Title: Metabolite analysis to identify markers for higher fruit firmness and longer shelf-life in southern highbush and rabbiteye blueberry

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Blueberries (*Vaccinium spp*.) is a leading crop, especially in GA. Fruit quality decreases after harvest, during their postharvest life span. Fruit respiration continues even after harvest which is tied to various biochemical and metabolic pathways ultimately affecting the composition of sugars, organic acids, and fatty acids. These metabolites may be useful predictors of fruit quality changes during postharvest storage. For example, previous studies have indicated the importance of metabolites in plum and tomatoes. In this proposal we investigated the metabolic composition of blueberry fruit during ripening and postharvest storage. Preliminary data from 2015 had suggested that quinic acid may differ in cultivars that vary in texture; higher quinic acid was present in cultivars that had higher firmness and increased postharvest shelf life in both southern highbush and rabbiteye cultivars. In this study, we quantified metabolites from southern highbush cultivars from 2017, however patterns of quinic acid did not hold up which may be due yearly or environmental variations. Due to the Covid-19 pandemic we could not investigate metabolic composition of all cultivars initially proposed in this study. Currently we plan to screen additional cultivars to make more definitive conclusions about underlying metabolic changes associated with fruit firmness and/or shelf-life. As such, providing more knowledge of changes in fruit composition such as sugars and acids that may be reflective of fruit quality would help in identifying metabolites that can serve as markers that predict blueberry quality. This information will be useful to the southeastern blueberry breeding programs and will help to make informed decisions about selection of new cultivars and parents.