

Growing Young Citrus Trees Under Individual Protective Covers (IPCs): What We Know After 18 Months

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Young vs Mature Citrus Trees

Different biology, different requirements

Mature trees

- Already infected with HLB.
- Declining production.

Young trees

- Planted healthy, HLB-free.
- They are not producing yet.

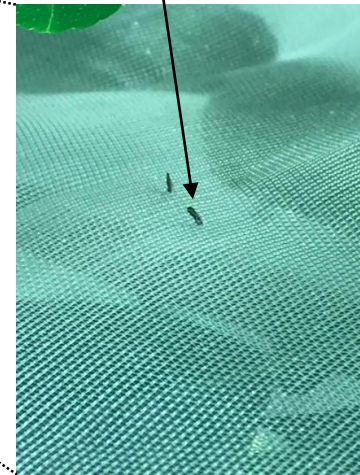
Desired goals

- Maintain trees productive and improve their health.
- Improve fruit yield and quality.
- Keep trees free from disease until they enter production age or longer.

Psyllid exclusion



Adult psyllid
0.57 mm width



50 mesh screen bags
0.26mm wide



Questions

- Are IPCs effective to prevent infection with CLAs?
- Does IPC affect physiology and productivity of the trees? How?
- For how long can an IPC cover a tree?
- Can trees set fruit? Are all varieties equal?

Field trial at SWFREC

Planted January 2018

Valencia on Cleopatra



Six combinations of treatments

- 1 IPCs/ no insecticides
- 2 IPCs/ half dose insecticides
- 3 IPCs/ full dose insecticides
- 4 without IPCs/ no insecticides
- 5 without IPCs/ half dose insecticides
- 6 without IPCs/ full dose insecticides

Insecticides	No	Half	Full
Thiamethoxan	0	0.0065	0.0131
Imidacloprid	0	0.0125	0.025
Clothianidin	0	0.01	0.02

Dosages unit: FL oz per tree

IPCs prevent HLB infection

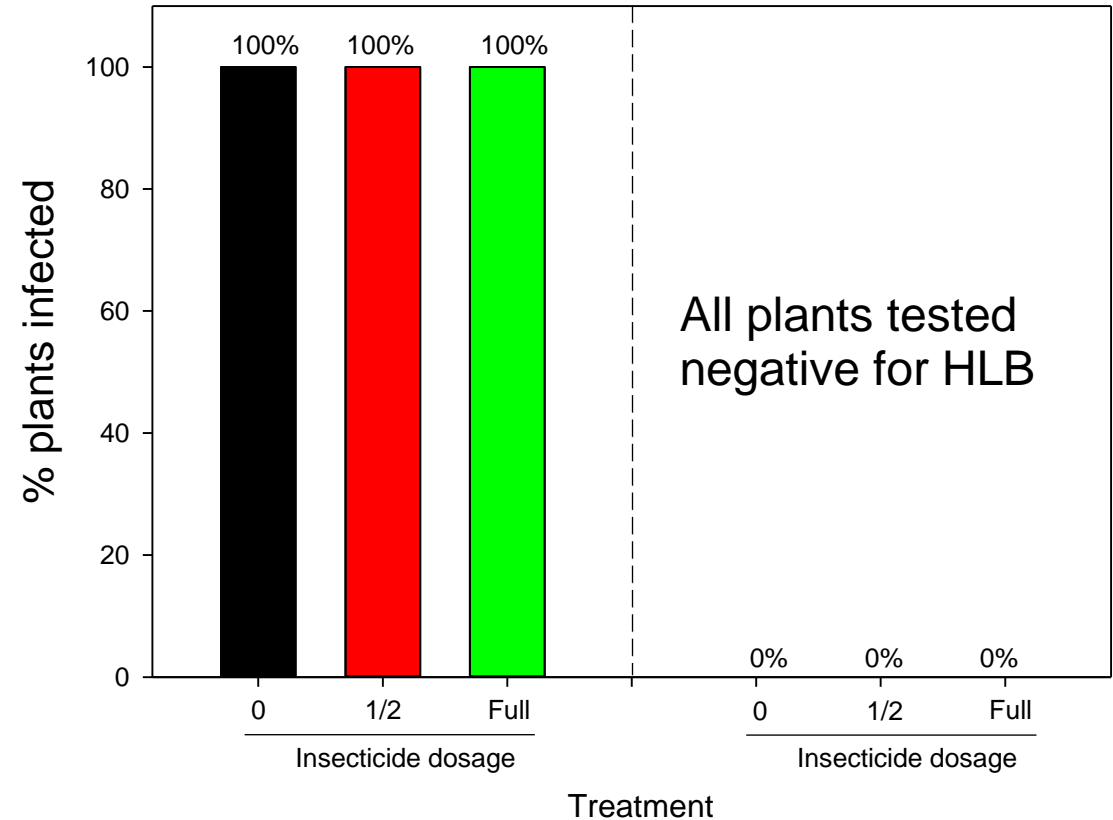
Product	Dosage (fl oz per tree)		
	0	1/2	Full
thiamethoxam	0	0.0065	0.0131
imidacloprid	0	0.0125	0.025
clothianidin	0	0.01	0.02

Applied by drench every 6 weeks

20 months after planting

No IPC

IPC



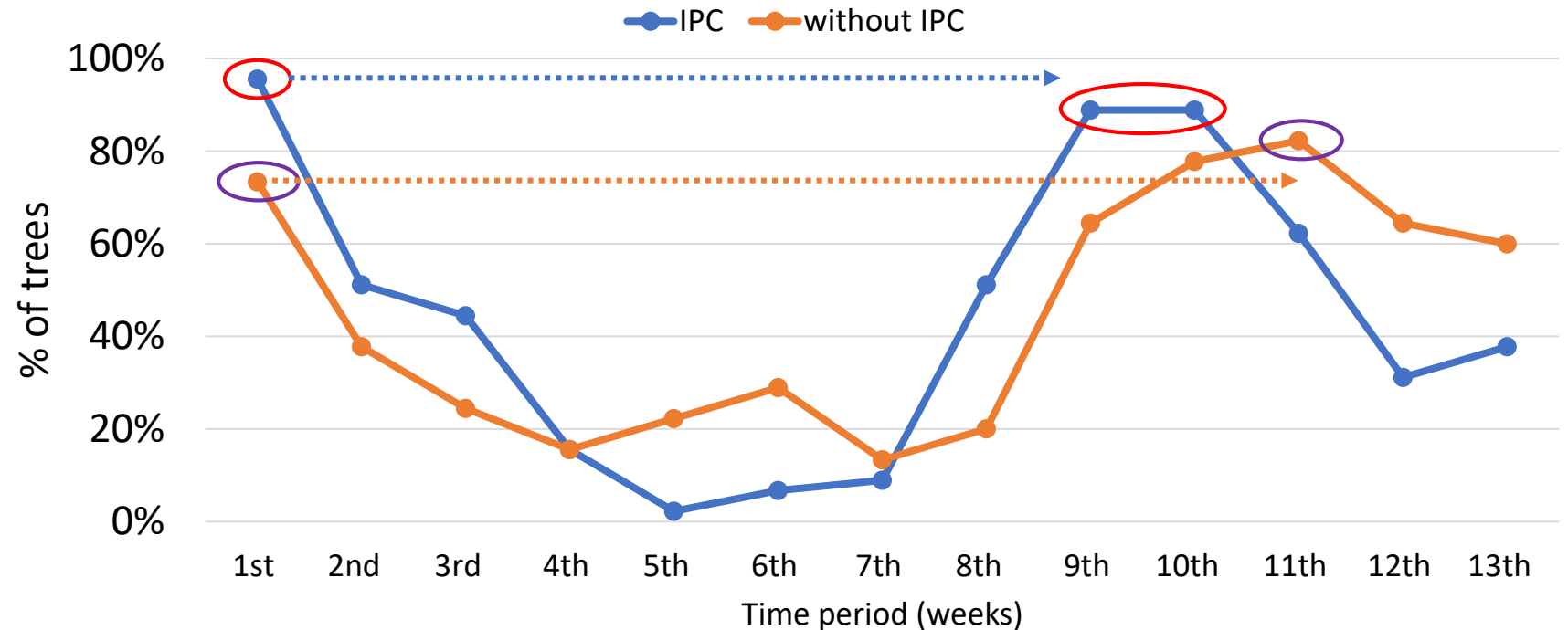
IPCs alter some growth parameters



Vapor Pressure Deficit



Increased photosynthesis
Increased vegetative growth



Shorter and more synchronized flush cycle in trees inside IPCs

Concerns

**Other pests
and diseases?**



Fruit set?



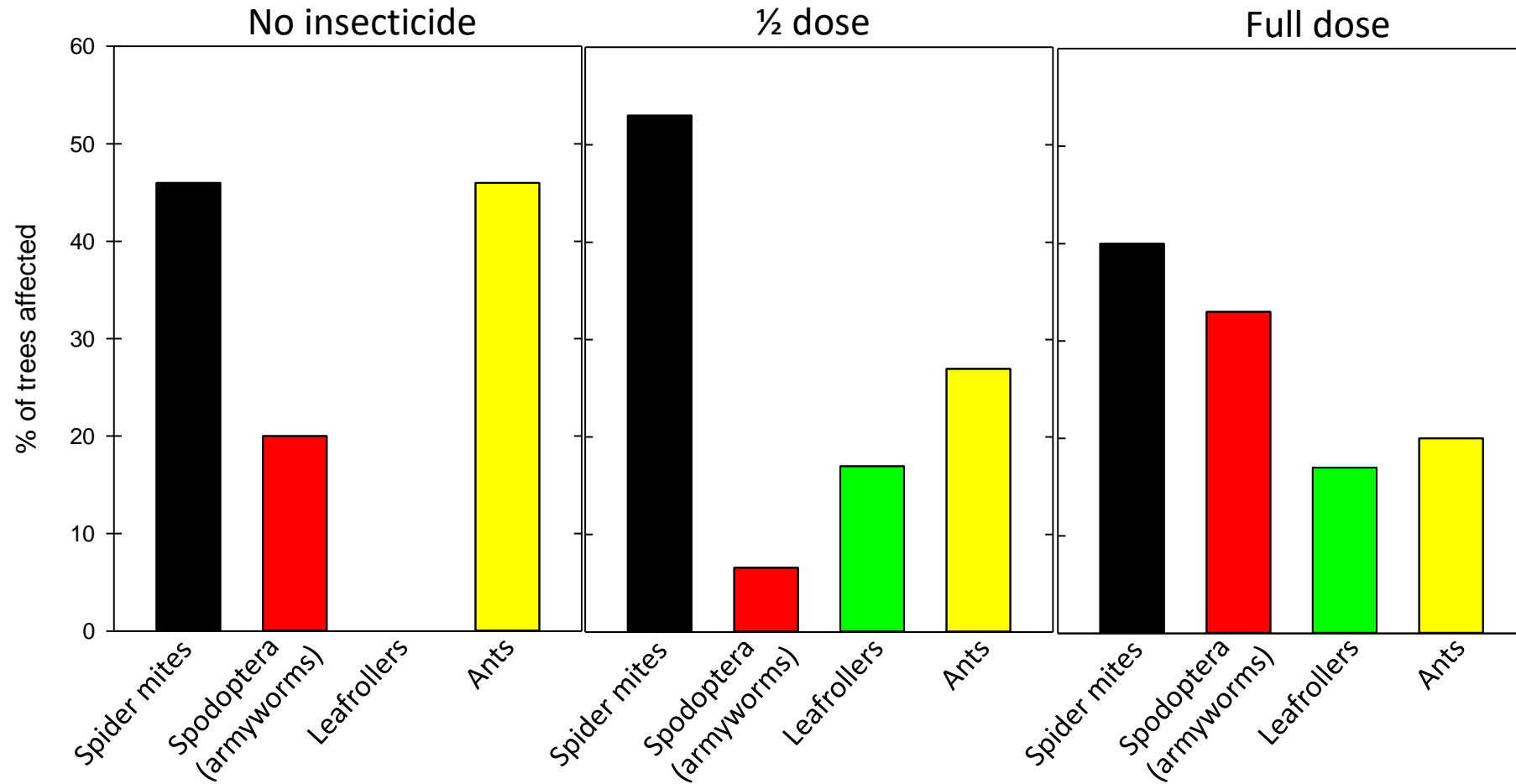
Growth?



Leaf drop?



Other pests (under IPCs)

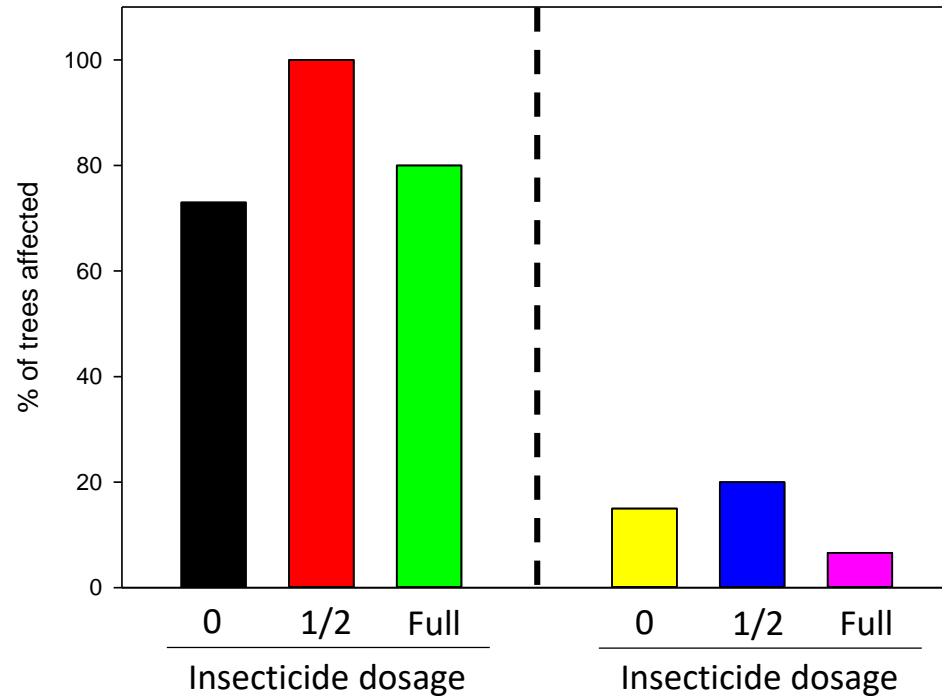


Incidence of other diseases

CANKER

No IPC

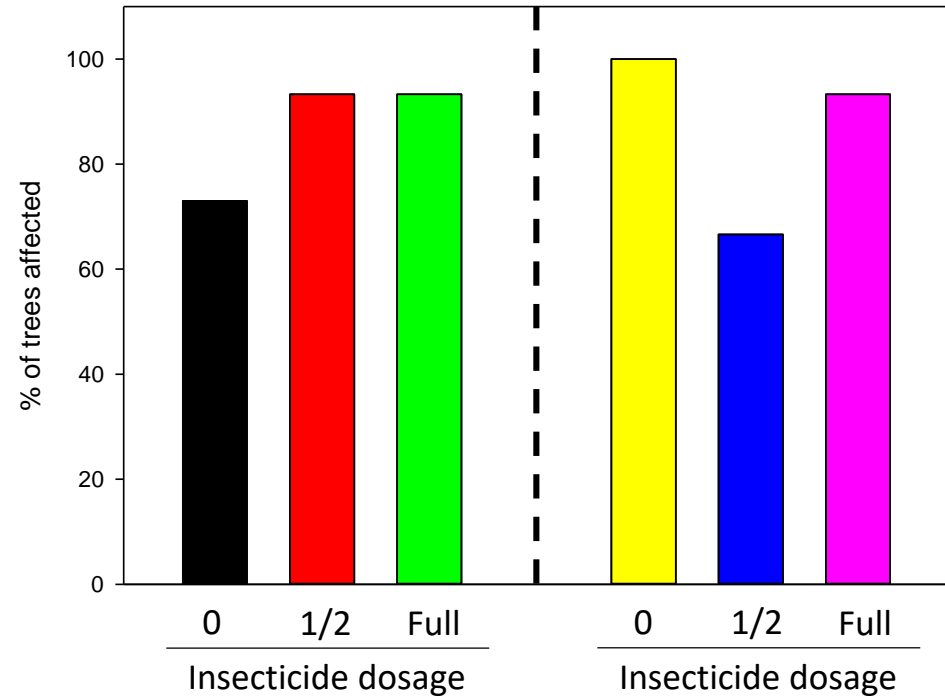
IPC



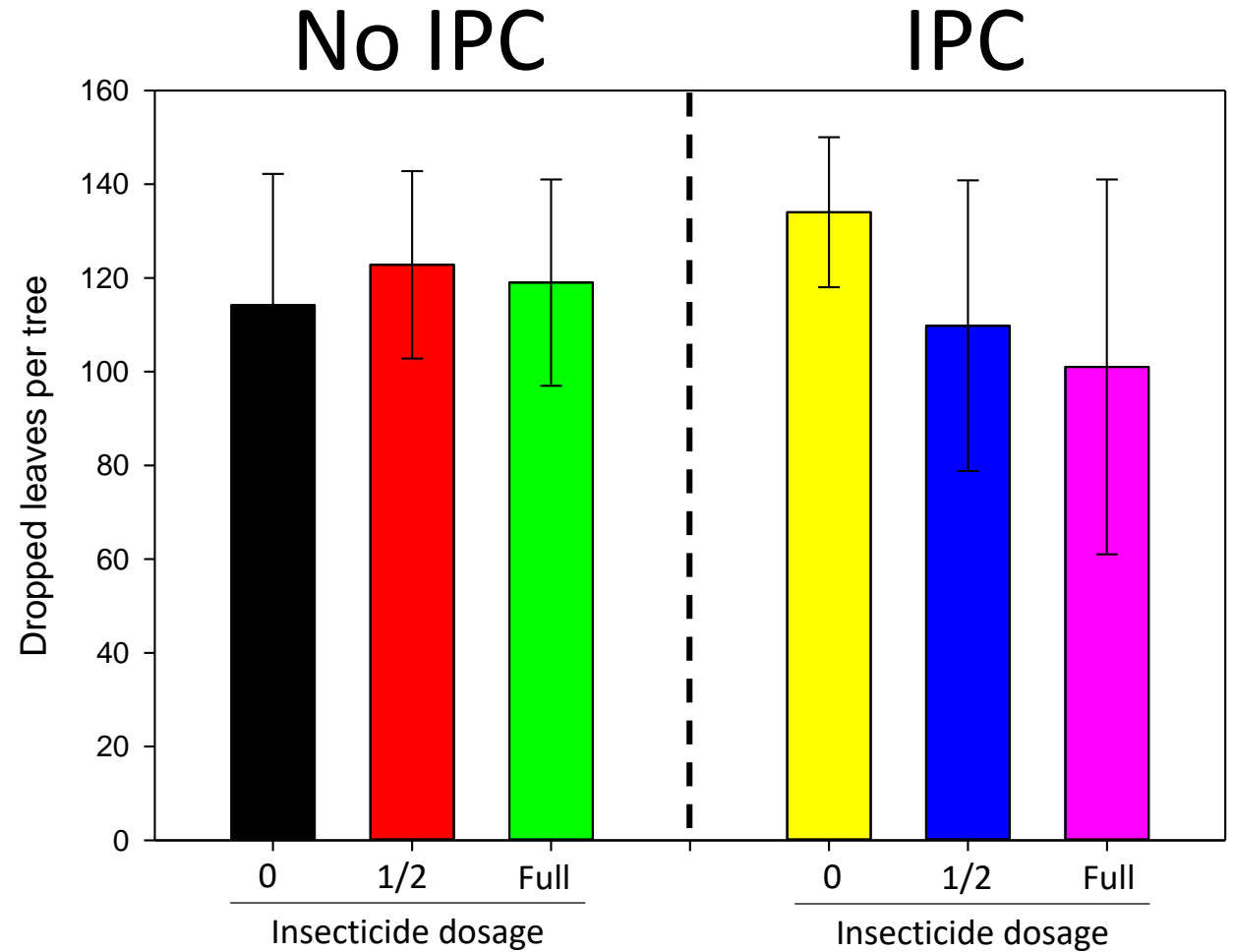
GREASY SPOT

No IPC

IPC



Leaf drop (5-month cumulative, April to August)



Fruit set

March 22, 2018



March 28, 2018



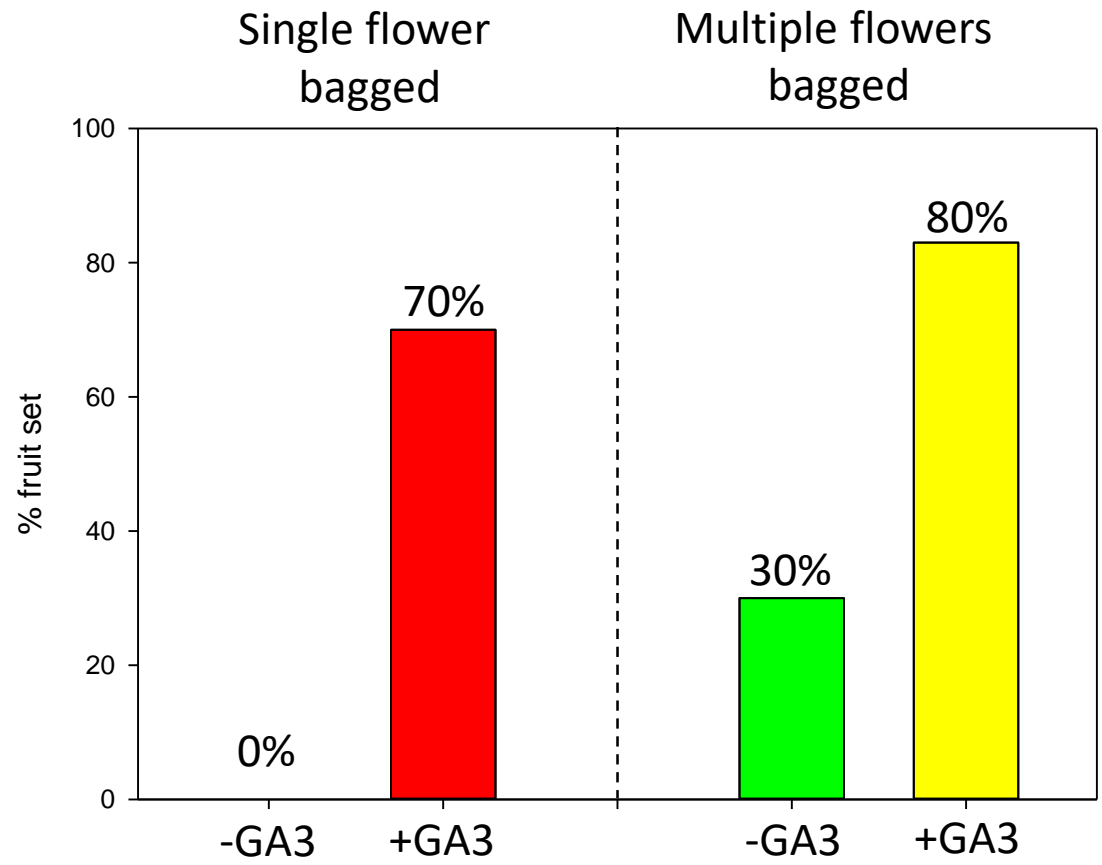
+ 10ppm GA3
at petal fall

SugarBelle

70% fruit set



November 20, 2018



Conclusions

- After 18 months, IPC prevented ACP transmission and HLB infection.
- However, insect scouting and pest and disease management are still necessary.
- Several tree growth parameters are modified by IPC.
- Some varieties are able to bloom and set fruit inside IPCs with adequate management.

August 7, 2019

8ft IPC installation



Sampling and disease rating



Insect identification



Installing the new IPCs

Replacing IPCs

August 12, 2019

August 7, 2019



Ongoing and next steps

- Integrating the “edge effect” in the whole IPC picture.
- How changing to bigger IPCs will affect the trees?
 - VPD
 - Branch unfolding
 - Pest/disease incidence
 - Flushing/blooming patterns

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