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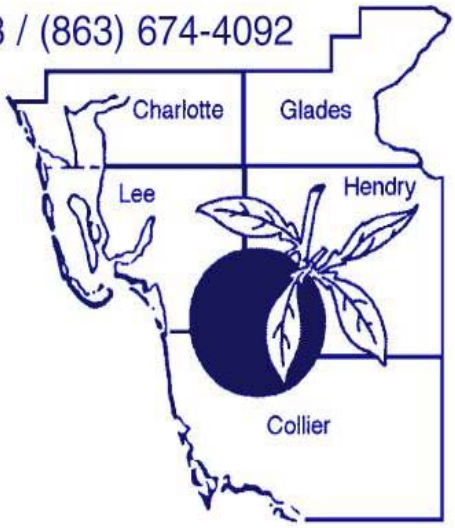
Flatwoods Citrus



Vol. 9, No. 3 **March 2006**

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

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U P C O M I N G E V E N T S

HOW TO LIVE WITH CITRUS CANKER & GREENING?

MANAGEMENT SYSTEMS FOR CITRUS CANKER & GREENING

►Strategies to produce citrus nursery trees in the presence of canker and greening
►Use of windbreaks to reduce the spread of canker in citrus groves
►Citrus psyllid and leafminer management to cope with greening and canker
►Additional costs or expenses to cope with canker and greening

Speakers: **Drs. Bob Rouse, Bill Castle, Michael Rogers, and Fritz Roka**

Location: **Immokalee IFAS Center**

Date: Tuesday, March 21, 2006, Time: 10:00 AM – 12:00 Noon

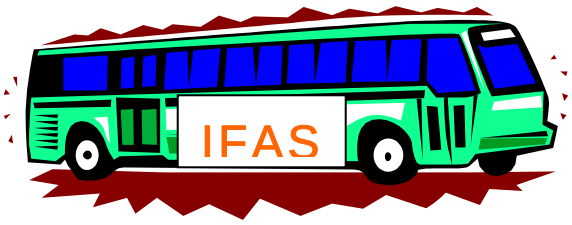
2 CEUs for Pesticide License Renewal, 2 CEUs for Certified Crop Advisors

Sponsor: Robert Gregg, Syngenta Crop Protection

Following the seminar, we are planning a free lunch (Compliments of Syngenta Crop Protection). **RSVP is required**. To RSVP, call 863 674 4092 or send an e-mail to maz@ifas.ufl.edu

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

COLLIER COUNTY EXTENSION AG TOUR



Wednesday, 15 March 2006

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

PESTICIDE LICENSE TRAINING & TESTING, CEU days

Thursday, 30 March & Friday, 31 March 2006

Location:

University of Florida, IFAS,
Hendry County Extension Office, LaBelle

For more information and/or registration, call 863 674 4092

MECHANICAL HARVESTING & ABSCISSION FIELD DAY

Mechanical Harvesting: Remaining Profitable in These Times of Canker & Greening

Want to learn more on how mechanical harvesting may help you remain profitable during these trying times of canker and greening? Then plan to attend the IFAS Citrus Mechanical Harvesting and Abscission Field Day at SWFREC in Immokalee on April 6, 2006 from 8 am to 3:30 pm. A field trip will allow participants to observe two of the currently viable mechanical harvesting systems in action as well as a fruit abscission demonstration. There will be discussions on economics of mechanical harvesting, use of abscission compounds, new harvester technologies, improved sanitation, yield monitoring, long-term yields, tree requirements, and tree damage caused by Hurricane Wilma. Lunch will be provided by Gator Hammock BBQ. RSVP required for planning purposes. Call Barbara Hyman at (239) 658-3415 to RSVP and for more information.

Special Thanks **to the 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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IRRIGATION

Irrigation is of particular importance during the dry period (February-May), which coincides with the critical stages of leaf expansion, bloom, fruit set, and fruit enlargement. Proper irrigation scheduling is defined as the application of water when needed and in the amounts needed. Citrus production managers should accurately determine when and for how long to irrigate. With proper irrigation scheduling, tree growth and fruit yield will not be limited by water stress or water excess. Over-watering will waste water and pumping energy, will leach nutrients and other chemicals below the rootzone, and will contribute to contamination of the groundwater.

Because of the high water table in southwest Florida, citrus trees have over 90% of their feeder roots within the top foot of soil. For this situation, irrigating for long duration can lead to loss of water below the rootzone. Therefore, it is recommended to increase the frequency and reduce the length or duration of irrigation. Irrigating every other day is better than irrigating once or twice a week.

Good water management practices should include precise irrigation scheduling and well-designed, uniform irrigation systems to minimize waste. Non-uniform irrigation will cause excess water to be applied in some areas while other areas will not get enough. Production managers should not only be aware of the losses resulting from irrigation systems that apply water and chemicals non-uniformly, but should adopt the recommended ways to minimize these losses.

BASIC IRRIGATION SCHEDULING

Proper irrigation scheduling is the application of water to crops only when needed and only in the amounts needed; that is, determining when to irrigate and how much water to apply. With proper irrigation scheduling, crop yields will not be limited by water stress from droughts, and the waste of water and energy used in pumping will be minimized. Other benefits include reduced loss of nutrients from leaching as a result of excess water applications, and reduced pollution of groundwater or surface waters from the leaching of nutrients.

Determining when to irrigate

One indicator of plant water stress is the visual appearance of the plant. However, yield reduction has already occurred by the time crops show wilt symptoms. Growth ceases in many crops before visual wilting occurs, and yield reduction may have occurred for some time before wilting is seen.

When to irrigate can also be determined by calendar methods (for example every 3 days), by crop growth stage (for example, every 4 days during early vegetative growth stage, and every other day during peak growth stage), or by similar methods based on long-term average irrigation requirements. However, these methods fail to consider the effects of climatic variability on daily crop water use. Therefore, the use of long-term average values may not be adequate during periods of hot, dry days, while over-irrigation may occur during periods of cool, overcast days, especially if rainfall is not considered. Day-to-day climatic conditions are highly variable during much of the year because of cloud cover and the random nature of rainfall.

Irrigations are most often scheduled based on the soil water status. Three procedures may be used: 1) a water balance procedure based on the estimated crop water use rate and soil water storage, 2) a direct measurement procedure based on instrumentation to measure the soil water status, and 3) a combination of the above two methods in which soil water status instrumentation is used with a water balance procedure. These procedures require knowledge of the crop water requirements, effective root-zone, soil water-holding capacity, and irrigation system capabilities in order to schedule irrigations effectively.

Once AWC is known, the total depth of water available (AW), and thus the capacity of the soil-water reservoir, can be obtained by multiplying AWC by the crop effective root zone depth. For layered soils, AW is calculated by adding the multiples of AWC and depths of all soil layers contained in the crop root zone.

Soil-moisture indicators for irrigation scheduling

Devices for monitoring soil moisture have been available for many years. Among them, are tensiometers and capacitance probes. When placed in the plant root zone, they indicate the soil water status that the plants are experiencing. Disadvantages of soil moisture sensors include their cost, labor requirements for reading and servicing, and the need for periodic calibration. They also measure soil water status at a point rather than for the whole field, thus many instruments or sensors may need to be installed to accurately represent a given field.

Pick up your copy of the BMP (*Best Management Practices) for Gulf Citrus* manual from the Hendry County Extension Office in LaBelle or the SW Florida Research & Education Center in Immokalee.

Our newest BMP manual reflects two years of hard work by a dedicated group of citrus growers plus local, state, and federal agencies. When used by producers, the manual will protect and improve water quality for citrus operations in Charlotte, Collier, Glades, Hendry, and Lee counties. This effort is of special significance for the Caloosahatchee River, which is an important nursery and fishery for many species, and is an estuarine system of national significance.

As many of you are aware, Florida citrus growers must utilize all tools available to them in order to remain competitive. Best Management Practices, which create reasonable environmental standards for participating growers, are one such tool. Despite all of the challenges faced by agriculture, including recent hurricane damage and our ongoing struggle to combat citrus canker and greening statewide, Florida citrus remains among the state's leading cash crops. In fact, the Gulf Citrus watershed alone rivals that of the entire State of California in terms of citrus producing acreage. These same acres are also critical to protecting water quality, providing valuable water recharge areas, and creating perennial open or "green" spaces throughout Southwest Florida.

Thanks to all who participated in the development of this important BMP manual and watershed protection initiative.

UNIVERSITY OF FLORIDA
IFAS EXTENSION

NRCS Natural Resources Conservation Service

Take advantage of the BMP cost share program.

Go to Gulf Citrus BMPs at:

http://citrusbmp.ifas.ufl.edu/gulfcoast/index.html

Apply now.

PLANT GROWTH REGULATORS (PGR)

Plant growth regulator sprays can provide significant economic advantages to citrus growers when used in appropriate situations. Many citrus growers routinely use PGRs to enhance crop profitability. Depending on variety and timing, PGRs may improve fruit set, increase fruit size by reducing cropload, extend the harvest season by delaying rind aging, reduce preharvest fruit drop, or reduce hand-suckering by controlling trunk sprout growth in young citrus trees. Excessive rates, improper timings, untested surfactants or tank mixes, and inappropriate environmental conditions can result in phytotoxicity, erratic results, and/or greatly reduced cropping.

Growers are urged to become familiar with PGRs through application to small plots before treating significant acreage. To avoid drift onto susceptible crops in surrounding areas, products containing 2,4-D (2,4-Dichlorophenoxyacetic acid) have stringent requirements for application conditions. Consult with your County Extension Office.

Since PGRs function by directly influencing plant metabolism, plant response can vary considerably with concentration, making sprayer calibration and accurate material measurement especially important. Studies show that variability in spray deposition increases as spray volume is reduced below 250 gallons/acre in mature citrus groves. At lower water rates, canopy closest to the sprayer manifold tends to retain much more material than other plant surfaces. Because material concentration is especially important in PGR use, water volumes below 125 gallons/acre are not generally recommended.

Unlike most agrichemicals applied to crop, efficacy of PGRs depends on entry of materials into plant tissues. Uptake is influenced by a number of factors: amount of PGR applied, concentration of PGR, presence of surfactants, solution pH, environmental conditions during and after application, foliage condition, and plant stress level. Application of PGRs is recommended only on healthy citrus blocks. Leaf Curling. Even when properly applied, some PGRs may cause leaf curling, especially when sprayed on young leaves.

GIBBERELLIC ACID (GA_3) is recommended to be used on citrus hybrids that are weakly parthenocarpic and without sufficient cross-pollination to improve fruit set. Applied from full bloom to two-third petal fall, GA can effectively set and produce an excellent crop of seedless Robinson, Nova, Orlando, Minneola, or other self incompatible mandarin hybrids. Use Gibeerellic acid (GA_3, 4.0% liquid concentrate) at the rate of 10-20 oz/acre. Products marketed include: Pro-Gibb, GibGro, and Gibbex. Because material concentration is important in plant growth regulators, water volumes below 125 gallons/acre are not recommended. Do not use in water above pH 7.5 because uptake will be reduced. Care should also be exercised in not exceeding the recommended GA dosage or concentration because it can cause severe leaf drop. **READ THE LABEL**

CONTROLLING ALTERNARIA BROWN SPOT & CITRUS SCAB

Alternaria fungal disease can be very devastating to some tangerine and tangerine hybrid cultivars. It can cause severe leaf and fruit drop particularly in Minneola (Honeybell) and Orlando tangelos, Dancy tangerine, Murcotts (Honey tangerine), Sunburst, and others. Alternaria must be controlled on these cultivars to obtain high yields of good quality fruit.

Copper fungicides, Abound, Gem, Headline, and Trilogy are materials registered for the control of this disease. The first spray should be applied when the spring flush leaves are ¼-1/2 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 or Headline may be the best choice for one or two applications especially if the grove has problems with both scab and Alternaria. From April though 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, and Trilogy may be substituted for copper in June or July applications. Abound, Gem, and Headline 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.

The preferred method to time fungicide sprays is to use the ALTER-RATER model.

http://www.crec.ifas.ufl.edu/timmer/alterater.htm

http://edis.ifas.ufl.edu/CH183

Scab 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. Benlate, Ferbam, and 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, Ferbam, Abound, Gem, or Headline should be selected for the 3 sprays. Benlate is ineffective against Alternaria. If used more than once a year, resistance of the scab fungus to Benlate, Abound, Gem, or Headline may develop.

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

Alternaria

Scab

THE EFFECT OF WATER pH ON THE EFFICACY OF PESTICIDES

Successful citrus growers should check the soil pH of their groves yearly and do their best to adjust it for better fertilizer efficiency, tree growth, and fruit production. Soil pH is usually increased by liming and decreased by applying sulfur or acid-forming fertilizers.

The pH indicates whether the solution or media is acidic or basic (alkaline). The pH scales goes from 0 to 14, where 7 indicates neutrality. Values less than 7 indicate acidic solutions and values greater than 7 indicate a basic condition.

Most of Florida fresh waters have pH values between 7 and 8. Although the pH is the most common measured property or characteristic of a solution or a media, some growers and production managers still ignore to adjust the pH of their water when used for pesticide mixing. For better efficacy, anyone involved in pesticide mixing should use a pH meter. The pH affects the rate at which some herbicides are absorbed by plants. Adjusting the pH of the water allows the user to reduce the rates of herbicides without reducing their efficacy. The effectiveness of spray mixture in the spray tank can be affected by a number of variables. A significant impact on the efficacy of many spray materials is the pH of the water used in the tank. In general, it is desirable to have the pH of the water below 7. Although several chemicals used today are effective at a wide range of pH conditions, many others can be subject to breakdown of the active ingredient at relatively high pH values. With extremely sensitive chemicals, this breakdown can begin between mixing and application. Benlate, Sevin, and Cygon are among the common pesticides that lose their effectiveness quickly in alkaline solution. Therefore, it is recommended to reduce the pH of the water in the tank to increase the efficacy of some chemicals. Acidifying agents such as phosphoric acid and citric acid will lower the pH, but can drop it too low. Buffering agents, available from most distributors, will lower the pH to the desired range and help maintain it at that level. Commercial buffering agents include Combine, Sufactant pH, LI-700, Dash HC, ReQuest, and Latron. It is important to add the buffer to the spray tank water before pesticides are added. Be careful when buffering tank mixes containing copper fungicides. Copper is more soluble in acidic water, and the resulting high concentrations will cause leaf and fruit burn. Aliette makes acid spray. Therefore, do not mix Aliette with copper. Temperature also affects the rate of hydrolysis (breakdown into two or more inactive chemicals) of a pesticide at any given pH.

Always read the label of the buffering material as well as the label of the pesticide.

It is also recommended to ask your chemical supplier for up-to-date information on the susceptibility of a material to hydrolysis. For example, the original Roundup was reported to have an optimum pH of 2.5 to 3.5. Monsanto has buffered Roundup Ultra, avoiding the need to buffer the spray tank water. A good rule of thumb is to spray pesticide mixtures as soon after mixing as possible, mix only enough to treat the crop and do not allow the mixture to stand for a long period of time or overnight.

FLORIDA STATE HORTICULTURAL SOCIETY

2006 Annual Meeting
of the Florida State Horticultural Society
at The **Marriott Tampa Westshore, Tampa, FL**
June 4 - 6, 2006

- **Call for Abstracts for the 2006 Annual Meetings** **(March 10th deadline)**

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One of the oldest horticultural societies in the United States. Established in 1888.

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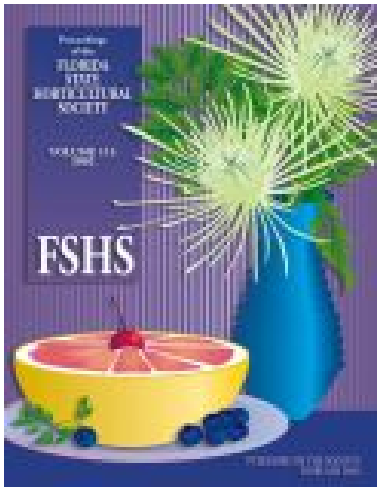
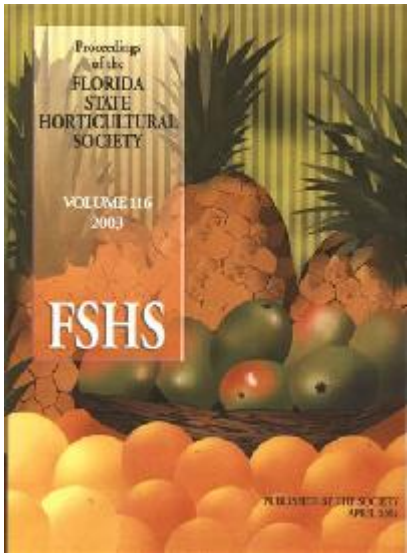


[2002 (vol. 115)]



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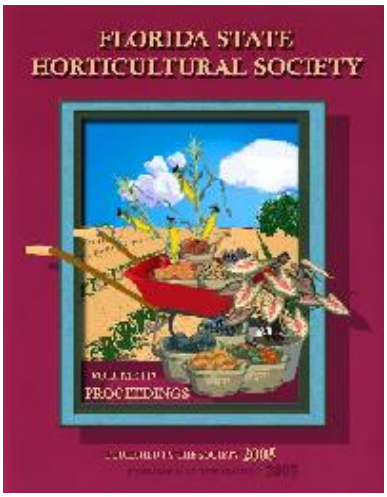

[2004 (vol. 117)]

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