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Use of Gibberellic Acid Treatments to Improve Health and Yield of HLB-Affected Sweet Orange Trees (Part 1 of 2)

HS1456
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Gibberellic Acid (GA_3, referred to as GA in this document)

- Commercially available for exogenous foliar spray on citrus.
- Used in Florida citrus industry for decades to improve fruit set, improve fruit quality, delay harvest, and reduce drop (see *UF/IFAS Florida Citrus Production Guide: Plant Growth Regulators*, https://edis.ifas.ufl.edu/publication/hs1310).

Orange line: Average yield percent differential between the GA- treated trees and the control, which ranges from 19% to 44%.

Green line: Average (on-tree) profit differential estimated using the average prices for the 4 seasons; ranges from 13% to 34%, suggesting GA use can be profitable.

GA Valencia Orange Field Trial (2016–2021)

SETUP

- 10-year-old 'Valencia' on Swingle.
- GA applied monthly from September to January for five consecutive years.
  - 10 fl oz per acre (ProGibb® LV plus) + 0.125% surfactant (Induce®).
  - 1 gallon per tree spray volume.

FINDINGS

- GA treatment resulted in synchronized and reduced flowering.
- GA-treated trees showed better canopy growth (see picture on back sheet).
- GA treatment increased average fruit size by 5%.
- GA-treated trees had 15%–20% lower pre-harvest fruit drop.
- With GA-treatment an improvement in yield was observed (see graph).
  - On average (4-year yield) GA-treated trees produced about 50 lb more fruit per tree than control.
- GA treatment resulted in fruit peel remaining green (picture on back), which can be a concern for fresh fruit.

4-year average yield of untreated and GA-treated trees		
Treatment	**Pounds of fruit/tree**	**Boxes per tree**
Untreated	176	1.9
GA-treated	228	2.5

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Suggested Use Pattern for Sweet Oranges

- For Valencia: September–January (five monthly applications)
- For Hamlin: August–October (three monthly applications)
  - Plan for a 3-to-4-month gap between last application of GA and harvest
- 10 fl oz ProGibb® LV plus per acre per application or GA 20 g a.i. per acre per application
- 0.125% surfactant (nonionic, low foam; Induce®)
- Spray volume: 125–150 Gal/A (good spray coverage)

May 2019: Photo of untreated (left) and GA-treated (right) 'Valencia' trees.

Note differences in canopy density, fruit drop, and fruit color. GA-treated tree has more fruit than untreated, but due to green color they are difficult to see.

Key Findings

1. Another tool in the citrus tree health management toolbox.
2. GA is available for use in FL citrus.
3. GA can improve fruit set, development, and yield.
4. Application time is critical.
5. GA can slow peel color and Brix development.

February 2019: Untreated (left) and GA-treated (right) 'Valencia' trees.

Note differences in canopy density and fruit color. GA-treated tree has more fruit than untreated, but due to green color they are difficult to see.