Effects of ethylene-related plant growth regulators on blueberry ripening and postharvest storage

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Blueberry (Vaccinium Sp.) has emerged as a major fruit crop in the southeastern United States. During ripening, individual blueberry fruit on the branch mature at different rates resulting in a non-uniform ripening period extending over 2-3 weeks (Suzuki et al., 1997). However, factors that regulate ripening in blueberries are poorly understood. Respiration and ethylene evolution characteristics of southern highbush and rabbiteye blueberry genotypes of current significance are not well understood. Further, the effects of plant growth regulators associated with ethylene biosynthesis and action have not been sufficiently well evaluated in blueberry. In this study, the respiration and ethylene release characteristics of several southern highbush and rabbiteye blueberry cultivars were evaluated. The effects of three PGRs associated with ethylene on fruit ripening and fruit quality were also evaluated. The results indicated that the blueberry types and cultivars differed in their respiration and ethylene release traits. Most of the blueberry types and cultivars displayed a peak associated with the onset of ripening. These data may have implications for postharvest storage of blueberry. A PGR associated with promoting ethylene release resulted in accelerated ripening. This can potentially reduce the number of harvests and reduce production costs. Further evaluation of such PGRs will determine their broad applicability on southern highbush and rabbiteye blueberry genotypes.