Optimizing young citrus tree protection against HLB

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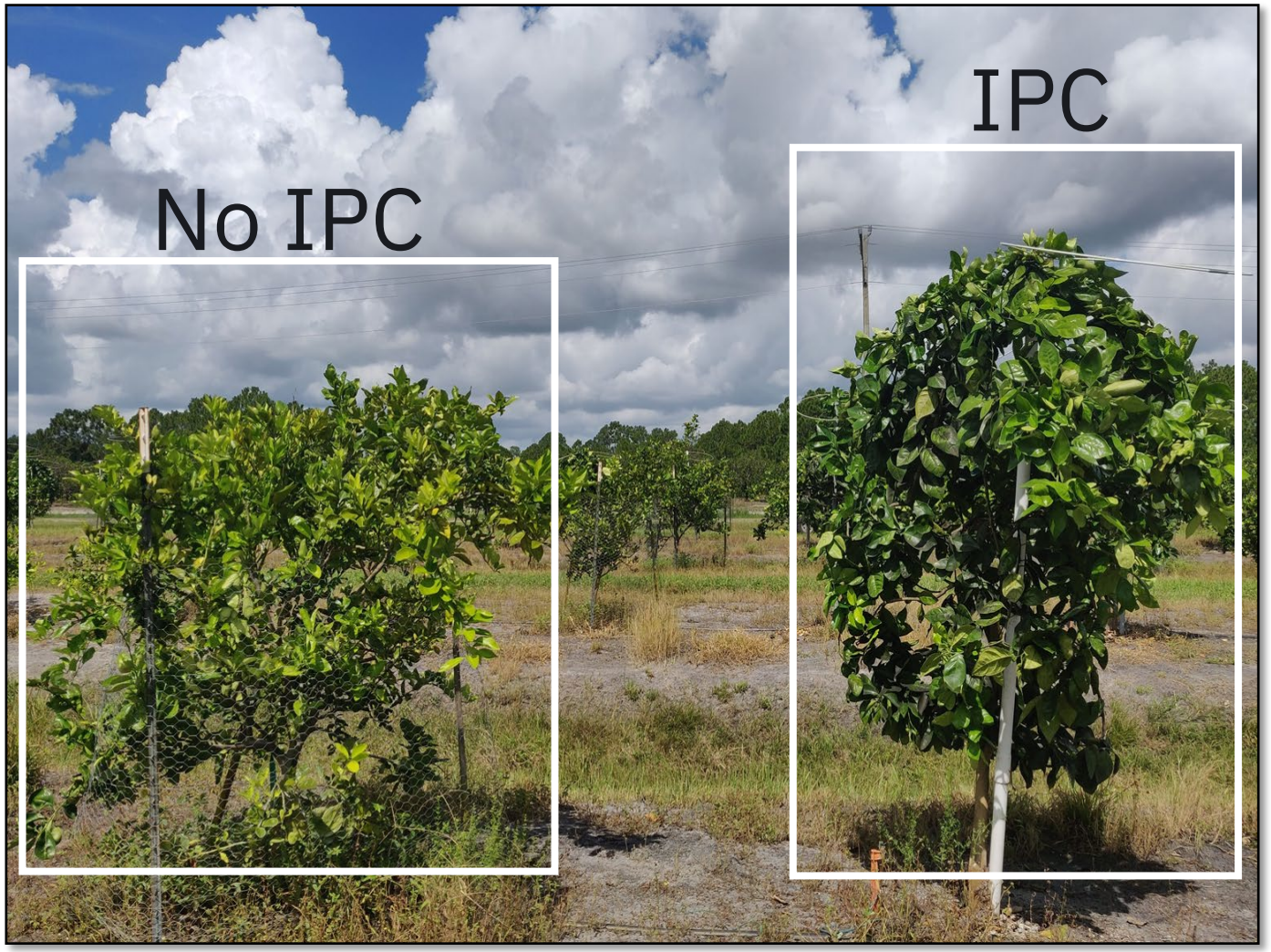
Take home messages

- Now, we are actively investigating best practices when installing individual protective covers (IPCs) to maximize benefits and reduce inputs.

- Not all varieties perform equally under IPCs.

- HLB-affected young trees can recover by later IPC installation and some aid (using brassinosteroids, that promote growth and defense responses in young citrus trees).

IPCs work



Trees with and without IPCs after IPC removal
(30 months after initial planting)

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What we know already

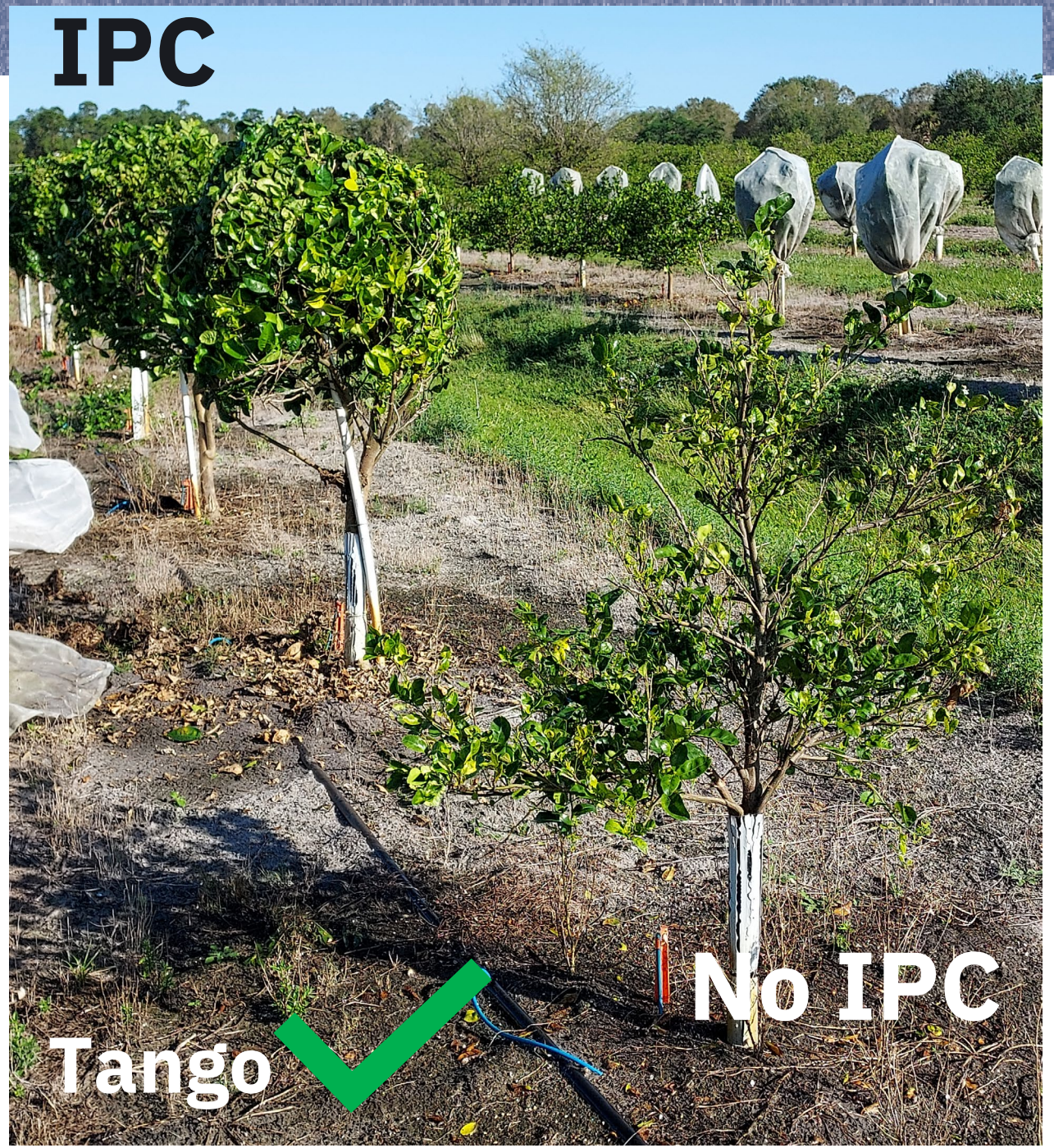
- IPCs are an effective strategy to maintain trees free from HLB.
- IPCs also reduce canker incidence.
- IPCs do not exclude all pests. This means that regular scouting is still necessary. Controlling secondary pests remains important.
- Fruits produced under IPCs have better internal quality.

What we know already

- Not all varieties grow equally under IPCs:

  - Valencia
  - Hamlin
  - Tango mandarins
  - Grapefruit
  - Pummelo

  - Early Pride
  - SugarBelle after 1 year



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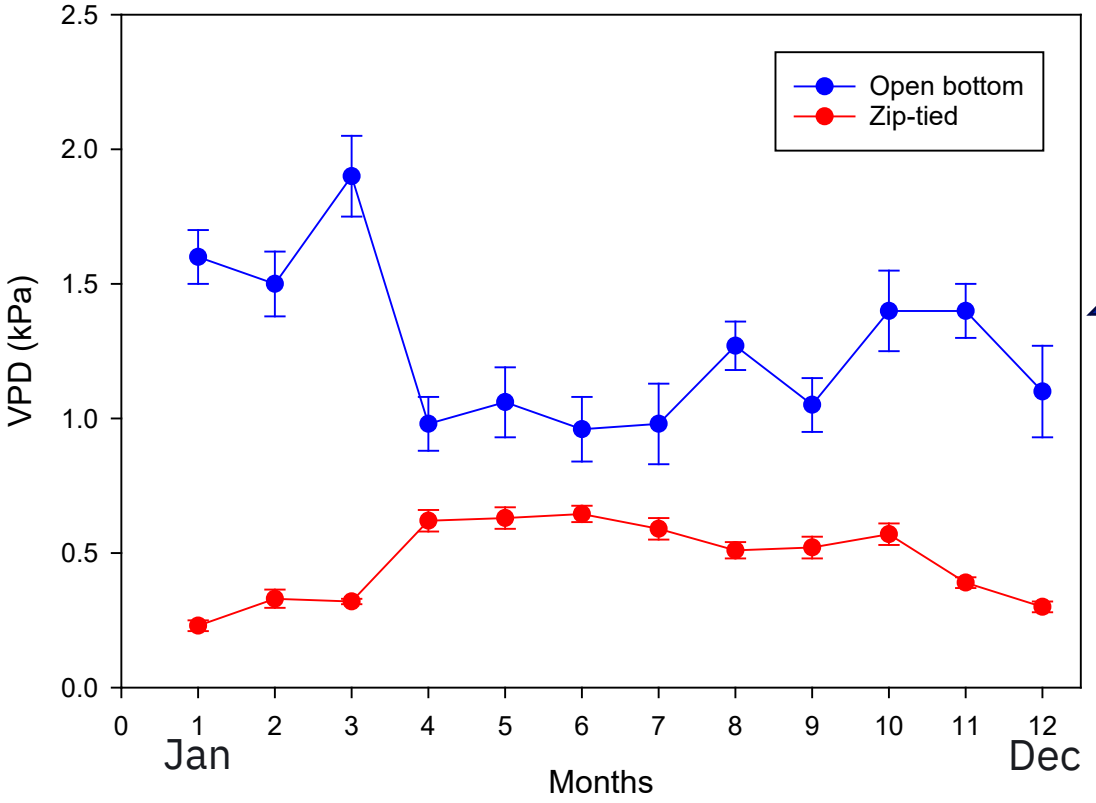
Vapor Pressure Deficit (VPD)="Drying power" of air
Higher VPD= FASTER EVAPORATION & TRANSPITATION
It will dry leaves faster



Evaporation

Less water use?

How can brassinosteroids help new plantings and HLB+ young trees

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Brassinosteroids (Br) applied at 6.2 fl oz/100 gallons of water

-Every other week
-Once per month
-Every other month

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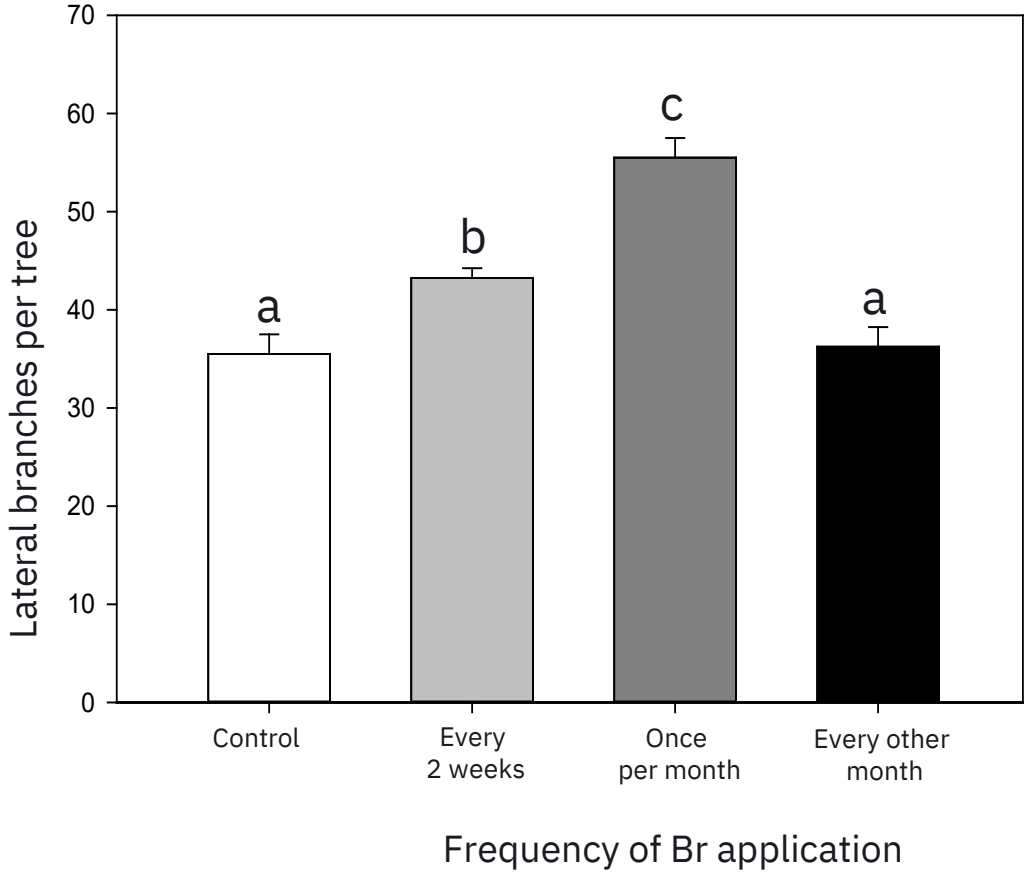
New growth



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Can young trees recover from HLB?

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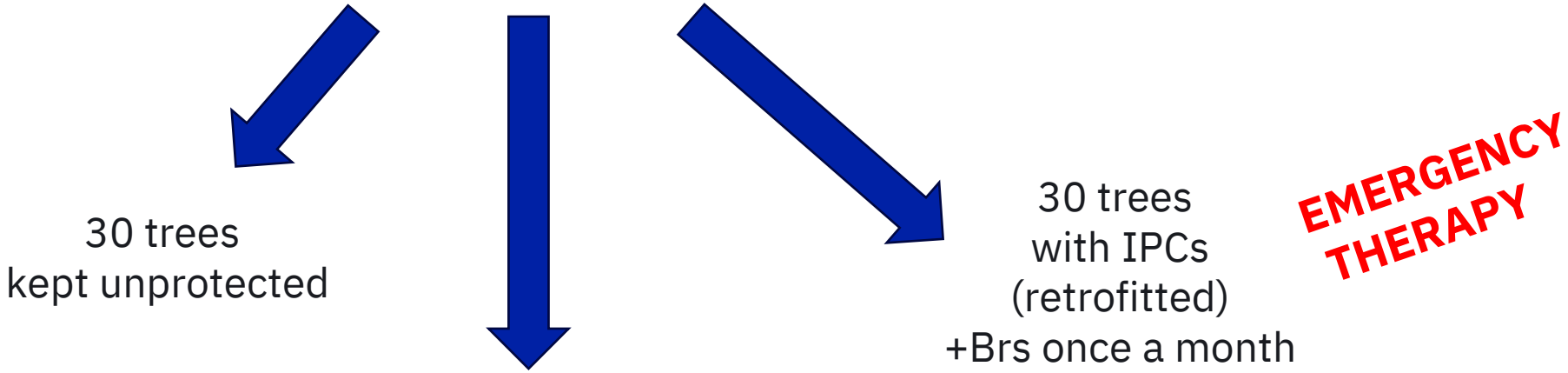
Can young trees recover from HLB? (IPC late adoption+Brassinosteroid therapy)

-90 trees (Valencia on US942) planted in February 2023 (left unprotected)
-In February 2024 (after 12 months), all trees were HLB+ and declining. Then:



6 months after treatments adopted....

Untreated control
18 months
of exposure to HLB

Avoiding reinfection

12 months of exposure to HLB
+ 6 months with IPCs

Avoiding reinfection &
Improving tree immunity and physiology

12 months of exposure to HLB
+ 6 months with IPCs &
Br treatment (monthly application)

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After 12 months....

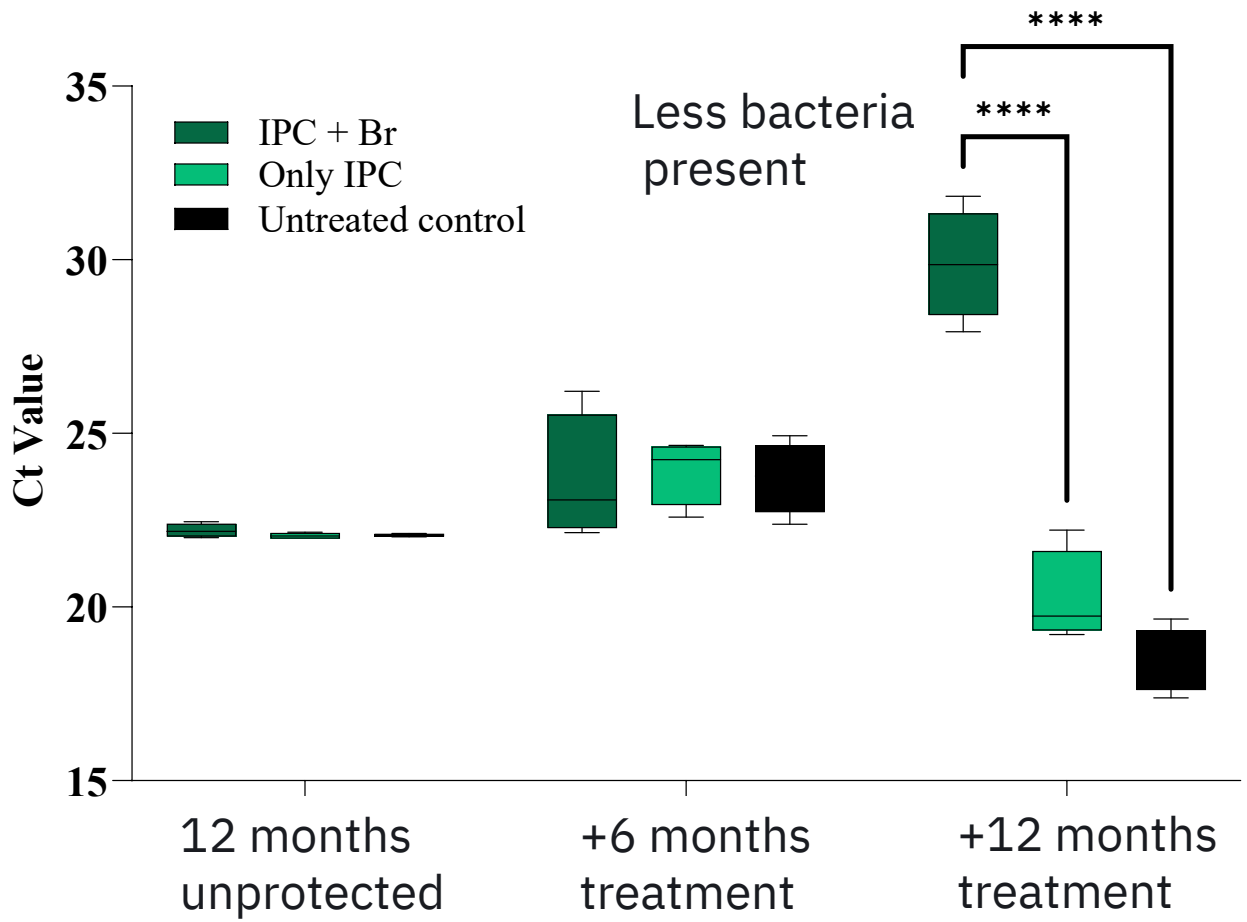
Untreated control
24 months of exposure to HLB

Avoiding reinfection

12 months of exposure to HLB
+ 12 months with IPCs

Avoiding reinfection &
Improving tree immunity and physiology

12 months of exposure to HLB
+ 12 months with IPCs &
Br treatment (monthly application)



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Conclusions

- IPCs are currently the best management practice for keeping young trees free from HLB in Florida's endemic areas.
- IPCs improve tree growth. This seems to be a direct effect of better environmental conditions inside the bag.
- VPD is significantly decreased in tied IPCs vs untied IPCs. This likely affects water usage and needs to be investigated.
- Brassinosteroids may recover trees already affected by HLB if no reinfection occurs (if IPCs are used).

THANK YOU

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