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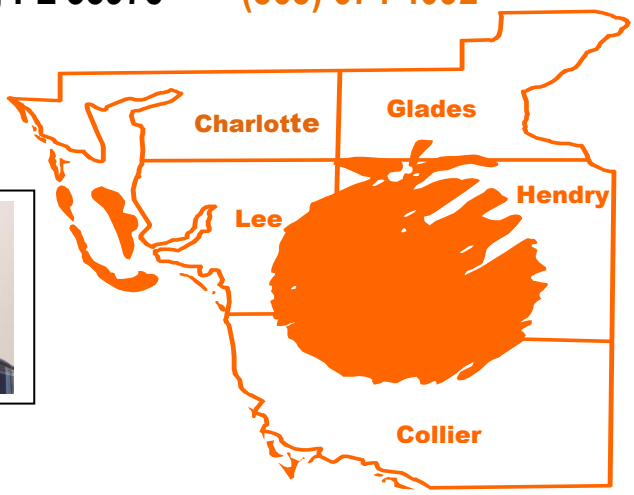
Flatwoods Citrus



Vol. 12, No. 8 August 2009

Dr. Mongi Zekri
Multi-County Citrus Agent, SW Florida

U P C O M I N G E V E N T S

Seminars

► Low volume spray for psyllid control

Location: **Immokalee IFAS Center**

Date: Tuesday, October 6, 2009, Time: 10:00 AM – 12:00 Noon

2 CEUs for Pesticide License Renewal, 2 CEUs for Certified Crop Advisors

► Mechanical Harvesting

Location: **Immokalee IFAS Center**

Date: Tuesday, December 8, 2009, Time: 10:00 AM – 12:00 Noon

2 CEUs for Pesticide License Renewal, 2 CEUs for Certified Crop Advisors

CITRUS EXPO

IN FORT MYERS

Lee Civic Center

Wednesday, August 19 &
Thursday, August 20, 2009,

www.CitrusExpo.net

Citrus Packinghouse Day on Thursday, August 27th at the Citrus Research and Education Center in Lake Alfred, and the **Indian River Postharvest Workshop** on Friday, August 28th at the Indian River Research and Education Center in Ft. Pierce. Visit http://postharvest.ifas.ufl.edu

For more information, contact Mark Ritenour at 772-468-3922, ext. 167 or at **ritenour@ufl.edu**.

55th Annual Meeting of the Interamerican Society for Tropical Horticulture (ISTH)

11 - 16 October, 2009
Barquisimeto, **Venezuela**
For more information, contact: isthlv2009@gmail.com

ISHS
International Society for Horticultural Science

SECOND INTERNATIONAL CITRUS BIOTECHNOLOGY SYMPOSIUM
CATANIA, ITALY, NOVEMBER 30 – DECEMBER 2, 2009
All information regarding the symposium will be available at: www.fagr.unict.it
For questions, please contact us at the following address: biotech2009@unict.it

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CITRUS FRUITS CHECK OBESITY, DIABETES

Toronto (IANS): Canadian researchers have found that citrus fruits can prevent weight gain and help control Type-2 diabetes and increased risk of heart disease.

A flavonoid called naringenin found in citrus fruits helps the body burn extra fat to check weight gain. It also has insulin-like properties to check Type-2 diabetes, says a study by the University of Western Ontario.

Flavonoids, which are found in plants, promote antioxidant activity in the human body. They work by genetically reprogramming the liver to burn up excess fat, rather than storing it, according to the study.

In their study, the university researchers fed one group of mice with a high-fat diet to induce the symptoms of metabolic syndrome. A second group was fed the exact same diet but treated with naringenin.

The researchers found that naringenin corrected the rise in triglyceride and cholesterol levels, prevented the development of insulin resistance and thus completely normalized glucose metabolism in mice.

"Furthermore, the marked obesity that develops in these mice was completely prevented by naringenin," Murray Huff of the Schulich School of Medicine & Dentistry at the university said.

"What was unique about the study was that the effects were independent of caloric intake, meaning the mice ate exactly the same amount of food and the same amount of fat. There was no suppression of appetite or decreased food intake, which are often the basis of strategies to reduce weight gain and its metabolic consequences."

He said: "We are examining the pharmacological properties of naringenin. The next step is to find out if naringenin prevents heart disease in animal models and to explore the feasibility of clinical trials to determine its safety and efficacy in humans."

Huff said his team is also investigating whether naringenin can treat obesity and other metabolic problems. "These studies show naringenin, through its insulin-like properties, corrects many of the metabolic disturbances linked to insulin resistance and represents a promising therapeutic approach for metabolic syndrome."

DESPITE FREEZES, CITRUS GROWERS PROSPERED THIS YEAR

DAVID DONALD, Staff Writer

Florida citrus growers produced more citrus fruit in 2008-09 than expected.

The U.S. Department of Agriculture's final crop estimate of the year was 162.1 million boxes.

Still, this year's harvest is down 4.8 percent compared to last year's 170.2 million boxes.

Despite the freezes that threatened many citrus crops this year, Lake County growers fared well.

"We were really pleased with the majority of the groves that came through the cold," said Rusty Wiygul, director of grower affairs for Florida Citrus Mutual, about Lake County growers. "We should have had more damage than we had. We didn't get hurt nearly as bad as some areas in the southwest."

Lake has more than 13,000 acres of commercial citrus groves, the 11th largest in the state. It's a stark contrast to the 125,000 acres of citrus groves blanketing Lake County before the freezes in the 1980s, Wiygul said.

Housing subdivisions replaced many of the citrus groves throughout Lake after the freeze in 1989. What was once acres of orange-spotted green foliage as far as the eye could see is now a sea of rooftops.

However, freezing weather wasn't the only concern this year, Wiygul said.

"Prices weren't really good for growers," he said.

Last year, growers received about $1.25 for a pound of citrus fruit processed into juice. This, year that payment dropped to 75 cents a pound.

"Some (growers) were barely breaking even," Wiygul said.

Florida is still the largest citrus-producing state in the country. The citrus industry has a $9.3 billion economic impact on the state every year, employing more than 76,000 people. Polk County is the largest citrus producing county with more than 81,000 acres

"Another Florida citrus season is over and once again Florida growers produced a high quality crop," said Michael Sparks, CEO of Florida Citrus Mutual. "We are certainly facing some challenges as an industry, but we remain a powerful economic engine supporting many communities, particularly in Florida's interior. With the overall economy sagging, citrus -- and agriculture in general -- becomes even more important."

GREENING RESEARCH FUNDS APPROVED

ADAM PUTNAN REQUESTS FUNDS TO FIGHT BOTH CITRUS GREENING AND CANKER

By Bill Rufty, 802-7523
bill.rufty@theledger.com

LAKELAND | The U.S. House of Representatives passed the agriculture funding bill Thursday that includes major funding for citrus greening research requested by Congressman Adam Putnam, R-Bartow.

The agriculture budget provides two major appropriations to fight and to research citrus greening and canker.

The first is $43.6 million for the Citrus Health Response Plan, a joint project by the US. Department of Agriculture and the Florida Department of Agriculture, that will provide pest control and prevention programs for citrus greening and canker in Florida, California, Texas, Arizona and Louisiana.

The CHRP funding represents an $8.3 million increase over last year's funding.

The second appropriation is $1,217,000 for research into greening by the University of Florida's Institute of Food and Agriculture Science research center in Lake Alfred.

The research will find ways to improve detection, treatment and containment of greening and canker.

Greening is caused by bacteria spread by the citrus psyllid insect. It attacks the citrus tree's tissue system that carries nutrients throughout the plant resulting in misshapen, bitter and inedible fruit with a green band along the bottom.

Andrew Meadows of Florida Citrus Mutual said the appropriations are crucial, particularly with the ravages of citrus greening.

"We worked very hard with the entire Florida delegation for the appropriations and are very happy to see they are in the House bill," he said.

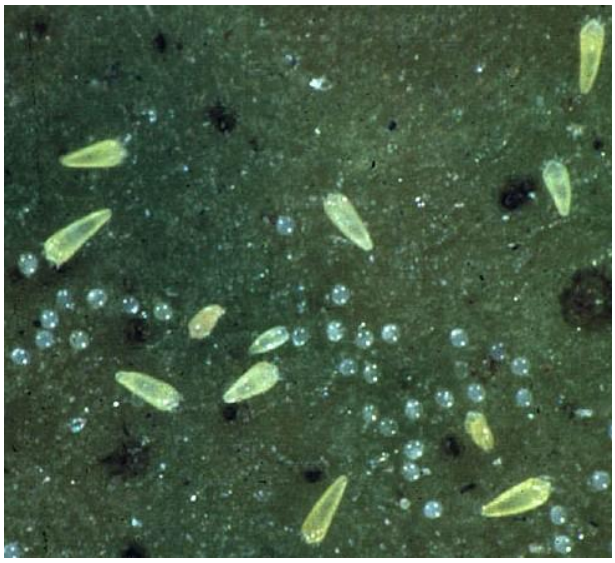
Putnam, who is running for Florida Commissioner of Agriculture in 2010, said the appropriations will help scientists develop ways to enhance food safety, and to stop pests and diseases threatening the citrus industry.

"I'm pleased that the commitment to greening research has been increased, but more must be done by the growers, the citrus producing states and the federal government to avert the most devastating citrus disease to hit our shores," Putnam said. "The Senate has a higher number (of dollars for greening research) and we will continue to work with them to maximize USDA and IFAS resources."

In other Putnam funding requests approved in the bill is a $6,677,000 appropriation for Tropical and Subtropical Research by the University of Florida research and education for interdiction, eradication, and suppression of invasive plants, animals, insects and disease.

The appropriations are a part of the $22.9 billion Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2010, (H.R. 2997) that now will go to the Senate.

CITRUS RUST MITES



The citrus rust mite and the pink citrus rust mite are found on all citrus varieties throughout Florida. The pink citrus rust mite develops to greater damaging populations early in the season (April-May). Both rust mites are important pests of fruit grown for the fresh market. On some specialty varieties (such as Sunburst tangerine), damage may even be severe on stems and foliage, causing leaf injury and drop. Fruit damage is the main concern with other varieties.

Egg deposition begins within two days after the female reaches sexual maturity and continues throughout her life of 2-3 weeks. The pink citrus rust mite populations can begin to increase in April to early May on new foliage, reaching a peak in mid-June to mid-July, depending on geographical location and weather. The pink citrus rust mite is more abundant in drier weather conditions. The citrus rust mite population densities increase in May-July and then decline in late August, but can increase again in late October or early November. Mite densities in the fall rarely approach those early in the summer. Generally, the north bottom of the tree canopy is preferred and supports the highest mite populations. While the primary effect of fruit damage caused by rust mites appears to be a reduction in grade, other conditions have been associated with severe fruit injury such as reduced size. Severe leaf injury to some specialty varieties (Ambersweet, Fallglo, and Sunburst) can lead to leaf drop.

Citrus groves producing fruit designated for the fresh market may receive 3-4 miticides/year typically during April, June, August, and October. In contrast, groves producing fruit designated for processing may not need to be treated. Miticides applied for the control of rust mites on fresh fruit varieties are often combined with compatible fungicides in the spring and summer. An alternative approach is using petroleum oil as a fungicide for greasy spot control and to suppress mites. Scouting for rust mite populations is very important for efficient control.

Citrus Miticide Selection*. ***Read the label.***

Supplemental (early Spring)	Post Bloom	Summer	Fall	Supplemental Fall
--	--	Agri-mek + oil	--	--
--	--	--	Comite	Comite
Dicofol	Dicofol	--	--	--
Envidor	Envidor	Envidor	Envidor	Envidor
--	Petroleum oil	Petroleum oil	Petroleum oil	--
--	--	--	Sulfur	Sulfur
--	--	Micromite	Micromite	--
--	--	--	Nexter	Nexter
Temik	--	--	--	--
Vendex	Vendex	--	Vendex	Vendex
***Except for petroleum oil, do not use the same miticide chemistry more than once a year.**				

For more information, go to http://edis.ifas.ufl.edu/CG002
2009 Florida Citrus Pest Management Guide: Rust Mites, Spider Mites, and Other Phytophagous Mites

Citrus Health Response Program Update
Abandoned Grove Initiative

A publication of the Florida Department of Agriculture & Consumer Services, Charles H. Bronson, Commissioner

Recognizing the pest and disease risks associated with abandoned citrus groves, the state has initiated a comprehensive plan for their removal and destruction. This initiative will help mitigate the impact of exotic citrus pests and diseases (namely citrus greening and citrus canker) by identifying abandoned groves and working cooperatively with county tax assessor offices and property owners regarding abatement options and tax incentives which will foster removal of these reservoirs of infection.

Key components:

- Catalog all abandoned groves throughout the state
- Map all high-risk abandoned groves
- Contact abandoned grove owners to ask their intentions for properties
- Inform owners if their groves are not kept in production, they will not be considered part of CHRP.
- Inform owners if they eliminate live citrus trees in abandoned groves, it is considered a bona fide agricultural practice and will remain in compliance with CHRP guidelines, thus maintaining their agriculture exempt status.

Agricultural land tax exemption – FDACS' interpretation and position on Section 193.461(7), Florida Statutes, is that if you have a valid CHRP compliance agreement and are in good standing, then the property covered by the agreement is considered in agricultural use, thus for tax purposes is eligible for agricultural land use classification. County property appraisers in citrus-growing areas are developing policies that comply with Section 193.461(7), Florida Statutes.

Property owners with abandoned groves should contact their local CHRP office for more information (see back). Proper documentation is required by county tax assessor offices for exemption, so please contact your local CHRP office for details. If you know of abandoned groves in your area, please report the property to your local CHRP office.

Abandoned Grove Defined:

No commercial fruit harvest during last two seasons

No production care during the past two years, including weed control and mowing

Grove use transferred to other uses (pine or livestock)

Division of PLANT INDUSTRY
Fresh Florida. Protection through Detection
Florida Department of Agriculture & Consumer Services
Charles H. Bronson, Commissioner

1-800-282-5153 ◇ www.fl-dpi.com/chrp

Citrus Health Response Program Overview

Citrus Health Response Program Mission

Working together to produce healthy citrus

- Ensure security of citrus germplasm and citrus nursery programs
- Support effective disease / disease vector management
- Monitor defendable phytosanitary protocol that allows fresh fruit movement to all markets
- Implement citrus nursery clean stock program

Resources for the Industry

Tools to support citrus

- Compliance agreements and business plans designed to provide guidance and protect citrus
- Grower Assistance Program – decontamination training, survey assistance, self-survey and business plans
- Best Management Practices
- Participate with growers in the Business Plan Share Program

Citrus Germplasm Introduction Program

Important disease-free start

- Ensures citrus germplasm is free from any known graft-transmissible pathogens
- Each variety undergoes years of intensive testing before release
- Provides approved germplasm to citrus budwood registration program
- New 20,000 sq ft facility at future Alachua County budwood site

Citrus Budwood Registration

Responding to disease pressures

- Provides clean budwood to citrus industry
- Facilities located outside of citrus-growing area
- 80,000 sq ft facility in Levy County
- Redundant 60,000-sq-ft location planned in Alachua County

Citrus Nursery Guidelines

Providing clean stock for citrus groves

- Rules and regulations to protect industry, 5B-62
- Geographic separation of new nurseries and groves
- Citrus nursery stock is propagated and housed in approved insect-proof structures
- All citrus nurseries are on 30-day inspection cycle
- Compliance agreements are required

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FDACS/DPI Citrus Health Response Program Offices

Contact Information

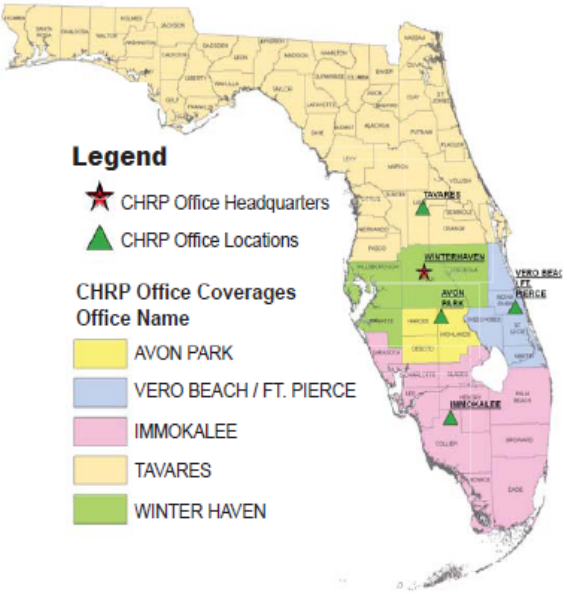
Avon Park
3397 US Hwy 27 South
Avon Park, Florida 33825
Phone: 863-314-5900

Vero Beach / Ft. Pierce
8075 20th Street
Vero Beach, Florida 32966
Phone: 772-778-5069

Immokalee
424 East Market Road, Unit 10
Immokalee, Florida 34142
Phone: 239-658-3684

Tavares
4129 County Rd. 561
Tavares, FL 32778
Phone: 352-253-4547

Winter Haven
3027 Lake Alfred Road
Winter Haven, FL 33881-1438
Phone: 863-298-7777



DACS-P-01613

From The Florida Citrus Pest Management Guide

WEED CONTROL IN CITRUS GROVES

Weeds can reduce the growth, health and survival of young trees, or the time to come into bearing and ultimately fruit production. The more competitive the weeds, the more adversely they alter tree physiology, growth, fruit yield and quality. The attainment of early crop production requires controlling the growth of weeds. Weeds alter economic status by competing with trees, particularly young trees, for water, nutrients and even light in the case of climbing vines, which can easily cover trees if left uncontrolled.

Weeds also have various effects on tree performance including reduced efficacy of low volume irrigation systems, and interception of soil-applied pesticides.

Management Methods

Cultural & mechanical

Cultural methods include off-target irrigation and fertilizer applications. Mechanical methods include cultivation in row middles. However, **constant cultivation results in the destruction of citrus fibrous roots, which normally would grow in the undisturbed portion of the soil.**

Mowing is practiced between the tree rows and away from the trees in combination with herbicide applications in the tree row over the major root zone of trees. It is appropriate where a cover crop is desired in bedded groves to prevent soil erosion. Weeds can also be spread by seed and vegetatively during mowing operations, reinfesting tree rows where herbicides have been applied. **Mowing before seedhead formation is necessary to reduce seed dissemination and reinfestation.**

Chemical mowing

Chemical mowing, utilizing Low Rate Technology (LRT) postemergence herbicide spray applications and wiping in combination with mechanical mowing, is used for the suppression of vegetation in row middles. With the high frequency and cost of mechanical mowing required to maintain vegetation control in row middles, chemical mowing and wiping with low rates of glyphosate has increased. Weed management in Middles by chemical applications results in the elimination of tall growing species and establishment of more manageable sod type species such as Bermuda and Bahia grasses.

Chemical

Generally speaking, all weed species listed as susceptible on the herbicide product label will be controlled by that herbicide at the appropriate rate, time of application and stage of growth. Environmental and plant conditions before, during and following the application are also important including moisture in the form of rainfall and/or irrigation.

Poor control can sometimes be expected from postemergence applications to weeds under stress conditions due to poor uptake and translocation of applied herbicides. Assuming that the appropriate herbicide or herbicide mixtures are selected for the weed species present, failures in the program will usually be due to one of the above factors or to the actual application including calibration and/or equipment design and operation.

Herbicides may be classified as foliar or soil-applied. Foliar applied materials may have systemic or contact activity. Soil

applied preemergence herbicides are absorbed through weed root systems, being most effective during germination and early seedling growth stages. Systemic herbicides are those that are absorbed by either roots or aboveground plant parts and are translocated throughout the plant. Contact herbicides act as desiccants, damaging or killing all plant parts actually sprayed with little if any translocation.

For the control of well-established perennial weeds, a postemergence herbicide with systemic metabolic activity should be used with preemergence soil residual products.

Timing and frequency of application are the keys to good vegetation management. **Increased application frequency of lower rates of soil residual herbicides is more effective in young groves where vegetation presence is greater due to more exposure of the grove floor to sunlight and where a greater herbicide safety factor is required**.

Application Technology

Rapid advances in herbicide application technology have resulted in the development of sophisticated equipment. Application equipment is now capable of selective delivery of multiple herbicide products, each directly injected into booms. In a single application, tree rows and row middles may be treated with soil residual and postemergence products with selectivity for tree age, soil type and vegetation species.

Well-maintained, accurately calibrated equipment with good filtration and agitation systems capable of uniform distribution of prescribed spray volumes and droplet size is essential for efficiency, cost-effective vegetation management. Worn nozzle tips result in increased spray delivery rates and distortion of distribution patterns and should be checked regularly. Improved herbicide boom design to reduce tree skirt contact, spray drift and interference of heavy weed cover with nozzle output will reduce tree damage and fruit drop while improving control of target vegetation. Tree skirt pruning and timing of postemergence applications will also reduce boom and spray contact with low hanging limbs and fruit.

Environmental Considerations

In determining management options, herbicide selection should be based not only on species and stage of vegetation development, but product solubility and leaching potential, soil type and rainfall distribution. Objectives are to reduce weed competition and interference through measured vegetation control/suppression with inputs having reduced potential for leaching through over-irrigation, runoff and erosion, chemical drift, or other off-target impacts. CAUTION: Herbicides may move through the soil to groundwater. Several factors influence the rate of this movement. Lower rates applied more frequently combined with sound irrigation management practices will reduce herbicide movement. **The use of bromacil-containing herbicides is prohibited on deep, sandy Ridge-type soils**. For more information and for the list of herbicides registered for citrus in Florida, go to: **http://edis.ifas.ufl.edu/CG013**

2009 Florida Citrus Pest Management Guide--Weeds.

PHYTOPHTHORA

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. Foot rot and root rot can be caused by *P. nicotianae* or *P. palmivora*. 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. Phytophthora management with chemical control should not be considered until other potential causes of decline in tree production are evaluated and corrected.

Cultural practices to manage *P. nicotianae*

Field locations not previously planted with citrus are probably free of citrus-specific *P. nicotianae*. Planting stock should be tested free of *Phytophthora* spp. 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 normally 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 moist, tender bark.

Phytophthora-Diaprepes Complex

Association of Phytophthora root rot with root damage by larvae of *Diaprepes* has been called the Phytophthora-Diaprepes (PD) complex. Surveys have identified a far more severe interaction of *P. palmivora* with Diaprepes root weevil than where *P. nicotianae* is the predominant interacting pathogen. The damage caused by *P. palmivora* is often associated with poorly-drained, fine-textured soils and with the rootstocks normally tolerant of *P. nicotianae*, Swingle citrumelo and Carrizo citrange. Rootstock susceptibility to damage by the PD complex depends on which

Phytophthora spp. is present and whether the soil and water conditions are conducive to the fungus or to rootstock stress. In most situations, *P. nicotianae* is the predominant pathogen and Swingle citrumelo appears to perform acceptably as a replant in weevil-infested groves, provided soil conditions are suited for this rootstock (e.g., sandy soil texture, well-drained, favorable pH and calcium carbonate status, etc.). When *P. palmivora* is present in poorly-drained soils high in clay, pH and calcium carbonate, Diaprepes render normally tolerant Swingle citrumelo and Carrizo citrange susceptible to Phytophthora root rot infection. Thus, tolerance of Swingle citrumelo is restricted to the ridge and certain flatwoods soils.

Chemical control

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 young trees on 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 the first year 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 spring and fall applications to coincide with periods of susceptible root flushes in the spring (after the spring leaf flush) and fall (October to November). Soil application methods with fungicides should be targeted to undercanopy 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.

Management of the Phytophthora-Diaprepes complex

Selection of tolerant rootstocks for replanting Diaprepes-affected groves aids in management of future losses. For existing trees, fungicides in conjunction with careful water and fertilizer management have been utilized to maintain tolerance to Diaprepes and Phytophthora damage. Fertigation maximizes efficiency of water and nutrient uptake by the roots in well-drained soils. However, use of fertigation to regenerate roots is limited in poorly-drained soils and high water tables typical in the flatwoods. In these situations, there may be increased reliance on fungicides to control root damage by *Phytophthora* spp. Based on studies of the PD complex, aggressive control of Diaprepes larvae and adult stages should be implemented as soon as infestation is discovered to minimize the more severe Phytophthora damage that follows larval feeding on roots. The IPM program may include carefully scheduled fertigation in well-drained soils to promote regeneration of fibrous roots after damage. In the flatwoods, IPM may include use of fungicides under the following conditions: 1) the soils are fine textured, poorly-drained or high in pH and calcium carbonate status, 2) the trees are on rootstocks susceptible to either or both *Phytophthora* spp., and 3) populations are above the damaging levels (15 to 20 and 40 propagules per cm^3 soil for *P. nicotianae* and *P. palmivora*, respectively).

For more details, go to Phytophthora Foot Rot and Root Rot at: http://edis.ifas.ufl.edu/CG009

DIAPREPES

The most devastating species of weevils infesting citrus is the Diaprepes root weevil, *Diaprepes abbreviatus*.
All citrus root weevils have a similar life cycle. They have three immature stages: egg, larva, and pupa. Adult weevils emerge from the soil and lay eggs on host plants above ground, the larvae enter the soil to feed on roots, and the pupae and teneral adult stages are spent below ground. Adults emerge from the soil throughout the year. Peak emergence varies by geographical region (ridge vs. coastal and interior flatwoods). Diaprepes adult emergence from the soil peaks in late-May to early-July, while peak adult abundance on the tree canopy parallel adult emergence in May/June but can have a second peak in late-August to mid-October. The most visual plant damage resulting from adult feeding is notching of the margins of leaves of young, tender shoots. Notching patterns differ slightly among species and can be confused with grasshopper injury. Diaprepes root weevil, can have a devastating effect on citrus trees since all larval stages feed on the roots for most of the year. Tiny hatchlings feed on fibrous roots whereas larger larvae feed on the larger structural roots, forming deep grooves as they consume the outer bark, including the cambium layer. Roots may be girdled and killed in the process or the crown may be girdled causing tree death. Larval feeding sites predispose the root system to infection and girdling by *Phytophthora* spp., thereby exacerbating economic loss. The rootstocks, trifolate orange and a hybrid "Swingle" citrumelo, are resistant to the complex of *P. nicotianae* and Diaprepes root weevil while Cleopatra mandarin is susceptible to this complex. When *P. palmivora* is coincident with *P. nicotianae* in fine-textured, poorly-drained soils, Swingle citrumelo is more vulnerable to attack by the complex than is 'Cleopatra' mandarin. See Phytophthora Foot Rot and Root Rot
Current research suggests that adult emergence coincides with the onset of summer rains in late-May through June, soil temperature, and the summer flush in central Florida groves.

Pest Control Considerations

Pest management of Diaprepes must begin with control of different life stages, particularly adult weevils using the following options: 1) foliar sprays for egg and adult suppression, 2) chemical barrier for larval control, and 3) biological control of all subterranean stages with nematodes. The application of these control tactics is timed according to monitoring of adult emergence and the onset of leaf flushing in the spring/summer period. Any of these tactics should reduce root injury and sustain root health from grove to grove. For many groves, however, pest management might differ according to: 1) rootstock susceptibility to soil-borne diseases (i.e. *Phytophthora* spp.) and 2) root stress caused by excessive flooding and poor drainage of sandy loam soils. In certain grove situations, a soil fungicide for control of *Phytophthora* spp. should be advised.

For more details, go to the 2009 Florida Citrus Pest Management Guide: Citrus Root Weevils at http://edis.ifas.ufl.edu/CG006

AgroClimate

Southeast climate Consortium summer Climate Outlook

Big Changes in the Pacific Ocean

The Pacific Ocean is transitioning into the El Niño Phase. Ocean temperatures in the past month have warmed rapidly in the eastern and central tropical Pacific Ocean and are now above the 0.5 C threshold that commonly designates El Niño conditions. This warming completes the transition from a weak La Niña as late as March 2009 through several months of neutral conditions in April, May, and June, to impending El Niño for the remainder of 2009. El Niño refers to a periodic (every 2-7 years) warming of the tropical Pacific Ocean along the equator from the coast of South America to the central Pacific.
Weakened trade winds over the central Pacific and abundant warm water beneath the surface indicate that surface temperatures will continue to warm in the next few months. Modeling centers around the world that predict El Niño/La Niña are in good agreement that waters will continue to warm and result in a weak to moderate El Niño over the next 3-6 months. NOAA's Climate Prediction Center issued an "El Niño watch" earlier in June, meaning that the development of El Niño is likely in the next 1-3 months. If El Niño fails to develop as forecasted, then neutral conditions will be the other possibility. There is virtually no chance for a return to La Niña in 2009.

What does El Niño mean for the rest of the summer? When an El Niño develops this early in the summer (they usually form in the fall and reach peak strength in the winter months), it has the potential to lead to drier than normal weather patterns across the Southeast in the second half of summer and in early fall. This tendency towards drier weather is strongest over Alabama, north Georgia, and the Carolinas where rainfall averages 10% to 20% less than normal in July and August during El Niño. Over Florida, the summer rainy season should continue as usual. In general, the second half of the season is a little drier than the first half in south Florida, but more rainfall hits north Florida and the Panhandle. Any drying impacts from El Niño at this time should not greatly offset the summer accumulation of rain. Also, expect Gulf coastal areas to receive more frequent thunderstorms, as Gulf water temperatures are now warm enough to support nocturnal convection.

Looking ahead to the fall/winter. Once we shift seasons into the colder months, the more widely recognized impacts of El Niño in the Southeast begin to set in. Starting in November, El Niño affects the jet stream pattern in a manner that leads to frequent winter storms and frontal systems, cooler temperatures, cloudier skies, and much above average rainfall. In December through March El Niño typically leads to rainfall 40% to 50% greater than normal over the peninsula of Florida.