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Flatwoods Citrus



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February 2011

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Multi-County Citrus Agent, SW Florida



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Previous issues of the Flatwoods Citrus newsletter can be found at:

<http://irrec.ifas.ufl.edu/flcitrus/>

<http://citrusagents.ifas.ufl.edu/agents/zekri/index.htm>

IMPORTANT EVENTS

Annual Certified Pile Burners Course in SW Florida

Thursday, 17 February 2011, 8:30 AM – 4:30 PM, Immokalee IFAS Center.

Class size is limited to the first 50 people.

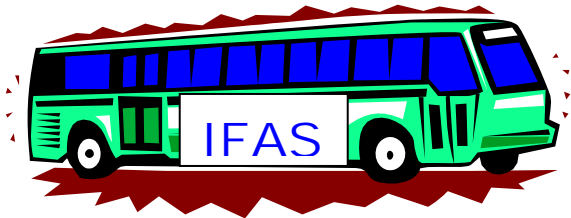
The Florida Division of Forestry and University of Florida Cooperative Extension Service will be conducting a Certified Pile Burners Course that will show you how to burn piles *legally, safely and efficiently*. Most importantly, it could save a life.

Registration starts at 7:30 AM. For more details and registration, go to:

http://www.fl-dof.com/training_education/training_schedule.html

Or send an e-mail to maz@ufl.edu or call 863 674 4092.

COLLIER COUNTY EXTENSION AG TOUR



Wednesday, 16 March 2011

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

Mark your calendar

ANNUAL FLORIDA CITRUS GROWERS' INSTITUTE

Date & Time: Wednesday, 6 April 2011, 8:00 AM – 3:30 PM

Location: Avon Park, Florida

CEUs for pesticide license renewal

CEUs for Certified Crop Advisors

Pre-registration or RSVP is required.

Please call Jane Wilson at 863 956 1151 or e-mail: mjw@crec.ifas.ufl.edu

AQUATIC WEED CONTROL SHORT COURSE 2011

May 3-4 2011, Coral Springs, Florida

Earn up to 20 CEUs in Aquatics, Forestry, General Standards (CORE), Right of Way, Natural Areas

For more information and to register online, visit:

www.conference.ifas.ufl.edu/aw

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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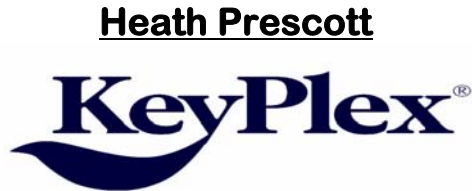


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Climate Prediction Center

Discussion for the Seasonal Drought Outlook

Tools used in the U.S. Drought Outlook (USDO) included the official CPC precipitation outlook for [February 2011](#) and the long lead forecast for [February - April 2011](#), various [medium- and short-range forecasts and models](#) such as the 6-10 day and 8-14 day forecasts, the [soil moisture tools](#) based on the GFS model and the Constructed Analogue on Soil (CAS) moisture, the Climate Forecast System (CFS) seasonal precipitation forecasts, La Niña composites for the December - February season, the four-month Palmer drought termination and amelioration probabilities, climatology, and initial conditions.

An early start to the dry season combined with a lack of tropical cyclone activity resulted in expanding drought across Florida. 2010 rainfall departures below normal include 12.58 inches at Melbourne (3rd driest year on record) and 14.89 inches at Vero Beach (5th driest year on record). Much needed rainfall occurred on January 17 when 2 – 5 inches fell in parts of the Florida peninsula. Heavy rainfall (more than 2 inches) was also recorded in eastern North Carolina. Across the southeast U.S., La Niña composites indicate the highest negative precipitation anomalies in southern Georgia and the Florida panhandle. The CPC monthly and seasonal outlooks indicate increased chances for below median precipitation across much of the southeast U.S., with the highest chances across the Florida peninsula. Although the CPC 6-10/8-14 Day outlooks favor above median rainfall, drought is expected to persist or develop across much of the southeast U.S.. This outlook is based primarily on the ongoing La Niña and its associated dry signal.

Forecaster: B. Pugh

PRICES AS REPORTED FOR FRUIT DELIVERED AT PROCESSING PLANTS

ORANGES: FOR CONCENTRATE and SINGLE STRENGTH JUICE:

E&M: (FR) Contract: Mostly \$1.80 to \$1.90 pps gross; occasionally lower.

NAVELS: (PHE) Spot: Mostly \$1.25 pps gross.

TANGERINES:

Honey: (PHE) Spot: Mostly \$1.20 pps gross.

(FR) Contract: Mostly \$1.25 to \$1.30 pps gross.

TANGELOS: (PHE/FR) Spot: Mostly \$1.20 pps gross.

TEMPLES: (PHE/FR) Spot: Mostly \$1.15 to \$1.20 pps gross.

GRAPEFRUIT: FOR CONCENTRATE and SINGLE STRENGTH JUICE:

Mostly \$1.05 for 7.50 to 7.99 ratio; \$1.25 for 8.00 to 8.99 ratio and \$1.35 for 9.00 ratio and higher.

EL NIÑO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC DISCUSSION

issued by

CLIMATE PREDICTION CENTER/NCEP/NWS

6 January 2011

ENSO Alert System Status: [La Niña Advisory](#)

Synopsis: La Niña is expected to continue well into the Northern Hemisphere spring 2011.

A moderate-to-strong La Niña continued during December 2010 as reflected by well below-average sea surface temperatures (SSTs) across the equatorial Pacific Ocean (Fig. 1). All of the Niño indices were -1.5°C at the end of December, except for the easternmost Niño-1+2 region (Fig. 2). The subsurface oceanic heat content (average temperatures in the upper 300m of the ocean, Fig. 3) continued to reflect a large reservoir of below-average temperatures at depth in the central and eastern equatorial Pacific (Fig. 4). Convection remained enhanced over Indonesia and suppressed over the western and central equatorial Pacific (Fig. 5). Also, enhanced low-level easterly trade winds and anomalous upper-level westerly winds continued over the equatorial Pacific. Collectively, these oceanic and atmospheric anomalies reflect the ongoing La Niña.

The current ENSO model forecasts have not changed significantly compared to last month (Fig. 6). La Niña is currently near its peak and is expected to persist into the Northern Hemisphere spring 2011 at a lesser intensity. Thereafter, there remains considerable uncertainty as to whether La Niña will last into the Northern Hemisphere summer (as suggested by the NCEP CFS and a few other models), or whether there will be a transition to ENSO-neutral conditions (as suggested by the CPC CON and a majority of the other models).

Likely La Niña impacts during January-March 2011 include suppressed convection over the west-central tropical Pacific Ocean, and enhanced convection over Indonesia. Impacts in the United States include an enhanced chance of above-average precipitation in the Pacific Northwest, Northern Rockies (along with a concomitant increase in snowfall), Great Lakes, and Ohio Valley. Below-average precipitation is favored across the southwestern and southeastern states. An increased chance of below-average temperatures is predicted for much of the West Coast and northern tier of states (excluding New England), and a higher possibility of above-average temperatures is forecast for much of the southern and central U.S. (see [3-month seasonal outlook](#) released on December 16th, 2010). While seasonal temperature and precipitation patterns in the U.S. are strongly influenced by La Niña, these signals can be modified by other factors, such as the Arctic Oscillation (AO)/ North Atlantic Oscillation (NAO).

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 10 February 2011. 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
Camp Springs, MD 20746-4304

62 Florida Counties Eligible for Natural Disaster Aid

Agriculture Commissioner Adam Putnam announced today that the U.S. Department of Agriculture (USDA) has designated 34 counties in Florida as primary natural disaster areas due to frosts and freezes during this winter season and drought over the last six months.

Posted: 9:48 PM Jan 26, 2011

Reporter: Press Release

TALLAHASSEE – Agriculture Commissioner Adam Putnam announced today that the U.S. Department of Agriculture (USDA) has designated 34 counties in Florida as primary natural disaster areas due to frosts and freezes during this winter season and drought over the last six months. The USDA has designated an additional 28 counties in Florida as contiguous natural disaster areas.

“Florida’s growers have faced difficult challenges this season, leading to significant crop loss and damage,” said Commissioner Putnam. “The natural disaster area designation from the USDA will enable Florida’s growers to apply for and obtain the assistance they need to recover and refocus their efforts on providing fresh fruits and vegetables to dining tables across the country.”

As a result of this designation, farm operators in both primary counties and contiguous counties are eligible to be considered for assistance from the USDA Farm Service Agency (FSA), including emergency loans and the Supplemental Revenue Assistance Payments (SURE) Program.

Farmers in these designated counties have eight months from today to apply for emergency loan assistance. FSA considers the extent of production losses, security available and repayment ability with each application. SURE Program applications for 2010 crop losses will be accepted in 2011, when the 2010 farm revenue data required by statute becomes available.

Counties designated as primary natural disaster areas due to frosts and freezes during the period between November 5 and December 17, 2010, include Alachua, Bradford, Charlotte, Clay, Collier, De Soto, Dixie, Flagler, Gilchrist, Glades, Hardee, Hendry, Highlands, Indian River, Lee, Levy, Manatee, Martin, Miami-Dad, Okeechobee, Palm Beach, Polk, Putnam, Sarasota, St. Johns and St. Lucie. Contiguous counties include Baker, Brevard, Broward, Citrus, Columbia, Duval, Hillsborough, Lafayette, Lake, Marion, Monroe, Orange, Osceola, Pasco, Sumter, Suwannee, Taylor, Union and Volusia.

Counties designated as primary natural disaster areas due to drought that occurred from June 1, 2010, to present include Bay, Calhoun, Gadsden, Gilchrist, Holmes, Indian River, Jackson, Madison, Martin, St. Lucie, Wakulla and Washington. Contiguous counties include Alachua, Brevard, Columbia, Dixie, Franklin, Gulf, Hamilton, Jefferson, Lafayette, Leon, Levy, Liberty, Okeechobee, Osceola, Palm Beach, Suwannee, Taylor and Walton.

The Florida Department of Agriculture and Consumer Services encourages farmers to contact local FSA offices for additional information.

For more information about the Department of Agriculture and Consumer Services, visit www.FreshFromFlorida.com or follow Commissioner Putnam on Facebook, www.facebook.com/adamputnam, and Twitter, @adamputnam.

CITRUS HALL OF FAME TO HONOR FOUR INDUCTEES

Four leaders of Florida's citrus industry who made significant contributions will be inducted into the [Florida Citrus Hall of Fame](#) on March 4.

They are R. William "Bill" Becker; Edgar S. Beeland (deceased); Robert C. "Bob" Bullock and Frank W. Savage (deceased), according to a news release.

- **Becker** is president and owner of Peace River Citrus Products and served as a Florida citrus commissioner from 1985-1991. He served as commission chairman from 1986-1991.

During that time, the industry saw the worst freezes it had ever experienced.

Becker also is past president of the Florida Citrus Processors' Association and the National Juice Association.

- **Beeland** served the citrus industry for more than 70 years, starting his career in 1928 with the Kissimmee Citrus Growers Association. With the exception of three years taken out for World War II, he was general manager of the Clearwater Growers Association for 28 years.

He went on to become executive vice president and general manager of Winter Haven CGA, a position he held for 22 years.

He also was president of the Florida Citrus Packers and received the John T. Lesley Award of Excellent in 1991 for his leadership and industry contributions.

- **Bullock** was a research entomologist at the Institute of Food and Agricultural Research in Ft. Pierce for more than 35 years. During that time, he gained a reputation as the "growers' teacher" for his hands-on knowledge of citrus production and development of integrated pest management practices.

He also pioneered the use of fixed-winged aircraft for applying certain pesticides. In addition, he developed application techniques for Temik and Admire.

- **Savage** is known as the state's first grower-cooperator, having begun working with U.S. Department of Agriculture scientists in 1892 to establish the world's first citrus research facility.

He constructed laboratories in two rooms of his house and participated in all of the work with the scientists. Among their successes were several citrus varieties, including Orlando and Minneola tangelos, and the Swingle rootstock.

The laboratories eventually became a plant evaluation facility—the A.H. Whitmore Foundation Farm in Leesburg, where breeding and variety development is still conducted today.

The Citrus Hall of Fame is housed in the McKay Archive Building at Lakeland's Florida Southern College.

FLOWER BUD INDUCTION ADVISORY # 6 for 2010-2011 - 01/18/2011

Gene Albrigo, Horticulturist Emeritus,
Lake Alfred CREC

<http://www.crec.ifas.ufl.edu/extension/flowerbud/index.htm>



This is a fortnightly service to our citrus growers posted on the CREC website. The internet Expert System on intensity and time of bloom can be accessed anytime:

<http://orb.at.ufl.edu/DISC/bloom>

Current Status: The Flowering Monitor Model indicated that a first wave of flower buds was initiated to grow between December 17th and 28th depending on the location. The inductive cool hours had reached 800 to 940 in southern areas and 1000 to 1250 in central and northern areas of Florida's citrus industry. The model now indicates that a second wave of flower buds has been initiated to grow in all areas from Sebring and to the south with 1030 to 1220 hours below 68 o F. The full bloom dates for the first wave of flower buds are about February 22 to 25 in southern, flatwoods areas and March 1 to 8 for central and

northern areas. The second wave will bloom about March 4th to 11th.

Induction levels are now excellent for all citrus areas and raise the possibility of too many flowers on mandarin and seedless cultivars such as navel and Ambersweet, particularly if the current crop was low. For areas south of Sebring it may be too late to reduce flowering levels with a GA3 (gibberellin) spray, but for areas north of Sebring this week may be an excellent time to prevent more flowering. Temperatures are projected to be in the mid-70s for 3 to 4 days. This will likely cause initiation of more flower bud growth where only one wave has started so far. A single spray of 20 ppm in 80 to 125 gal of water per acre is the recommended rate. Pro-Gibb will have an active ingredient (ai) rate/acre on the label. As a reminder about damage from the recent freezing temperatures, remember if damaged leaves persist after a freeze, it indicates that the green tissue of the shoot was also damaged. The associated buds will likely be lost. If damaged leaves quickly abscised, the buds should be ok and will grow normally and most of these buds will be flower buds this year. An assessment of how much reduction in crop may occur next year may be gained by evaluating how much of last year's spring and summer shoots appear to be damaged based on non-abscising dead leaves. Actual damage is usually not clear until the spring growth starts and is or is not sustained by the supporting wood below the buds.

If you have any questions, please contact Dr. Gene Albrigo (albrigo@ufl.edu)

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/pdf/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.

FOLIAR FEEDING

Foliar feeding is not intended to completely replace soil-applied fertilization of the macronutrients (nitrogen, potassium, and phosphorous). However, macronutrients can be foliarly applied in sufficient quantities to influence both fruit yield and quality. Some crops, such as citrus, can have a large part of the nitrogen, potassium, and phosphorous requirements met through foliar applications.

Foliar applications of other plant nutrients (calcium, magnesium, and sulfur) and micronutrients (zinc, manganese, copper, boron, and molybdenum) have proven for many crops to be an excellent means for supplying the plants' requirements. Soil application of magnesium, manganese, zinc, boron, and molybdenum is not as economical and not as effective as foliar application to supply those nutrients to citrus trees. Applications made to the soil can be subject to leaching, volatilization, and/or being tied up by soil particles in unavailable forms to plants.

Foliar feeding should be used as an integral part of the annual nutritional program. It can be used in other situations to help plants through short, but critical periods of nutrient demand, such as fruit set and bud differentiation. Foliar nutrition may also prove to be useful at times of soil or environmentally induced nutritional shortages. Foliar application of nutrients is of significant importance when the root system is unable to keep up with crop demand or when the soil has a history of problems that inhibit normal growth.

Foliar feeding is proven to be useful under prolonged spells of wet soil conditions, dry soil conditions, calcareous soil, cold weather, or any other condition that decreases the tree's ability to take up nutrients when there is a demand. Foliar feeding may be utilized effectively when a nutritional deficiency is diagnosed. A foliar application is the quickest method of getting the most nutrients into plants. However, if the deficiency can be seen, the crop might have already lost some potential yield.

Several Florida citrus growers and production managers are using foliar nutritional sprays, mainly micronutrients, to slow down tree decline and maintain adequate fruit productivity of citrus greening-infected trees. Supplemental, balanced foliar nutrition has positive effects on plant diseases by inducing naturally occurring plant resistance mechanisms. It is always important to maintain the balance between nutrients because having one nutrient significantly out of balance can be as bad as a deficiency.

While foliar feeding has many advantages, it can burn plants at certain rates under certain environmental conditions. It is important, therefore, to foliar feed within the established guidelines. There are a number of conditions that can increase the chances of causing foliar burn. A plant under stress is more susceptible to damage. Stressful conditions include drying winds, disease infestations, and poor soil conditions. The environmental conditions at the time of application are also important factors. Applications when the weather is warm (above 80°F) should be avoided. This means that during warm seasons, applications should be made in the morning or evening. Additionally, applications should not be at less than two-week intervals to give the plant sufficient time to metabolize the nutrients and deal with the added osmotic stress.

Another important factor when applying nutrient foliarly is to ensure that the pH of the material is in the proper range. The pH range of the spray solution should be between 6 and 7. Attention should be paid to the pH of the final spray solution. This is significant in areas where water quality is poor.

Post-bloom foliar applications (applied in April when the spring flush leaves are about fully expanded) of potassium nitrate or mono-potassium phosphate have been found to increase fruit yield and size.

- **8 lb K₂O per acre per application**
- **Foliar applications are not a substitute for a good soil nutritional program.**

IMPORTANCE OF SPRAYER CALIBRATION

Sprayers must be checked to ensure all nozzles are applying pesticides uniformly and at the correct rate. Make sure your equipment is working properly and calibrated to ensure the correct amount of pesticide is delivered to the target area.

Pesticide application, greater than the label rate, is illegal and can result in needless risk to groundwater, increased production costs, and crop damage. Under-application might be costly by not properly controlling the target pest. Although you can sometimes repeat the application, doing so is time-consuming, costs more, increases the risk of applying too much and increases the risk in pesticide resistance.

Regular sprayer calibration includes measuring the output of each nozzle to ensure all nozzles are functioning properly. Specific calibration guides are available from a number of sources. Sprayer calibration should be done every time a different pesticide is applied or at least once each season.

The rate of application depends partly on the particle or droplet size, texture, and other properties of the pesticide being applied. Use only water during the test if the pesticide is a liquid. Contact the manufacturer to get reliable information regarding carrier material to perform the tests if the pesticide is a dust, granule, or fumigant, or a liquid diluted with a liquid other than water.

Follow calibration and mixing instructions carefully. Mixing, loading, and calibration methods must also conform to the speed

of the application machinery. Moving too fast or too slow changes the rate of application.

Minimizing spray drift

Spray drift, movement of a pesticide through air during or after application to a site other than the intended site of application is a challenging issue facing pesticide applicators. Complete elimination of spray drift is impossible. However, drift can be minimized by following these control measures:

1. Read and follow the pesticide label.
2. Select low or nonvolatile pesticides.
3. Use spray additives following label guidelines.
4. Use large orifice sizes for spray nozzles.
5. Avoid high sprayer pressures, which create finer droplets.
6. Use drift reduction nozzles.
7. Use wide-angle nozzles, lower spray boom heights, and keep spray boom stable.
8. Do not spray when wind speeds exceed 10 mph and when wind direction is directed toward sensitive vegetation.
9. Use a shielded spray boom when wind conditions exceed preferred conditions.
10. Avoid spraying on extremely hot and dry days, especially if sensitive vegetation is nearby.
11. Keep good records and evaluate the results.



IMPORTANCE OF FERTILIZER SPREADER CALIBRATION AND MAINTENANCE

Properly calibrated and maintained equipment ensures a more uniform distribution of nutrients. This, combined with other conservation practices, reduces production costs, soil surface runoff, and nutrient movement to nearby surface waters. Spreaders that have not been properly maintained and calibrated will have problems delivering accurate rates and evenly distributed fertilizer amounts to the grown crop.

Calibration

Calibration is the process used to help ensure that the equipment applies proper rates of the selected product. Proper calibration is the key to successful fertilizer use efficiency. Failure to calibrate equipment can result in ineffective applications. Applying too much is costly, unlawful and may cause crop injury. Applying too little can result in poor crop growth and production. It is important to calibrate equipment on a regular basis to compensate for variations. The equipment will become worn or damaged with use and result in inaccurate output and spread pattern.

Two items must be considered when calibrating a spreader. The first is the distribution pattern of the spreader. The second is the product application rate, which is the amount of product applied per acre. There are many factors that affect the distribution pattern of a rotary spreader and some of them relate directly to the product. For this reason, it is recommended that the spreader be calibrated separately for every product to be applied. Spreader calibration should be checked more often when the spreader is used frequently.

Product & application

Choose a product according to the need of the crop. Before applying the product, read the spreader manual. The spreader manual will usually indicate proper settings for various application rates. However, calibration still needs to be performed to ensure the settings are accurate and to compensate for wear and variations in equipment. Be sure that the proper procedures and application rates are followed. Check the 'spread pattern' and amount being applied. The physical properties of dry fertilizer can vary widely. Since larger particles are thrown further than small particles, a product of uniform size should be used to achieve a consistent application pattern. It is essential to maintain a constant speed when using a rotary spreader to obtain uniform and accurate distribution.

Maintenance and Cleaning

Proper care and maintenance will help retain precise applications and prolong the life of spreaders. Manufacturer's directions on cleaning and lubricating should be followed. With the shutter or gate wide open, remove all granules from the spreader at the end of each application. Then, the spreader should be thoroughly washed and allowed to dry. Hot water may help break loose fertilizer which is caked on. Finally, lubricate the spreader according to instructions. Spreaders should be stored in a clean, dry place out of direct sunlight.



PESTICIDE RECORDKEEPING BENEFITS & REQUIREMENTS

BENEFITS

Exemption from pesticide contamination liability. As provided by section 487.081(6), Florida Statutes, if you keep records of all your pesticide use (general and restricted use products), and you have used pesticides legally, you may be exempt from proceedings by the Florida Department of Environmental Protection to recover costs associated with damages, assessment, evaluation, or remediation of pesticide - contaminated property. Records must be kept indefinitely.

Evaluate effectiveness of controls. Use your records to analyze your pest management programs: what works and what doesn't. You can compare pesticides with other control tactics.

Resolve pesticide failures. If reduced pesticide product performance occurs, having record will help you determine the cause such as pest resistance or use of the wrong application rate.

Improve your ability to buy the right amount of pesticide. Records will help you buy the correct amount of pesticide the following year. You'll save money and eliminate excess pesticide disposal problems.

Provide buyers with required records of pesticide use. Nurserymen must document certain preventative applications before selling nursery stock. Other buyers may also require a report on pesticides used on crops or other commodities treated with pesticides.

Improve crop rotation decisions. With records, you know your crop rotation options. Some pesticides have restrictions on crops that can be planted within certain time frames after pesticide application.

Determine carryover injury. If your fields exhibit pesticide carryover injury, records will help evaluate the situation.

Document your legal use of pesticides. Records are your best defense if you are accused of an improper application that

causes drift, personal injury, or other problems.

Provide necessary information in a medical emergency. If an accident or pesticide exposure occurs, records may be necessary for medical personnel to give treatment.

Support studies that identify critical pesticide registrations. Through surveys, your records can contribute data needed to preserve pesticide registrations.

Provide accurate data to respond to public concerns about pesticide use. Your records can be added to national databases that will accurately show pesticide use. Efforts to reduce pesticide use can be documented in the information.

Be prepared for requirements of lending institutions. Some lending institutions and buyers request field records to evaluate potential environmental liability when making land sales or loans.

Be in compliance with the law. The Florida Pesticide Law requires all licensed pesticide applicators to keep records of restricted use pesticides applied.

RECORDKEEPING REQUIREMENTS

The following information must be recorded for each application of a restricted use pesticide:

- Name and license number of licensed applicator
- Name of person who applied the pesticide (may be an unlicensed assistant)
- Date, start time, and end time of treatment
- Location of treatment site using one of the following methods:

1. County, range, township and section
2. Maps and/or written descriptions that accurately identify the treatment location and distinguish it from other sites
3. USDA identification system found in 7 CFR 110 which uses maps and numbering systems
4. Legal property description
5. Global Positioning Satellite (GPS) coordinates or longitude/latitude points that delineate the treatment site

- Crop, commodity or target site treated
- Total size of area treated
- Brand name and EPA Registration Number of product applied
- Total amount of product applied
- Application method
- Name of person authorizing the treatment, if the application was made to property not owned or leased by the licensed applicator

ADDITIONAL REQUIREMENTS

- The required pesticide application information must be recorded within 2 working days after application.
- Records may be kept in any format that includes all the required information and may be incorporated into other business records.
- It is not necessary to record repetitive information that applies to all records, as long as the information is recorded one time and there is a written record that this information applies to other applications as well.
- Records must be kept for 2 years from application date and must be made available to authorized FDACS representatives upon request.
- Commercial applicators must provide a copy of the application record to the person for whom the application was made within 30 days of application.
- Pesticide application records and any available label information must be provided to licensed health care professionals or their designated agents in the event of a medical emergency or if the health care professional determines the information is necessary to provide medical treatment to an individual who may have been exposed to a pesticide included in the record information.

VIOLATIONS

Licensed applicators who violate any of the above requirements are subject to a fine imposed by FDACS. Violators who are fined have the right to respond to the charges or request a hearing.

FORMS

A Suggested Pesticide Recordkeeping Form for Restricted Use Pesticides and WPS (Worker Protection Standard) is available from the FDACS Bureau of Compliance Monitoring or may be downloaded from <http://www.flaes.org>

CONTACT

For more information contact the FDACS Bureau of Compliance Monitoring, 3125 Conner Blvd., Bldg. 8 (L-29), Tallahassee, Florida 32399-1650, telephone (850) 488-3314.

WEB SITE

More information about Bureau pesticide programs and copies of various forms are available from the web site <http://www.flaes.org>

**Florida Department of Agriculture
& Consumer Services
Division of Agricultural
Environmental Services**

**Pesticide Recordkeeping
Benefits and
Requirements**

Make wiser, more
profitable decisions by
keeping records of
your pesticide use.

**Adam Putnam, Commissioner
Florida Department of Agriculture
& Consumer Services**

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.

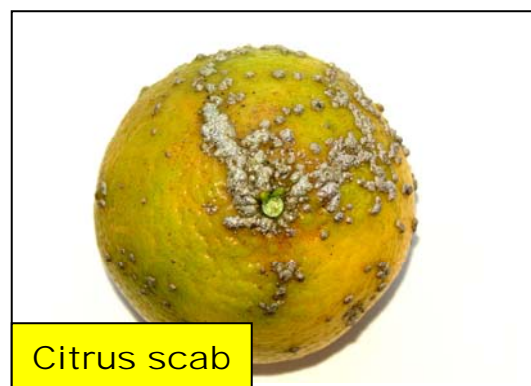
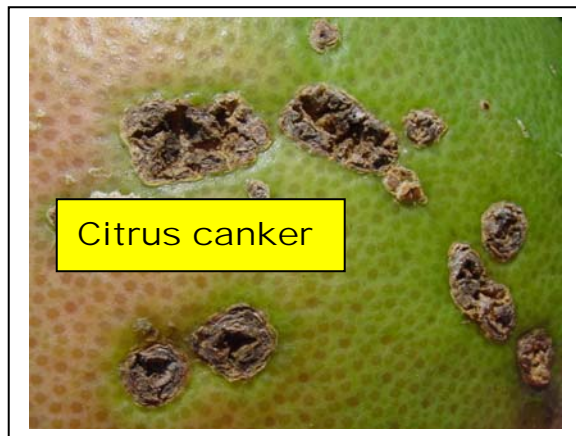
Properly managed applications of plant nutrients through irrigation systems significantly enhance fertilizer efficiency while maintaining or increasing yield. On the other hand, poorly managed fertigation may result in substantial yield losses. Fertigation involves deciding which and how much nutrients 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.

Fungicide effectiveness (By Dr. Pete Timmer)

	<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



Flatwoods Citrus

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Hendry County Extension Office
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__ Asian American

__ Hispanic

__ White, non-Hispanic

__ Black, non-Hispanic

Gender

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__ Male