Applications of Plant Growth Regulators for Improvement of Huanglongbing-affected ‘Hamlin’ under Biotic and Abiotic Stress

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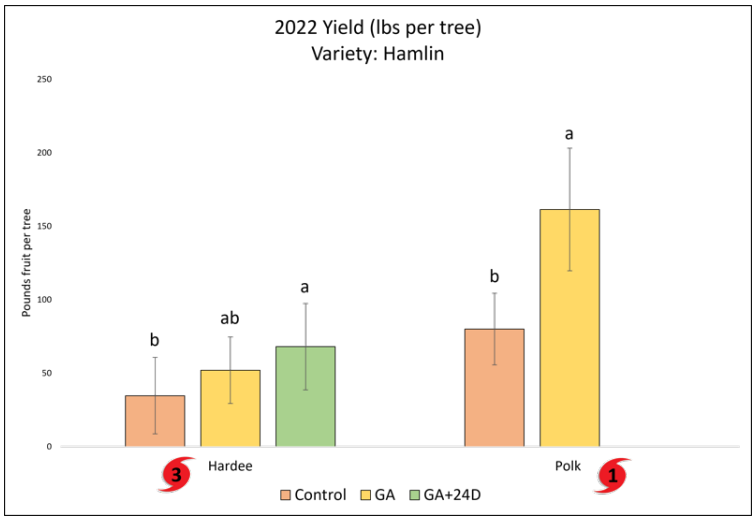

Take Home Message:

- GA applications on HLB-affected ‘Hamlin’ increased yield and reduced fruit drop.
- GA applications mitigate negative response to abiotic factors such as hurricanes and hard freezes.
- Use of 2,4-D can reduce further fruit drop caused by damage from hurricanes.

Summary: Canopy health of HLB-affected citrus has been directly related to disease severity, fruit drop, and overall fruit production. Some success has been found with the use of certain plant growth regulators (PGR) such as gibberellic acid (GA) and 2,4-Dichlorophenoxyacetic acid (2,4-D) to achieve healthier trees with reduced fruit drop and increased production. Application of these PGRs to ‘Hamlin’ in various combinations and weather conditions has given some promising results for building resilience in the HLB-endemic era. Grower collaborated field trials evaluating the use of GA on HLB-affected ‘Hamlin’ were initiated in Polk and Hardee counties in August 2021 and repeated in 2022. GA was applied 2-4 times from August to November at 45-day intervals. Yield results from year one showed that GA-treated trees retained on average 34.4 pounds more fruit than the control trees and in year two, after Hurricane Ian devastated the Hardee County site, the GA trees still retained on average 50 pounds more fruit than control. As a hurricane recovery measure, 2,4-D was applied to a subset of GA-treated trees in Hardee County two weeks after Hurricane Ian, and the treated trees had retained 33.3 pounds more fruit than control trees at harvest. On top of Hurricane Ian, Hardee County also sustained a significant freeze in early February 2022 where the control trees lost 17% of their canopy while the GA trees only lost about 4% which suggests that GA treatments may also help with freeze damage mitigation. Results show that the use of PGRs such as GA and 2,4-D may help the tree’s ability to mitigate HLB disease symptoms while also protecting against Florida’s unpredictable weather patterns.

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