UNIVERSITY OF FLORIDA | EXTENSION
Institute of Food and Agricultural Sciences

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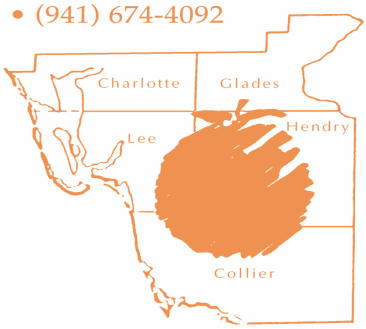
Flatwoods Citrus



Vol. 5, No. 12 December 2002

Dr. Mongi Zekri, Multi-County Citrus Agent | **Email: maz@mail.ifas.ufl.edu**

UPCOMING EVENTS

Seminars & workshops at the Hendry County Extension Office, LaBelle

Tuesday, December 17, 2002, 10:00 AM – 12:00 Noon
Foliar nutrition (potassium, urea and phosphite), nitrogen rates and micronutrients vs. fruit production
Speakers: Drs. Brian Boman, Gene Albrigo, Juan Valiente, and Tom Obreza
2 CEUs for Certified Crop Advisors
Sponsor: Robert Murray, Florida Favorite Fertilizer
Following the seminar, we are planning a free lunch (Compliments of Florida Favorite Fertilizer) for only who call Sheila at 863 674 4092 no later than Friday, 13 December.

Tuesday, January 14, 2003, 9:00 AM – 4:30 PM
Workshop on scouting for pests and diseases
Speakers: John Taylor, and Drs. Pam Roberts, Stephen Rogers and Phil Stansly
6 CEUs for Pesticide License Renewal, 6 CEUs for Certified Crop Advisors
Sponsor: Robert Gregg, Syngenta
Preregistration is required. Registration form is enclosed.
Registration fee is $10.00 (includes refreshments, lunch, and handouts). To ensure lunch, registration is required no later than January 3.

Tuesday, January 21, 2003, 10:00 AM – 12:00 Noon
Citrus scab, alternaria, melanose, and fungicide update
Speakers: Dr. Pete Timmer and Pam Roberts
2 CEUs for Pesticide License Renewal
2 CEUs for Certified Crop Advisors
Sponsor: Shelby Hinrichs, Nufarm Agriculture USA

Tuesday, February 4, 2003, 10:00 AM – 12:00 Noon
Strategies for efficient application of pesticides
Speaker: Dr. Masoud Salyani
2 CEUs for Pesticide License Renewal
2 CEUs for Certified Crop Advisors
Sponsor: Michael Harowitz, FarmSaver.com

Tuesday, February 18, 2003, 10:00 AM – 12:00 Noon
Update on herbicide program options
Speakers: Dwight Meeker, Mike Prescott and Dr. Steve Futch
2 CEUs for Pesticide License Renewal
2 CEUs for Certified Crop Advisors
Sponsor: Donna Muir-Strickland, Monsanto

Tuesday, March 18, 2003, 10:00 AM – 12:00 Noon
Irrigation scheduling, maintenance, plugging problems and solutions
Speakers: Drs. Larry Parsons, Brian Boman, Tom Obreza and Sanjay Shukla
1 CEU for Pesticide License Renewal
2 CEUs for Certified Crop Advisors
Sponsor: John Coley, Citrus Maintenance & Service, Inc.

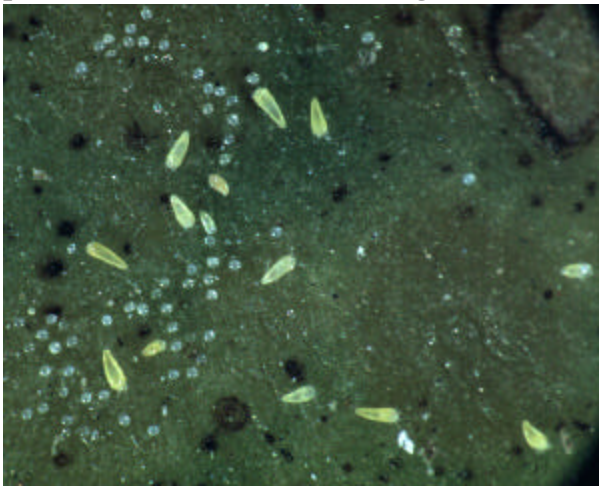
If you want to print a color copy of the Flatwoods Citrus Newsletter, get to the Florida Citrus Resources Site at http://flcitrus.ifas.ufl.edu/
You can also find all you need and all links to the University of Florida Citrus Extension and the Florida Citrus Industry

Log on to Lake Alfred CREC website at **http://www.lal.ufl.edu/** to get weekly updates on **FLOWER BUD INDUCTION OVERVIEW and ADVISORY.** Click at the bottom of the page on **Extension Programs,** then **Flowering.** The first 2 flower bud induction advisories for this season are copied here on pages 11 & 12. **Contact Dr. L. Gene Albrigo at Albrigo@lal.ifas.ufl.edu if you have questions about this advisory or citrus tree flowering under Florida conditions.**

Special Thanks to the following 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.

SCOUTING FOR PESTS AND DISEASES

Florida citrus industry uses sustainable production practices. Florida citrus growers help preserve environmental quality by using many sound cultural practices including integrated pest management (IPM) strategies. IPM depends on grove scouting and close observations to determine the need and timing for pesticide applications as well as modification of cultural practices to minimize damage.



Scouting for early warnings of pests and diseases is becoming very important in citrus operations.

Scouting not only helps growers control pests more efficiently, but also lowers the use of pesticides and the chances of pesticide resistance.
In most cases, there is no way to predict on a seasonal basis the incidence and severity of pests. However, based on grove history and frequent observations, many situations can be reasonably assessed. With most citrus pests, the pressure must be high before economic damage levels on the processing fruit crop are experienced. Pest populations should be suppressed only when high levels of infestation threaten tree vigor and productivity.

There are several techniques and procedures for scouting and there are many things to know before scouting. To learn more, you need to attend the workshop on scouting for citrus pests and diseases scheduled on Tuesday, January 14, 2003, 9:00 AM – 4:30 PM

Preregistration is required. Registration form is enclosed.
Registration fee is $10.00 (includes refreshments, lunch, and handouts).
To ensure lunch, registration is required no later than January 3.

Special Thanks to the following 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.

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- CITRUS PEST MANAGEMENT COURSE OFFERED IN SPRING -

Contact: ***Dr. Larry Duncan, CREC, Tel. (863) 956-1151 E-mail: lwdn@lal.ufl.edu***

Citrus Pest Management (PMA 5205) is a graduate-level course (3.0 units) designed for students and citrus industry personnel working in the area of pest management. The course reviews the latest tactics and strategies available to manage diseases and arthropod, nematode and weed pests of citrus. Emphasis is given to techniques by which pest and disease organisms are monitored and how this information is used to effectively manage pests with the least risk to the environment.

The course is coordinated by Dr. Larry Duncan, Professor of Nematology.

University credit (3.0) or audit credit.

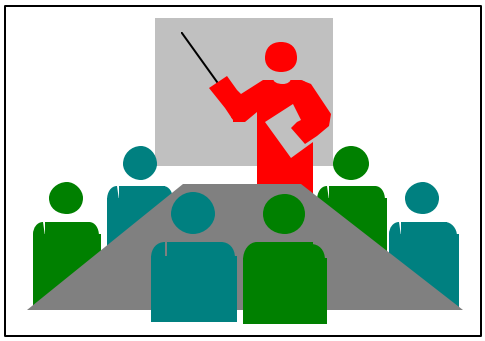
CEU's will be offered.

Dates/Time: Thursdays, Jan. 7 – April 29, 2003; 3 - 6 p.m.

Location: University of Florida/IFAS Citrus Research and Education Center, Ben Hill Griffin, Jr. Citrus Hall Teaching Laboratory, 700 Experiment Station Road, Lake Alfred, Florida. Tel. (863) 956-1151. Map: http://www.lal.ufl.edu/CRECHOME/maps.htm

Textbook: *Citrus Health Management* (APS Press). L.W. Timmer and Larry W. Duncan, editors. *Citrus Health Management* was written by 26 citrus specialists and designed specifically for this course.

Registration: $538.05 for Florida residents. Registering students must submit a UF Distance Education Course Request Form by **December 20, 2002** (available on the internet at http://disted.ifas.ufl.edu/register/registerspring2003.htm), and then complete the registration procedures outlined on the UF/IFAS Distance Education website (http://disted.ifas.ufl.edu/registration/registration_info.html). For registration assistance, contact Monica Lewandowski at Tel. (863) 956-1151 or E-mail: mmlew@lal.ufl.edu.



PLANT PATHOLOGY COURSE OFFERED AT THE INDIAN RIVER RESEARCH & EDUCATION CENTER THIS SPRING

Plant Pathology 3002C, Introductory Plant Pathology. **Dr. Ken Pernezny**, instructor. This 4-credit undergraduate course will be offered Spring 2003 at the Indian River Research and Education Center in Ft. Pierce and will introduce students to the fundamentals of the science of plant pathology. The course will consist of lectures and laboratory exercises designed to lead students to a firm understanding of the major classes of plant pathogens (bacteria, fungi, viruses, nematodes, and phytoplasmas), plant disease epidemiology, physiology of disease, and the important methods of plant disease control. Classes start January 6th, 2003 and will meet Monday nights from 5:30 to 9:30 p.m. The course assumes a basic knowledge of plant biology. For registration information, call Kim Wilson at (772) 468-3922, ext. 126. Registration runs until January 3, 2003.

COURSES OFFERED AT THE IMMOKALEE IFAS CENTER

Other courses are also offered next semester at the Southwest Florida Research and Education Center (SWFREC), Immokalee. **For more information, see enclosed brochure, call or write to Dr. Bob Rouse**, Teaching Coordinator, WSFREC, 2686 S.R. 29 North, Immokalee, FL 34142-9515, Phone: (941) 658 3400.

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 gal divided by 50 gal = 4 x 20 ml = 80 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 ml x 60 min = 4,800 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.

A CHLORINE-ACID INJECTION SYSTEM

CHLORINATION TO CONTROL ALGAE AND BACTERIA IN IRRIGATION SYSTEMS

Chlorine Injection Interval

Chlorine injection will prevent clogging of lines and emitters by algae and bacterial slime. Continuous injection of small amounts of chlorine can keep algae and bacterial slime under control. However, periodic injection of larger amounts of chlorine is the preferred treatment for controlling algae and bacteria in microirrigation systems. You do not need to inject chlorine if you are using municipal water that is already chlorinated. However, if your irrigation water has not been chlorinated, you should be prepared to inject chlorine as needed. If water quality is extremely poor, it may be necessary to chlorinate at the end of each irrigation cycle. Experience is helpful when determining the appropriate intervals between chlorine injections.

Recommended Chlorine Formulations

Liquid sodium hypochlorite (NaOCl) is the easiest form of chlorine to handle and is the type most often used for treatment of microirrigation systems. It is readily available in supermarkets and other stores as common household bleach (5.25% chlorine). Liquid chlorine is also available from some swimming pool companies as a 10% chlorine solution. Caution: Powdered calcium hypochlorite $Ca(OCl_2)$, also called High Test Hypochlorite (H.T.H.) is a dry powder commonly used in swimming pools. This material is not recommended for injection into microirrigation systems. When mixed with water (especially at high pH), the calcium contained in H.T.H. can form precipitates.

Initial Chlorine Injection Rate

As chlorine is injected, some of it reacts with bacteria (as it destroys the bacteria) and other forms of organic matter in the irrigation lines. This "reacted" chlorine is chemically bound or "tied up" and is no longer antibacterial. Chlorine that has not reacted remains as "free residual chlorine." Only this free chlorine is available to destroy bacteria and to continue treatment of the system. For chlorination to be effective, you should maintain 1 to 2 ppm free chlorine in the system for 30 to 60 minutes. Usually, an initial concentration of 5 to 6 ppm is required in order to maintain 1 to 2 ppm free chlorine. Samples for determining the initial chlorine concentration should be taken near the point of injection. However, samples should be taken far enough past the point of injection that the chlorine is uniformly mixed in the irrigation water.

The following equation can be used to calculate the injection rate.

Injection rate (gal/hr) = 0.03 x GPM divided by % chlorine.

Example: The desired initial chlorine concentration in irrigation water just past the point of injection is 5 ppm. Assume a drip irrigation system with a total flow rate of 100 gallons per minute (gpm) and that common chlorine bleach (5.25% chlorine) will be injected.

Injection rate = 0.03 x GPM divided by %chlorine
= 0.03 x 100 divided by 5.25
= 0.57 gal/hr

The chlorine solution must be in contact with algae and bacteria for at least 30 minutes to successfully treat the drip irrigation system. To ensure that all parts of the system receive a minimum of 30 minutes' contact time, inject chlorine for one hour.

For convenience, the injection rates (gal/hr and oz/hr) required to give an initial concentration of 5 ppm chlorine have been calculated for selected flow rates in the following Table.

Water Flow (gpm)	5.25% Chlorine Solution		10% Chlorine Solution	
	gal/hr	oz/hr	gal/hr	oz/hr
10	0.06	7.7	0.03	3.8
20	0.11	14.1	0.06	7.7
30	0.17	21.8	0.09	11.5
40	0.23	29.4	0.12	15.4
50	0.29	37.1	0.15	19.2
75	0.43	55.0	0.22	28.2
100	0.57	73.0	0.30	38.4
150	0.86	110.1	0.45	57.6
200	1.14	145.9	0.60	76.8
250	1.43	183.0	0.75	96.0
300	1.71	218.9	0.90	115.2
350	2.00	256.0	1.05	134.4
400	2.29	293.0	1.20	153.6

Maintaining Free Residual Chlorine Concentration

During chlorination, maintain 1 to 2 ppm free chlorine at the point in the system where the concentration is lowest (usually at the point farthest from injection). If the irrigation water has a pH of 7.5 or less, 1 ppm free chlorine may be sufficient. However, for alkaline water with a pH above 7.5, maintain 2 ppm. Chlorination for bacterial control may be ineffective above pH 7.5. Therefore, it is recommended to inject acid to lower the pH to increase the efficacy of chlorine. The free chlorine concentration drops as the chlorine reacts with organic matter in the lines. Therefore, to maintain 1 to 2 ppm free chlorine in the lines farthest from injection, it is often necessary to maintain a concentration of 5 to 6 ppm free chlorine near the point of injection. The specific concentration necessary (near the point of injection in a given zone) depends on water quality and the quantity of bacteria, algae and other organic matter in the lines. Maintain the recommended free chlorine concentration at the most distant emitter for 60 minutes. This requires frequent testing of the free chlorine concentration and subsequent adjusting of the chlorine injection rate if needed.

To ensure that the free chlorine concentration is maintained at 1 to 2 ppm, measure free chlorine concentration at the emitter most distant from the injection point 10 to 20 minutes after injection is initiated. This can be done by using a D.P.D. (N,N Diethyl-P-Phenylenediamine) test kit, which measures only free residual chlorine. These test kits are available from chemical suppliers and from most irrigation dealers. Caution: The orthotolidine type test kit, often used for swimming pools, measures total chlorine content (not free residual chlorine) and, therefore, cannot be used satisfactorily for microirrigation systems.

In cases where the injection pump cannot be calibrated low enough to inject 5.25 percent or 10 percent liquid chlorine at the desired rate, dilute the chlorine solution prior to injection. This permits the use of a higher injection rate within the capacity of the injector pump.

Example: Assume you need to inject 1 gallon of 5.25 percent chlorine into your drip system during a one-hour injection period. If your injection pump can inject no less than 2 gallons per hour, add 1 gallons of water to the 5.25 percent chlorine to give a total chlorine solution of 2 gallons. Then set the injector pump to inject 2 gallons per hour.

FLOWER BUD INDUCTION OVERVIEW and ADVISORY

By Dr. Gene Albrigo, Horticulturist, University of Florida, IFAS, Citrus Research & Education Center, Lake Alfred

ADVISORY #1 for 2002- 2003 -11/11/02

It is the time of year to start following citrus flower bud induction conditions for the coming year's bloom. Cool weather stops growth and then promotes induction of flower buds as more cool weather accumulates. A warm spell can then initiate differentiation, which after sufficient days of warm temperatures leads to bloom. The meteorologists say that this winter in Florida will be slightly cooler than normal, a weak El Nino year. Potentially, sufficient cool temperatures should accumulate, below 68 degrees F, to induce adequate flower buds for a good crop yield. Sufficient flower bud induction under Florida conditions is achieved when 850 to 1000 hours of accumulated cool temperatures < 68 degrees F occurs without interruption before a warm spell (ie., 7 to 12 days with max. temperatures > 80 and min. temperatures >70 degrees F) triggers the beginning of bud growth. So far this year little cool weather has occurred to slow down or stop vegetative growth on mature trees, 150 to 175 hr < 68 degrees F in southern districts and 250 to 275 hr < 68 degree F in northern districts. This information is available on the Florida Automated Weather System as less than 65 and less than 70 degrees F (**www.fawn.ifas.ufl.edu**). A third cool spell of the Fall is predicted to start Wednesday or Thursday and continue for the following 5 or more days depending on location in the citrus growing areas ((**www.lal.ufl.edu**), click on Research and Extension, then weather and 8 day forecast). The 8 day forecast from the National Weather Service predicts that our accumulated cool weather (below 68 degrees F) will be 275 to 320 hours in northern locations and 200 to 250 hours in southern locations 8 days from now.

The major concern for the next 60 days is the possibility of an early warm spell that will initiate differentiation of easily induced flower buds or push vegetative buds to grow. Some flower buds will be induced in the range of 300 to 600 accumulated hr < 68 degrees F. Warm events when only these levels of induction have occurred result in initiation of a weak flowering event, and therefore, many buds remain that can be induced by later cool spells resulting in multiple blooms occurring. When early winter bud break was not prevented in Florida (1963 to 2002 records), multiple blooms occurred in over half of the years. The time period in which a warm spell can lead to some bud growth and then result in multiple blooms is roughly Thanksgiving to Christmas. Extreme warm conditions existed last Fall and early Winter and resulted in the poor flowering and the low crop being experienced this year. Presently, the only management tool available to eliminate or reduce the chance of multiple blooms is to allow water stress to occur during these warm periods. The difficulty last year was that warm weather was continuous until December 18th. Allowing trees to be in water stress for this extended period could lead to poor photosynthesis, little fruit growth or sugar accumulation and excessive fruit drop of the current crop, particularly for early maturing cultivars. If the warm spell(s) are of the more typical 7 to 10 day duration, mild water stress will have little impact on overall fruit development or quality. Mild water stress may be interpreted as leaf wilt observed by 10 or 11 am.

With the shallow root systems in bedded groves, it is relatively easy to reach sufficient stress to suppress growth by withholding irrigation for a few days. In deeper sandy soils, 2 or more weeks may be required for a fully saturated root zone to dry sufficiently for leaf water stress symptoms to appear. To

minimize the time to initiate water stress, the soil should be allowed to dry out in late fall so that trees show wilt by mid-day. For bedded groves, minimum irrigation can then be applied as needed until a weather prediction indicates a warm spell is expected. At this time irrigation should be shut down. For deep sands, the soil needs to be dried out to wilt and then leave part of the lower root zone dry each irrigation until at least Christmas so that no growth can occur. This may be risky for Hamlin or other early maturing cultivars that tend to drop fruit near harvest.

If no rains interrupt a mild water stress condition of the citrus tree, buds will not grow in response to warm temperatures. Once a warm spell occurs and has passed with the trees underwater stress, trees again can be watered to minimize fruit water stress. Although no weather prediction is guaranteed even by the meteorologist, rains in the winter usually come on the fronts of cool spells. Therefore, the chances of being able to apply water stress to prevent an early flower bud differentiation is reasonably good for most short duration warm spells. Each of this year's three cool spells, including the current predicted one, has had a rain prediction on the front of the cool spell.

The next few advisories will update accumulating weather effects on flower bud induction and provide timing information if water stress should be applied. As we reach appropriate moderate levels of flower bud induction, information concerning methods for enhancing or reducing flowering intensity (sprays of urea to enhance or GA3 to reduce) will be provided (see last years advisories for more information about these sprays). Much of what has been stated above has now been incorporated into a 'Flowering Expert System for Florida Citrus'. Our new flowering decision support system (expert system) that is now in test with some growers will be discussed during two talks scheduled in the next two months.

Factors controlling flowering, use of control strategies for stopping early flowering events, enhancing or diminishing flowering intensity and when to use these options will also be discussed. ***These two talks are November 12th at 11 am in the CREC Ben Hill Griffin Hall and on December 17th at 10 am in the LaBelle, Hendry County Extension Office Auditorium.***

<u>FLOWER BUD INDUCTION ADVISORY #2 - 11/18/02</u>

This is an update from the first advisory. Essentially all areas received heavy rains that saturated the root zone. However, a full week of cool temperatures is expected through next Monday, and therefore no bud growth will occur. Growers should follow the NOAA 8 day forecast (http://www.lal.ufl.edu/CRECHOME/crecweather.HTM) later in the week to see if a warm spell is predicted for next week. If so, sufficient cool temperatures will have accumulated that a weak initiation of flowering could start with the first significant warm spell. With a weak induction level, some apex buds may start to differentiate if sufficient soil moisture is present. Growers should allow trees to reach late morning wilt before starting to irrigate again. See last weeks advisory for general guidelines for irrigation depending on rooting depth after the current soil moisture is used by the trees.

Southern areas have accumulated about 200 hours below 68 degrees F and should reach the 300 mark by next Monday. Northern areas are at about 250 hours and should exceed 300 hours by next Monday. Remember that the goal is to get to Christmas and/or above 900 hours below 68 degrees F before allowing initiation of flower bud differentiation. At that time flower bud enhancing sprays such as urea and increasing irrigation rate are appropriate. I will discuss those options in one or two weeks after we reach 600 hours below 68 degrees F. Applying water stress for any warm spells that may occur before we reach those accumulated cool temperature goals, should minimize any early bud development and may also conserve freeze hardiness that the trees may have gained. At the same time, short periods of water stress (7 to 10 days) will have little adverse effects on fruit size or fruit droppage.

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Flatwoods Citrus

TOPICS DISSCUSSED IN THE FLATWOODS CITRUS NEWSLETTER -YEAR 2002-

Month	Topic
January	Citrus tree pruning; recommendations to reduce the spread of citrus canker; pruning citrus trees; mechanical harvesting vs. hand picking
February	Flowering and fruit quality of citrus trees; some factors that affect flowering and fruit production; fertilizer management; nutrition of citrus trees; boron; postbloom fruit drop; groundwater quality in SW Florida citrus groves; Florida citrus and international trade
March	Salinity; spray tank mixing; the use of adjuvants; salinity and citrus; update on Alternaria brown spot, update on citrus scab; irrigation; protect your right to grow and distribute dooryard citrus
April	Water Conserv II; wastewater; treated municipal wastewater for citrus irrigation; Diaprepes; the citrus psyllid; problems with trees on Swingle; using foliar potassium applications to enhance fruit size
May	Melanose; citrus rust mites; micronutrients in citrus nutrition; the 2002 SW Florida farm safety day
June	Greasy spot; citrus canker; recommendations to reduce the spread of citrus canker; summary of the justification for removing canker-exposed trees within 1900 ft of infected trees; citrus canker in Florida
July	Gulf citrus growers association scholarship foundation, inc.; importance of tissue and soil sampling and analysis in adjusting fertilizer programs; gulf citrus growers association
August	Citrus expo; greasy spot; brown rot; magnesium and potassium nutrition on calcareous soils; citrus growers and production managers are advised to pay a special attention to magnesium; pesticide license rule changes
September	The citrus leafminer; the citrus psyllid; drainage and flooding; Phytophthora foot rot and root rot
October	Factors affecting citrus production and fruit quality; irrigation, nutrition and fruit quality; nematodes
November	Citrus blight; citrus rootstocks; citrus reset management; observations on citrus blight; rootstock selection
December	Scouting for pests and diseases; acidification to remove mineral deposits in irrigation systems; chlorination to control algae and bacteria in irrigation systems; flower bud induction overview and advisory; tree size and crop load management

FLATWOODS CITRUS NEWSLETTER

ÿ 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.

ÿ 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:_____

Phone:_____

Fax:_____

E-mail:_____

Racial-Ethnic Background

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

Gender

__Female __Male

SCOUTING FOR CITRUS PESTS AND DISEASES WORKSHOP

Location: Hendry County Extension Office, LaBelle

*Date: Tuesday, January **14**, 2003*

Diseases (9:00 AM - 12:00 Noon)
By ***Dr. Pamela Roberts***

Introduction to Plant Pathology
Scouting Tips and Techniques
Foliar and Fruit Production Diseases
- Alternaria Brown Spot and Dieback
- Greasy Spot and Greasy Spot Rind Blotch
- Citrus Scab
- Melanose
- Postbloom Fruit Drop
- Phytophthora Brown Rot
- Phytophthora foot rot and gummosis
- Citrus Canker

A scouting technique for rust mite, data collection and interpretation
1:00 PM -1:30 PM
By ***Mr. John Taylor***

Mites & Insect Pests (1:30 PM - 4:30 PM)
By ***Drs. Steve Rogers & Phil Stansly***

Principals of Entomology and IPM
Mite Pests of Citrus
Sucking Insect Pests of Citrus
Soil inhabiting pests
Citrus Leafminer and Misc. Insects

12:00 Noon - 1:00 PM: Lunch

Program Sponsored by SYNGENTA - Robert Gregg

**********DETACH**********

REGISTRATION FORM
(Registration is required)

Registration Deadline: Friday, January 3, 2003

Name: .....

Company: .....

Address: .....

Phone: .....

Mail registration form and check for $10.00* per person to:
Dr. Mongi Zekri, Hendry County Extension Office, P.O. Box 68, LaBelle, FL 33975-0068
Checks should be made payable to: Citrus Advisory Committee.

***The registration fee of $10.00 includes refreshments, lunch, and handouts.