content. "We sought to profile the changes in volatiles through blueberry development. The general profile was an increase in total volatiles in blueberry samples as fruit progressed in maturity from green to blue,"

Olmstead explained.

The researchers noted that, when blueberries are commercially harvested when they are immature, they may contain low levels of many of volatile compounds, and therefore will not have the characteristic blueberry flavor. "If the volatiles in this study are in fact the most important to the perception of blueberry flavor, then 'Star' may have the most consistent flavor in response to varying environmental factors," they concluded.

More information: The complete study and abstract are available on the ASHS HortScience electronic journal web site:

hortsci.ashspublications.org/c ... nt/48/7/835.abstract

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