

Hendry County Extension, P.O. Box 68, LaBelle, FL 33975 (863) 674 4092

# Flatwoods Citrus



Vol. 15, No. 7

July 2012

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/>

# IMPORTANT EVENTS

## --July Seminar

Date: Tuesday, July 24, 2012, Time: 10:00 AM – 12:00 Noon

Location: Southwest Florida REC (Immokalee)

1. Weed management in citrus groves – **Dr. Megh Singh**, Lake Alfred CREC, UF-IFAS
2. The reality of resetting or not resetting– **Mr. Ron Muraro**, Lake Alfred CREC, UF-IFAS
3. The correct way for soil and leaf sampling and chemical analysis – **Dr. Mongi Zekri**, Hendry County, UF-IFAS

2 CEUs for pesticide license renewal

2 CEUs for Certified Crop Advisors (CCAs)

No registration fee and lunch is free Thanks to Garry Gibson and Joe Mitchell with BASF, but **pre-registration is required.**

**To reserve your seat, call 863 674 4092 or send an e-mail to: [maz@ufl.edu](mailto:maz@ufl.edu)**

## DuPont Crop Protection Seminar

Overview of Cyazypyr™ in Citrus

Date: Tuesday, August 14, 2012, 10:30 AM – 12:00 Noon

Location: Immokalee IFAS Center

1.5 CEUs for Certified Crop Advisors (CCAs)

1.5 CEUs for pesticide license renewal

**Pre-registration is required.** Please reply by August 12th to [maz@ufl.edu](mailto:maz@ufl.edu) or call 863 674 4092 to reserve a seat.

## --September Seminar

Date: Thursday, September 20, 2012, Time: 10:00 AM – 12:00 Noon

Location: Southwest Florida REC (Immokalee)

1. Spray program calendar for all citrus pests – **Dr. Phil Stansly**, Immokalee IFAS Center
2. Growing young citrus trees in the greening era – **Dr. Tim Spann**, Lake Alfred CREC, UF-IFAS
3. Breeding disease tolerant citrus rootstocks – **Dr. Kim Bowman**, USDA, Fort Pierce
4. Ridomil Gold Best Use Guidelines – **Mr. Cody Hoffman**, Syngenta, Fort Myers

2 CEUs for Certified Crop Advisors (CCAs)

2 CEUs for pesticide license renewal

**Pre-registration is required.** No registration fee and lunch is free Thanks to Cody Hoffman with **Syngenta**. To reserve a seat, call 863 674 4092, or send an e-mail to: [maz@ufl.edu](mailto:maz@ufl.edu)

## CITRUS EXPO

[IN FORT MYERS](#)

**Wednesday, August 15 &  
Thursday, August 16, 2012**

[Preregister for Citrus Expo online](#)

**[www.CitrusExpo.net](http://www.CitrusExpo.net)**

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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# 2012 WATER WATCH

*Keeping an Eye on Water Resources*

## District-Wide Conditions for July 16, 2012

The South Florida Water Management District (SFWMD) is issuing the following monthly briefing:

Most of the 16-county region is experiencing an average wet season. As a result, many of the region's groundwater and surface water supplies have been replenished and some areas, such as Miami-Dade County, experienced heavy localized rainfall this month.

It takes time for all water supplies to experience a boost from the summer increase in rainfall. Lake Okeechobee remains below average for this time of year, while the southwest part of the region is currently seeing below-average rainfall.

The District continues to monitor water levels and operate the system to capture as much water as possible while maintaining flood control. For more information on the rainy season and other water updates, visit:

- [Flood and Rainy Season Readiness](#)
- [SFWMD Weather/Rainfall Data](#)
- [Climate Prediction Center Precipitation Forecast](#)

### Lake Okeechobee Levels

Today	11.96 feet
Historical Average for Today	13.61 feet
This Date One Year Ago	10.05 feet
One Month Ago	11.87 feet
One Week Ago	12.01 feet

### Water Levels in Key Locations

LOCATION	WATER LEVEL	ONE WEEK AGO	HISTORICAL AVERAGE FOR TODAY
Lake Istokpoga	38.22 feet	38.20 feet	38.13 feet
WCA-1	15.72 feet	15.69 feet	15.41 feet
WCA-2	12.15 feet	12.26 feet	12.47 feet
WCA-3	10.42 feet	10.24 feet	9.78 feet
Lake Kissimmee	50.26 feet	50.21 feet	49.96 feet

For a map of recent rainfall totals since Feb. 1 in all District basins, [click here](#).

## Water Conservation Measures

- South Florida is under the District's Year-Round Landscape Irrigation Rule that limits residential and business landscape irrigation to two or three days per week based on location.
  - Some city and county governments have adopted local ordinances that differ from the District rule and may further limit landscape irrigation. To determine watering days and times in your area, contact your local government or visit [www.sfwmd.gov/2days](http://www.sfwmd.gov/2days).
  - The City of West Palm Beach is no longer under an emergency order limiting landscape irrigation. Customers of the city's utility are to follow the District's Year-Round Landscape Irrigation Rule, which allows watering up to three days per week.
- Permitted water users such as nurseries, agriculture, golf courses and utilities are required to continue following the water use conditions in their permits.
  - Copies of water use permits can be found in the Application/Permit records search online at [www.sfwmd.gov/ePermitting](http://www.sfwmd.gov/ePermitting).
- For information about water conservation, visit [www.savewaterfl.com](http://www.savewaterfl.com).
- Information about current weather and water conditions can be found at [www.sfwmd.gov/waterwatch](http://www.sfwmd.gov/waterwatch).

## Other Actions

### Navigation

- The following locks on the north shore of Lake Okeechobee are closed due to declining lake levels:
  - S-135 at J&S Fish Camp in Martin County
  - G-36 at Henry Creek in Okeechobee County
  - S-127 at Buckhead Ridge in Glades County
  - S-131 at Lakeport in Glades County
- The S-193 Lock, located on Taylor Creek on the north shore of Lake Okeechobee, is closed due to ongoing renovation work to refurbish the lock and ensure decades of reliable service.

# # #

### Media inquiries can be directed to:

**Randy Smith**

South Florida Water Management District

Office: (561) 682-2800 or Cellular: (561) 389-3386

We value your opinion. Please take a few minutes to share your comments on the service you received from the District by clicking on this [link](#).



## BROWN ROT



Management of brown rot, caused by *Phytophthora nicotianae* or *P. palmivora*, is needed on both processing and fresh market fruit. While the disease can affect all citrus types, it is usually most severe on Hamlin and other early maturing sweet orange cultivars.

Phytophthora brown rot is a localized problem usually associated with restricted air and/or water drainage. It commonly appears from mid-August through October following periods of extended high rainfall. It can be confused with fruit drop due to other causes at that time of the year. If caused by *P. nicotianae*, brown rot is limited to the lower third of the canopy because the fungus is splashed onto fruit from the soil. *P. palmivora* produces airborne sporangia and can affect fruit throughout the canopy.

Early season inoculum production and spread of *Phytophthora* spp. are minimized with key modifications in cultural practices. Skirting of the trees reduces the opportunity for soil-borne inoculum to contact fruit in the canopy. The edge of the herbicide strip should be maintained just inside of the dripline of the tree to minimize the exposure of bare soil to direct impact by rain. This will limit rain splash of soil onto the lower canopy. Boom application of herbicides and other operations dislodge low-hanging fruit. Fruit on the ground becomes infected and produces inoculum of *P. palmivora* that can result in brown rot infection in the canopy as early as July while fruit are still green. The beginning stages of the epidemic are very difficult to detect before the fruit are colored and showing typical symptoms. Application of residual herbicides earlier in the summer may reduce the need for post-emergence materials later and minimize fruit drop throughout this early stage of inoculum production from fallen fruit.

Usually a single application of Aliette, Phostrol or ProPhyt before the first signs of brown rot appear in late July is sufficient to protect fruit through most of the normal infection period. No more than 20 lb/acre/year of Aliette should be applied for the control of all *Phytophthora* diseases. Aliette, Phostrol and ProPhyt are systemic fungicides that protect against postharvest infection and provide 60-90 days control. Copper fungicides are primarily protective but are capable of killing sporangia on the fruit surface and thus reducing inoculum. They may be applied in August before or after brown rot appearance and provide protection for 45-60 days. If the rainy season is prolonged into the fall, a follow-up application of either systemic fungicides at one-half of the label rate, or copper in

October may be warranted. With average quality copper products, usually 2-4 lb of metallic copper per acre are needed for control.

Precautions should be taken during harvesting not to include brown rot-affected fruit in the field containers as this could result in rejection at the processing or packing facility.



## Recommended Chemical Controls for Brown Rot of Fruit

Pesticide	FRAC MOA <sup>2</sup>	Mature Trees Rate/Acre <sup>1</sup>
Aliette WDG	13	5 lb
Phostrol	13	4.5 pints
ProPhyt	13	4 pints
copper fungicide	M9	Use label rate.

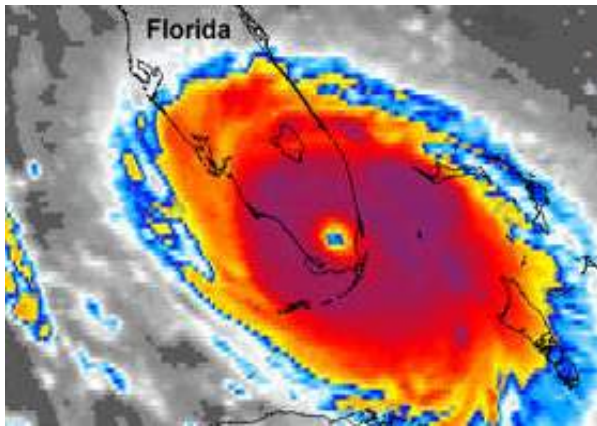
<sup>1</sup>Lower rates may be used on smaller trees. Do not use less than minimum label rate.

<sup>2</sup>Mode of action class for citrus pesticides from the Fungicide Resistance Action Committee (FRAC) 2003. Refer to ENY624, Pesticide Resistance and Resistance Management, in the 2009 Florida Citrus Pest Management Guide for more details.

**Rates for pesticides are given as the maximum amount required to treat mature citrus trees unless otherwise noted. To treat smaller trees with commercial application equipment including handguns, mix the per acre rate for mature trees in 250 gallons of water. Calibrate and arrange nozzles to deliver thorough distribution and treat as many acres as this volume of spray allows.**

**For more information, go to: Florida Citrus Pest Management Guide: Brown Rot of Fruit at: <http://edis.ifas.ufl.edu/cg022>**

## PREPARE FOR TROPICAL STORMS



The National Oceanic and atmospheric administration (NOAA)

**“NOAA’s outlook predicts a less active season compared to recent years,” said NOAA Administrator Dr. Jane Lubchenco. “But regardless of the outlook, it’s vital for anyone living or vacationing in hurricane-prone locations to be prepared. We have a stark reminder this year with the 20th anniversary of Hurricane Andrew.” Andrew, the Category 5 hurricane that devastated South Florida on August 24, 1992, was the first storm in a late-starting season that produced only six named storms.**

**We must prepare every year, regardless of weather predictions.**

**Bob Rouse & Mongi Zekri**

Little can be done to protect trees and fruit from hurricane velocity wind, but we can take steps to protect the people, equipment and supplies that will be needed for the recovery. Below is a checklist for citrus grove managers.

### **Hurricane Preparation Checklist**

#### **Personnel assignments:**

1. Make a list of all tasks and make assignments.
2. Update the names on the damage inspection team.
3. Update worker contact list and means for them to call in after the storm.

#### **Safety training:**

Train workers in the safe operation of unfamiliar equipment they may have to use. Example: Drivers may have to use chain saws to remove downed trees blocking roads.

#### **Insurance:**

Buildings, equipment including tractors, irrigation parts, and supplies may be damaged.

#### **Buildings:**

1. Close storm shutters or board up windows.
2. Store loose, light-weight objects such as garbage cans and tools.

#### **Liquid tanks:**

1. Fuel, fertilizer and other tanks have to be full so they don’t move in the wind.
2. Ensure sufficient fuel is available.

#### **Roads and Ditches:**

1. Roads should be cleared and graded and kept well maintained and ditches kept clean and pumped down.
2. Arrange with a flying service for grove manager to survey grove damage.

#### **Emergency equipment:**

1. Test run generators, chain saws, torches, air compressors, and other equipment.
2. Have shovels, slings, fuel, paint, and equipment parts available for use.
3. Know where to obtain backhoes, front-end loaders, and other heavy equipment.

#### **Communications equipment:**

1. Ensure that radios are in good working order.

2. Have hand-held portable radios with extra charged battery packs available.
3. Direct truck-to-truck radio and cellular phones save valuable time during recovery.

**Hazardous materials:**

1. Hazardous materials should be secured.
2. Gasoline pumps should be shut down.

**Emergency contacts:**

1. Have a list of emergency phone numbers, including electric companies, sheriff, and medical.

**Cultural Practices:**

1. Regular pruning can reduce broken limbs and minimize toppled or uprooted trees.
2. Windbreaks reduce tree damage and spread of citrus canker bacterium.

**HURRICANE RECOVERY CHECKLIST**

**Damage inspection:**

Make a visual assessment of the damage and determine priorities and equipment needed.

**Prioritize Damage:**

A priority plan can quickly determine where and how to begin recovery operations.

**Employee call-in:**

When safe, call in those needed for damage inspection and grove recovery work.

**Clear road access:**

Clear roads to where trees must be reset or recovery activities must be conducted.

**Water removal:**

Remove excess water from tree root zones within 72 hours to avoid root damage.

**Tree rehabilitation:**

1. Resetting trees to an upright position should be accomplished as soon as possible.
2. Toppled trees should be pruned back to sound wood.
3. Painting exposed trunks and branches with white latex paint helps prevent sunburn.

**Irrigation:**

Check the irrigation system as rehabilitation is a long process and water is critical.

**Fertilizer:**

1. The major fertilizer elements should be applied when new growth begins.
2. Reset toppled trees will require less fertilizer due to reduced root system and tree canopy.
3. Reduce N fertilizer to remaining trees proportional to canopy or leaf loss.
4. The following year, trees may require more-than-normal rates to re-establish canopy.
5. Micronutrients should be applied in nutritional sprays to the leaves.

**Weeds:**

Row middles should be mowed and herbicide applications resumed on a normal schedule.

---

**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](http://www.nhc.noaa.gov)*

*National Weather Service - [www.nws.noaa.gov/](http://www.nws.noaa.gov/)*

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## MAGNESIUM NUTRITION

Magnesium (Mg) deficiency is a problem in Florida. Trees with inadequate Mg supply have no symptoms in the new spring flush, but leaf symptoms will develop as the leaves age and the fruit expand and mature in the summer and fall. Leaves that have lost most of their green color due to Mg deficiency drop freely under unfavorable conditions. Defoliated twigs become weak and usually die by the following spring. Severe defoliation will reduce the average size of individual fruit and cause a general decline in fruit production. In Florida, Mg deficiency in citrus is caused primarily by low levels of Mg on acid light sandy soils and on calcareous soils. Leaching of added Mg is particularly serious and substantially rapid when the soil pH is 4.5 to 5.0. Under such conditions, the use of dolomite to bring the pH to 6.5 will furnish Mg at the same time.



### FIXING Mg DEFICIENCY

Soil application of Mg sulfate or oxide to provide 50-60 lbs of Mg per acre can be successful in correcting Mg deficiency when the soil pH is adjusted. Under calcareous soils, the amounts of Mg applied must be greater than those applied on soils low in calcium or

potassium. Foliar spray applications of Mg nitrate (3-5 gallons/acre) can be very effective when applied on the spring and summer flush leaves when they are about fully expanded. Remember that Magnesium should be applied regularly at 1/5 (or 20%) of the N rate unless leaf analysis shows more than 0.50% Mg. If leaf Mg deficiency symptoms occur, Mg should be applied in the fertilizer, and the rate should be increased up to 30% of the N rate until symptoms are no longer present in mature leaves of subsequent flushes. If both potassium (K) and Mg status are low, sulfate of potash-magnesia (SPM), which contains both K and Mg in the sulfate form is a very good option.

### IMPROVING Mg and K NUTRITION UNDER HIGH SOIL pH

It is often difficult to increase Mg and K uptake with fertilizer applied to calcareous soils. High Ca levels suppress Mg and K uptake by citrus trees through the competition of Ca, Mg, and K. In cases where soil-applied fertilizer is ineffective, the only means of increasing leaf Mg or K concentration is through foliar application of water-soluble fertilizers, such as magnesium nitrate, potassium nitrate (KNO<sub>3</sub>), or monopotassium phosphate. A solution of 20 lbs KNO<sub>3</sub> per 100 gallons of water has been shown to raise leaf K, especially if applied several times during the year. For citrus on noncalcareous soils, nitrogen and potassium fertilizer applications with a 1:1 ratio of N to K<sub>2</sub>O are recommended. If leaf testing on calcareous soils reveals that high levels of soil Ca may be limiting K uptake, the K<sub>2</sub>O rate should be increased by 25% to have a N:K<sub>2</sub>O ratio of 1:1.25.

## FREQUENTLY ASKED QUESTIONS ABOUT BIOSOLIDS

### 1) What are Biosolids?

Biosolids are the nutrient-rich solid organic matter recovered from the treatment of domestic sewage in a wastewater treatment facility. Biosolids are a beneficial resource, containing essential plant nutrient and organic matter and are recycled as a fertilizer and soil amendment. When treated and processed, these residuals can be recycled and applied as fertilizer to improve and maintain productive soils and stimulate plant growth.

### 2) What is the difference between biosolids and sewage sludge?

*Sludge* is generally used before applicable beneficial recycling criteria have been achieved which normally occurs at the outlet of the stabilization process. It should be used in tandem with a specific process descriptor (e.g., *primary sludge*, *waste activated sludge*, *secondary sludge*, etc.)

*Biosolids* is generally used after applicable beneficial recycling criteria have been achieved, i.e., at the outlet of the stabilization process. Common stabilization processes include the following: aerobic digestion, autothermal thermophilic aerobic digestion (ATAD), anaerobic digestion, composting, alkaline stabilization, thermal drying, including flash, rotary, fluid bed, paddle, hollow-flight, disc, and infrared dryers, thermophilic pozzolanic fixation, acid oxidation/disinfection, and heat treatment/acid digestion.

### 3) Why do we have biosolids?

We have biosolids as a result of treating sewage sludge (i.e., the solids generated during the treatment of domestic sewage in a treatment plant) to meet the land

application regulatory requirements). Wastewater treatment technology has made our water safer for recreation and seafood harvesting. Thirty years ago, thousands of American cities dumped their raw sewage directly into the nation's rivers, lakes, and bays. Through regulation of this dumping, local governments now required to treat domestic sewage and to make the decision whether to recycle the solids generated as fertilizer, incinerate them or bury them in a landfill. If the solids meet the regulatory requirements for land application and are recycled, they are biosolids.



### 4) How are biosolids generated and processed?

Biosolids are generated when solids generated during the treatment of domestic sewage are treated further to meet regulatory requirements. The wastewater treatment can actually begin before the wastewater reaches the treatment plant. In many larger wastewater treatment systems, pre-treatment regulations require that industrial facilities pre-treat their wastewater to remove many hazardous contaminants before it is sent to a wastewater treatment plant. Wastewater treatment facilities monitor incoming wastewater streams to ensure their recyclability and compatibility with the treatment plant process.

Sewage sludge is not generated until domestic sewage is treated in a treatment works, and biosolids are not produced



until the sewage sludge meets the land application Part 503 requirements. For these reasons, the treatment of biosolids cannot occur before the domestic sewage reaches the wastewater treatment plant. Once the wastewater reaches the plant domestic sewage goes through physical, chemical and biological processes that clean the domestic sewage and remove the solids. If necessary, some of the solids are then treated with lime to raise the pH level to eliminate objectionable odors. Pathogen reduction (disease-causing organisms, such as bacteria, viruses and parasites) and other organisms capable of transporting disease for the solids usually occur in a different process (e.g., a digester).

#### **5) How are biosolids used?**

After treatment and processing, biosolids can be recycled and applied as fertilizer to improve and maintain productive soils and stimulate plant growth. The controlled land application of biosolids completes a natural cycle in the environment. By treating sewage sludge, it becomes biosolids that can be used as valuable fertilizer, instead of taking up space in a landfill or other disposal facility.

#### **6) Are biosolids safe?**

Decades of studies have demonstrated that biosolids can be safely used on food crops. The National Academy of Sciences has reviewed current practices, public health concerns and regulator standards, and has concluded that "the use of these materials in the production of crops for human consumption when practiced in accordance with existing federal guidelines and regulations, presents negligible risk to the consumer, to crop production and to the environment." In addition, an epidemiological study of the health of farm families using biosolids showed that the use of biosolids was safe.

#### **7) Do biosolids smell?**

Biosolids may have their own distinctive odor depending on the type of treatment it has been through. Some biosolids may have only a slight musty, ammonia odor. Others have a stronger odor that may be offensive to some people. Compounds that contain sulfur and ammonia, which are both plant nutrients, cause most odors.

#### **8) Are there regulations for the land application of biosolids?**

The federal biosolids rule is contained in 40 CFR Part 503. Biosolids that are to be land applied must meet these strict regulations and quality standards. The Part 503 rule governing the use and disposal of biosolids contains general requirements, numerical limits for metals in biosolids, pathogen and vector attraction reduction standards, management practices and frequency of monitoring, record keeping and reporting requirements for land applied biosolids as well as similar requirements for sewage sludge that is surface disposed or incinerated. Most recently, Part 503 requirements have been proposed to limit the concentration of dioxin and dioxin like compounds in biosolids to ensure safe land application. Biosolids are one of the most studied materials that have ever been regulated by EPA.

#### **9) Where can I find out more about the regulations?**

The biosolids rule is described in the EPA publication, A Plain English Guide to the EPA Part 503 Biosolids Rule. This guide states and interprets the Part 503 rule for the general reader. This guide is also available in hard copy. In addition to the Plain English Guide, EPA has prepared A Guide to the Biosolids Risk Assessments for the EPA Part 503 Rule which shows the many steps followed to develop the scientifically defensible, safe set of rules (also available from EPA in hard copy.)

The cited references provide valuable information about the Part 503 land application requirements. However, if the information in the references is different from the requirements in the Part 503 rule, the Part 503 rule requirements apply. A number of relevant biosolids publications are located on the National Biosolids Partnership's web page at: <http://www.biosolids.org>.

### **10) How are biosolids used for agriculture?**



Biosolids are used to fertilize fields on which crops are grown. Agricultural uses of biosolids that meet strict quality criteria and application rates have been shown to produce significant improvements in crop growth and yield. Nutrients found in biosolids, such as nitrogen, phosphorus and potassium and trace elements such as calcium, copper, iron, magnesium, manganese, sulfur and zinc, are necessary for crop production and growth. The use of biosolids reduces the farmer's production costs and replenishes the organic matter that has been depleted over time. The organic matter improves soil structure by increasing the soil's ability to absorb and store moisture.

Crops use the organic nitrogen and phosphorous found in biosolids very efficiently because these plant nutrients are released slowly throughout the growing season. This enables the crop to absorb these nutrients as the crop grows. This efficiency lessens the likelihood of groundwater pollution of nitrogen and phosphorous.

### **11) Can biosolids be used for composting?**

Yes, biosolids may be composted and sold or distributed for use on lawns and home gardens. Biosolids composted with sawdust, wood chips, yard clippings, or crop residues make excellent mulches and topsoils for horticultural and landscaping purposes. Even after composting, the sewage sludge has to meet the appropriate Part 503 requirements for it to become biosolids that can be applied to lawns and home gardens. Many professional landscapers use composted biosolids for landscaping new homes and businesses. Home gardeners also find composted biosolids to be an excellent addition to planting beds and gardens. Most biosolids compost, are highly desirable products that are easy to store, transport and use.

### **12) Are there rules about where biosolids can be applied?**

To determine whether biosolids can be applied to a particular farm site, a good management practice includes an evaluation of the site's suitability and is generally performed by the land applier. The evaluation examines water supplies, soil characteristics, slopes, vegetation, crop needs and the distances to surface and groundwater.

There are different rules for different classes of biosolids. Class A biosolids contain no detectible levels of pathogens and must meet strict vector attraction reduction requirements and low levels metals contents. The biosolids preparer usually applies for a permit and only have to apply for permits to ensure that these very tough standards have been met. However, the Part 503 requirements have to be met even if there is no permit. Class B biosolids are treated but still contain detectible levels of pathogens. There are buffer requirements, public access, and crop harvesting restrictions for Class B

biosolids. (The land application site restrictions have to be met in all cases where Class B biosolids are land-applied.) Nutrient management planning ensures that the appropriate quantity of biosolids is land applied. The biosolids application is specifically calculated to match the nutrient uptake requirements of the particular crop. Nutrient management technicians work with the farm community to assure proper land application and nutrient control.

**13) Is EPA pushing the use of biosolids as a fertilizer? Is the federal policy for biosolids driven by economics of disposal?**

As a result of its decade-long assessment of biosolids, EPA concluded that recycling biosolids to land was an environmentally responsible solution, when used in accordance with the Part 503 rule. The Federal policies supporting and promoting the beneficial recycling of biosolids are based upon sound science that has demonstrated the benefits of such recycling. These policies are not driven by economics, and the choice of to recycle biosolids remains a local decision.

**14) How do the risks associated with biosolids compare with other soil amendments used in agriculture?**

A Water Environment Research Foundation (WERF) study completed in 2002 finds that the risks associated with biosolids are no greater than risks associated with other soil amendments used in agriculture. The project, "Evaluate Risks and Benefits of Soil Amendments Used in Agriculture" (project no. 99-PUM-1), examined the risks and benefits, advantages and potential disadvantages associated with the use of a variety of soil amendments in comparison to chemical fertilizers. Project results indicate that the relative risk to the environment from amendments and fertilizers varies by

parameter and shows that known risks from each of the materials studied can be managed. Moreover, these manageable risks must be carefully weighed against the considerable benefits provided by the land application of amendments and fertilizers.

**15) Is recycling much cheaper than disposal?**

In areas where disposal costs have increased due to shrinking landfill space and increased costs to maintain and monitor landfills, some cities and towns find that recycling biosolids is less expensive than land filling. However, in most cases, land filling is competitive or less expensive than land application. In such cases, many U.S. communities have made a positive environmental decision to commit to recycling biosolids despite the additional cost. This is especially true where communities have committed to the additional costs of composting or heat drying and pathogen reduction processes for biosolids prior to utilization.

**16) Are Biosolids good for the environment?**

Recycling biosolids is good for the environment. Organic matter has been recycled for centuries to improve soil fertility and productivity. When properly applied and managed, biosolids can: provide essential plant nutrients; improve soil structure and tilth; add organic matter; enhance moisture retention; and reduce soil erosion.

Biosolids recycling is regulated and encouraged by the United States Environmental Protection Agency and state and local authorities. Research and years of recycling experience have demonstrated that properly managed land application of biosolids is environmentally safe.

# CITRUS BLACK SPOT (summarized version)

From the Citrus Pest Management Guide

Citrus black spot, caused by the fungal pathogen *Guignardia citricarpa* (sexual stage) and *Phyllosticta citricarpa* (asexual stage), was first found in southwest Florida in March 2010. Around the world, black spot can be found in Argentina, Australia, Brazil, China, Ghana, Mozambique, Philippines, South Africa, Sub-Saharan Africa, Taiwan and other regions of South America.



Citrus black spot causes fruit blemishes and significant yield losses, especially on sweet oranges. Black spot can affect all commercial citrus species and cultivars commonly grown in Florida. Lemons are the most susceptible, but sweet oranges—especially mid-late maturing types such as 'Valencia'—are also highly susceptible to this disease. 'Hamlin' sweet oranges and tangerine/mandarin types are moderately susceptible. Grapefruit is thought to be moderately susceptible. Management is required in groves intended for processing and fresh market fruit in quarantine and surrounding areas and should be considered in all others.

Black spot fruit symptoms are wide ranging and have many different names. For photos and more details go to:

[http://www.crec.ifas.ufl.edu/extension/black\\_spot/citrus\\_black\\_spot.shtml](http://www.crec.ifas.ufl.edu/extension/black_spot/citrus_black_spot.shtml)

Fruit not fallen off the tree are still suitable for processing. Significant fruit drop is a common symptom in heavily infected groves. Airborne ascospores produced in decomposing leaf litter on the grove floor and blown into the canopy by the wind are the primary inoculum for black spot. These spores germinate and directly infect the leaves and fruit. Major ascospore release usually occurs from April to early September. Fruit remains susceptible most of the growing season. It is unknown how long leaves may remain susceptible. Monthly fungicide applications of copper and/or strobilurins (Abound, Gem, or Headline) will be needed from early May to mid-September to control black spot. Since only four strobilurin fungicide applications can be used in a season for any purpose, it is recommended to reserve strobilurin fungicides for times when phytotoxicity from copper applications is a concern (temperatures >94°F). This is especially important for fresh fruit. It is recommended that strobilurin fungicides not be applied in two consecutive sprays to manage pathogen resistance. Currently, there are no other rotational fungicides for resistance management. In addition to chemical control measures, practices to accelerate leaf litter decomposition beneath the trees to reduce the ascospore inoculum may be beneficial. Enhancing leaf litter degradation should commence in mid-March. There are three methods that may reduce the ascospore inoculum. The first is to increase microsprinkler irrigation to at least 5 times a week for approximately a ½ hour per irrigation period for 1.5 months. The leaf litter decomposition will be greater compared to that with the traditional irrigation frequency. One drawback is that leaf litter reduction will be confined to the areas where the microsprinklers reach. A second method is to apply urea (187 lb/treated acre) or ammonium sulfate (561 lb/acre) to the leaf

litter. If using ammonium sulfate as a method to control leaf litter inoculum, monitor the soil pH to ensure that it does not become too low. Nitrate-based fertilizers are ineffective. The final method is to apply dolomitic lime or calcium carbonate (2,226 lb/treated acre) to the leaf litter. The decay rate is greater for litter treated with lime, and inoculum production is reduced.

There are several cultural practices that will aid control and help restrict further spread of black spot. It is essential to minimize plant trash movement among groves and even among blocks within groves. **While there are generally few symptoms on leaves, the ascospores, which are the main inoculum, are formed within the leaves.** As leaf litter decomposes, the spores form and are forcibly ejected. It is very easy to inadvertently move the fungus from one site to

another with symptomless leaves and other trash. This is the basis of the tarping requirement from quarantine areas, but any grove equipment or vehicle can move leaf litter or trash from one location to another.

Declining trees should be removed from groves regardless of the cause. Where possible, open the tree canopy by skirting to reduce the leaf wetness periods. Like the melanose pathogen, black spot fungus can colonize and reproduce in dead twigs. Canopies with significant numbers of dead twigs will have more problems with black spot than those without.

**Finally, as with all fungal diseases, it is important to use clean nursery stock. Currently, there are no nurseries near known infected groves.**

## Recommended Chemical Controls

### READ THE LABEL.

Rates for pesticides are given as the maximum amount required to treat mature citrus trees unless otherwise noted. To treat smaller trees with commercial application equipment, including handguns, mix the per acre rate for mature trees in 250 gallons of water. Calibrate and arrange nozzles to deliver thorough distribution and treat as many acres as this volume of spray allows.

Pesticide	FRAC MOA <sup>2</sup>	Mature Trees Rate/Acre <sup>1</sup>
<b>copper fungicide</b>	M1	Use label rate.
<b>Abound 2.08F<sup>3</sup></b>	11	12.4-15.4 fl oz. Do not apply more than 92.3 fl oz/acre/season for all uses. Best applied with petroleum oil.
<b>Gem 25WG<sup>3</sup></b>	11	4.0-8.0 oz. Do not apply more than 32 oz/acre/season for all uses.
<b>Gem 500 SC<sup>3</sup></b>	11	1.9-3.8 fl oz. Do not apply more than 15.2 fl oz/acre/season for all uses. Best applied with petroleum oil.
<b>Headline<sup>3</sup></b>	11	9-12 fl oz. Do not apply more than 54 fl oz/acre/season for all uses. Best applied with petroleum oil.

<sup>1</sup>Lower rates can be used on smaller trees. Do not use less than minimum label rate.

<sup>2</sup>Mode of action class for citrus pesticides from the Fungicide Resistance Action Committee (FRAC) 2011<sup>1</sup>. Refer to ENY-624, "Pesticide Resistance and Resistance Management," in the *2012 Florida Citrus Pest Management Guide* for more details.

<sup>3</sup>Do not use more than 4 applications of strobilurin fungicides/season. Do not make more than 2 sequential applications of strobilurin fungicides.

For more information, go to [2012 Florida Citrus Pest Management Guide: Citrus Black Spot](http://edis.ifas.ufl.edu/cg088) at: <http://edis.ifas.ufl.edu/cg088>





# CITRUS JULY FORECAST FORECAST COMPONENTS

Cooperating with the Florida Department of Agriculture & Consumer Services  
2290 Lucien Way, Suite 300, Maitland, FL 32751  
(407) 648-6013 · (407) 648-6029 FAX · [www.nass.usda.gov/fl](http://www.nass.usda.gov/fl)

July 11, 2012

All Orange Production up less than 1 percent  
Non-Valencia Orange Production unchanged  
Valencia Orange Production up less than 1 percent  
All Grapefruit Production unchanged  
All Tangerine Production unchanged  
Tangelo Production unchanged  
FCOJ Yield 1.628480 gallons per box

The first forecast of the 2012-2013 season will be released at 8:30 a.m. on October 11, 2012.

## Citrus Production by Type and State – United States

Crop and State	Production <sup>1</sup>			2011-2012 Forecast <sup>1</sup>	
	2008-2009 (1,000 boxes)	2009-2010 (1,000 boxes)	2010-2011 (1,000 boxes)	June (1,000 boxes)	July (1,000 boxes)
<b>Non-Valencia Oranges<sup>2</sup></b>					
Florida .....	84,600	68,600	70,300	74,200	74,200
California .....	34,500	42,500	48,000	44,000	44,000
Texas .....	1,300	1,360	1,700	1,165	1,108
Arizona .....	150				
United States .....	120,550	112,460	120,000	119,365	119,308
<b>Valencia Oranges</b>					
Florida .....	77,900	65,100	70,200	72,000	72,300
California .....	12,000	15,000	14,500	14,000	14,000
Texas .....	159	275	249	224	311
Arizona .....	100				
United States .....	90,159	80,375	84,949	86,224	86,611
<b>All Oranges</b>					
Florida .....	162,500	133,700	140,500	146,200	146,500
California .....	46,500	57,500	62,500	58,000	58,000
Texas .....	1,459	1,635	1,949	1,389	1,419
Arizona .....	250				
United States .....	210,709	192,835	204,949	205,589	205,919
<b>Grapefruit</b>					
Florida-All .....	21,700	20,300	19,750	18,800	18,800
White .....	6,600	6,000	5,850	5,300	5,300
Colored .....	15,100	14,300	13,900	13,500	13,500
California .....	4,800	4,500	4,300	3,400	3,400
Texas .....	5,500	5,600	6,300	5,292	4,800
Arizona .....	25				
United States .....	32,025	30,400	30,350	27,492	27,000
<b>Lemons</b>					
California .....	21,000	21,000	20,500	19,500	20,000
Arizona .....	3,000	2,200	2,500	800	750
United States .....	24,000	23,200	23,000	20,300	20,750
<b>Tangelos</b>					
Florida .....	1,150	900	1,150	1,150	1,150
<b>Tangerines</b>					
Florida-All .....	3,850	4,450	4,650	4,300	4,300
Early <sup>3</sup> .....	2,550	2,250	2,600	2,350	2,350
Honey .....	1,300	2,200	2,050	1,950	1,950
California <sup>4</sup> .....	6,700	9,900	9,900	9,800	10,900
Arizona <sup>4</sup> .....	250	350	300	200	200
United States .....	10,800	14,700	14,850	14,300	15,400

<sup>1</sup> Net pounds per box: oranges in California-80 (75 prior to the 2010-2011 crop year), Florida-90, Texas-85; grapefruit in California-80 (67 prior to the 2010-2011 crop year), Florida-85, Texas-80; lemons-80 (76 prior to the 2010-2011 crop year), tangelos-90; tangerines and mandarins in Arizona and California-80 (75 prior to the 2010-2011 crop year), Florida-95.

<sup>2</sup> Navel and miscellaneous varieties in California. Early (including Navel) and midseason varieties in Florida and Texas. Includes small quantities of tangerines in Texas and Temples in Florida.

<sup>3</sup> Fallglo and Sunburst varieties.

<sup>4</sup> Includes tangelos and tangors.



## Citrus Summary

The 2011-2012 Florida all orange forecast released today by the USDA Agricultural Statistics Board is raised to 146.5 million boxes. The total is comprised of 74.2 million boxes of non-Valencia oranges (early, midseason, Navel, and Temple varieties) and 72.3 million boxes of Valencia oranges, up 300,000 boxes from last month. The forecast of all grapefruit production remains at 18.8 million boxes. Of the total grapefruit forecast, 5.3 million boxes are white and 13.5 million boxes are the colored varieties. The all tangerine forecast remains at 4.3 million boxes. The total is comprised of the early varieties (Fallglo and Sunburst) at 2.35 million boxes and the later maturing Honey tangerines at 1.95 million boxes. The forecast of tangelo production is continued at 1.15 million boxes. As reported by the Florida Department of Citrus in the last field box report (No. 37), the FCOJ yield is: all oranges at 1.628480 gallons per box, the late portion at 1.745597 gallons per box, and the early-midseason component at 1.529715 gallons per box. Drought conditions were nearly eliminated in all citrus areas by the end of June due to the significant rainfall provided by Tropical Storm Debby.

## Forecast Components of Production from Objective Surveys — Florida: 2007-2008 through 2011-2012

Fruit type and crop year	Number bearing trees (1,000 trees)	Sample survey averages		
		Fruit per tree (number)	Percent drop <sup>1</sup> (percent)	Fruit per box <sup>1</sup> (number)
<b>Early-Midseason Oranges</b> <sup>2,3</sup>				
2007-2008 .....	25,521	1,058	8	264
2008-2009 .....	25,147	1,082	11	257
2009-2010 .....	24,623	866	8	246
2010-2011 .....	24,164	932	7	280
2011-2012 .....	23,909	919	13	235
<b>Navel Oranges</b>				
2007-2008 .....	1,303	443	10	137
2008-2009 .....	1,233	481	11	136
2009-2010 .....	1,137	366	10	135
2010-2011 .....	1,089	487	7	138
2011-2012 .....	1,046	481	17	137
<b>Valencia Oranges</b>				
2007-2008 .....	34,918	676	15	221
2008-2009 .....	34,374	575	15	219
2009-2010 .....	33,801	480	14	218
2010-2011 .....	32,905	598	16	227
2011-2012 .....	32,467	567	19	212
<b>White Grapefruit</b> <sup>4</sup>				
2007-2008 .....	1,896	558	18	99
2008-2009 .....	1,672	407	9	85
2009-2010 .....	1,475	431	12	96
2010-2011 .....	1,435	478	11	104
2011-2012 .....	1,377	443	16	101
<b>Colored Grapefruit</b>				
2007-2008 .....	4,094	499	13	109
2008-2009 .....	3,961	429	12	97
2009-2010 .....	3,725	413	10	109
2010-2011 .....	3,602	450	9	116
2011-2012 .....	3,486	430	18	105

<sup>1</sup> Averages at cut-off month—January 1 for early-midseason oranges, December 1 for Navels, April 1 for Valencias, and February 1 for grapefruit.

<sup>2</sup> Excludes Navels.

<sup>3</sup> Includes Temples.

<sup>4</sup> Includes seedy grapefruit.

The above table shows the production components used for the 2007-2008 through the 2011-2012 forecast seasons. Bearing trees are estimated at the beginning of each forecast season using the most updated tree inventory with an allowance for expected attrition. Revisions are made to the historic series where applicable. Fruit per tree is the weighted average obtained from the annual Limb Count survey conducted during a ten-week period from mid-July to mid-September. Survey averages for each tree age group within an area are weighted by the estimated number of bearing trees for each age group. Fruit size measurements and drop observations are obtained from monthly surveys. The average drop percentages are from the final month used in the forecast model. Average fruit sizes were also obtained from the same survey period and have been converted in the table to estimated number of fruit needed to fill a 1 3/5 bushel box. These four factors are the primary components used in the initial October forecast and in following months up to the "cut-off" for each fruit type. The first two factors have the greatest influence on the forecast.

$$\text{Direct Expansion} = \frac{\text{Bearing Trees} \times \text{Fruit per Tree} \times \text{Percent Remaining at Harvest}}{\text{Pieces of Fruit per Box}}$$

# Flatwoods Citrus

If you did not receive the *Flatwoods Citrus* newsletter and would like to be on our mailing list, please check this box and complete the information requested below.

If you wish to be removed from our mailing list, please check this box and complete the information requested below.

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

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## *Racial-Ethnic Background*

\_\_ American Indian or native Alaskan

\_\_ Asian American

\_\_ Hispanic

\_\_ White, non-Hispanic

\_\_ Black, non-Hispanic

## *Gender*

\_\_ Female

\_\_ Male