

Title: Changes in flavor-related compounds, sugars and acids, after application of Ethephon and 1-aminocyclopropane carboxylic acid.

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Blueberries are among the leading crop with two main types of cultivated in Georgia, the southern highbush blueberry and rabbiteye blueberry. Blueberry fruits grow in a cluster and fruit maturity times vary among fruit within a cluster resulting in a non-uniform ripening, the duration of which can extend over several weeks, thus requiring multiple harvests for each cultivar. In January 2019, we conducted surveys at the Annual Blueberry Meeting in Alma, GA and the Southeast Fruit and Vegetable Conference, in Savannah, GA. The survey was taken by 43 growers. When asked about the value placed on reducing harvesting frequency, ~ 86% of blueberry growers placed high to moderate value on reducing harvest frequency. Thus, synchronized ripening is a desired trait that will save production related costs in commercial blueberry production. Previously we have shown that Ethephon and ACC application at 250 ppm increased the rate of ripening in two rabbiteye cultivars, ‘Premier’ and ‘Powderblue’. Here, we propose to test the effects of these two-ethylene related plant growth regulators on fruit flavor-related compounds, mainly sugars and acids. We determined the major sugars and acids present during blueberry fruit development. Fructose, glucose, and sucrose were the three major sugars that accumulated during blueberry fruit development. Malic acid, citric acid, quinic acid, and shikimic acid were the major acids in blueberries. Overall, application of ethylene releasing PGRs did not influence sugar and acid composition in the fruit. These results suggest that the PGRs may be effective as ripening aids to concentrate fruit ripening with minimal effects on fruit flavor related sugar and acid metabolites. These data also suggest that the PGRs can enhance ripening possibly by influencing color change. Hence, future studies will focus on the effects of ethephon and ACC applications on anthocyanin production.