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EXTENSION

Institute of Food and Agricultural Sciences

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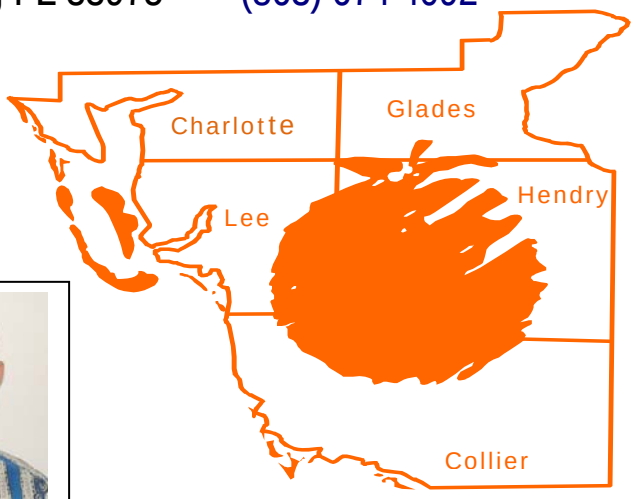
Flatwoods Citrus



Vol. 16, No. 5 **May 2013**

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

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Previous issues of the Flatwoods Citrus newsletter can be found at:
http://citrusagents.ifas.ufl.edu/agents/zekri/index.htm
http://irrec.ifas.ufl.edu/flcitrus/

I M P O R T A N T E V E N T S

Citrus BMPs, New Varieties, CHMAs

Free Citrus BMP manuals will be available

Cost-Share! Install a weather station in your grove. FDOACS will provide 75% of the cost with up to $5,000/station.

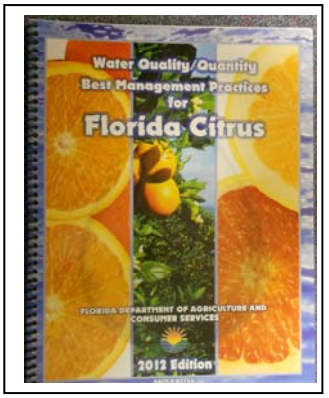
Program Coordinator: Dr. Mongi Zekri, UF-IFAS Extension

Program Sponsor: Robert Murray, Timac AGRO USA, Inc.

Date: Wednesday, May 29th, 2013, Time: **10:00 AM** – 12:00 Noon

Location: Southwest Florida REC (Immokalee)

1. Comprehensive BMP Manual for Florida Citrus- **Dr. Brian Boman**
2. BMPs Cost Share- **Mrs. Callie Walker**
3. Fast Track and New Citrus Varieties Facing Trial- **Mr. Peter Chaires**
4. Experiences and Remarks on Citrus Health Management Areas (CHMAs) **- Mark Colbert, Jim Snively, Paul Mears/Greg Carlton**



2 CEU for Pesticide License Renewal

2 CEUs for Certified Crop Advisors (CCAs)

Pre-registration is required. No registration fee and lunch is free Thanks to **Robert Murray with Timac AGRO USA, Inc.** To reserve a seat, call 863 674 4092, or send an e-mail to Dr. Mongi Zekri: maz@ufl.edu

Farm Safety Day, Saturday, May 18, 2013, 7:30 AM – 1:30 PM

Topic	English/Trainer	Spanish/Trainer
WPS for Workers	Frank Dowdle	Cesar Asuaje
Preventive Pesticide Spill	Gene McAvoy	Jose Ojeda
Power Lines Safety	Scott Brewer	Scott Brewer/ C. Asuaje
Emergency Preparedness	Robert Halman	Marcela Rice

Location: Southwest Florida REC (Immokalee)

Class is full. Registration is closed

Presentations from 2013 Florida Citrus Growers' Institute

The 2013 Institute held on April 2 in Avon Park drew over 300 growers to the South Florida State College campus. For those of you who attended and those who could not make it, video recordings were made of the presentations and most of them are posted on the Citrus Agents Website.
http://citrusagents.ifas.ufl.edu/events/GrowersInstitute2013/GrowersInstitute2013.htm

Special Thanks to sponsors of the "Flatwoods Citrus" newsletter for their generous contribution and support. If you would like to be among them, please contact me at 863 674 4092 or maz@ufl.edu

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2013 Hurricane Forecast

9 Hurricanes, 18 Named Storms


The first forecast for the six-month 2013 hurricane season came out Wednesday, and it doesn't look much different than what happened in the 2012 season.

Professor William Gray and research scientist Philip Kloztbach from Colorado State University's Department of Atmospheric Science say the Atlantic basin can expect 18 named storms, 95 named storm days, nine hurricanes, 40 hurricane days, four major hurricanes (sustained winds of 111 mph or higher) and nine major hurricane days.

Last year for the season that runs from June 1 to Nov. 30, there were 19 named storms, nine of which attained hurricane strength at some point.

But it was the seventh consecutive year a hurricane didn't make landfall in Florida, which National Hurricane Center spokesman Dennis Feltgen said is a record dating back to 1851.

The main reason for this year's forecast, the Colorado State team said, is largely due to an expected lack of an El Nino.

A weak El Nino weather pattern is when warm water temperatures in the Pacific tend to push damp weather east. A strong El Nino tends to minimize hurricanes during the storm season.

The Colorado State researchers say there is a 72 percent chance that a major hurricane (Category 3 or higher) could make landfall along the "entire U.S. coastline." That goes down to 48 percent for the "U.S. East Coast including peninsula Florida."

HLB ESCAPE TREES

To accelerate citrus gene discovery for HLB tolerance/resistance, UF-IFAS Citrus Researchers and Extension Agents are working closely with the citrus industry. They would like to know about trees that appear to be doing better than their cohorts in groves declining from HLB. We need your help in reporting to us about escape trees or potential survivor trees in your groves. Please contact Mongi Zekri (maz@ufl.edu or 863 674 4092) or any other citrus extension agent to determine if your trees meet this research criterion.

MANAGEMENT OF GREASY SPOT

Management of greasy spot must be considered in groves intended for processing and fresh market fruit. Greasy spot is usually more severe on leaves of grapefruit, pineapples, Hamlins, and tangelos than on Valencias, Temples, Murcotts, and most tangerines and their hybrids.

Greasy spot spores germinate on the underside of the leaves and the fungus penetrates through the stomates (natural openings on lower leaf surface). Warm humid nights and high rainfall, typical of Florida summers, favor infection and disease development.

On processing Valencias, a single spray of oil (5-10 gal/acre) or copper + oil (5 gal/acre) should provide acceptable control when applied from mid-May to June. With average quality copper products, 2 lb of metallic copper per acre usually provide adequate control. The strobilurin fungicides (Abound, Gem, Headline or Quadris), as well as Enable 2F, are also suitable with or without petroleum oil. On early and mid-season oranges and grapefruit for processing, two sprays may be needed especially in the southern part of the state where summer flushes constitute a large portion of the foliage. Two applications also may be needed where severe defoliation from greasy spot occurred in the previous year. In those cases, the first spray should be applied from mid-May to June and the second soon after the major summer flush has expanded. Copper fungicides provide a high degree of control more consistently than oil sprays. Control of greasy spot on late summer flushes is less important than on the spring and early summer growth flushes since the disease develops slowly and defoliation will not occur until after the next year's spring flush. Thorough coverage of the underside of leaves is necessary for maximum control of greasy spot, and higher spray volumes and slower tractor speeds may be needed than for control of other pests and diseases.

The program is essentially the same for fresh fruit. That is, a fungicide application in May-June and a second in July should provide control of rind blotch.

A third application in August may be needed if rind blotch has been severe in the grove. Petroleum oil alone is less effective than other fungicides for control of greasy spot rind blotch (GSRB). Heavier oils (455 or 470) are more effective for rind blotch control than are

lighter oils (435). Copper fungicides are effective for control of GSRB, but may result in fruit spotting especially if applied at high rates in hot, dry weather or if applied with petroleum oil. If copper fungicides are applied in summer, they should be applied when temperatures are moderate, at rates no more than 2 lb of metallic copper per acre, without petroleum oil or other additives, and using spray volumes of at least 125 gal/acre. Enable 2F can be applied for greasy spot control at any time but is especially indicated in mid to late summer for rind blotch control.

The strobilurin fungicides (Abound, Gem, Headline, or Quadris) or Enable 2F can be applied at any time to all citrus and provide effective control of the disease on leaves or fruit. Use of a strobilurin (Abound, Gem, Headline or Quadris) is especially indicated in late May and early June since it will control both melanose and greasy spot and avoids potential fruit damage from the copper fungicides at that time of year. A strobilurin fungicide should not be applied more than once a year for greasy spot control. Addition of petroleum oil increases the efficacy of these products.

•Processed fruit

May-June

- Petroleum oil (455, 470) 5-10 gal
- Cu fungicides 2-4 lb metal
- Abound, Gem, Headline + 5 gal oil
- Quadris
- Enable

July

- Petroleum oil (455, 470) 5-10 gal
- Cu fungicides 2-4 lb metal
- Abound, Gem, Headline + 5 gal oil
- Quadris
- Enable

•Fresh fruit

May-June

- Petroleum oil (455, 470) 10 gal
- Cu fungicides < 2 lb metal, No oil
- Abound, Gem, Headline + 5 gal oil
- Quadris

July

- Petroleum oil (455, 470) 10 gal
- Cu fungicides < 2 lb metal
- Abound, Gem, Headline + 5 gal oil
- Quadris
- Enable 8 oz. + 5 gal oil

For more information on greasy spot, go to:

http://www.crec.ifas.ufl.edu/extension/pest/PDF/2013/Greasy%20Spot.pdf

CITRUS LEAFMINER MANAGEMENT

Adults of the citrus leafminer are tiny moths that hide within the canopy during the day and emerge at night to lay eggs individually on young, expanding leaf flushes.

Leafminer populations decline to their lowest levels during the winter due to cool temperatures 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. 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 up to 90% mortality of larvae and pupae.

Leafminer Management

NONBEARING TREES

On young trees, use of the soil-applied neonicotinoid insecticides 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 neonicotinoids have been shown to provide at least 8 weeks control of leafminer. Injection through the irrigation system is less effective because a large portion of the material falls beyond the root zone. Compared to soil-application, foliar-applied insecticides provide a shorter duration of protection lasting only about 2 weeks depending on weather conditions and the uniformity of flush pattern.

Soil applications of neonicotinoids 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 hr 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. When the residual effects of the spring application have worn off, typically during the mid-summer rainy season, foliar sprays of other materials can be used on small trees to reduce leafminer damage if necessary. Reapplication of imidacloprid is not recommended during this part of the season because of the likelihood of the material being washed away by frequent summer rains.

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. While a number of products are effective against this pest, achieving control of leafminer using foliar sprays on large trees is difficult due to the unsynchronized flush typically encountered during summer and fall. However, since leafminers affect only developing leaves, coverage of peripheral leaves in the canopy should be adequate to exert suppression when applying foliar pesticides. Foliar sprays should be timed to coincide with the appearance of the first visible leaf mines which occur immediately following the feather leaf stage or about 13 days after budbreak. At this time, insecticide applications will provide protection for most of the leaves in the new flush.

Recommended Chemical Controls

READ THE LABEL.

Some product labels specify rates per acre, while others specify rates per volume delivered (e.g. per 100 gallons). Refer to label for details on how product should be mixed for desired targets.

Rates for pesticides are given as the maximum amount required to treat mature citrus trees unless otherwise noted. When treating smaller trees with commercial application equipment including handguns, mix the per acre rate for mature trees in 100 gallons of water. Calibrate and arrange nozzles to deliver thorough distribution and treat as many acres as this volume of spray allows.

TABLE 2. RECOMMENDED CHEMICAL CONTROLS FOR CITRUS LEAFMINER

Pesticide/Trade Name	IRAC MOA	Rate/Acre	Other Pests Controlled
Abamectin			
Agri-Mek 0.15 EC + Petroleum Oil 97+% (FC 435-66, FC 455-88, or 470 oil)	6	5 oz + min of 1 gal oil	Aphids, citrus psyllids
Clothianidin (soil-drench)			
Belay 50 WDG	4	3.2 – 6.4 oz	Aphids, citrus psyllids
Diflubenzuron			
Micromite 80WGS + Petroleum Oil 97+% (FC 435-66, FC 455-88, or 470 oil)	15	6.25 oz + 2% v/v	Citrus root weevils, citrus rust mites
Imidacloprid (soil drench)			
Admire Pro	4	7-14 oz	
Admire 2 F	4	16-32 oz	
Methoxyfenozide			
Intrepid 2F + Petroleum Oil 97+% (FC 435-66, FC 455-88, or 470 oil)	18	8 oz + 2% v/v	
Petroleum Oil			
97+% (FC 435-66, FC 455-88, or 470 oil)	NR3	5 gal	
Spinetoram			
Delegate WG + Petroleum Oil 97+% (FC 435- 66, FC 455-88, or 470 oil)	5	6 oz + 2% v/v	
Spinosad			
SpinTor 2SC	5	6 oz	Orangedog
Thiamethoxam (soil drench)			
Platinum 75 SG	4	1.83-3.67 oz	Aphids, Asian citrus psyllid
Thiamethoxam + Chlorantraniliprole			
VoliamFlexi	4 28	7 oz	Aphids, citrus psyllids
Thiamethoxam + abamectin			
Agri-Flex + Petroleum Oil 97+% (FC 435-66, FC 455-88 or 470 oil)	4 6	8.5 fl oz + 2% v/v	Aphids, citrus leafminer, citrus rust mites

CITRUS RUST MITES

Rust mites are found on all citrus varieties throughout Florida. Rust mite population densities increase in May-July and then decline in late August, but can increase again in late October or early November. 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 (Sunburst, Ambersweet, Fallglo) 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, psyllids, and leafminers. Scouting for rust mite populations is very important for efficient control.
For more information, go to:
http://www.crec.ifas.ufl.edu/extension/pest/PDF/2013/Rust%20Mites.pdf

CITRUS MITICIDE SELECTION*

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
Movento	Movento	Movento	--	--
Vendex	Vendex	--	Vendex	Vendex

*Except for petroleum oil, do not use the same miticide chemistry more than once a year.

LIVING WITH LOVEBUGS

http://edis.ifas.ufl.edu/in694

Dr. Norman C. Leppla, professor, Entomology and Nematology Department, Institute of Food and Agricultural Sciences, University of Florida

The "lovebug," is a seasonally abundant member of a generally unnoticed family of small flies related to gnats and mosquitoes. The males are about 1/4 inch and the females 1/3 inch in length, both entirely black except for red on top of their thoraxes (middle insect body segment). Other common names for this insect include March flies, double-headed bugs, honeymoon flies, united bugs, and some expletives that are not repeatable. Lovebugs characteristically appear in excessive abundance throughout Florida as male-female pairs for only a few weeks every April-May and August-September (IPM Florida 2006). Although they exist over the entire state during these months, they can reach outbreak levels in some areas and be absent in others. They are a nuisance pest, as opposed to destructive or dangerous, in areas where they accumulate in large numbers.

Lovebug Description and Biology

Although the lovebug has two distinct generations per year in Florida, adults can be found during most months (Buschman 1976). Higher temperatures cause adult populations to peak slightly earlier in the southern areas of the state. As in all other flies, lovebugs exhibit complete metamorphosis, having egg, larva, pupa and adult stages (Figure 3). An individual female deposits an average of 350 eggs under decaying vegetation in a grassy or weedy area with adequate moisture. Conditions must not be too wet or dry, although the larvae soon emerge and can move short distances to locate the best habitats. Larvae develop more rapidly at higher temperatures, so the summer generation is shorter than the one in the winter. The larvae feed on decomposing leaves and grass until they pupate. The pupal stage lasts 7-9 days (Hetrick 1970). In nature, the adults live just long enough to mate, feed, disperse and deposit a batch of eggs, about 3-4 days (Thornhill 1976b).

Lovebugs do not fly during the night. After a pair disperses, the male dies and the female deposits as many as 600 eggs under decaying leaves or grass before also dying. Groups of about 300 larvae have been found on or near the surface of the soil among the roots of grasses (Thornhill 1976a).

Lovebug Myths

Lovebugs escaped after University of Florida researchers brought them into Florida.

Lovebugs are not native to most of the southern United States (Hardy 1945). According to Buschman (1976), since 1940 *P. nearctica* has extended its range from Louisiana and Mississippi across the Gulf States, reaching Florida in 1949. In the late 1960s, it became established entirely across north Florida. During the 1970s explosive populations occurred progressively southward nearly to the end of peninsular Florida and northward into South Carolina (Figure 4). Its movement may have been accelerated by prevailing winds, vehicle traffic, sod transport, increased habitat along highways, and expansion of pastures, but not by UF researchers.

University of Florida researchers genetically engineered lovebugs to kill mosquitoes.

Lovebugs are small, slow herbivorous insects that feed on the pollen and nectar found in flowers. Thus, they lack the mandibles (jaws), grasping legs, speed, and other characteristics

of predaceous insects, such as dragonflies. Lovebugs are active during the day, whereas most mosquitoes are crepuscular (active at twilight) or nocturnal, and they are only adults for a few weeks each year. For these and many other reasons, the lovebug would be a poor candidate to genetically engineer as a mosquito predator, even if it were possible.

Lovebugs are attracted to automobiles. After mating, lovebugs disperse as coupled pairs, presumably flying in search of nectar on which to feed and suitable oviposition sites. Mated females are attracted to sandy sites with adequate moisture, dead leaves, grass clippings, cow manure, and other decomposing organic debris. Cherry (1998) found that lovebugs are attracted to anethole, an essential oil found in plants that also attracts bees. Additionally, female lovebugs are attracted to UV irradiated aldehydes, a major component of automobile exhaust fumes (Callahan and Denmark 1973, Callahan et al. 1985). They may confuse these chemicals with the odors emitted from decaying organic matter at typical oviposition sites. Heat has also been shown to attract lovebugs (Whitesell 1974) and contribute to their abundance on highways. Additionally, lovebugs seem to collect on light-colored buildings, especially when freshly painted (Callahan 1985). Many kinds of flies are attracted to light-colored and shiny surfaces, although the physiological or behavioral mechanisms are unknown. Thus, lovebugs apparently accumulate in relatively warm, humid, sunny areas with food and chemicals in the atmosphere that mimic oviposition sites.

Dispersing lovebugs move great distances and are attracted to homes. Lovebug pairs are not strong fliers, so tend to remain within a few hundred yards of emergence sites when there is little or no wind (Thornhill 1976b). They are able to move across the wind when it is 5-7 mph and search for sources of nectar and suitable oviposition sites. Stronger winds blow them as high as 1500 ft in the air and concentrate them against down-wind objects. Coupled females initiate and control flight but males assist if they are able to obtain food (Sharp et al. 1974). Locations within 20-30 miles can have quite different levels of lovebug emergence and dispersal (Cherry and Raid 2000), and this variable distribution can lead to naturally occurring "hotspots" in different places from year to year. Lovebugs are most abundant in moist grassy habitats. People who live near these habitats, or are exposed to winds that deposit the insects at their homes, can perceive erroneously that they are attracting these pests.

Lovebugs mate the entire time they are coupled. The general pattern of mating in lovebugs begins with males forming swarms above emergence areas each day in the morning and afternoon (Leppla et al 1974, Thornhill 1976c). Individual males also may fly just above these areas. Females emerge from the soil later than males, crawl onto vegetation, and fly into the swarms. A male may grasp a female before or after she flies into a swarm. In either case, the pair lands on vegetation where the male transfers sperm to the female. Sperm transfer requires an average of 12.5, hours but the pair can remain coupled for several days during which they feed and disperse (Thornhill 1976c). The male ejects a depleted spermatophore after separating from the female (Leppla et al. 1975), and both sexes may mate again. Pairs formed during the morning hours begin dispersal flights, whereas those that couple in the evening remain on vegetation until taking flight the following day.

The body fluids of lovebugs are acidic and immediately dissolve automobile paint. When numerous lovebugs are smashed on the front of a vehicle, the contents of their bodies, especially eggs, coat the painted surface. No permanent damage is caused, however, if the surface is cleaned before the coating is baked by the sun for a day or two. Marisa and Jeffrey Gedney (personnel communication) determined that macerated lovebugs are about neutral with a pH of 6.5 but become acidic at 4.25 within 24 hours. Yet, automobile paint was not damaged after being coated with macerated lovebugs and held in a humid indoor environment for 21 days. A lovebug-coated surface exposed to the sun for an extended period of time, however, may be damaged by the insects and their removal (Denmark and Mead 2001). The front of a vehicle can be protected by coating it with “car wax” and removing the lovebugs within 24 hours.

Lovebugs have no significant natural enemies. No parasites have emerged from lovebug larvae or adults held in the laboratory, and few cases of predation have been observed in nature over the years (Hetrick 1970, Mousseau 2004). Apparently lovebugs adults are avoided by red imported fire ants, *Solenopsis invicta* Buren (=*S. wagneri* Santschi), and other predators but one periodically eaten by spiders, dragonflies, and birds. They have aposematic coloration that implies defensive mimicry but have not been chemically analyzed or tested as

food for predators (Dunford et al. 2008). Bee keepers report anecdotally that honeybees do not visit flowers infested with lovebugs. Fungal pathogens have been identified by screening, six from larvae and one from adults, that could be limiting lovebug populations (Kish et al. 1974). These fungi include the well-known insect pathogenic genera, *Metarhizium*, *Beauveria* and *Conidiobolus*. Although not yet studied, lovebug eggs may be subjected to predation or parasitism.

Insecticides are effective in controlling lovebugs. Insecticides available to the public for controlling houseflies, mosquitoes, and other flies will also kill lovebug adults. However, there are risks associated with using these products around humans and pets, and the lovebugs will return almost immediately. Other insects are often misidentified as being lovebugs, some of which are innocuous or beneficial, and therefore, should not be killed. It is important to preserve lady beetles, lacewings, honeybees, and other insects that help to protect or pollinate plants. Thus, insecticides are expensive, potentially harmful, and of no value in controlling lovebugs. It is best just to avoid lovebugs if they become a nuisance during their brief appearances each year.

University of Florida scientists are working to control lovebugs. The University of Florida research programs in urban and public health entomology are among the strongest in the U.S. Priority is placed on destructive or dangerous pests that threaten human health and resources. These pests include mosquitoes that transmit West Nile virus, equine encephalitis, and other diseases; those that infest people, livestock and pets; and urban insects, such as cockroaches, ants, and termites. Nuisance pests like lovebugs and blind mosquitoes are important but much less damaging and costly. The Florida Legislature funded research on lovebugs at the University of Florida during the outbreak that swept through the state in the early 1970s. Additional resources were contributed by the USDA and Florida Department of Agriculture and Consumer Services, Division of Plant Industry. Even though this support is no longer available, the University of Florida continues to provide information to help educate Florida residents and tourists about lovebugs.

Lovebugs and People

It is possible but usually not necessary to avoid lovebugs and the problems they cause. Unlike some of their close relatives, lovebugs do not bite, sting, or transmit diseases and are not poisonous. Lovebugs are only active in the daylight and are much less mobile during the early and late daytime hours. Typically, the pairs fly across the wind during their dispersal flights and are blown against obstacles, especially vehicles traveling at high speeds. Their remains can be removed from surfaces easily if not left to bake in the sun. Lovebugs are poor fliers that can be kept out of a building by creating positive pressure with an air-conditioning fan. If a few lovebugs enter, a vacuum cleaner can be used to remove them. Screens can be added to windows and doors, particularly on the prevailing windward side of a building, and placed over decks and swimming pools. A fan can be used outside near work or recreational areas to keep lovebugs away. Due to their abundance and mobility, lovebugs cannot be controlled effectively with poisons or repellents.

Some people consider the lovebug to be among the peskiest alien invasive species to become established in the Gulf States. On the contrary, these potentially annoying flies are actually beneficial as larvae because they help to decompose dead plant material. People would also appreciate esthetic aspects of the adults, if these insects were not such a nuisance. Like cute little migratory birds, lovebugs signal changes in the seasons from spring to summer and again from summer to fall. Moreover, if they were larger, people could easily see and admire their delicate features, particularly the big round eyes of the males. Wilhelm Rudolph Wiedemann named the lovebug genus *Plecia* in 1828, so his concept for the term may never be known. A reasonable guess, however, is that he applied the Greek verb "pleo" intending to mean "to sail" (Jaeger, E. C. 1955). Lovebugs sail from flower to flower much like butterflies and in smaller numbers could be perceived as beautiful. They have become less abundant over the past 30 years, and people living in the Gulf States are beginning to accept them as a normal part of nature. However, newcomers are much less tolerant of lovebugs until they learn that these insects are not dangerous. Since lovebug populations tend to rebound unpredictably, we are fortunate that these creatures create inconveniences and tickle, rather than threaten human health and the environment.

Rootstock Selection

By Dr. Bill Castle, UF-IFAS, CREC

Choosing a rootstock is an important decision. It should be carefully considered because such decisions are relatively permanent in their effect and, thus, in their long-term significance. The steps involved in choosing a rootstock may not always be obvious, but there are factors that traditionally have been important. Among these are the experiences and opinions of friends, neighbors, nurserymen, and the grower himself. The information can be conflicting and confusing, making the choice of a rootstock unnecessarily difficult. What follows is just one approach that may be helpful in selecting the best rootstock for your conditions.

GATHER THE FACTS ABOUT YOUR SITE

There is no substitute for having available as much factual information as possible. Information should be obtained regarding:

1. Soil - Texture, depth, hardpan, pH, chemical characteristics, water holding capacity, drainage, nutrient status, etc.
2. Elevation and air drainage - These factors are strongly related to the potential for cold damage.
3. Nematodes - The presence of the parasitic citrus and burrowing nematodes has the potential for simplifying a rootstock decision because of the ease with which many choices can be eliminated. Even if this information is not used in the decision-making process, it is still useful.
4. Historical - If a new site is being planted, learn about the successes and failures of your neighbors. If an area is being replanted, consider the reason for replanting.

KNOW YOUR OBJECTIVE

Many decisions are made within the framework of a well-defined goal. Therefore, it is important to consider:

1. Scion cultivar - Like choosing a rootstock, the cultivar selected represents a choice not often or easily changed after planting.
2. Market - Juice quality may be less important than yield if the fruit is for processing, and this would affect the choice of rootstock. If the fruit is for the fresh market, the influence of the rootstock on external quality may become more important.
3. Time - If you have a short-range goal, a tree on a vigorous, productive rootstock might be appropriate. For long-range objectives, another rootstock with different characteristics may be more suitable.

KNOW THE ROOTSTOCKS

There are two readily available sources of information on rootstocks. Each provides a different perspective. They are:

1. Experience - Few growers have hesitated to plant trees on rootstocks such as Carrizo citrange because this stock and its characteristics are well known. The boundaries of its performance have been established from years of commercial use. Practical experience has also shown that it has limitations; nevertheless, this rootstock is generally more acceptable than others that are untried. Confidence (and less risk) is derived from knowledge.
2. Field experiments and research data - A major function of rootstock research is to determine the commercial potential of new rootstocks and also to ensure that the capabilities of currently used rootstocks are completely and clearly understood. The various field experiments established for this purpose, including those in commercial groves, represent essentially the only source of data regarding new rootstocks. As a result, they

are likely to provide answers for today's important issues, such as the incidence of blight among trees on Carrizo citrange. It wasn't too many years ago that Volkamer lemon and Swingle citrumelo rootstocks were unknown in Florida. Now, one of these, Swingle, is of considerable commercial interest.

CHOOSING THE ROOTSTOCK

The first three steps are the relatively simple information gathering process, which provides a sound foundation for the final step - selecting a rootstock.

There are several factors that combine to make the final step more difficult than the preceding ones. These include the lack of complete information about any rootstock as well as recognizing that no rootstock is perfect. Unfortunately, all the desirable attributes for a citrus rootstock have never been combined in one rootstock. Every rootstock has certain weaknesses as well as advantages. Perhaps more importantly, though, is that all rootstocks do not have the same disadvantages or strengths.

Another consideration affecting the choice of a rootstock is the relative importance given to individual rootstock effects. To illustrate this point and those mentioned above, consider, for example, trees on *Citrus macrophylla*. They are precocious, bear well, and are highly resistant to foot rot; however, they are also very easily cold damaged and the fruit have a poor quality juice. Which of these traits is of greatest concern under your grove site conditions and with your objectives?

In Florida, the choice of a rootstock is generally based on a combination of concern for productivity and tree survival. The fundamental question with fruit produced for processing is how to produce the maximum quantity of soluble solids with the minimum number of risks. Therefore, priority is normally given to rootstock effects on yield, but sometimes other factors become limiting. Examples in Florida are the potential for cold damage and susceptibility to foot rot or root rot, tristeza and blight. In contrast, some rootstock characteristics are essentially non-limiting or can be controlled and are, therefore, less important. If trees on a cold tolerant, productive rootstock are susceptible to drought, they can be irrigated.

The final step in selecting a rootstock essentially involves developing a composite assessment of a rootstock based on its individual characteristics and then choosing the rootstock that best matches your interests and goals. As no one rootstock is likely to be entirely satisfactory in any set of circumstances, it is often wise to consider using two or three. If two or more are selected, setting a grove so that trees are planted on alternating rootstocks is not recommended. Rootstocks should be selected to match specific, local conditions especially when planting the highly variable soils found in the Flatwoods. Soil and drainage are critical factors and are often the basis for rootstock decisions. It is the author's opinion that soil and yield are priority determinants. Differences in juice quality usually do not exceed the larger differences in yield among rootstocks.

The proper spacing can have a great impact on the financial outcomes associated with a particular rootstock. For example, the income form Hamlin on Swingle, C-35, Rusk citrange, Smooth Flat Seville can double if the trees were planted at 12 ft by 22 ft versus 14 ft by 22 ft. On the other hand, tress on vigorous rootstock such as Carrizo and Volk will make more money when planted at wider spacing.

Match rootstocks with soils
Determine why you would not use Swingle or Carrizo

COCA-COLA ANNOUNCES PLANS FOR 25,000 ACRES OF NEW GROVES

PIERRE DUCHARME | THE LEDGER
By Kevin Bouffard
THE LEDGER

Published: Tuesday, May 7, 2013

AUBURNDALE | In an effort to reverse a 15-year decline in Florida's citrus grove acreage and nine years of declining orange production, Coca-Cola Co. announced Tuesday a $2 billion agreement with Vero Beach and Brazilian companies to plant 25,000 acres of new orange groves over the next five years.

"It's certainly a vote of confidence by the world's dominant beverage company that citrus in Florida is here to stay," said Agriculture Commission Adam Putnam, a member of his family's Bartow-based citrus and cattle company, after a brief ceremony announcing the deal at Coke's Main Street Juice Plant in Auburndale. "It's a very real Brazilian commitment of skin in the game to become a grower in Florida."

Mike Sparks, the chief executive of Lakeland-based Florida Citrus Mutual, the state's largest growers' representative, said the Coke agreement could be an incentive for other growers who've been reluctant to plant new groves in the face of the fatal citrus greening disease endemic in the state.

"A lot of growers are sitting on the fence waiting for scientific research to find a cure for greening," Sparks said. "This sends a message to growers: Here's a huge capital investment we're willing to make. It's a real shot in the arm."

The principal partners in the Coke deal are Peace River Citrus Products Inc., which has about 5,000 grove acres in Florida and operates juice processing plants in Bartow and Arcadia, and Sucocitrico Cutrale Ltd., Brazil's second largest juice processor and one of its largest orange growers.

Both Peace River and Cutrale's U.S. subsidiary, Cutrale Citrus Juices U.S.A. Inc. in Auburndale, supply orange juice to Coke's Auburndale plant, the largest in the country, for the Simply Orange brand sold under the Coke subsidiary, Minute Maid. Cutrale operates citrus processing plants in Auburndale and Leesburg, which it purchased from Coke in 1996.

Each company will plant 12,500 acres of new groves over the next five years in Polk, Highlands, Hardee, DeSoto and Hendry counties, said Jose Luis Cutrale, owner of the Brazilian company, and Bill Becker, Peace River owner, who spoke at the announcement ceremony. They will plant more than 5 million orange trees equally divided between early and mid-season varieties, which mature from October to March, and Valencia oranges, which are harvested from March to June.

Becker told The Ledger Peace River will partner with about 12 other citrus growers, including A. Duda & Sons Inc. in Oviedo, to plant his company's share of the new groves.

The 12,500 acres planted by Cutrale will be the first large-scale planting by a Brazilian company in Florida, Putnam said. Cutrale has a 600-acre grove in Lake Alfred.

The three major Brazilian processors — Cutrale; CitroSuco Paulista S.A., which operates a citrus processing plant in Lake Wales; and Louis Dreyfus Citrus Inc. with a Winter Garden plant — have processed about 50 percent of Florida's orange crop for the past two seasons.

Florida juice processors buy 95 percent of the state's annual orange crop.

Steve Cahillane, president of Coca-Cola Americas, told an audience of more than 100 workers and guests the agreement represented a $2 billion investment for the company but provided no other contract details.

A source with knowledge of those details said the deal includes a 20-year contract to supply Coke with oranges from the new groves at a minimum farm price of $2 per pound solids, an industry measure of the amount of juice squeezed from the fruit. If the market price in a season goes above that floor, the growers would get a share of the increase, or "rise."

That compares to the 2012-13 average farm price of $1.40 per pound solids for early-mid oranges and an estimated $1.65 for Valencias, according to Citrus Mutual and the Florida Department of Citrus.

Other processors have been offering similar long-term contracts for large new grove plantings in recent months as an incentive to reverse the trend of declining grove acreage and orange production.

Citrus acreage in Florida peaked at 857,687 acres in 1996, including 656,598 acres of oranges, according to the U.S. Department of Agriculture, and it dropped to 621,373 total acres and 529,241 acres of oranges in 2006, a year after the first discovery of greening in Florida. The citrus industry began the 2012-13 season with 531,493 total acres, including 464,918 acres of oranges.

Over that time, the Florida orange crop has shrunk from a historic high of 244 million boxes in the 1998-99 season to an estimated 138 million boxes this season, the lowest in 23 years, USDA figures show. As recently as the 2003-04 season, the last unaffected by hurricanes or greening, Florida growers produced 242 million orange boxes.

Polk leads the state's citrus-producing counties with 82,572 grove acres and 9.9 million trees in 2012, according to USDA data. It historically leads the state in citrus production, as it did in the 2011-12 season with 31.2 million boxes. It ranked No. 1 in orange, tangerine and tangelo production and third in grapefruit.

If the acreage and production declines aren't reversed, the state's annual orange crop will become too small to support production at all the existing processing plants, forcing some to close, said Tom Spreen, a University of Florida agricultural economist.

Growers need the higher farm prices because they are taking a substantial risk planting new groves amid endemic greening in Florida, Becker said. Besides doubling grove caretaking costs since 2005, growers have discovered that new trees infected with the bacterial disease never reach maturity by the fifth year, when a healthy tree normally produces its first harvestable crop.

"It's still a scary proposition. It's the biggest business risk our company has ever taken, but we're reasonably confident we can bring these trees into production," Becker said. "If we bring these groves to maturity, we think it will be a great return on our investment."

Coke opened the Auburndale plant 10 years ago, shortly after introducing its Simply Orange and other Simply brands, which have annual sales of $1.2 billion, according to the company. The Auburndale plant employs more than 500 people and Coke's 26 facilities in Florida employ more than 6,000 workers.

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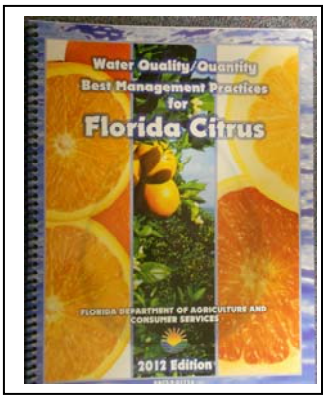

Department adopts new statewide citrus manual

The Florida Department of Agriculture and Consumer services (FDOACS) adopted a new statewide citrus BMP manual, *Water Quality/Quantity Best Management Practices for Florida Citrus*, on Jan. 9. This new manual incorporates the four region-based citrus programs: Ridge Citrus, Indian River Citrus, Gulf Citrus and the Peace River/Manasota basins. All citrus operations that enroll in department BMPs as of Jan. 9 must submit a Notice of Intent under the new statewide manual.

Over the past month, growers representing about 10,000 acres have enrolled or re-enrolled under the new statewide citrus manual. Benefits of participation include a presumption of compliance with state water quality standards, a release from fines or damages related to pollutants addressed by BMPs, and eligibility for BMP implementation cost-share funds.

Ridge Citrus Growers

Growers now participating in the Ridge Citrus BMP have until Jan. 8, 2015, to enroll in the statewide manual and implement applicable BMPs, in order to maintain their presumption of compliance with state water quality standards. Notices of Intent to implement BMPs submitted under the previous Ridge Citrus rule will be invalid after this 2-year period.

David “Bo” Griffin is leading the effort to reenroll Ridge Citrus growers in the new statewide manual, and can be contacted at (863) 402-7020 or David.Griffin@FreshFromFlorida.com. Growers also may contact Susie Bishop at sbishop@highlandsswcd.org. Please contact Bo or Susie for Ridge Citrus reenrollment or first-time enrollment soon to take advantage of cost-share opportunities.

Flatwoods Citrus Growers

Growers currently enrolled under one of the three region-based Flatwoods Citrus Manuals (Indian River, Gulf and Peace River/Manasota) are grandfathered under the new rule.

However, growers must continue to implement the applicable BMPs and must follow guidelines in Nutrition of Florida Citrus Trees, Second Edition, UF/IFAS Publication SL253 from January 2008, that are relevant to their operations.
Flatwoods Citrus growers who are re-establishing or renovating groves already enrolled under a region-based manual must contact the department for assistance in submitting an NOI under the new statewide manual at (850) 617-1727 or AgBMPHelp@FreshFromFlorida.com.

Cost-share program for on-farm weather stations

FDACS has established a cost-share program to help producers enrolled in BMPs purchase on-site weather stations and temperature sensors. Funds are available on a first-come, first-served basis. However, requests related to irrigation for frost/freeze protection will be given priority.

Producers who own operations with less than 300 acres of production land may apply for one station and up to five temperature sensors for each operation. Producers who own larger operations may apply for one station and up to five temperature sensors for each 300 acres of production land on the operation(s). The department will provide 75 percent of the cost up to a $25,000 maximum per producer, with a $5,000 cap per station/sensors set.

The stations will be installed by a company that agrees to meet the approved specifications, at the on-site location(s) the farmer designates.

These weather stations will collect real-time information throughout the year on rainfall, air temperature, relative humidity, dew point, wind speed, and wind direction. The information will be accessible to producers on their smartphones and computers, through a University of Florida Automated Weather Network (FAWN) website.

Why purchase a weather station? The use of weather stations helps producers:

- Better determine when to delay irrigation after rainfall and when to irrigate during frost/freeze events, which can reduce water use and save costs on pump operation.
- Better determine when to use fungicide or pesticide sprays or foliar fertilizer applications, which can avoid waste and save related costs.
- Enhance the potential for reducing the pumping of surface and ground water and the runoff and leaching of fertilizers and other farm chemicals into water resources.

Producers within the Southwest Florida Water Management District may contact Jessica Stempien at 813-985-7481, ext. 2125, or JessicaLea.Stempien@FreshFromFlorida.com.

Producers outside of the Southwest Florida Water Management District may contact Susie Bishop at 863-402-4020, or sbishop@highlandsswcd.org.

300 acres or less of production land	1 weather station and up to 5 temperature sensors	75% with $5,000 cap for each operation	$25,000 total maximum per producer
More than 300 acres of production land	1 weather station and up to 5 temperature sensors per 300 acres	75% with $5,000 cap for each 300 acres	

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

NEWS RELEASE

May 1, 2013

CONTACT:
Gabe Margasak
South Florida Water Management District
Office: (561) 682-2800 or Cellular: (561) 670-1245

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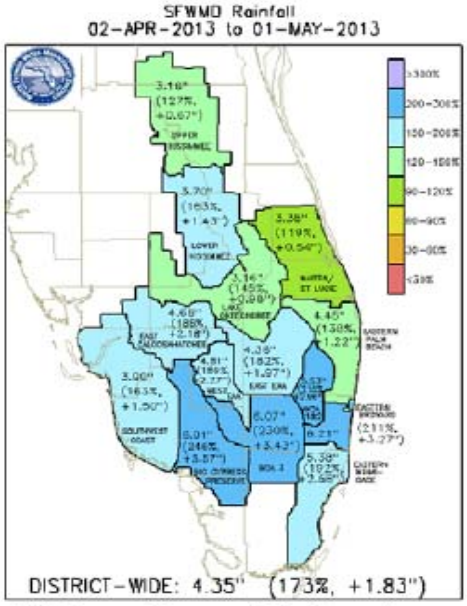
South Florida Sees 2nd Wettest April Since 1997

Balancing water levels for residents and the environment is a continuing challenge



(Click on the graphic for a larger version.)

West Palm Beach, FL — All 16 counties in the South Florida Water Management District (SFWMD) received significantly above-average rainfall in the past 30 days, leading to the second wettest April since 1997.

A District-wide average of 4.35 inches of rain for the month fell from Orlando to the Florida Keys, representing 173 percent of average, or 1.83 inches above average. Areas along the east coast received between 0.54 and 3.27 inches above average rainfall. The Southwest Coast received 1.50 inches above average rainfall.

"April's showers helped stabilize the regional system during the driest time of the year," said Susan Sylvester, SFWMD Chief of the Water Control Operations Bureau. "The challenge in May is preparing for the wet season ahead while also balancing the needs of Everglades wildlife and the environment."

Heading into the upcoming rainy season, water managers operate the system so that key water bodies are positioned at lower water levels to provide capacity to store wet season and tropical system rainfall.

At the same time, the timing and distribution of water is being cautiously managed because large or rapid fluctuations can impact nesting wading birds and other wildlife.

The variable start of the annual sea-breeze cycle, which brings the characteristic South Florida afternoon rainstorms, and the release of the National Weather Service's wet season forecast in mid-May are the next significant indicators for water managers as they plan operations for the regional system.

District meteorologists are forecasting a wet start to May, with significant rainfall expected during the next five days. Some areas could receive up to 4 inches of rain in a 24-hour period.

Lake Okeechobee Levels

Today	**13.40** feet
Historical Average for Today	**13.63** feet
This Date One Year Ago	**11.68** feet
One Month Ago	**13.79** feet
One Week Ago	**13.57** feet

For more information:

- SFWMD Weather/Rainfall Data
- Climate Prediction Center Precipitation Forecast
- U.S. Drought Monitor

# # #

About the South Florida Water Management District

The South Florida Water Management District is a regional, governmental agency that oversees the water resources in the southern half of the state – 16 counties from Orlando to the Keys. It is the oldest and largest of the state's five water management districts. The agency mission is to manage and protect water resources of the region by balancing and improving water quality, flood control, natural systems and water supply. A key initiative is cleanup and restoration of the Everglades.

Flatwoods Citrus

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Please send: Dr. Mongi Zekri
Multi-County Citrus Agent
Hendry County Extension Office
P.O. Box 68
LaBelle, FL 33975

Subscriber's Name:_____

Company:_____

Address:_____

City:_____State:_____Zip:_____

Phone:_____

Fax:_____

E-mail:_____

Racial-Ethnic Background

__American Indian or native Alaskan
__Asian American
__Hispanic
__White, non-Hispanic
__Black, non-Hispanic

Gender

__Female
__Male