

Plant growth regulators to reduce post hurricane fruit drop

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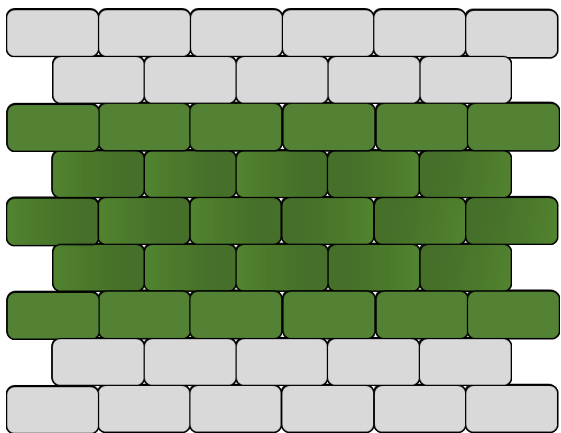
Fruit Drop

- HLB exacerbates fruit drop
- Trees with thinner canopy loses more fruit
- Hurricane brings:
 - High force winds
 - High amount of rainfall
- Fruit drop due to wind caused mechanical breaking
 - Immediately, fruit close to maturity drops more
- Fruit drop because of stress: water logging and ethylene production
 - Slow, in weeks to come...

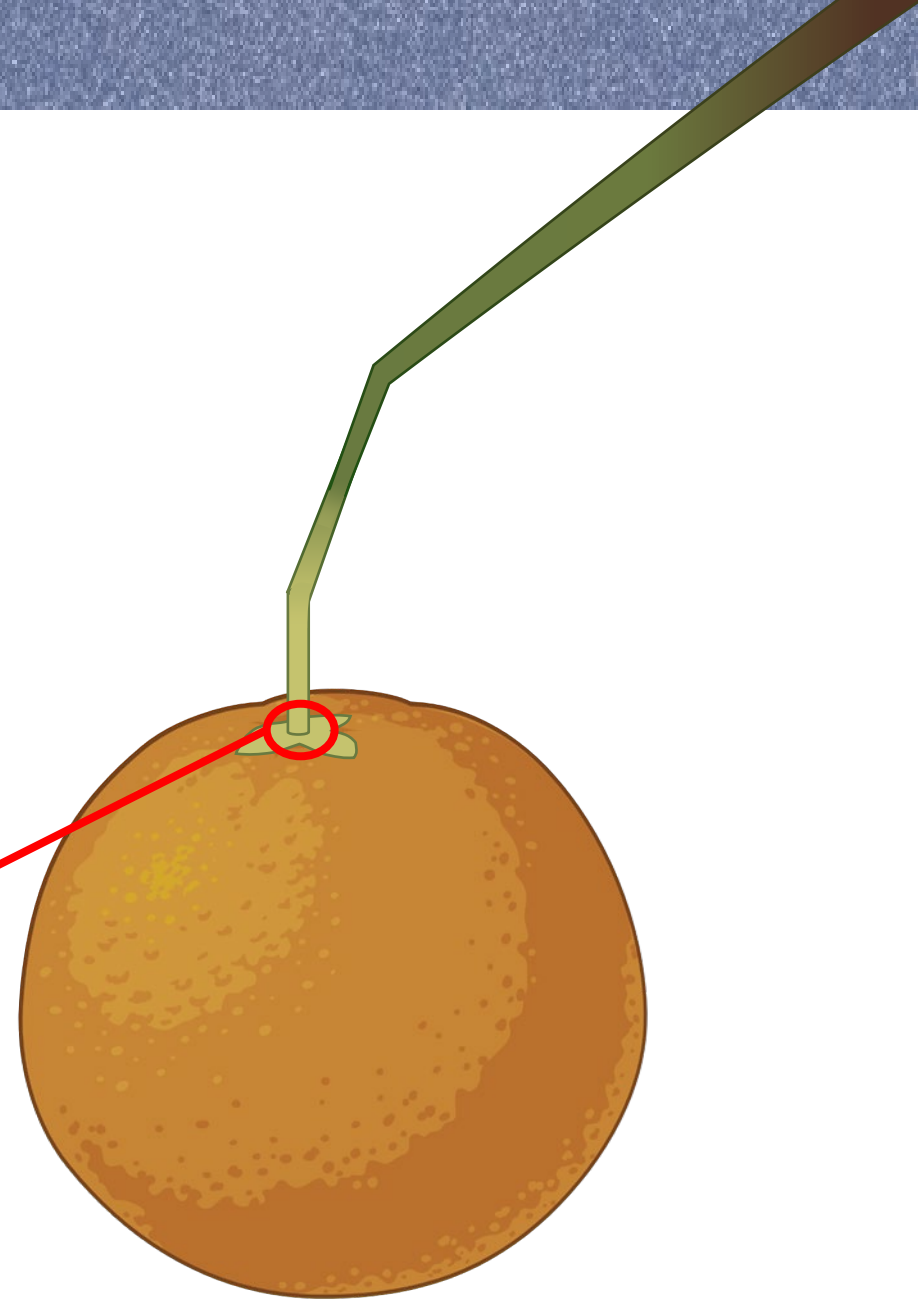


Fruit drop and ethylene

- As the fruit matures, it becomes more sensitive to ethylene
- Ethylene can trigger the process of abscission
- Trees enduring the high-speed wind and water logging are expected to produce high levels of ethylene



Ethylene



GA and 2, 4 -D can help!

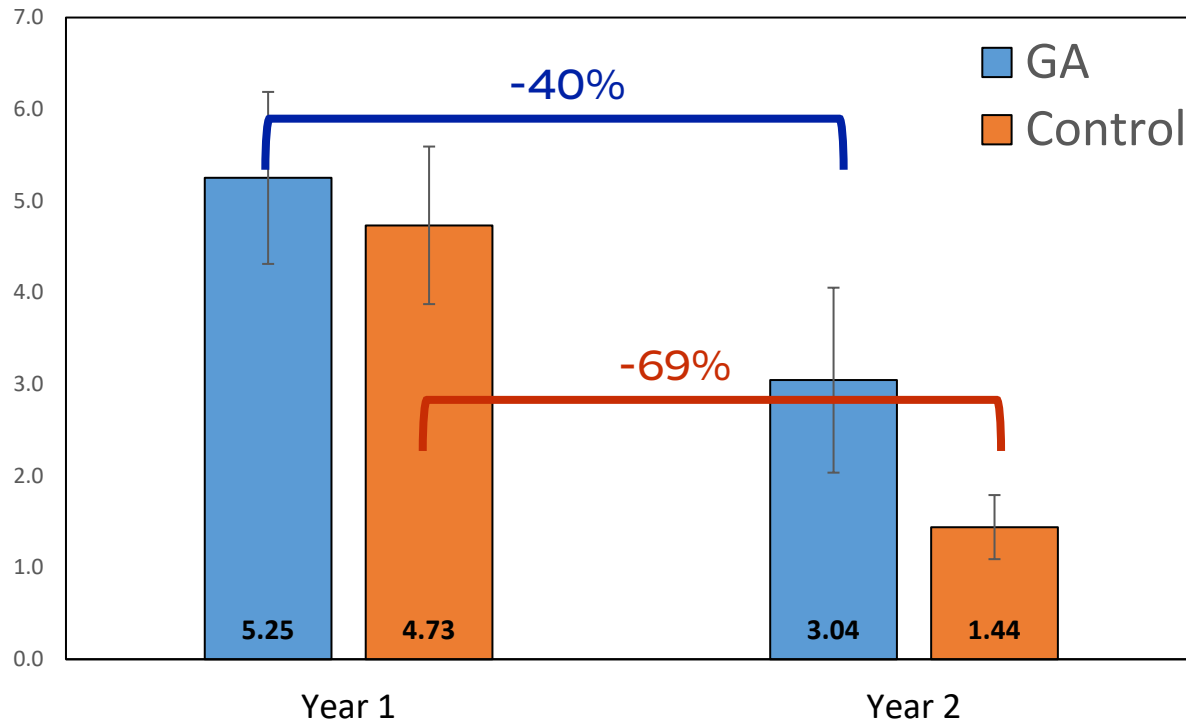
- GA and 2, 4 - D (synthetic auxin) can both affect abscission, but mode of action is different
- GA can reduce sensitivity to ethylene by keeping fruit longer in developmental phase
 - Slows down maturation
- 2, 4- D counteracts the ethylene signal thus rendering abscission zone insensitive to ethylene

What we know about PGRs in hurricane years?

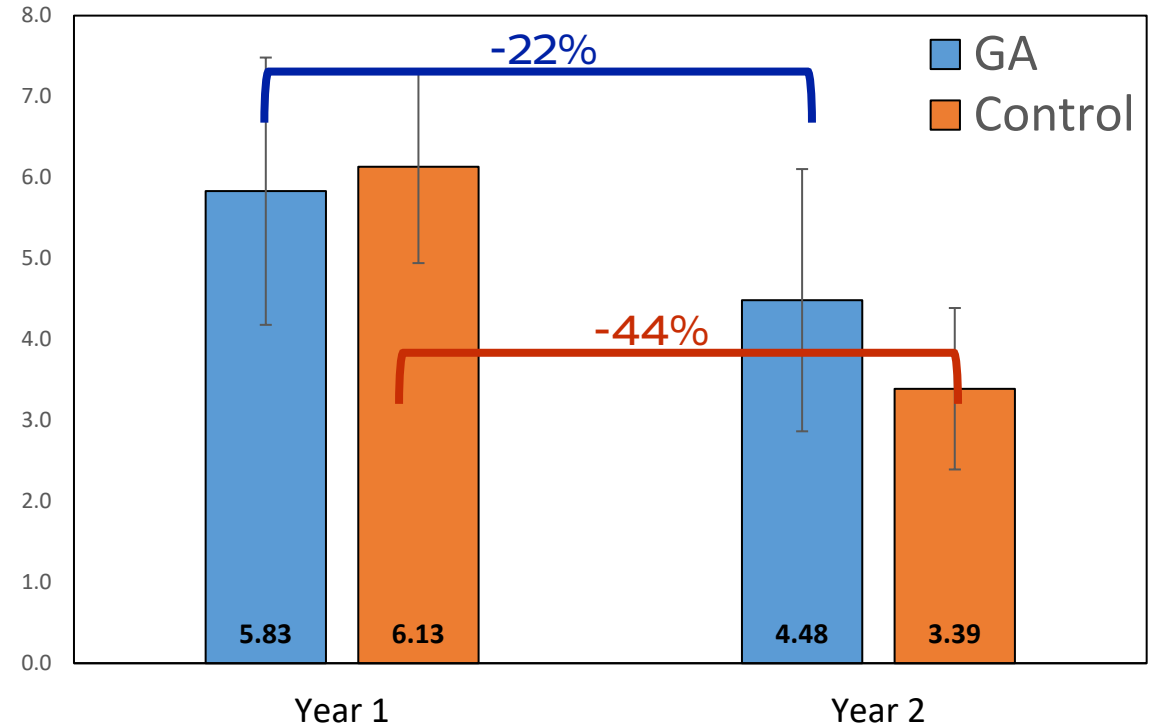
- Grower trial with Hamlin 2021 and 2022 (hurricane Ian)
- Grower sprayed half block with GA (10 fl oz per acre with adjuvant) and left other half untreated
- GA Applications:
 - 2021 (Year 1)- Oct 19, Nov 24 (2 applications)
 - 2022 (Year 2)- August 12, Sep 26, Nov 18 (3 applications, one post hurricane)
- Harvest:
 - Year 1: January 13, 2022
 - Year 2: December 5, 2022

GA improved yield efficiency even after hurricane

Site 1 Hamlin
Yield efficiency (lbs fruit/m3)



Site 2 Hamlin
Yield efficiency (lbs fruit/m3)



Hamlin trial in Hardee county

2, 4 D and GA can reduce fruit drop

- GA application
 - 2021: Aug, Sep, Nov
 - 2022: Aug, Sep, Nov (extensive hurricane damage)
 - 2, 4-D (+ adjuvant) application at 3 oz per acre, one week after the hurricane

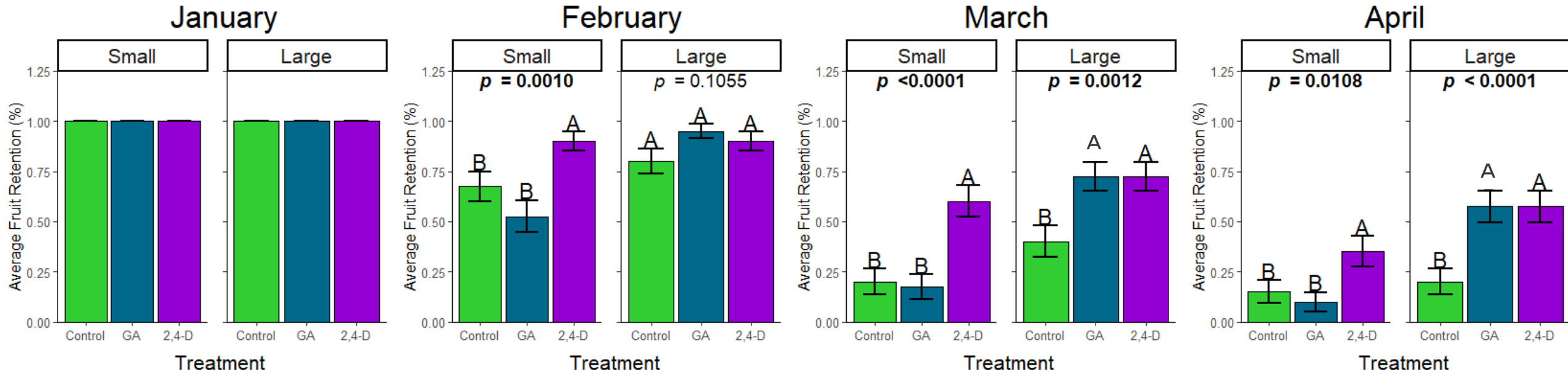
	2021	2022	2021	2022	
	Yield (lbs/tree)	Yield (lbs/tree)	FDF (December)	FDF (August)	FDF (November)
Control	316 b	34.7 b	5.49 b	6.0 b	5.26 b
GA	380 a	52 ab	7.05 a	6.74a	5.54 b
GA + 2,4 D (post hurricane treatment)		68.03 a			7.07 a

GA and 2,4-D act differently for pre-harvest fruit drop

- Valencia
- Tagged small and large fruit, 3 months pre-drop window
 - Small fruit drop first and more
- Treatments:
 - Control (no dip)
 - GA (ProGibb: 10 oz/acre)
 - 2,4-D (CitrusFix: 3.2 oz/acre)
- Re-dipped monthly



Retention



GA and 2, 4-D has different mode of action for mitigation of fruit drop
2, 4-D is better option in reducing fruit drop post hurricane

Take home message

- Unfortunately, we expect to drop more fruit and leaves
- 2,4 -D (Citrus Fix, 3oz/acre) and GA (Progibb, 10 oz/acre) both can help in reducing fruit drop and leaf drop
- 2,4-D and GA can be tank-mixed, adjuvant will improve efficacy
- 2,4-D has higher efficacy against drop
- GA can help in growing tree canopy, but we don't want to cause too much new flush this late in year
- PGR application are better sooner than late
- Adequate irrigation will help in reducing fruit drop

Thank You!

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