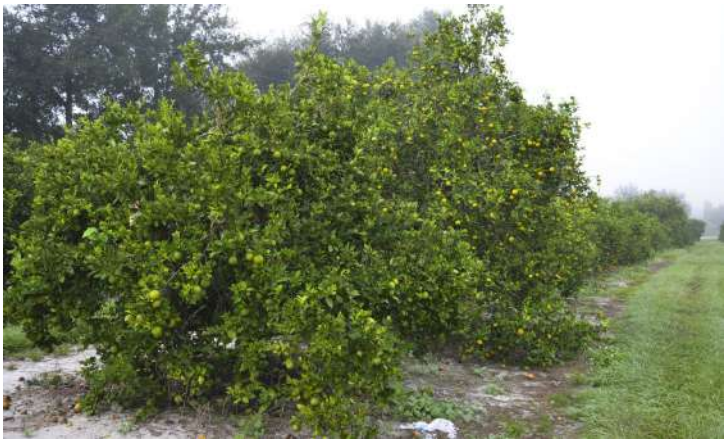
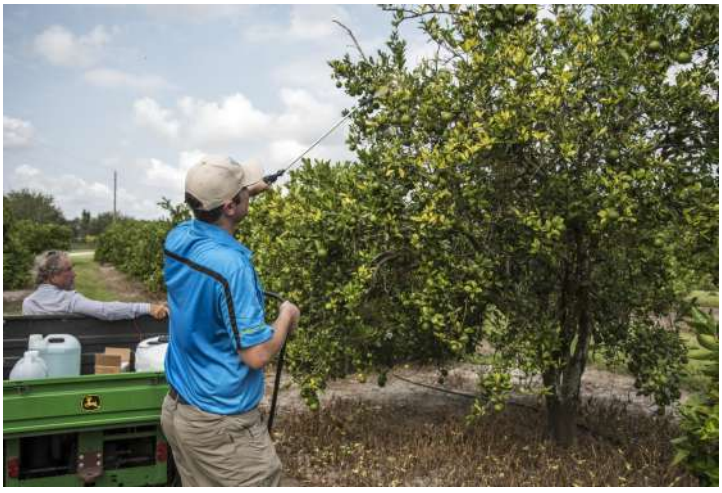
# Citrus Greening Study

## Wauchula, FL





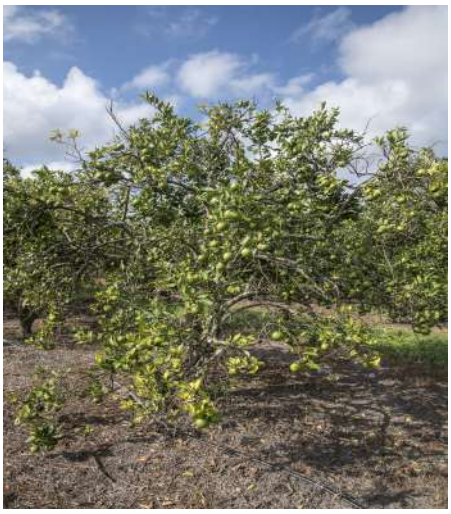
Citrus Greening ("HLB") was first documented in 1919, in Guangdong Province in south China. Observers back then saw the symptoms that mark HLB today: Infected trees develop mottled yellow leaves, yellow shoots, and small, lopsided green fruits that drop early. As the fruits begin to mature, instead of signaling their ripened state by turning yellow or orange from the bottom up, the color change often starts at the top, where the fruits attach to the stem. HLB attacks a tree's phloem—the vascular tissue that it uses to transport nutrients—so infected trees don't grow at the rate of healthy ones, and their canopies become sparse. Although they appear healthy initially, trees with HLB become unproductive within a few years. In HLB-infected trees, the phloem is like a clogged plumbing system.

The culprit behind the widespread disease is a microbe called Candidatus Liberibacter asiaticus, or CLas, which comes from a family of bacteria that can wreck potatoes and other economically important crops. CLas reproduces and hides in citrus trees' phloem.

| Row—Date | Sampling Frequency | Product | Application Rate |
|---|---|---|---|
| 1 & 2 (BAM-FX) STAGE 1<br>Day 0: 9/11/19: 1st Application<br>Day 7: 9/18/19: 2nd Application<br>Day 14: 9/25/19: 3rd Application<br>Day 21: 10/02/19: 4th Application<br>Day 28: 10/09/19: Sample only<br>Day 35: 10/16/19: Sample only<br>Day 42: 10/23/19: Sample only<br>Day 49: 10/20/19: Visual only—No sample | Day 0, 7, 14, 21, 28, 35, 42, 49 & 56<br><br>Each day must include control samples. | BAM-FX Liquid | 1 oz. per Gallon. 16 Gallons total preparation.<br><br>4 weekly applications |

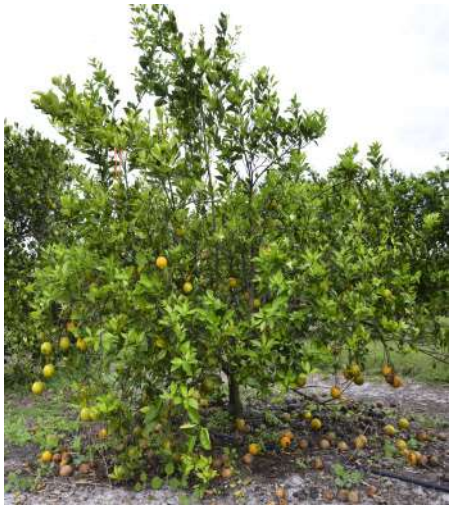
***Treatment**: 4 weekly applications first, then 1 per month for the 11 following months cycle.*

# BEFORE BAM-FX



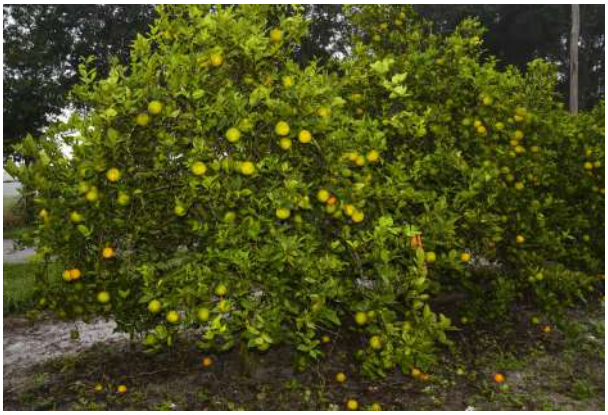
Before 1st application of BAM-FX, showing citrus yellowing on leaves (HLB positive).

# AFTER BAM-FX

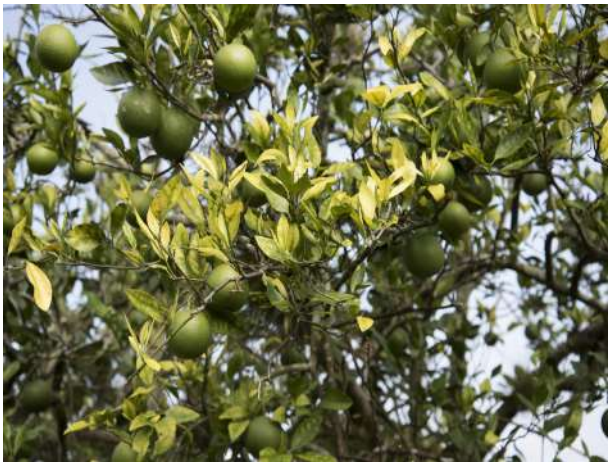


BAM-FX treated trees fought infection by shedding small affected leaves, and producing new & larger leaves, resulting in an overall healthier tree.

Full row of ***infected*** citrus trees.



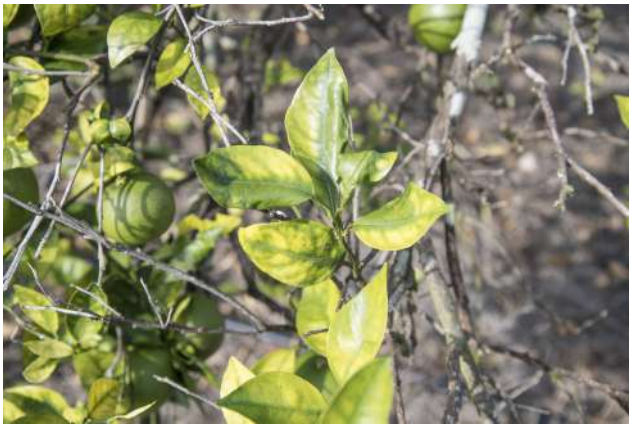
Full row of BAM-FX ***treated*** citrus trees.



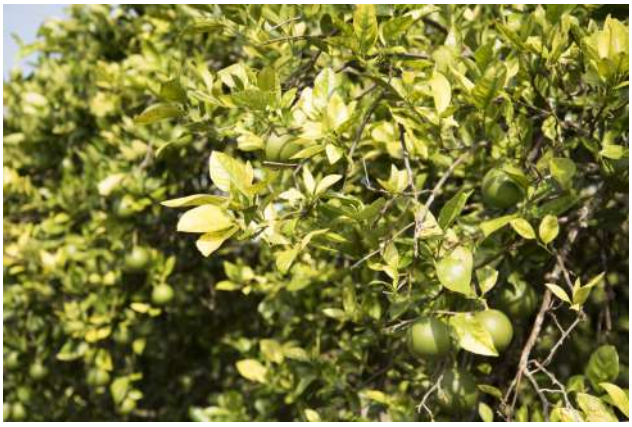
Photos depicting infected tree. Notice the reduced size of the leaves, which will eventually fall. A branch with little to no leaves will not be able to bear fruit.

Trees look rejuvenated, producing larger and healthier leaves.

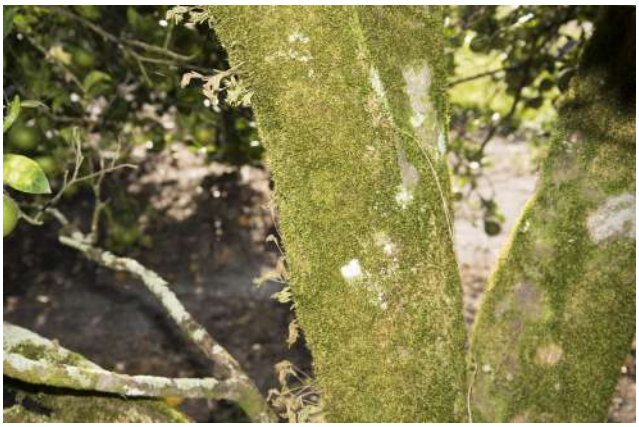
# BEFORE BAM-FX




Close-up views of  affected leaves

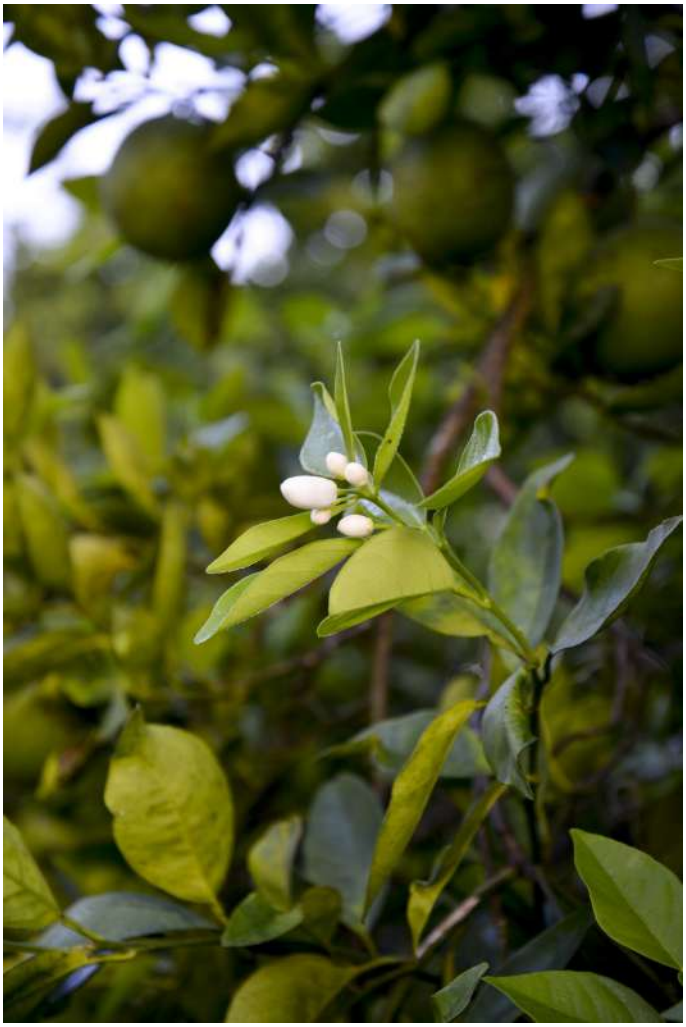



Because of the disease, new growth becomes stunted.

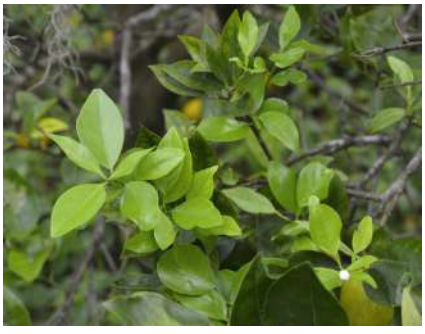



BAM-FX helps eradicate unwanted growths, such as Lichen, moss, and fungus, on the tree limbs after 1-2 applications.

# AFTER BAM-FX



**45 days after first application, trees began to produce flowers and multiple new growth sites.**



Healthy new growth.