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Flatwoods Citrus



Vol. 6, No. 8

August 2003

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



UPCOMING EVENTS

Seminars at the Immokalee IFAS Center

Tuesday, August 19, 2003, 10:00 AM –12:00 Noon

Managing Brown Rot, other Phytophthora Diseases and Diaprepes/Phytophthora Root Rot Interaction

Speakers: Drs. Pete Timmer, Pam Roberts, and Larry Duncan

Sponsor: Rachel M. Walters, Bayer CropScience

2 CEUs for Pesticide License Renewal

2 CEUs for Certified Crop Advisors

Following the seminar, we are planning a free lunch (Compliments of Bayer CropScience) for only who call 863 674 4092 no later than Monday, 18 August 2003.

**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**

Date & Time: Wednesday, August 20, 2003, 9:00 AM –12:00 Noon

GF 120 Natural Fruit Fly bait to be used in the state Fly Eradication program

2 CEUs for Pesticide License Renewal

2 CEUs for Certified Crop Advisors

Following the seminar, we are planning a free lunch (Compliments of Dow) for only who call 863 674 4092 no later than Monday, 18 August 2003.

Agenda

9:00 Registration/Sign In

9:30 Introductions / GF 120 NF presentation, Linda / Meghan - Dow

10:10 Compliance with state Protocol for "Fly Free" Fruit, Calise Jenkins - DPI

10:40 Ground Applications for GF 120 NF, Mike Ziegler - Consultant

11:15 Lorsban 4E Tolerance Issues with Japan, Ray Brinkmeyer - Dow AgroSciences

CITRUS EXPO

IN FORT MYERS

Wednesday, August 27 &

Thursday, August 28, 2003



49th Annual Meeting of the InterAmerican Society for Tropical Horticulture (ISTH)

August 31- Sept 6, 2003

Fortaleza, Brazil

<http://www.isth.cjb.net/>

Annual Conference of Extension Professionals (FAEP)

September 8 - 11, 2003

Jacksonville Hilton, Jacksonville, Florida

<http://extadmin.ifas.ufl.edu/>

<http://extadmin.ifas.ufl.edu/FAEP2003/Theme.htm>

American Society for Horticultural Science (ASHS)

100th Annual International Conference

October 3-6, 2003

Rhode Island Convention Center, Providence, Rhode Island

<http://www.ashs.org/>

INTERNATIONAL SOCIETY OF CITRICULTURE

10th International Citrus Congress

February 15-20, 2004

Agadir, Morocco

http://www.lal.ufl.edu/ISC_Citrus_homepage.htm

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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SPRAY TANK MIXING



Tank mixing allows the grower to reduce the number of times spray machinery is used. The benefits include fewer trips, which reduces cost, soil compaction, and crop damage. Tank mixing is a complex issue. Some tank mixes are beneficial, but others cause problems. The types of chemicals that are used in a sprayer include water, pesticides, adjuvants, and fertilizers. As the number of ingredients increases in a tank mix, chances for incompatibility and phytotoxicity increase, particularly at lower spray volumes. Well water is better than ditch and pond water because it is cleaner. Ditch and pond water can plug up screens, pumps, and nozzles and be a source of inoculum for plant diseases. However, well water is alkaline, and it is believed that as the pH of the final spray mix increases, the effectiveness of some chemicals is significantly reduced. Loading the spray materials into the spray tank should be done after the tank is at least half full with water. The agitation system should be operating to attain thorough mixing. This minimizes the risk for physical and chemical incompatibilities. Loading should be away from surface water. The handler should wear the required protection as indicated on the label. Remember that the more chemicals are used in the same mix, the more likely that an adverse effect on the crop will occur. Unless the pesticide labeling states, add pesticides to the water using the W-A-L-E plan: Dry formulations should be added to

the tank first followed by the liquid formulations. To the water, first add Wettable powders, prills [(DF's, DG's, water-dispersible granules (WDG's)] and soluble powders. Second, Agitate thoroughly and add the remaining quantity of water. Third, add the Liquid products such as solutions, flowables, and adjuvants. Finally, add Emulsiifiable concentrates (EC's) and oils last. Tank mixing is a necessity. However, success with tank mixing is based upon slowly acquired experience. It is not possible to test the thousands of combinations that exist with tank mixing. Do the testing on a small scale and get information from reliable sources on tank mixing.

THE USE OF ADJUVANTS

Adjuvants are non-pesticidal chemicals, that when added to a spray mix, are supposed to enhance and improve its effect. Surfactants, spreaders, stickers, buffers, drift retardants, penetrants, and foam busters are examples of adjuvants. All surfactants are adjuvants, but not all adjuvants are surfactants. The importance on inclusion of an adjuvant in herbicide formulations has become an almost universal practice. The key to success with adjuvants is to use them at the recommended rate and as little as possible. At higher rates, adjuvants can cause damage to crops. Let the label be your guide in selecting adjuvants. The use of surfactants, oils, emulsifiers and fertilizer salts can enhance the activity of foliar-applied herbicides. The addition of ammonium sulfate to spray mixtures of certain foliar-applied herbicides enhances herbicide efficacy, including glyphosate. Surfactants enhance spray retention and penetration due to a number of surface properties, including reduction in surface tension and contact angle of spray droplet. Therefore, they may enhance cuticle retention, wetting and spreading on the leaf surface.

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SAVE YOUR GROVE OR NURSERY FROM CITRUS CANCKER



1. Whenever possible lock the gates of the property and restrict access at all times.
2. Before entering groves or nurseries, equipment should be first cleaned of all plant material, debris and soil and then disinfected with approved decontamination products.
3. Prior to entering or leaving groves, blocks and nurseries, all workers should disinfect hands and shoes with antimicrobial soap or other approved disinfectants.
4. All workers including fruit picking personnel should wear freshly laundered clothes each day.
5. All grove and nursery traffic including personal vehicles, equipment and visitors should be limited as much as possible.
6. Exchange of personnel, vehicles and equipment between groves, blocks and nurseries should be limited as much as possible.
7. It is very important to require grove service contractors to practice stringent decontamination and sanitation procedures.
8. Restrict access of all personnel, vehicles, and equipment and movement in groves or nurseries when foliage is wet with rain or dew. Do not harvest fruit before the trees dry.
9. Restrict irrigation to nighttime hours to reduce worker exposure to wet foliage.
10. Before entering a grove, all harvesting equipment including trucks, trailers, tractors, "goats", ladders, tubs, boxes, picking bags and gloves must be decontaminated.
11. Do not collect canker specimens. Flag adjacent trees, map the location and immediately contact the DPI at 1 800 282 5153 or 1 800 850 3781.



CITRUS EXPO

The 2003 Citrus Expo will be held on August 27 & 28 at Fort Myers Lee Civic Center. The Citrus Expo has become an outstanding agricultural event for the Florida citrus industry because of its trade show, seminar program, and banquet.

The success of the program has been the three-way partnership of the Florida citrus growers through the Gulf Citrus Growers

Association, the University of Florida Extension Service, and the trade show organized by the Citrus Industry Magazine. The Expo is the largest seminar and trade show event dedicated

exclusively to citrus. *Enclosed, you will find a brochure for the Citrus Expo including a pre-registration form, which can be xeroxed if needed and mailed or faxed.* Pre-register before August 15 and receive a free gift when you pick up

your registration packet at Lee Civic Center. There is no registration fee. Admission and parking are free. The theme of this year's Expo seminar program is "**Florida Citrus... In The Year 2020.**" Grower Changes Needed for New Technology and Changing Logistics of Fruit Movement for Maximum Efficiency will be addressed on Wednesday, Aug. 27th. Thursday program will focus on Preparing "Today" for the Year 2020 and Production Changes for New Technology. The program is approved for CEUs for Certified Public Accountant, Certified Crop Advisors, and pesticide license renewal. The trade show opens at 8:00 AM on Wednesday and Thursday with a free continental breakfast and drawings for great prizes (\$1,000 cash on Wednesday and a grand prize on Thursday). Don't miss the Gulf Citrus Growers Association Reception and Banquet, which will be held on Wednesday evening (6:00 PM) at Harborside Convention Hall in downtown Ft. Myers. For reservation, call the association at 863 675 2180.



A CITRUS COURSE OFFERED AT RESEARCH & EDUCATION CENTERS

HOS 6545 - Citriculture I (3 units). Graduate level course on climactic, physiological and cultural factors affecting citrus growth.

Instructor, Dr. Gene Albrigo, Professor of Horticulture. Offered at the UF/IFAS Citrus Research and Education Center, 700 Experiment Station Rd., Lake Alfred, and via videoconferencing at UF/IFAS locations in Gainesville, Immokalee and Ft. Pierce, pending availability of equipment. For more information, contact Dr. Albrigo at Tel. (863) 956 1151 or e-mail: albrigo@lal.ufl.edu. Class is limited to 12 people. Those interested should contact Dr. Albrigo directly.

Time and dates: Mondays, 4-7 pm. Classes Aug 25 - Dec. 8. Finals are Dec. 13-19.

Fees: For Florida residents, \$205.26 per graduate credit hour, or \$615.78 for the 3 unit course.

Prerequisite: horticulture, citrus or physiology course(s) and/or work experience.

Important dates: Aug. 15: Non-degree application, Residency Affidavit and proof of FL residency/US citizen DUE. Note: a distance education course request form is NOT required for this course.

Regular registration is Aug. 21-22 (online with the ISIS system or by telephone through the Telegator system). Late reg. is Aug. 25-26, includes a \$100 late fee.

CITRUS BROWN ROT

Management of brown rot, caused by *Phytophthora nicotianae* or *P. palmivora*, is needed on both processing and fresh market fruit. While the disease can affect all citrus types, it is usually most severe on Hamlin and other early maturing sweet orange cultivars. *Phytophthora* brown rot is a localized problem usually associated with restricted air and/or water drainage. It commonly appears from mid-August through October following periods of extended high rainfall. It can be confused with fruit drop due to other causes at that time of the year. If caused by *P. nicotianae*, brown rot is limited to the lower third of the canopy because the fungus is splashed onto fruit from the soil. *P. palmivora* produces airborne sporangia and can affect fruit throughout the canopy. Early season inoculum production and spread of *Phytophthora* spp. are minimized with key modifications in cultural practices.

Skirting of the trees reduces the opportunity for soil-borne inoculum to contact fruit in the canopy. The edge of the herbicide strip should be maintained just inside of the dripline of the tree to minimize the exposure of bare soil to direct impact by rain. This will limit rain splash of soil onto the lower canopy. Boom application of herbicides and other operations dislodge low-hanging fruit. Fruit on the ground becomes infected and produces inoculum of *P. palmivora*, which can result in brown rot infection in the canopy as early as July while fruit are still green. The decay initially occurs as a light brown discoloration of the rind at any location on the fruit surface. The affected area is firm and leathery, and it retains the same degree of firmness and elevation as the adjacent healthy rind. At a later stage, a delicate white mycelium will form on the lesion surface. Fruit with

brown rot have a characteristic pungent, rancid odor, which distinguishes the disease from the stem-end rots.



The beginning stages of the epidemic are very difficult to detect before the fruit are colored and showing typical symptoms. Application of residual herbicides earlier in the summer may reduce the need for post-emergence materials later and minimize fruit drop throughout this early stage of inoculum production from fallen fruit.

Usually a single application of a copper fungicide or Aliette in mid-late August is sufficient to protect fruit through most of the normal infection period. No more than 20 lb/acre/year of Aliette should be applied for the control of all *Phytophthora* diseases. Aliette, a systemic fungicide at the rate of 5 lbs/acre protects against postharvest infection and provides 60-90 days control. Copper fungicides are only protective but are capable of killing sporangia on the fruit surface and thus reducing inoculum. They provide protection for 45-60 days. Use the label rate. With average quality copper products, usually 3-4 lb of metallic copper per acre are needed for the control of brown rot. When the disease has already spread, do not apply Aliette; spray copper only. Precautions should be taken during harvesting not to include brown rot-affected fruit in the field containers as this could result in rejection at the processing or packing facility.

PHYTOPHTHORA FOOT ROT AND ROOT ROT

Foot rot results from infection of the scion near the ground level, producing bark lesions, which extend down to the budunion on resistant rootstocks.



Crown rot results from infection of the bark below the soil line when susceptible rootstocks are used. Root rot occurs when the cortex of fibrous roots is infected, turns soft and appears water-soaked. Fibrous roots slough their cortex leaving only white thread-like stele.



When managing Phytophthora-induced diseases, consider integration of cultural practices (e.g., disease exclusion through use of Phytophthora-free planting stock, resistant rootstocks, proper irrigation practices) and chemical control methods. Cultural practices. Field locations not previously planted with citrus are free of citrus-specific *P. nicotianae*. Planting stock should be tested free of Phytophthora in the nursery and inspected for fibrous root rot in the nursery or grove before planting. In groves with a previous history of foot rot, consider use of Swingle citrumelo for replanting. Swingle citrumelo is resistant to foot rot and roots do not support damaging populations once trees are established.

Cleopatra mandarin should be avoided because it is prone to develop foot rot when roots are infected in the nursery or when trees are planted in flatwoods situations with high or fluctuating water tables and fine-textured soils. Trees should be planted with the budunion well-above the soil line and provided with adequate soil drainage. Overwatering, especially of young trees, promotes buildup of populations in the soil and increases risk of foot rot infection. Prolonged wetting of the trunk, especially if tree wraps are used on young trees, should be avoided by using early to midday irrigation schedules. Control of fire ants prevents their nesting under wraps and causing damage to tender bark. Sampling for *P. nicotianae*. Population densities of the fungus in grove soils should be determined to assist in decisions to treat with fungicides. Soil samples containing fibrous roots should be collected during the spring through fall (March to November) from under-canopy within the tree dripline. Individual small amounts of soil from 20 to 40 locations within a 10-acre area are composited into

one resealable plastic bag to retain soil moisture. Samples must be kept cool but not refrigerated for transport to the analytical laboratory. Currently, populations in excess of 10 to 15 propagules per cm³ soil are considered damaging. The same soil sample could be tested for populations of nematodes, to assess whether they occur at damaging levels.

Chemical control.

Use of fungicides in young groves should be based on rootstock susceptibility, likelihood of Phytophthora infestation in the nursery, and history of Phytophthora disease problems in the grove. For susceptible rootstocks, such as Cleopatra mandarin and sweet orange, fungicides may be applied to young trees on a preventive basis for foot rot. For other rootstocks, fungicide treatments should commence when foot rot lesions develop. The fungicide program for foot rot should be continued for at least one year for tolerant rootstocks, but may continue beyond for susceptible stocks.



In mature groves, the decision to apply fungicides for root rot control is based on yearly soil sampling to indicate whether damaging populations of *P. nicotianae* occur in successive growing seasons.

Time applications to coincide with periods of susceptible root flushes in late spring and late summer or early fall. Soil application methods with fungicides should be targeted to under canopy areas of highest fibrous root density. To avoid leaching from the root zone, soil-applied fungicides should not be followed by excessive irrigation. Aliette and Ridomil are both effective, but alternation of the materials should be practiced to minimize the risk of the development of fungicide resistance.



Foliar spray with Aliette: It is recommended to buffer the spray solution to pH 6 or higher to avoid phytotoxicity when copper has been used prior to or with Aliette. For nonbearing trees, use 5lb/100 gal. For bearing trees, use 5 lb in 100-150 gal/acre. Soil application with Ridomil Gold 4EC: Apply 1quart/treated acre or soil drench by applying 5 gallons of solution (1 quart/100 gal) in water ring. For more details and product selection and rates, get your copy of the 2003 Florida Citrus Pest Management Guide. In SW Florida, it is available at the LaBelle Hendry County Extension Office and the Immokalee IFAS Center.

FLATWOODS CITRUS NEWSLETTER

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.

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