

# HLB Management, PGRs and Fruit Drop

**P**lant growth regulators (PGRs) are chemicals that increase or decrease plant growth, flowering and/or fruit set. PGRs include some herbicides. This article summarizes research studies on how PGRs might aid in the management of HLB. Although several successful herbicide practices were developed by University of Florida Institute of Food and Agricultural Sciences (UF/IFAS) researchers [including M. Singh, partially funded by the Citrus Research and Development Foundation (CRDF)] to kill HLB-infected trees, little industry interest evolved from these practices because growers became more interested in saving HLB trees through management than in removing infected trees.

Several other studies (J. Burns, UF/IFAS) sought to determine if seasonal timing of hedging of sweet oranges, along with the use of PGRs to control subsequent leaf growth, could aid in psyllid management. Effects of hedging and PGRs on psyllids did not appear to be due to growth retardation or specific toxicity of PGRs. Although more declined HLB trees usually drop more fruit than declining trees before harvest, frequent low application rates of the PGRs 2,4-D and cytokinin did not consistently reduce preharvest fruit drop when applied in late January or right before harvest (L.G. Albrigo, UF/IFAS).

Other studies (E. Johnson, UF/IFAS) tried to determine the efficacy of PGRs as a tool to mitigate HLB-induced declines in citrus tree root and canopy growth. Results were not conclusive and did not support any effects of 2,4-D in reducing citrus fruit drop.

Additional CRDF-designed 2,4-D field trials were established at eight Central Florida locations to determine if a single, on-label application of Citrus Fix (2,4-D) spray in late December (2014 and 2015) could mitigate Valencia preharvest fruit drop from HLB-affected trees. Fruit-drop counts were checked every two weeks until harvest in March 2015 or April 2016. Total overall fruit drop was quite high (from 25 to 76 percent) and variable from tree to tree and from location to location. Overall, the percentage of fruit drop was significantly reduced from 5 to 28 percent by the single, 2,4-D spray, but in only three of the seven trials. This work resulted in a publication titled, "A Single Application of 2,4-D Can Decrease Preharvest Fruit Drop in HLB-Affected 'Valencia' Orange Trees" in the 2015 Proc. Fla. State Hort. Soc. 128: 70-72. Overall, it appears that PGRs may work as intended in healthy, non-HLB trees, but the added stress and decline of HLB trees negate any consistent PGR affects in diseased trees.

Strigolactones (SL) are relatively expensive PGRs (E. Etxeberria, UF/IFAS) that potentially could be of use to combat HLB. Foliar sprays or soil drenches of HLB trees in greenhouse pots resulted in increases in leaf flushes and increased root growth over non-treated HLB trees. Thus, SL may result in restored tree health, but the current cost makes it unlikely to be of commercial use in ameliorating HLB symptoms of trees in the field. Further declines in costs may offer an opportunity to integrate SL with present grove-care practices.

*Prepared by the CRDF project management team*

