DIAGNOSTICS

Southern Gardens Diagnostic Laboratory
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Florida Division of Plant Industry
PO Box 147100, Gainesville, FL 32614-7100
(800) 282-5153

UF Plant Diagnostic Center
Building 1291, 2570 Hull Rd. Gainesville, FL 32611
352-392-1795

Before sending samples, contact the testing facility to obtain proper sampling procedures, submission guidelines, and fees.

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UF/ IFAS Extension Offices with Citrus Agents
Hardee, Hendry, Highlands, Lake,
Polk, St. Lucie, Sumter

Websites
UF/IFAS Extension Citrus Agents
http://citrusagents.ifas.ufl.edu

UF/IFAS Citrus REC
www.crec.ifas.ufl.edu

UF/IFAS Southwest Florida REC
http://www.imok.ufl.edu

Local UF/IFAS Extension Office
http://solutionsforyourlife.ufl.edu/map/

CITRUS GREENING[1]
(Huanglongbing)

A Serious Threat to the Florida Citrus Industry

UF IFAS Extension
UNIVERSITY of FLORIDA

June 2018

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2. J. D. Burrow, Extension program manager; M. M. Dewdney, associate professor, Department of Plant Pathology; T. Vashisth, assistant professor, Horticultural Sciences Department; and L. M. Diepenbrock, assistant professor, Department of Entomology and Nematology; UF/IFAS Citrus Research and Education Center, Lake Alfred, FL 33850.

HUANGLONGBING HISTORY

- In 1995, the official name for greening became Huanglongbing (HLB)
- The vector, Asian citrus psyllid, was first found in Florida in 1998
- HLB was first detected in residential areas in South Florida in August 2005
- As of October 2006, affected trees had been found in twelve counties
- By October 2007, affected trees had been discovered in twenty-eight counties
- Thirty-two counties had confirmed greening in their area by the end of 2008
- By February 2010, thirty-four counties had at least one positive confirmed HLB affected tree
- HLB is now confirmed in all commercial citrus growing counties in Florida
- Currently, identified in most non-commercial citrus growing counties in residential properties

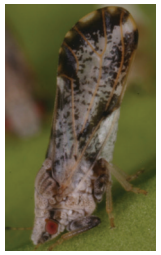
HUANGLONGBING BIOLOGY

- A disease caused by a phloem-limited bacterium affecting all citrus cultivars
- The rod-shaped, Gram-negative bacterium is named *Candidatus* Liberibacter asiaticus
- Bacterium does not move between trees without the insect vector or through grafting
- The bacteria are present in symptomatic tissues in low numbers
- Phloem tissue is damaged when bacteria are present
- Starch accumulates to toxic levels in plant cells
- Excessive phloem tissue is produced in infected trees
- Bacteria are at their highest levels in young asymptomatic tissues and appear to die as tissues age and become symptomatic
- Changes to the plant tissue begin in the early infection before symptoms

VARIETIES AFFECTED

- All citrus varieties and rootstocks can be affected by HLB
- Affects plants in the *Rutaceae* family (ex. box orange and orange jasmine)

GREENING VECTOR



- Asian citrus psyllid (*Diaphorina citri*)
- Five nymphal stages
- Numerous generations per year
- Egg to adult in 2 weeks at 75°F to 85°F
- Egg stage lasts an average of 3 to 4 days
- Duration of the nymphal stages is about 12 to 14 days at 82°F
- Adult psyllids may live for several months in cool temperatures
- Psyllids can acquire the bacterium from infected trees, regardless of whether symptoms are present on the tree
- The longer psyllids remain uncontrolled and are allowed to feed on infected trees, the higher the chance that those psyllids will acquire and spread HLB to other trees
- Psyllid populations are best managed by controlling adults prior to the presence of new flush which facilitates rapid population growth

- Chemical control of the psyllid and removal of infected trees are the only methods currently available to manage the spread of greening

COMMERCIAL MANAGEMENT

- For detailed information, please see UF/*IFAS Guidance for Huanglongbing (Greening) Management* (http://edis.ifas.ufl.edu/hs1165)
- Citrus Health Management Areas (www.flchma.org)

RESIDENTIAL MANAGEMENT

- Remove infected trees
- Use of disease-free nursery trees (a certified nursery tag should be attached to tree at time of purchase)
- Use horticultural oil sprays to manage psyllid populations
- When applying pesticides, remember the label is the law
- The Florida Department of Agriculture has a release program for the *Tamarixia radiata*, a beneficial insect of the psyllid. For more information, visit https://www.freshfromflorida.com/

GREENING SYMPTOMS

- Symptoms can be found year round, but are more prominent September through March

Vein corking

Fruit remain green at the blossom end

Yellow shoots

Yellow veins

Reduced fruit size

Blotchy mottle—key diagnostic symptom

For more information, please contact the UF/IFAS Citrus Research and Education Center, Lake Alfred 863-956-1151