

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

Flatwoods Citrus



Vol. 17, No. 2

February 2014

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

Citrus Black Spot (CBS) fungal disease has been progressing and has been infecting more trees this season in Collier and Hendry counties. The quarantine zone is expanding and regulations are in place.

Seminar - All You Need to Know About Scouting and Managing Citrus Fungal Diseases

Get your free copy of the 2014 Florida Citrus Pest management Guide

Program Coordinator: Dr. Mongi Zekri, UF-IFAS

Program Sponsor: Cody Hoffman, Syngenta

Date: Thursday, February 20th, 2014, Time: **10:00 AM** – 12:10 PM

Location: UF-IFAS Southwest Florida Research and Education Center

Agenda

10:00 AM – 11:15 AM

Alternaria brown spot and citrus scab symptoms and managements- **Dr. Megan Dewdney, IFAS**
Melanose and greasy spot symptoms and management, and the copper model- **Dr. Megan Dewdney, IFAS**

Break 11:15 AM – 11:25 AM

11:25 AM – 11:35 AM

Current status of citrus black spot in Florida – **Paul Mears, Division of Plant Industry**

11:35 AM – 12:10 PM

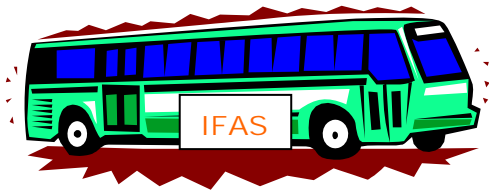
Citrus black spot and Phytophthora management- **Dr. Pamela Roberts, IFAS**

2 CEUs for Pesticide License Renewal

2 CEUs for Certified Crop Advisors (CCAs)

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 Dr. Mongi Zekri at: maz@ufl.edu

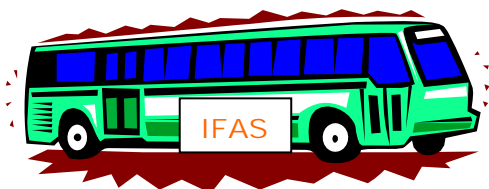
HENDRY COUNTY EXTENSION AG TOURS



Saturday, 8 March 2014

For more information or to sign up, call Debra at 863 674 4092

COLLIER COUNTY EXTENSION AG TOUR



Wednesday, 19 March 2014

For more information or to sign up, call Robert Halman at 239 353 4244

Citrus and Vegetable BMP Water and Nutrient Management Field Day

Thursday, March 6, 2014, 10:00 AM – Noon, Immokalee IFAS Center

Speakers: [Dr. Kelly Morgan](#), [Dr. Sanjay Shukla](#), [Dr. Monica Ozores-Hampton](#), [UF-IFAS](#) and [Gene McAvoy](#), [UF-IFAS](#)

Coordinators: [Mongi Zekri](#) and [Gene McAvoy](#), [UF-IFAS](#)

Agenda

9:00 Introduction and status of Southwest Florida Research and Education Center funding request – **Dr. Phil Stansly**

9:15 Demonstration of web and smartphone based evapotranspiration (ET) tools available for water management using weather station data – **Dr. Kelly Morgan** (Auditorium)

9:45 Depart from field demonstrations

10:00 Demonstration of drip irrigation management (blue dye test) and use of soil moisture sensors – **Dr. Sanjay Shukla** (Field 1)

10:30 Demonstration of tensiometers and water table observation wells – **Dr. Monica Ozores-Hampton and Gene McAvoy** (Field 6)

11:00 Results of Fall drip fertigation experiment – **Dr. Kelly Morgan** (Field 8)

11:30 Display and discussion of weather stations and automated irrigation controls – Sam Carns or Scott Faunce – **AgTronix**

12:00 Lunch (Auditorium)

CITRUS EXOTIC DISEASES

--Update on Citrus Leprosis and Citrus Variegated Chlorosis

--Research & Recent Results on the Possible Causal Agent of Citrus Blight

--Breeding for HLB Tolerance

Thursday, March 20, 2014, 10:00 AM – Noon, Immokalee IFAS Center

Speakers: [Dr. Ron Brlansky](#) and [Dr. Jude Grosser](#), [UF-IFAS](#)

Coordinator: [Mongi Zekri](#), [Citrus Extension Agent](#), [UF-IFAS](#)

2014 ANNUAL FLORIDA CITRUS GROWERS' INSTITUTE

Date & Time: Tuesday, 8 April 2014, 8:00 AM – 3:45 PM

Location: Avon Park Campus of South Florida Community College

Coordinators: [Citrus Extension Agents](#), [UF-IFAS](#)

2014 ANNUAL FARM SAFETY DAY

Date & Time: Saturday 17 May 2014, 7:30 AM – 1:00 PM

Location: Immokalee IFAS Center

Coordinator: [Mongi Zekri](#), [Citrus Extension Agent](#), [UF-IFAS](#)

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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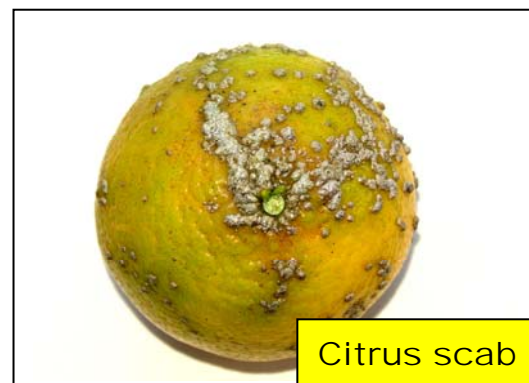
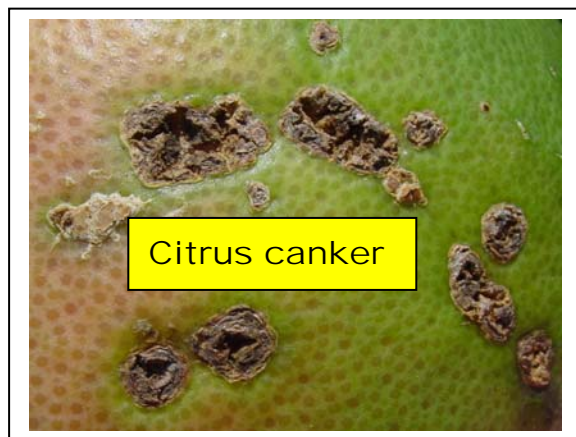


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Fungicide effectiveness

	<u>Canker</u>	<u>Greasy Spot</u>	<u>Alternaria</u>	<u>Scab</u>	<u>Melanose</u>
Copper	Good	Excellent	Good	Moderate	Excellent
Oil	None	Good	None	None	None
Ferbam	None	Weak	Moderate	Good	Weak
Headline	None	Good	Very good	Excellent	Good
Abound	None	Good	Very good	Excellent	Good
Gem	None	Good	Good	Excellent	Good
Enable	None	Excellent	Poor	Good	Weak



ALTERNARIA BROWN SPOT



Alternaria fungal disease can cause severe leaf and fruit drop particularly in Minneola (Honeybell) and Orlando tangelos, Dancy tangerine, and Murcott (Honey tangerine). Alternaria must be controlled on these cultivars to obtain high yields of good quality fruit. The spores of this disease are air borne, but require moisture for germination and infection. Leaf tissue is susceptible until it is fully expanded and fruit is susceptible for about 3 months after bloom. When new groves of the above cultivars are planted, only disease-free nursery stock should be used. Trees should be spaced more widely than oranges to promote rapid drying of the canopy. It is best to locate susceptible varieties in high areas where air drainage and ventilation are good so that leaves dry more rapidly. Irrigation, fertilization, hedging, topping, and skirting should be carefully monitored so that excessive vegetative growth is minimized. Copper fungicides, Abound, Gem, Ferbam, Headline, Pristine, Quadris Top are the materials registered for the control of this disease. The first spray should be applied when the spring flush leaves are 1/4-1/2 expanded. In severe cases, another spray should be applied when the leaves are near full expansion to reduce the infection on the fruit. Another spray should be

scheduled shortly after petal fall. Abound, Ferbam, Gem, Headline, Pristine, or Quadris Top may be the best choice for one or both applications especially if the grove has problems with both scab and Alternaria. From April through June, spray applications may be needed as often as every 10 days or as infrequently as once a month depending on the frequency and amount of rainfall and the rate of infection in the grove. Copper fungicides can be used from April through May, but can produce fruit blemishes if applied during hot weather. Therefore, Abound, Gem, Ferbam, Headline, Pristine or Quadris Top may be substituted for copper in June or July applications. Abound, Gem, Headline, Pristine, and Quadris Top are strobilurin fungicides and Alternaria has the potential to develop resistance to these products. Strobilurin should not be used for Alternaria control more than 3 times in a season and never more than 2 applications in a row. Gem is not highly effective for control of Alternaria. Trilogy and Ferbam are less effective for Alternaria control than copper, Abound or Headline.



For more information, go to:
<http://www.crec.ifas.ufl.edu/extension/pest/PDF/2014/Alternaria.pdf>

CITRUS SCAB



This fungal disease affects grapefruit, Temple orange, Murcott, tangelos, and some other tangerine hybrids. If leaves from the previous season are heavily infected by citrus scab, 3 applications should be scheduled to control this disease. The first spray should be applied at about ¼ expansion of the spring flush leaves, the second at petal fall and the third about 3 weeks later. Fruit becomes resistant to scab about 2 months after petal fall. Ferbam, Enable, Abound, Gem, or Headline are good choices for the first application because they are able to kill the fungus in old lesions and thus reduce the inoculum and protect the foliage. Whichever of these products was not used in the first spray may then be used in the petal fall spray. Copper fungicides, Abound, Gem, or Headline are good choices for the third spray since they will protect fruit from early melanose as well as from scab. On tangelos and Murcott, Alternaria brown spot and scab occur together. Under this circumstance, either copper fungicides, Abound, Gem, or Headline should be selected for the 3 sprays. Copper products are less effective for scab and should not be selected where scab pressure is high. Ferbam is less

effective against Alternaria. If used more than once a year, resistance of the scab fungus to Abound, Gem, or Headline may develop.

For more information, go to:

<http://www.crec.ifas.ufl.edu/extension/pest/PDF/2014/Scab.pdf>



•Spring flush

Abound, Gem, Headline, Ferbam, Enable

•Petal fall

Abound, Gem, Headline, Ferbam

•3 weeks later

Cu fungicides, Abound, Gem, Headline

•Do not use Abound, Gem, or Headline more than once.

**DO NOT APPLY ABOUND, GEM,
or HEADLINE IN NURSERIES.**

NUTRITION OF CITRUS TREES

Fertilizer management should include calibration and adjustment of fertilizer spreaders, booms, pumps, or irrigation systems to accurately deliver fertilizer rates and place fertilizers within the tree rootzone. To increase fertilizer efficiency, soil and leaf analysis data should be studied and taken into consideration when generating a fertilizer program and selecting a fertilizer formulation. Dry fertilizer application should be split into 3 to 4 applications per year with a complete balanced fertilizer. For mature trees, the highest nutrient requirement extends from late winter through early summer. This coincides with flowering, heavy spring flush, fruit set, and fruit development and expansion. For best fresh fruit quality, nutritional requirements, particularly nitrogen (N), should decrease late in the summer and fall. Based on tree demands, 2/3 to 3/4 of the yearly fertilizer amount should be applied between February and June. In warm areas such as southwest Florida where tree growth can continue certain years during the winter, fertilizer applications should also be made in the fall to satisfy vegetative growth demand. However, fall fertilizer applications may sometimes delay fruit color development and fruit maturity for early and mid-season cultivars. For more information, go to **“Nutrition of Florida Citrus Trees, 2nd Edition”** By Thomas A. Obreza and Kelly T. Morgan <http://edis.ifas.ufl.edu/pdffiles/SS/SS47800.pdf>

IFAS fertilizer guidelines for nonbearing citrus trees

Year in grove	Lb N/tree/year (range)	Lbs Fertilizer/tree/year (range)		Lower limit of application frequency	
		6-6-6	8-8-8	Dry	Fertigation
1	0.15 – 0.30	2.5-5.0	1.9-3.8	6	10
2	0.30 – 0.60	5.0-10.0	3.8-7.5	5	10
3	0.45 – 0.90	7.5-15.0	5.6-11.3	4	10

IFAS fertilizer guidelines for bearing citrus trees (4 years and older)

Oranges	Grapefruit	Other varieties	Lower limit of application frequency	
Lbs N/acre/year (range)			Dry	Fertigation
120 - 200	120 - 160	120 - 200	3	10

Rates up to 240 lbs/acre may be considered for orange groves producing over 700 boxes/acre and up to 180 lbs/acre for grapefruit groves producing over 800 boxes/acre. Young trees planted on previously uncropped soils should receive fertilizer containing the following ratio of elements: nitrogen-1, phosphorus-1, potassium-1, magnesium-1/5, manganese-1/20, copper-1/40, and boron-1/300.

For more information on citrus nutrition, get to the following EDIS publications:

[Increasing Efficiency and Reducing Costs of Citrus Nutritional Programs](#)

Mongi Zekri, Thomas Obreza and Arnold Schumann
<http://edis.ifas.ufl.edu/SS442> [[pdf](#)]

[Irrigation, Nutrition, and Citrus Fruit Quality](#)

Mongi Zekri, Thomas A. Obreza and Robert Koo
<http://edis.ifas.ufl.edu/SS426> [[pdf](#)]

[Micronutrient Deficiencies in Citrus: Iron, Zinc, and Manganese](#)

Mongi Zekri and Thomas A. Obreza
<http://edis.ifas.ufl.edu/SS423> [[pdf](#)]

[Micronutrient Deficiencies in Citrus: Boron, Copper, and Molybdenum](#)

Mongi Zekri and Thomas A. Obreza
<http://edis.ifas.ufl.edu/SS422> [[pdf](#)]

[Macronutrient Deficiencies in Citrus: Calcium, Magnesium, and Sulfur](#)

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[Macronutrient Deficiencies in Citrus: Nitrogen, Phosphorus, and Potassium](#)

Mongi Zekri and Thomas A. Obreza
<http://edis.ifas.ufl.edu/SS420> [[pdf](#)]

[Plant Nutrients for Citrus Trees](#)

Mongi Zekri and Thomas A. Obreza
<http://edis.ifas.ufl.edu/SS419> [[pdf](#)]

[Fertigation Nutrient Sources and Application Considerations for Citrus](#)

Brian Boman and Tom Obreza
<http://edis.ifas.ufl.edu/CH185> [[pdf](#)]

[Citrus Fertilizer Management on Calcareous Soils](#)

Thomas A. Obreza, Mongi Zekri, and David V. Calvert
<http://edis.ifas.ufl.edu/CH086> [[pdf](#)]

[Nitrogen \(N\) for Citrus Trees](#)

Mongi Zekri and Tom Obreza
edis.ifas.ufl.edu/ss580

[Phosphorus \(P\) for Citrus Trees](#)

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[Potassium \(K\) for Citrus Trees](#)

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[Magnesium \(Mg\) for Citrus Trees](#)

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[Calcium \(Ca\) and Sulfur \(S\) for Citrus Trees](#)

Mongi Zekri and Tom Obreza
edis.ifas.ufl.edu/ss584

MICROSPRINKLER IRRIGATION & FERTIGATION

Microsprinkler irrigation is an important component of citrus production systems in Florida. Microirrigation is more desirable than other irrigation methods for several reasons. Three important advantages are: water conservation, the potential for significantly improving fertilizer management and for cold protection.

Research has shown that when properly managed (no overirrigation), water savings with microirrigation systems can amount to as much as 80% compared with subirrigation and 50% compared with overhead sprinkler irrigation.



Microirrigation provides for precise timing and application of fertilizer nutrients in citrus production. Fertilizer can be prescription-applied during the season in amounts that the tree needs and at particular times when those nutrients are needed. This capability helps growers increase the efficiency of fertilizer application and should result in reduced fertilizer applications for citrus production. Research has also shown the important advantage of microsprinklers for freeze protection of citrus.

Fertigation is the timely application of small amounts of fertilizer through irrigation systems directly to the root zone.

Some advantages of fertigation:

- ◆ Fertilizer is placed in the wetted area where feeder roots are extensive,
- ◆ Fertilizer may be applied more frequently in small amounts so that it is available when the tree needs it,
- ◆ Increased fertilizer application frequency can increase fertilizer efficiency and reduce leaching,
- ◆ Application cost is much lower than that of dry or foliar fertilizer application.

Through fertigation, comparable or better yields and quality can be produced with less fertilizer. Microirrigation systems must properly maintain to apply water and fertilizer uniformly. Growers must determine:

- (1) which fertilizer formulations are most suitable for injection,
- (2) the most appropriate fertilizer analysis for different age trees and specific stages of growth,
- (3) the amount to apply during a given fertigation event, and
- (4) the timing and frequency of applications.

Properly managed applications of plant nutrients through irrigation systems significantly enhance fertilizer efficiency while maintaining or increasing yield. On the other hand, poorly managed fertigation may result in substantial yield losses. Fertigation involves deciding which and how much nutrients to apply, selecting the most effective formulations and scheduling injections to ensure that essential nutrients are available as needed.

Injection Duration

A minimum injection time of 45 to 60 minutes is recommended. This time is sufficient for uniform distribution of nutrients throughout the fertigation zone. Limit injection time to prevent the application of too much water, because excessive water leaches plant nutrients below the root zone.

MOBILE IRRIGATION LAB

The Agricultural MIL is a FREE service that serves Florida. For an Agricultural MIL evaluation in Southwest Florida call (239) 455-4100

Assisting the agricultural community by improving irrigation efficiency and conserving water.



The Mobile Irrigation Lab program is an ongoing joint effort between the District, the U.S. Department of Agriculture–Natural Resources Conservation Service (USDA–NRCS) and the agricultural community. The program began in 1987 to assist the District in meeting its statutory responsibilities and to assist growers with water conservation.

The Mobile Irrigation Lab is a free volunteer service to the agricultural community. Any grower can contact the District to arrange a free evaluation. It was expanded to help growers meet water use permit conditions. District staff has used high pumpage reports to identify users who might wish to voluntarily reduce water use before a resource problem or permit violation occurs.

A trained technician is invited to a grower's field and collects irrigation system and specific field data. System pressure and irrigation uniformity data are then reviewed and computer-analyzed. A report provides recommendations for improvements and irrigation schedules. If needed, the technician assists the local NRCS office in the redesign of the system.

An irrigation schedule offers a general guide to determine when and how much to irrigate based on system efficiency, crop requirements and soil characteristics.

In addition to the benefits of free irrigation evaluations, water conservation and water quality improvements, the program shares valuable technology and information with growers.

Mobile Irrigation Lab data suggests that most evaluated systems are already at or above permitted efficiency standards. With only minor improvements, about half the sites below these standards could easily meet them. Typically, if all recommendations are implemented, overall system irrigation efficiency can improve by an estimated 17 percent — helpful to any grower's bottom line, as well as the region's water resources.



ACIDIFICATION TO REMOVE MINERAL DEPOSITS IN IRRIGATION SYSTEMS



Acid Injection

Mineral precipitates can form deposits (scale) that clog emitters. The most common deposits are calcium or magnesium carbonates and iron oxides. Since precipitation occurs more readily in water with a high pH (above 7.0), precipitation of these compounds can be prevented by continuous injection (whenever the system is operating) of a small amount of acid to maintain water pH just below 7.0. A more popular control method is to remove deposits as they are formed by periodic injection of a greater volume of acid. Enough acid should be injected continuously for 45 to 60 minutes to reduce the water pH to 4.0 or 5.0.

Phosphoric acid (which also supplies phosphate to the root zone), sulfuric acid, or hydrochloric acids are commonly used. The selection of a specific acid depends on cost and availability, water quality, the severity of clogging, and nutrient needs of the crop. The amount of acid required to treat a system depends on (1) the strength of the acid being used, (2) the buffering capacity of the irrigation water and (3) the pH (of the irrigation water) needed to dissolve mineral precipitates in lines and emitters. The required pH of the irrigation water (target pH) depends on the severity of mineral deposits. Experience is helpful when estimating target pH.

To determine the volume of a selected acid needed at a specific site, estimate the target pH and run a "titration" test (as described below) using the selected acid and irrigation water from the site. This test will indicate the volume of acid required to lower the pH of a selected volume of water to the target pH. Titration provides an acid volume:water volume ratio that can be used in conjunction with the system flow rate to determine the appropriate acid injection rate. The acid injection rate is determined by dividing the volume of water by the flow rate of the irrigation system and multiplying the result by the volume of acid added to reach the target pH.

Titration

A water container, a non-corrosive measuring cup, beaker or pipette calibrated in small increments such as milliliters, and a portable pH meter are needed to run the titration test. The volume of the container may be as small as 10 liters (about 3 gallons) or as large as 55 gallons. In general, the smaller the increments used when measuring and dispensing the acid into water, the smaller the required container.

To run the titration test, put a known volume of water (from the site) into the container and check the pH. Add a small amount of acid (1-3 ml for 3 gallons, 4-8 ml for 30 or more gallons) to the water, stir and re-check the pH. Continue this process until the target pH is attained. As the acidity of the water gets near to the target pH, add acid in very small increments (1 ml) so that the pH does not quickly drop below the target pH and necessitate repeating the test. **Always add acid to water.**

Caution: Never add water to acid.

The following example illustrates how to determine the required volume of acid and the appropriate acid injection rate.

Example: For a system with a flow rate of 200 gal/min.

Based on the severity of mineral deposits in the system, a target pH of 4.5 and an injection period of one hour are selected.

--Put 50 gallons of water into a 55-gal drum. Check the pH. Meter indicates pH of 7.4.

--Add 8 ml phosphoric acid. Check the pH. Meter indicates pH of 6.9.

--Add 7 more ml phosphoric acid. Check the pH. Meter indicates pH of 6.0.

--Add 4 more ml phosphoric acid. Check the pH. Meter indicates pH of 5.3.

--Add 1 more ml phosphoric acid. Check the pH. Meter indicates target pH of 4.5. 20 ml (8+7+4+1) of phosphoric acid were required to lower the pH of 50 gal of water to the target pH of 4.5.

--Divide 50 gal by the system flow rate of 200 gal/minute and multiply the result by the ml of phosphoric acid required to reach the target pH. $200 \text{ gal} \div 50 \text{ gal} = 4 \times 20 \text{ ml} = 80 \text{ ml}$ phosphoric acid. Therefore, the required acid injection rate is 80 ml per minute.

--Multiply 80 ml per minute by the injection time to determine the required volume of acid needed during the 1-hour injection period. $80 \text{ ml} \times 60 \text{ min} = 4,800 \text{ ml}$ (approximately 1.3 gal/hr, since there are 3785 ml in 1 gallon)

Note: Acid injection rates are usually very low (ml/hour or oz/hour). Although injection pumps with low flow rates may be suitable for acid injection, they may not have enough capacity for injecting fertilizers.

After the desired amount of acid has been injected and distributed throughout the irrigation system, turn the system off and let the low pH water remain in the lines for several hours, preferably overnight. This allows sufficient reaction time for the acidified water to dissolve mineral precipitates. After the setting period, flush the lines to remove dislodged and solubilized materials. To flush the lines, bring the system to full charge by running the irrigation pump (injection pump off) until the system reaches normal operating pressure. With the irrigation pump running, begin sequentially opening the ends of the PVC lines and emitter lines to flush the system. To ensure proper flushing, do not open so many lines at one time that system pressure drops below normal levels. If too many lines are opened at one time, the pressure drops too low and the system will not flush adequately. Improperly flushed lines after acidification will likely result in severe clogging problems. Keep in mind that routinely flushing lines with non-acidified irrigation water will also help remove mineral precipitates from the system.



EL NIÑO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC DISCUSSION

http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc.html

issued by CLIMATE PREDICTION CENTER/NCEP
and the International Research Institute for Climate and Society

6 February 2014

ENSO Alert System Status: [Not Active](#)

Synopsis: ENSO-neutral is expected to continue through the Northern Hemisphere spring 2014.

While remaining ENSO-neutral, January was characterized by the periodic emergence of below-average sea surface temperatures (SSTs) across the tropical Pacific Ocean ([Fig. 1](#)). Weekly Niño index values in Niño-3 and Niño-3.4 bounced around -0.5°C , while Niño-4 and Niño-1+2 stayed within $\pm 0.5^{\circ}\text{C}$ ([Fig. 2](#)). This recent cooling was associated with the upwelling phase of an oceanic Kelvin wave, which was reflected in a dip in the oceanic heat content ([Fig. 3](#)) and below-average subsurface temperatures at depth across the eastern Pacific ([Fig. 4](#)). Upper and lower-level winds were near average across most of the Pacific, except for the emergence of strong westerly winds in the western part of the basin toward the end of the month. Convection became more enhanced over eastern Indonesia and the western Pacific and remained suppressed over the central equatorial Pacific ([Fig. 5](#)). Collectively, these atmospheric and oceanic conditions reflect ENSO-neutral.

Nearly all model forecasts indicate the persistence of ENSO-neutral (Niño-3.4 index between -0.5°C and 0.5°C) through the Northern Hemisphere spring 2014, but afterwards, an increasing number of models suggest the possible onset of El Niño ([Fig. 6](#)). Strong surface westerly winds in the western Pacific and the slight eastward shift of above-average temperatures in the subsurface western Pacific potentially portend warming in the coming months. However, the spring is also historically associated with lower forecast skill, so the chance of El Niño developing after the spring is not much different from ENSO-neutral. The consensus forecast is for ENSO-neutral to continue through the Northern Hemisphere spring 2014 (see [CPC/IRI consensus forecast](#)).

This discussion is a consolidated effort of the National Oceanic and Atmospheric Administration (NOAA), NOAA's National Weather Service, and their funded institutions. Oceanic and atmospheric conditions are updated weekly on the Climate Prediction Center web site ([El Niño/La Niña Current Conditions and Expert Discussions](#)). Forecasts for the evolution of El Niño/La Niña are updated monthly in the [Forecast Forum](#) section of CPC's Climate Diagnostics Bulletin. The next ENSO Diagnostics Discussion is scheduled for 6 March 2014. To receive an e-mail notification when the monthly ENSO Diagnostic Discussions are released, please send an e-mail message to: ncep.list.enso-update@noaa.gov.

Climate Prediction Center
National Centers for Environmental Prediction
NOAA/National Weather Service
College Park, MD 20740

2013 WATER WATCH

Keeping an Eye on Water Resources

District-Wide Conditions for January 13, 2014

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

Record rainfall on January 9 and 10 along portions of the East Coast and above-average rainfall across the 16-county area during the past two weeks have boosted water levels and increased the regional water supply.

The District continues to operate the water management system to maximize water storage for the remainder of the dry season while providing flood control during periods of localized, intense rainfall. During last week's deluge, the District closely coordinated with local drainage districts and communities to move water as efficiently and safely as possible.

Water Levels in Key Locations (January 13)		
Location	Today's level	Water Supply Floor
WCA-1	16.38 feet	14.00 feet
WCA-2	12.13 feet	10.50 feet
WCA-3	9.95 feet	7.50 feet

Water Conservation

- 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.
 - To determine watering days and times in your area, contact your local government or visit www.sfwmd.gov/2days.
- Permitted water users such as nurseries, agriculture, golf courses and utilities can find water use conditions in their permits online at www.sfwmd.gov/ePermitting.
- For tips and information about water conservation, visit www.savewaterfl.com.

Lake Okeechobee Operations

- The U.S. Army Corps of Engineers manages Lake Okeechobee water levels based on its regulation schedule and the best available science and data provided by its staff and a variety of partners, including SFWMD.
 - SFWMD makes an operational recommendation each week based on conditions. The most recent Operational Position Statement is available at www.sfwmd.gov/opsreports.

Lake Okeechobee Levels	
Today (Jan. 13)	14.04 feet
Historical Average for Today	14.71 feet
This Date One Year Ago	15.00 feet

Navigation

- Information on navigational locks can be found at www.sfwmd.gov/recreation.



United States Department of Agriculture
National Agricultural Statistics Service



CITRUS FEBRUARY FORECAST

MATURITY TEST RESULTS AND FRUIT SIZE

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

February 10, 2014

Florida All Orange Production Unchanged
Florida Non-Valencia Orange Production Unchanged
Florida Valencia Orange Production Unchanged
Florida All Grapefruit Production Up 3 Percent
Florida All Tangerine Production Up 3 Percent
Florida Tangelo Production Down 20 Percent
FCOJ Yield 1.61 Gallons per Box (42° Brix)

FORECAST DATES	—	2013-2014 SEASON
March 10, 2014		April 9, 2014
May 9, 2014		June 11, 2014
		July 11, 2014

Citrus Production by Type and State – United States

Crop and State	Production ¹			2013-2014 Forecasted Production ¹	
	2010-2011 (1,000 boxes)	2011-2012 (1,000 boxes)	2012-2013 (1,000 boxes)	January (1,000 boxes)	February (1,000 boxes)
Non-Valencia Oranges²					
Florida.....	70,300	74,200	67,100	54,000	54,000
California ³	48,000	45,500	44,000	42,000	42,000
Texas ³	1,700	1,108	1,499	1,455	1,455
United States.....	120,000	120,808	112,599	97,455	97,455
Valencia Oranges					
Florida.....	70,200	72,400	66,500	61,000	61,000
California ³	14,500	13,500	12,500	11,500	11,500
Texas ³	249	311	289	370	370
United States.....	84,949	86,211	79,289	72,870	72,870
All Oranges					
Florida.....	140,500	146,600	133,600	115,000	115,000
California ³	62,500	59,000	56,500	53,500	53,500
Texas ³	1,949	1,419	1,788	1,825	1,825
United States.....	204,949	207,019	191,888	170,325	170,325
Grapefruit					
Florida-All.....	19,750	18,850	18,350	16,500	17,000
White.....	5,850	5,350	5,250	4,500	4,500
Colored.....	13,900	13,500	13,100	12,000	12,500
California ³	4,310	4,400	4,000	4,000	4,000
Texas ³	6,300	4,800	6,100	5,370	5,370
United States.....	30,360	28,050	28,450	25,870	26,370
Lemons					
California ³	20,500	20,500	21,000	20,000	20,000
Arizona ³	2,500	750	1,800	1,785	1,785
United States.....	23,000	21,250	22,800	21,785	21,785
Tangelos					
Florida.....	1,150	1,150	1,000	1,000	800
Tangerines					
Florida-All.....	4,650	4,290	3,280	3,400	3,500
Early ⁴	2,600	2,330	1,910	1,800	1,800
Honey.....	2,050	1,960	1,370	1,600	1,700
California ^{3,5}	10,600	10,900	13,000	13,200	13,200
Arizona ^{3,5}	300	200	200	200	200
United States.....	15,550	15,390	16,480	16,800	16,900

¹ Net pounds per box: oranges in California-80, Florida-90, Texas-85; grapefruit in California-80, Florida-85, Texas-80; lemons-80; tangelos-90; tangerines and mandarins in Arizona and California-80, Florida-95.

² 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.

³ Estimates carried forward from previous forecast.

⁴ Fallglo and Sunburst varieties.

⁵ Includes tangelos and tangors.

All Oranges 115.0 Million Boxes

The 2013-2014 Florida all orange forecast released today by the USDA Agricultural Statistics Board is 115.0 million boxes, unchanged from January, and 14 percent less than last season's production. The total includes 54.0 million boxes of the non-Valencia oranges (early, midseason, Navel, and Temple varieties) and 61.0 million boxes of Valencia oranges.

The hurricane seasons of 2004-2005 and 2005-2006 have been excluded from the usual 10-year regression analysis and from comparisons of the current season to previous seasons. For those previous 8 seasons, the February forecast has deviated from final production by an average of 3 percent with 3 seasons above and 5 below, and differences ranging from 4 percent below to 9 percent above. All references to "average", "minimum", or "maximum" refer to the previous 8 non-hurricane seasons unless otherwise noted.

Non-Valencia Oranges 54.0 Million Boxes

The forecast of non-Valencia production is unchanged at 54.0 million boxes. Size and drop components were final last month. The Row Count survey conducted on January 28-29, 2014 shows 75 percent of the early-midseason rows, and 87 percent of the Navel rows have been harvested. Estimated utilization to February 1, with an allocation for non-certified fruit, is 43.0 million boxes. The Navel forecast, included in the non-Valencia portion of the forecast, is unchanged at 1.9 million boxes.

Valencia Oranges 61.0 Million Boxes

The forecast of Valencia production is unchanged at 61.0 million boxes. Current fruit size is below the minimum and is projected to be below the minimum at harvest. Droppage measurements showed a higher than average increase in the past month and is expected to be above the maximum at harvest.

All Grapefruit 17.0 Million Boxes

The forecast of all grapefruit production is raised to 17.0 million boxes. The white grapefruit forecast continues at 4.5 million boxes while the colored grapefruit forecast is increased 500,000 boxes to 12.5 million boxes. Final fruit sizes for both white and colored grapefruit are slightly above the minimum. Final droppage rates for both white and colored grapefruit are the highest of any non-hurricane season. The Row Count survey conducted January 28-29, 2014 indicated 36 percent of the colored grapefruit and 19 percent of the white grapefruit are harvested.

All Tangerines 3.5 Million Boxes

The forecast of all tangerine production is raised 100,000 boxes to 3.5 million boxes. The early tangerine forecast (Fallglo and Sunburst) is unchanged at 1.8 million boxes. Early tangerine harvest is complete for this season. The forecast of the later maturing Honey variety is increased to 1.7 million boxes. Final Honey fruit size is larger than recorded in two of the past three seasons, requiring 300 pieces of fruit to fill a 1-3/5 bushel box. The droppage rate of 36 percent is near average.

Tangelos 800 Thousand Boxes

The forecast of tangelo production is lowered 200,000 boxes to 800,000 boxes. Estimated utilization to February 1 is 739,000 boxes, including an allocation for non-certified fruit. The Row Count survey conducted January 28-29, 2014 showed only two-thirds of the rows were harvested; however, utilization has dropped significantly over the past two weeks indicating harvest is nearly complete.

FCOJ Yield 1.61 Gallons per Box

The projection for frozen concentrated orange juice (FCOJ) remains at 1.61 gallons per box of 42° Brix concentrate. The yield projection for the non-Valencia oranges is raised to 1.53 gallons per box while the projection for Valencia oranges is lowered to 1.69 gallons per box. Last season's final yield for all oranges was 1.587680 gallons per box, as reported by the Florida Department of Citrus. Last season's final yield for the components were 1.508465 for non-Valencia oranges and 1.692050 for Valencia oranges.

Forecast Components, by Variety — Florida: February 2014

[Survey data is considered final in December for Navels, January for early-midseason oranges, February for grapefruit, and April for Valencias]

Type	Bearing trees (1,000 trees)	Fruit per tree (number)	Droppage (percent)	Fruit per box (number)
ORANGES				
Early-midseason.....	23,660	918	23	286
Navel.....	985	429	19	144
Valencia.....	32,149	614	25	238
GRAPEFRUIT				
White.....	1,282	555	29	118
Colored.....	3,617	500	25	123

Citrus gets A-plus for its Vitamin C

The vitamin can shorten a cold by as much as one to 1 1/2 days. In addition, it fights free radicals to prevent or delay heart disease

Elaine Gordon

Published: 17:00 February 14, 2014



According to the National Institutes of Health, fresh-squeezed orange juice is better for you than store-bought orange juice because it contains more active vitamin C

In this cold and bleak winter, citrus is a great way to brighten up dinnertime with in-season produce while giving your immune system a boost.

Citrus fruits are most known for containing the antioxidant vitamin C, which supports proper immune function. According to the Academy of Nutrition and Dietetics, evidence suggests that for some people, high doses of Vitamin C might actually shorten a cold by as much as one to 1 1/2 days. In addition, Vitamin C fights free radicals to prevent or delay certain cancers and heart disease. It is essential for the growth and repair of bodily tissues, helps heal wounds and repairs and maintains healthy cartilage, bones, teeth and skin.

Vitamin C also helps your body absorb iron from plant-based sources such as quinoa, beans and spinach.

There are more ways to enjoy citrus than simply pouring a glass of bottled OJ in the morning.

Can Citrus Ward Off Your Risk of Stroke?

Source Newsroom: [American Academy of Neurology \(AAN\)](#)

Newswise — PHILADELPHIA –

Eating foods that contain vitamin C may reduce your risk of the most common type of hemorrhagic stroke, according to a study released today that will be presented at the American Academy of Neurology's 66th Annual Meeting in Philadelphia, April 26 to May 3, 2014.

Vitamin C is found in fruits and vegetables such as oranges, papaya, peppers, broccoli and strawberries. Hemorrhagic stroke is less common than ischemic stroke, but is more often deadly.

The study involved 65 people who had experienced an intracerebral hemorrhagic stroke, or a blood vessel rupture inside the brain. They were compared to 65 healthy people. Participants were tested for the levels of vitamin C in their blood. Forty-one percent of cases had normal levels of vitamin C, 45 percent showed depleted levels of vitamin C and 14 percent were considered deficient of the vitamin.

On average, the people who had a stroke had depleted levels of vitamin C, while those who had not had a stroke had normal levels of the vitamin.

"Our results show that vitamin C deficiency should be considered a risk factor for this severe type of stroke, as were high blood pressure, drinking alcohol and being overweight in our study," said study author Stéphane Vannier, MD, with Pontchaillou University Hospital in Rennes, France.

"More research is needed to explore specifically how vitamin C may help to reduce stroke risk. For example, the vitamin may regulate blood pressure."

Vannier adds that vitamin C appears to have other benefits like creating collagen, a protein found in bones, skin and tissues.

Vitamin C deficiency has also been linked to heart disease.

What are the health benefits of oranges?

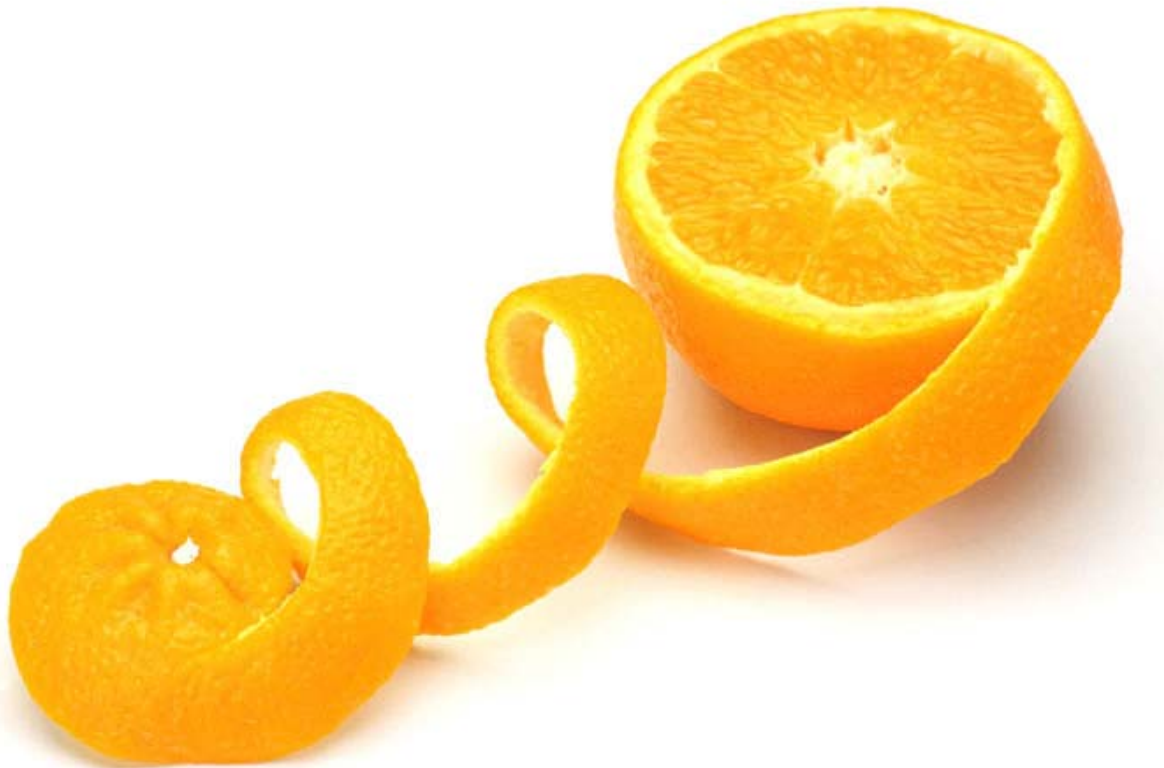
We all know the proverb "an apple a day," but equally an orange could be recommended. There are thousands of reasons why eating an orange a day is a good idea; they are low in calories but full of nutrients, they promote clear, healthy skin and can help to lower our risk for many diseases and conditions as part of an overall healthy and varied diet.

Orange trees are the most cultivated fruit trees in the world. Oranges are a popular fruit because of their natural sweetness, wide variety of types and diversity of uses - from juices and marmalades to face masks and candied orange slices.

An orange has over 170 different phytochemicals and more than 60 flavonoids, many of which have been shown to have anti-inflammatory properties and strong antioxidant effects.⁶

This MNT Knowledge Center feature is part of a collection of articles on the [health benefits of popular foods](#). It provides a [nutritional breakdown](#) of the fruit and an in-depth look at its possible [health benefits](#), how to [incorporate](#) more oranges into your diet and any [potential health risks](#) of consuming oranges.

Nutritional breakdown of oranges



One orange provides a range of vitamins and minerals; a staggering 130 percent of your vitamin C needs for the day.

One medium orange (approximately 154 grams) contains 80 calories, 0 grams of fat, 250 milligrams of potassium, 19 grams of [carbohydrate](#) (14 grams of sugar and 3 grams of dietary fiber) as well as 1 gram of protein.

One orange provides 130 percent of your vitamin C needs for the day, 2 percent of vitamin A needs, 6 percent of calcium and 0 percent of iron.

Oranges also contain thiamin, riboflavin, niacin, [vitamin B-6](#), folate, pantothenic acid, phosphorus, magnesium, manganese, selenium and copper. Because of their high vitamin

C content (over twice the daily need) oranges are associated with boosting the immune system.

Oranges also contain choline, zeaxanthin, and carotenoids.

Choline is an important nutrient found in oranges that helps with sleep, muscle movement, learning and memory. Choline also helps to maintain the structure of cellular membranes, aids in the transmission of nerve impulses, assists in the absorption of fat and reduces chronic [inflammation](#).²

Zeaxanthin and carotenoids have antioxidant effects and have been shown to have an inverse relationship with overall [cancer](#) rates and [prostate cancer](#) in particular.

Possible health benefits of consuming oranges

Stroke: According to the American Heart Association, eating higher amounts of a compound found in citrus fruits like oranges and grapefruit may lower ischemic [stroke](#) risk for women. Those who ate the highest amounts of citrus had a 19 percent lower risk of ischemic stroke than women who consumed the least.⁵

Blood pressure: Maintaining a low sodium intake is essential to lowering [blood pressure](#), however increasing potassium intake may be just as important because of its vasodilation effects. According to the National Health and Nutrition Examination Survey, fewer than 2 percent of US adults meet the daily 4700 mg recommendation.³

Also of note, a high potassium intake is associated with a 20 percent decreased risk of dying from all causes.³

Cancer: According to a study published in the American Journal of Epidemiology, consuming bananas, oranges and orange juice in the first two years of life [may reduce the risk of developing childhood leukemia](#).

As an excellent source of the strong antioxidant vitamin C, oranges can also help combat the formation of free radicals known to cause cancer. While an adequate vitamin C intake is necessary and very beneficial as an antioxidant, the amount necessary to consume for therapeutic purposes for cancer is beyond oral intake.¹ High fiber intakes from fruits and vegetables are associated with a lowered risk of [colorectal cancer](#).

Heart health: The fiber, potassium, vitamin C and choline content in oranges all support heart health. An increase in potassium intake along with a decrease in sodium intake is the most important dietary change that a person can make to reduce their risk of cardiovascular disease, according to Mark Houston, M.D, M.S, an associate clinical professor of medicine at Vanderbilt Medical School and director of the Hypertension Institute at St. Thomas Hospital in Tennessee.³

In one study, those who consumed 4069 mg of potassium per day had a 49 percent lower risk of death from ischemic [heart disease](#) compared with those who consumed less potassium (about 1000 mg per day).³

High potassium intakes are also associated with a reduced risk of stroke, protection against loss of muscle mass, preservation of bone mineral density and reduction in the formation of [kidney stones](#).³

Diabetes: Studies have shown that type 1 diabetics who consume high-fiber diets have lower blood glucose levels and type 2 diabetics may have improved blood sugar, lipids and insulin levels. One medium banana provides about 3 grams of fiber.

The Dietary Guidelines for Americans recommends 21-25 g/day for women and 30-38 g/day for men.

Skin: The antioxidant vitamin C, when eaten in its natural form (as in an orange) or applied topically, can help to fight skin damage caused by the sun and pollution, reduce wrinkles and improve overall skin texture. Vitamin C plays a vital role in the formation of collagen, the support system of your skin

How to incorporate more oranges into your diet



There are a variety of orange types on offer that can aid in various conditions from heart health to diabetes.

Oranges should be picked at their peak of ripeness because unlike some other fruits, they do not ripen or improve in quality after being picked. Oranges should be stored at room temperature, away from direct sunlight.

While it is hard to find good fruits and vegetables in the winter, it is the perfect time to buy citrus. Winter is the peak season for oranges and other citrus fruits.

There are many different types of oranges available such as navel, mandarin, cara cara, blood oranges, Valencia and Seville oranges just to name a few. Some are very sweet and others have more of a sour taste.

Tips:

--Keep a bowl on the kitchen table or counter stocked with fresh fruit from the season.

Seeing the fruits readily available will likely cause you to choose them as a snack more often rather than raiding the cupboards for a less healthy snack.

--Make a fruit salad with strawberries, pineapple, mandarin oranges and grapes.

--Add some orange slices to your salad at lunch or dinner. Compliment the oranges with walnuts or pecans, a crumbled cheese and a light balsamic or citrus vinaigrette dressing.

--Make your own juice! Nothing tastes better than freshly squeezed orange juice in the morning. When you make your own, you can be sure there are no added preservatives or sweeteners.

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

Subscriber's Name: _____

Company: _____

Address: _____

City: _____ State: _____ Zip: _____

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Racial-Ethnic Background

__ American Indian or native Alaskan

__ Asian American

__ Hispanic

__ White, non-Hispanic

__ Black, non-Hispanic

Gender

__ Female

__ Male