Flatwoods Citrus

Upcoming Events

Seminar
Date: Thursday, September 18, 2008, Time: 9:00 AM – 12:30 PM
Location: Immokalee IFAS Center
- Optimizing Sprayer Performance for Pesticide Application
- Aerial Application of Pesticides, Techniques that Work
- Why, When, and How to Monitor Citrus for Psyllids (English & Spanish)?
- Pesticides for Psyllid Control

Speakers: Rachel Walters, Jeffery Summersill, Philip Stansly and Alejandro Arevalo

Program Sponsor: Jeff Summersill, AG SERVICES, LLC.

A total of 4 CEUs for pesticide license renewal and 3 CCAs including
- 2 CEUs in the general Standards (Core) category
- 1 CEU in the Aerial application – Agriculture category and
- 1 CEU for:
  -- Ag tree crop pest control category
  -- Private applicator Ag Pest control category or
  -- Demonstration and Research

Thanks to Jeff Summersill! Lunch is free, but RSVP is required for planning purposes. To RSVP, call 863 674 4092 or send an e-mail to maz@ifas.ufl.edu
Florida Mini-Greening Summit (see enclosed details)

Meeting dates and locations:

- **Sep. 30**<sup>th</sup> Tavares 1951 Woodlea Rd Lake County Extension
- **Oct. 2<sup>nd</sup>** Sebring 4509 W. George Blvd Highlands County Extension
- **Oct. 7<sup>th</sup>** Immokalee 2686 SR 29 N SW Florida REC
- **Oct. 8<sup>th</sup>** Arcadia 2250 NE Roan St. Turner Exhibition Hall
- **Oct. 9<sup>th</sup>** Bartow 1710 Highway 17 South Polk Co. Ext. Stuart Center
- **Oct. 14<sup>th</sup>** Ft. Pierce 2199 S Rock Rd Indian River REC

Certified Crop Advisor Educational Seminar

**Date:** October 15, 2008, 7:30 AM – 5:30 PM  
**Locations:** IFAS Research Centers (Lake Alfred, Immokalee, Balm, Ft. Pierce)

For registration or more information, go to: [www.crec.ifas.ufl.edu/cca](http://www.crec.ifas.ufl.edu/cca) or call 863 956 1151

54th Annual Meeting ISTH

12 to 17 October, 2008  
Victoria, Espiritu Santo, Brazil

For more information visit the Website:  
Or contact Noris Ledesma [nledesma@fairchildgarden.org]

INTERNATIONAL CITRUS CONGRESS

**Location:** Wuhan (Capital of Hubei province), **China**  
**Date:** October 26-30 2008  
Email: ICC2008@mail.hzau.edu.cn

International Conference on Huanglongbing

Hosted by Florida Citrus Mutual  
December 1-5, 2008

For additional information on the Conference or to register, go to [http://www.flcitrusmutual.com/greening-info/hlb_conference.aspx](http://www.flcitrusmutual.com/greening-info/hlb_conference.aspx)
Steve Fletcher
Fletcher Flying Service, Inc.
Phone: 239 860 2028
Fax: 863 675 3725

Heath Prescott
Toll Free: 800 433 7117
Mobile: 863 781 9096
Nextel: 159*499803*6

Chip Giles
Dow AgroSciences
Nextel 158*17*15098
Phone: (239) 693-1351
Mobile: (239) 707-0197
lmgiles@dow.com

FIRST BANK
P.O. Box 697
LaBelle, FL 33975
Labelle Phone: 863 675 4242
Fax: 863 675 1099
Moore Haven: 863 946 1515

Ed Early
DuPont Ag. Products
5100 S. Cleveland Ave.,
Suite 318-368
Fort Myers, FL 33907
Phone: 239 994 8594

Gary Sawyer
SYNGENTA
Office Phone: 813-737-1718
Cell Phone: 813-917-1818
gary.sawyer@syngenta.com

Donald Allen
AGLIME SALES, INC.
1375 Thornburg Road
Babson Park, FL 33827-9549
Mobile: 863 287 2925
Agnet # 52925

Bart Hoopingarner
United Phosphorus, Inc.
3605 162nd Ave East, Parrish, FL 34219
Phone: 941 737 7444
Ag Net: 158*17*9485
bart.hoopingarner@uniphos.com

Mark White
G.P. SOLUTIONS
Liquid fertilizers, Micronutrients, & Organic Products
Phone: 239 214 1072
Fax: 863 938 7452
E-mail: mwhite@nitro30.com

Susan S. Thayer
Maxijet
“The Standard of Quality in Low-Volume Irrigation”
8400 Lake Trask Rd.
P.O. Box 1849, Dundee, FL 33838
Phone: 800 881 6994

Heath Prescott
KeyPlex
Toll Free: 800 433 7117
Mobile: 863 781 9096
Nextel: 159*499803*6

FIRST BANK
P.O. Box 697
LaBelle, FL 33975
Labelle Phone: 863 675 4242
Fax: 863 675 1099
Moore Haven: 863 946 1515

Gary Sawyer
SYNGENTA
Office Phone: 813-737-1718
Cell Phone: 813-917-1818
gary.sawyer@syngenta.com

Donald Allen
AGLIME SALES, INC.
1375 Thornburg Road
Babson Park, FL 33827-9549
Mobile: 863 287 2925
Agnet # 52925
**Nufarm Agriculture USA**

**Craig Noll**  
Office: 239 549 2494  
Mobile: 239 691 8060  
[craig.noll@us.nufarm.com](mailto:craig.noll@us.nufarm.com)

**Gary Simmons**  
Phone: 772 260 1058

---

**MONSANTO**

**Mike Prescott**  
Phone: 863 773 5103  
Nextel Agnet: 886

**Thad G. Boatwright**  
Phone: 561 478 4970  
Nextel Agnet: 10556

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**Magna-Bon** Agricultural Control Solutions

**Canker Suppressant, Canker Wash Solutions, Line Cleaner**  
Nextel 158*17*10066  
Phone: 800 845 1357

**Susan Wright**

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**Nichino America**

**Paul Hudson**  
Phone: 941 924 4350  
Fax: 941 924 4135  
[phudson@nichino.net](mailto:phudson@nichino.net)

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**KPHITE 7LP**

**Larry Bridge**  
321 303 7437

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**FARM CREDIT**

**SOUTHWEST FLORIDA**  
330 N. Brevard Ave.  
Arcadia, FL 34266  
Phone: 800 307 5677  
Fax: 863 494 6460

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**BAYER CropScience**

**Rachel M. Walters**  
Phone/Fax: 941 575 5149  
Mobile: 239 707 1198  
Nextel 158*17*41198  
[rachel.walters@bayercropscience.com](mailto:rachel.walters@bayercropscience.com)

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**BASF Corporation**

**Garry Gibson**  
1502 53rd Avenue  
Vero Beach, FL 32966  
Cell: 772 473 1726  
Fax: 772 567 2644  
[w.garry.gibson@basf.com](mailto:w.garry.gibson@basf.com)
PREPARING FOR A HURRICANE

Hurricane season is upon us once again. While hurricanes may develop any time during the June to November hurricane season, they are most likely to occur between August and October. In order to best protect yourself and your groves or nursery, it is essential to develop a hurricane plan and prepare in advance.

Although there is not much that can be done to prevent damage to trees and fruit from the wind, rain has the potential to cause the most severe and longest lasting damage to citrus. There are precautions that can be taken to help minimize damage and protect your grove or nursery.

Be “Water Wise”
- Clean and pump down ditches and grade areas to help maximize drainage and water removal efforts after the storm.
- Irrigate trees and remove water from reservoirs. Dismantle irrigation risers.
- Provide for portable water storage.
- Fill additional fuel tanks, sprayers and portable containers with water.
- Turn off water, natural and propane gas and electricity.

Non-Water Preparations
- Make sure all emergency equipment is on hand and in good, working condition. This includes generators, chain saws, torches and air compressors.
- Ensure radios are in working order. Have hand-held portable radios with extra batteries, or direct truck-to-truck radio communication available in case of downed phone lines.
- Secure all hazardous materials.
- Fill fuel, fertilizer and other liquid material tanks so they won’t move in the wind and to ensure sufficient fuel is available for the recovery process.
- Establish personnel assignments. Make a list of all tasks that will need to be performed and whose responsibility they will be following the storm so there are no last-minute surprises.
- Keep an updated list of contact information for workers at their place of safety so that you can communicate with them following the storm.
- Keep a list of emergency contact information for agencies that you may need assistance from during or after the storm.

Emergency Contact Phone Numbers and Websites

Florida Emergency Information Line - 800-342-3557
FEMA Disaster Assistance - 800-621-3362
FDACS - 800-435-7352
National Hurricane Center - www.nhc.noaa.gov
Florida Hurricane Reports - http://iwin.nws.noaa.gov/iwin/fl/hurricane.html
Florida Mini-Greening Summit

Presented by the Florida Cooperative Extension Service
Citrus Extension Agents

Program Agenda

9:45 AM  Registration
10:00 AM  Psyllid control research and management update
10:25 AM  Greening bacteria research update
10:50 AM  Break
11:05 AM  Horticultural greening management research update
11:30 AM  Citrus canker research update
12:00 PM  Adjourn

Attendees will receive 2 Continuing Education Units (CEUs) for the Restricted Pesticide and Certified Crop Advisory Program.

Speakers-Citrus Extension Agents:
Steve Futch Mongi Zekri Chris Oswalt
Lake Alfred, FL Labelle, FL Bartow, FL
863-956-1151 863-674-4092 863-519-8677 x 108

Gary England Ryan Atwood Tim Hurner
Bushnell, FL Tavares, FL Sebring, FL
352-793-2728 352-343-4101 863-402-6540

Tim Gaver
Ft. Pierce
772-462-1660

Meeting dates and locations:
Sep. 30th  Tavares  1951 Woodlea Rd  Lake County Extension
Oct. 2nd  Sebring  4509 W. George Blvd  Highlands County Extension
Oct. 7th  Immokalee  2686 SR 29 N  SW Florida REC
Oct. 8th  Arcadia  2250 NE Roan St.  Turner Exhibition Hall
Oct. 9th  Bartow  1710 Highway 17 South  Polk Co. Ext. Stuart Center
Oct. 14th  Ft. Pierce  2199 S Rock Rd  Indian River REC

To register for a specific location of the following locations, please contact:
Bartow-  Polk County Extension Service  863-519-8677 ext. 111
Arcadia-  DeSoto County Extension Service  863-993-4846
Immokalee-  Hendry County Extension Service  863-674-4092
Tavares-  Lake County Extension Service  352-343-4101
Sebring-  Highlands County Extension Service  863-402-6540
Ft. Pierce-  St. Lucie County Extension Service  772-462-1660
Huanglongbing (Citrus Greening)

Huanglongbing (HLB) or citrus greening or "yellow shoot" disease is a serious disease of citrus because it affects all citrus cultivars and causes decline of trees. HLB was discovered in August 2005 in south Florida and it is now spread in over 30 Florida counties.

The blotchy mottle symptom is the most diagnostic symptom of the disease. Leaves might be small and upright with a variety of chlorotic patterns that often resemble zinc deficiency. Often some of the leaves may be totally devoid of green or with only islands of green spots (green islands). Affected trees may show twig dieback and the productivity may decline in a few years.

Fruit are often few in number, small, may be lopsided with a curved central core and fail to color properly remaining green at the stylar end. The affected fruit often contain aborted seeds and have a sour taste.

When psyllids are abundant and conditions are favorable, HLB can spread very quickly. Infected mature trees may decline and become non-productive and young trees that become infected never come into full production.

Recommended Practices

HLB is difficult to manage and continued production of citrus has proven difficult and expensive in areas where it is widespread.

Integrated pest management strategies should focus on the following: use of disease-free nursery trees, suppression of the citrus psyllid populations through chemical, biological and cultural controls, and reduction of the inoculum by frequent disease surveys and removal of symptomatic trees if the infection rate is low.

The Citrus Psyllid

Psyllid Management

With citrus greening disease now present in Florida, management of the Asian citrus psyllid has become very important.

Factors Affecting Psyllid Populations

The two main factors that affect the abundance of psyllids are 1) presence of new flush and 2) temperature. New flush is required for psyllid females to lay eggs as well as for subsequent development of the psyllid nymphs.
When no new flush is present, psyllid populations do not continue to increase. Temperature is also closely linked to the abundance of psyllids in the field. The ideal temperature conditions for psyllids are between 68-86°F. At these temperatures, a single female psyllid lives for 30-50 days and can lay between 300 and 800 eggs. When the daily temperatures are above 90°F, the average lifespan of a female psyllid decreases to less than 30 days with an average of fewer than 70 eggs produced per female. Thus, under Florida conditions, psyllid populations will be substantially lower during the midsummer months due to both high temperatures and a reduced amount of new flush available for egg laying.

*Psyllid Feeding Damage and Disease Transmission*

Pesticide application and other management strategies targeting psyllids will not provide complete control of greening, but is necessary to slow its spread and severity. Previous studies on psyllid-pathogen transmission suggest that a healthy psyllid feeding on a greening infected plant may be able to pick up the pathogen with as little as 30 minutes of feeding. After picking up the bacteria, a latent period which may last up to 25 days is required before the psyllid can transmit the pathogen. Transmission of the pathogen is thought to occur through salivary secretions, requiring 1-7 hours of feeding for successful transmission to occur.

To effectively maintain psyllids at low levels throughout the year, it will be necessary to incorporate chemical, cultural and biological control into a comprehensive management strategy for psyllid suppression. No one management strategy alone is likely to be able to provide the results desired in terms of reducing psyllid populations. Thus, managing psyllids will involve targeting control measures at appropriate times depending on the particular growing situation.

*Nonbearing Trees*

Young trees that produce multiple flushes throughout the year are at greater risk of greening infection than mature trees because of the attraction of adult psyllids to the new flush. Even without greening, young trees in the field need to be protected for about 4 years from psyllids and leafminers to grow optimally. Soil-applied systemic insecticides will provide the longest lasting control of psyllids with the least impacts on beneficials. Drenches are best applied once in the spring and again in the fall, when the trees are flushing and rainfall is less likely to move the material past the root zone before it can be taken up by the plant. Foliar sprays with different modes of action can be used during the rainy season if psyllids are observed on the new flush of young trees. When making multiple foliar insecticide applications within a season, rotation between products with different modes of action is recommended to reduce the likelihood of pesticide resistance development.

*Bearing Trees*

Currently, the only soil-applied insecticide that has been shown to provide any reduction in psyllid numbers on large trees is aldicarb. If aldicarb is applied to bearing trees as part of a program for psyllid management,
application should be made at least 30 days prior to the initiation of flushing. This timing will allow for the material to move from the roots up to the tree canopy.

At present, the only other chemical control option that has been demonstrated to be effective for reducing psyllid populations on bearing trees is the use of broad-spectrum foliar insecticide applications. Broad-spectrum foliar sprays are most effective when used to control adult psyllids prior to the presence of new flush. Once psyllids begin reproducing on new flush, it becomes increasingly difficult to gain control of rapidly increasing populations. Psyllid management programs should begin by first targeting overwintering adult psyllids during the winter months when the trees are not producing flush. By eliminating these overwintering adults, psyllid populations will be greatly reduced on the following spring flushes. By targeting psyllids early in the year, this should provide enough suppression in psyllid populations to reduce the need for psyllid sprays during bloom when pollinators are present and most pesticide products cannot be applied. Additional sprays for psyllids should be made when observing an increase in adult populations in a grove.

For more information, go to

The Florida Citrus Pest Management Guide
http://edis.ifas.ufl.edu/TOPIC_BOOK_Florida_Citrus_Pest_Management_Guide
HOW TO REDUCE DRIFT?

- Avoid high spray pressure, which create finer droplets. Use as coarse a spray as possible and still obtain good coverage and control.
- Don't apply pesticides under windy or gusty conditions; don't apply at wind speeds over 10 mph. Read the label for specific instructions.
- Maintain adequate buffer zones to insure that drift does not occur off the target area.
- Be careful with all pesticides. Insecticides and fungicides usually require smaller droplet sizes for good coverage and control than herbicides; however, herbicides have a greater potential for nontarget crop damage.
- Choose an application method and a formulation that is less likely to cause drift.
- Use drift reduction nozzles.
- Use wide-angle nozzles, lower spray boom heights, and keep spray boom stable.
- Use drift control/drift reduction agents. These materials are designed to minimize the formation of droplets smaller than 150 microns. They help produce a more consistent spray pattern and aid in deposition. Drift control additives do not eliminate drift. Therefore, common sense is still required.
- Apply pesticides early in the morning or late in the evening; the air is often more still than during the rest of the day.
- Don't spray during thermal inversions, when air closest to the ground is warmer than the air above it. When possible, avoid spraying at temperatures above 90°-95° F.
- Know your surroundings! You must determine the location of sensitive areas near the application site. Some crops are particularly sensitive to herbicides, which move off-site.
- Be sure you are getting the spray deposition pattern you think you are; service and calibrate your equipment regularly.
- Whenever possible, cut off the spray for missing trees in the row. Spray that does not enter the tree canopy is wasted and contributes significantly to drift problems.
- Keep good records and evaluate pesticide spray results.

Remember, ALWAYS read and follow label directions.
Citrus Canker

Citrus canker is a serious bacterial disease that affects citrus. Grapefruit, Mexican lime, and some early oranges are highly susceptible to canker.

Major outbreaks of citrus canker occur when new shoots are emerging or when fruit are in the early stages of development. Frequent rainfall in warm weather, especially during storms, contributes to disease development. Citrus canker is mostly a leaf-spotting and fruit rind-blemishing disease, but when conditions are highly favorable for infection, it causes defoliation, shoot die-back, and fruit drop. When feeding galleries of Asian leafminer on leaves, stems, and fruit become contaminated with the bacterium, the number and size of individual lesions greatly increases and results in tremendous inoculum production.

Canker is more severe on the side of the tree exposed to wind-driven rain. Spread over longer distances can occur during severe tropical storms, hurricanes, and tornadoes. Workers can carry bacteria from one location to another on hands, clothes, and equipment. Grove equipment spreads the bacteria in blocks within groves, especially when trees are wet. The entire state of Florida has been under quarantine, and fruit movement is subject to specific regulations based on market destination.

Rules for decontamination are still in place and should be followed. In moving equipment and personnel from grove to grove, all equipment has to be free of plant material and thoroughly decontaminated. Decontamination is especially important in harvesting operations, hedging and topping, and in any other practices involving extensive contact with foliage.

Tree removal. If canker is detected in areas previously free of the disease, removal and burning of trees on site can slow the establishment of the disease. For
tree removal to be effective, canker has to be localized and limited to a small number of trees. Tree removal is not likely to be effective if canker is widely spread. Before tree removal is attempted as a control measure, blocks should be thoroughly inspected to be sure that canker is not more widespread than initially thought. At some point, tree removal will no longer be economically sustainable and should be discontinued.

**Buckhorning or pruning** of canker-infected trees can alleviate the problem, but is not likely to eliminate the disease. Following pruning or buckhorning, the new growth flush should be treated with copper products once the growth is half expanded to protect it from new infections.

**Windbreaks.** Windbreaks are highly effective in reducing the spread of canker, but more importantly, they reduce the severity of the infection in endemic situations. The vast majority of the infection occurs by wind-blown rains. Winds of 18 to 20 mph are needed to actually force bacteria into the stomates on leaves and fruit. Windbreaks are the single most effective means of dealing with canker. To be effective for canker control, windbreaks need not to be dense. All that is required is to reduce wind speed to less than 20 mph. The need for and the distance required between windbreak rows will depend on the destination of the fruit, fresh or processed, and the susceptibility of the variety. With grapefruit for the fresh market in Florida, it is likely that each 5- to 10-acre block will need to be surrounded by a windbreak. In many groves of less susceptible varieties, a windbreak down the row about every 300 ft may be sufficient. In some situations where some protection exists and tolerant varieties are grown for processing, additional windbreaks may be unnecessary. Additionally, not topping outside rows of citrus will also serve as a viable, harvestable windbreak. Currently, it is recommend that growers plant windbreaks along fence lines, ditches, around wetlands, or wherever they can plant without removing citrus trees. If it becomes obvious that more windbreak protection is needed, rows of citrus or end trees can be removed to accommodate windbreaks.

**Copper sprays.** Over the last 3 decades, IFAS has evaluated dozens of products for canker control. Products such as antibiotics, compounds that induce resistance in plants, and disinfectants often provide limited canker control, but no material has proven more effective than copper products. Copper products are quite effective in preventing infection of fruit, less effective for reducing leaf infection, and have limited value in reducing spread of the disease. Application of copper to young leaves protects against infection, but protection is soon lost due to rapid expansion of the surface area. Fruit grows more slowly and is easier to protect. Fruit is susceptible to infection after the stomates open when the fruit is about 1/2- to 1-inch in diameter until they develop resistance in mid to late July. Infection through wounds can occur at any stage. It is believed that most of the infection will occur during June and July. With endemic canker, we suggest that three
copper sprays be used for early oranges grown for processing, one in mid-May, a second in mid-June, and a third in mid-July. If canker continues to be very severe, another application of copper in August may be justified. Two applications should be sufficient for Valencias, in early June and early July. Programs for fresh fruit are more complex, but many copper sprays are already used on these varieties. For fresh market grapefruit, a low rate of copper should be added to the spray of spring flush for scab. Subsequently, the copper spray program used for melanose control should also control canker, but additional applications may be needed in late June and July. Copper may need to be added to applications of fungicides or petroleum oil.

Most tangerines are fairly tolerant to canker. Programs used for control of Alternaria should also protect against canker, but copper will have to be used in each spray. Navel oranges are highly susceptible to canker and will probably need to be sprayed every 3 weeks from late April through July. Fallglo is more tolerant and probably three sprays in May, June, and July should suffice. The rates needed depend on the length of protection expected and the weather. As little as 0.5 to 1.0 lb of metallic copper will protect spring flush growth or fruit during the dry spring season. However, in the rainy season, 2 lb of metallic copper will be required to protect fruit for 3 to 4 weeks.

Copper usage should be minimized since this metal accumulates in soil and may cause phytotoxicity and creates environmental concerns. **Leafminer control.** The citrus leafminer does not spread canker, but extensive infestation by leafminer greatly increases canker inoculum levels making the disease difficult to control. Leafminers are not usually a problem on the spring flush and no control is needed at that time. Leafminer control on the first summer flush can reduce disease pressure considerably. If properly timed, applications of petroleum oil, Agri-mek, Micromite, Spintor, or Assail will reduce damage by leafminer. Late summer flushes tend to be erratic and effective control at that time will probably be difficult.

**The Citrus Leafminer**

Leafminer populations decline to their lowest levels during the winter, due to cool temperature and the lack of flush for larval development. Populations of leafminer build rapidly on the spring flush, although their presence is not apparent until late spring as populations increase while the amount of new foliage
decreases. The summer period of high leafminer damage coincides with the rainy season when canker spread is most likely.

Citrus leafminer greatly exacerbates the severity of citrus canker caused by *Xanthomonas axonopodis* pv. *citri*. This insect is not a vector of the disease. Nevertheless, leafminer tunnels are susceptible to infection much longer than mechanical wounds. Tunnels infected by canker produce many times the amount of inoculum than in the absence of leafminer. Control of leafminer should be optimized in areas where infection by canker is high. Natural enemies already present in Florida have responded to leafminer infestations, causing in excess of 50% mortality of larvae and pupae in some areas. The introduced parasitoid *Ageniaspis citricola* has established throughout most of Florida, with rates of apparent parasitism reaching 90% or more. However, these high rates of parasitism are not seen until late in the year.

**Leafminer Management**

*Nonbearing Trees*

On young trees, use of the soil-applied systemic insecticide imidacloprid is the most effective means of preventing mining damage on the new flush and has little direct effect on natural enemies. Soil drenches directly to the base of the tree with imidacloprid have been shown to provide at least 8 weeks control of leafminer.

Soil applications of imidacloprid should be made about 2 weeks prior to leaf expansion to allow time for the pesticide to move from the roots to the canopy. Avoid applications 24 hours prior to significant rainfall events which will result in movement of the product out of the root zone before it can be taken up by the plant. Because of limits on the amount of imidacloprid that may be applied on a per acre basis each season, only one application in the spring and possibly one in the fall are recommended. When the residual effects of the spring application have worn off, typically during the mid-summer rainy season, foliar sprays can be used on small trees to reduce leafminer damage.

*Bearing Trees*

If canker is present in a grove (or in a nearby grove), healthy trees with leafminer damaged leaves are more likely to become sites for new canker infection. The only products currently available for leafminer control on large trees are foliar insecticide sprays. Soil applications of imidacloprid are not effective for leafminer control on large trees due to use rate restrictions that limit the usefulness of the product on trees greater than 6-8 feet in height. It should also be noted that aldicarb (Temik®), which has been demonstrated to suppress psyllid populations on large trees, does not provide control of leafminers. While there are a number of products that are effective for controlling leafminer, achieving control of leafminer using foliar sprays on large trees is difficult due to the unsynchronized flush typically encountered during the summer period when leafminer populations are at their highest levels.

Since leafminers affect only developing leaves, coverage of peripheral leaves in the canopy should be adequate to exert suppression when applying foliar pesticides.

**For more information, go to The Florida Citrus Pest Management Guide**

PHYTOPHTHORA
FOOT ROT AND ROOT ROT
Foot rot results from infection of the scion near the ground level, producing bark lesions, which extend down to the budunion on resistant rootstocks. Crown rot results from infection of the bark below the soil line when susceptible rootstocks are used. Root rot occurs when the cortex of fibrous roots is infected, turns soft and appears water-soaked. Fibrous roots slough their cortex leaving only white thread-like stele.

When managing Phytophthora-induced diseases, consider integration of cultural practices (e.g., disease exclusion through use of Phytophthora-free planting stock, resistant rootstocks, proper irrigation practices) and chemical control methods. Cultural practices. Field locations not previously planted with citrus are free of citrus-specific *P. nicotianae*. Planting stock should be tested free of Phytophthora in the nursery and inspected for fibrous root rot in the nursery or grove before planting. In groves with a previous history of foot rot, consider use of Swingle citrumelo for replanting. Swingle citrumelo is resistant to foot rot and roots do not support damaging populations once trees are established. Cleopatra mandarin should be avoided because it is prone to develop foot rot when roots are infected in the nursery or when trees are planted in flatwoods situations with high or fluctuating water tables and fine-textured soils. Trees should be planted with the budunion well-above the soil line and provided with adequate soil drainage. Overwatering, especially of young trees, promotes buildup of populations in the soil and increases risk of foot rot infection. Prolonged wetting of the trunk, especially if tree wraps are used on young trees, should be avoided by using early to midday irrigation schedules. Control of fire ants prevents their nesting under wraps and causing damage to tender bark. Sampling for *P. nicotianae*. Population densities of the fungus in grove soils should be determined to assist in decisions to treat with fungicides. Soil samples containing fibrous roots should be collected during the spring through fall (March to November) from under-canopy within the tree dripline. Individual small amounts of soil from 20 to 40 locations within a 10-acre area are composited into one resealable plastic bag to retain soil.
moisture. Samples must be kept cool but not refrigerated for transport to the analytical laboratory. Currently, populations in excess of 10 to 15 propagules per cm³ soil are considered damaging. The same soil sample could be tested for populations of nematodes, to assess whether they occur at damaging levels.

Chemical control.
Use of fungicides in young groves should be based on rootstock susceptibility, likelihood of Phytophthora infestation in the nursery, and history of Phytophthora disease problems in the grove. For susceptible rootstocks, such as Cleopatra mandarin and sweet orange, fungicides may be applied to young trees on a preventive basis for foot rot. For other rootstocks, fungicide treatments should commence when foot rot lesions develop. The fungicide program for foot rot should be continued for at least one year for tolerant rootstocks, but may continue beyond for susceptible stocks.

In mature groves, the decision to apply fungicides for root rot control is based on yearly soil sampling to indicate whether damaging populations of *P. nicotianae* occur in successive growing seasons. Time applications to coincide with periods of susceptible root flushes in late spring and late summer or early fall. Soil application methods with fungicides should be targeted to under canopy areas of highest fibrous root density. To avoid leaching from the root zone, soil-applied fungicides should not be followed by excessive irrigation. Aliette and Ridomil are both effective, but alternation of the materials should be practiced to minimize the risk of the development of fungicide resistance.

Foliar spray with Aliette: It is recommended to buffer the spray solution to pH 6 or higher to avoid phytotoxicity when copper has been used prior to or with Aliette. For nonbearing trees, use 5lb/100 gal. For bearing trees, use 5 lb in 100-150 gal/acre. Soil application with Ridomil Gold 4EC: Apply 1quart/treated acre or soil drench by applying 5 gallons of solution (1 quart/100 gal) in water ring.

For more details and product selection and rates, get your copy of the 2008 Florida Citrus Pest Management Guide or go to: [http://edis.ifas.ufl.edu/CG009](http://edis.ifas.ufl.edu/CG009)
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**Racial-Ethnic Background**

__American Indian or native Alaskan__ __White, non-Hispanic__
__Asian American__ __Black, non-Hispanic__
__Hispanic__

**Gender**

__Female__ __Male__