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Institute of Food and Agricultural Sciences

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Flatwoods Citrus

Vol. 18, No. 3 **March 2015**

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

Table of Contents

Important Events	2-3
Newsletter Sponsors – Thank You!	4-7
Fungicide Effectiveness	8
Drought	9
Plant Growth Regulators	10-15
Spider Mites	16-17
Pollination of Citrus by Honey Bees	18-19
El Niño/Southern Oscillation (Enso) Diagnostic Discussion	20
Water Watch	21
Citrus-March Forecast	22-23
The Twenty Fifth Annual Farm Safety Day	24-28
2015 Annual Florida Citrus Growers' Institute	29-30

Previous issues of the Flatwoods Citrus newsletter can be found at:
http://citrusagents.ifas.ufl.edu/agents/zekri/index.htm
http://irrec.ifas.ufl.edu/flcitrus/

I M P O R T A N T E V E N T S

Citrus IPM workshop

Date & time: Tuesday, **April 21st, 2015, 10:00 AM – 12:10 PM**
Location: Immokalee IFAS Center
Program Coordinator: Dr. Mongi Zekri, UF-IFAS
Program Sponsors: Samuel Monroe and Botond Balogh from Nichino America, Inc.

----10:00 AM - 10:25 AM

1. **Overview of Insecticidal Control of Asian Citrus Psyllid. Dr. Jawwad Qureshi**, UF-IFAS

----10:25 AM - 10:50 AM

2. Soil-Applied Systemic Insecticides for Protecting Young Trees from ACP and HLB. **Dr. Phil Stansly**, UF-IFAS

10:50 AM – 11:00 AM Break

----11:00 AM – 11:25 AM

3. Metalized reflective Mulch for Protecting Young Trees from ACP and HLB. **Scott Croxton**, UF-IFAS

----11:25 AM – 11:50 AM

4. Trial Results with Foliar Sprays for Control of ACP and Citrus Rust Mite. **Barry Kostyk**, UF-IFAS

----11:50 AM – 12:00 Noon

5. Nichino Products Update. **Samuel Monroe** Nichino America Inc.

----12:00 Noon – 12:10 PM

6. Uses of Apta Insecticide/Miticide on Citrus. **Bo Balogh**, Nichino America Inc.

2 CEUs for Certified Crop Advisors (CCAs)
2 CEUs for Pesticide License Renewal

Pre-registration is required. No registration fee and lunch is free Thanks to **Samuel Monroe** & **Bo Balogh** with Nichino America Inc.
To reserve a seat, call 863 674 4092, or send an e-mail to Dr. Mongi Zekri at: maz@ufl.edu

No pre-registration = No lunch

2015 ANNUAL FLORIDA CITRUS GROWERS' INSTITUTE

Date & Time: Tuesday, 7 April 2015, 8:00 AM – 3:35 PM

Location: Avon Park Campus of South Florida Community College

Coordinators: Citrus Extension Agents, UF-IFAS

Agenda and information on registration are included below

The Twenty Fifth Annual Farm Safety Day

Friday, 8 May 2015

Saturday, 9 May 2015

AN IMPORTANT MESSAGE TO EMPLOYERS

Safe and competent equipment operators are important to you as an employer. Accidents, which cause damage, injury or death to employees, equipment and crops, are costly. We believe all types of accidents can be reduced with proper employee training. Our training has been designed to help your employees perform better, operate safely to prevent accidents, fulfill necessary training requirements and build pride in themselves and their farm company.

Detailed information is attached

The number of trainings offered and attendance at each training are LIMITED. Don't wait.

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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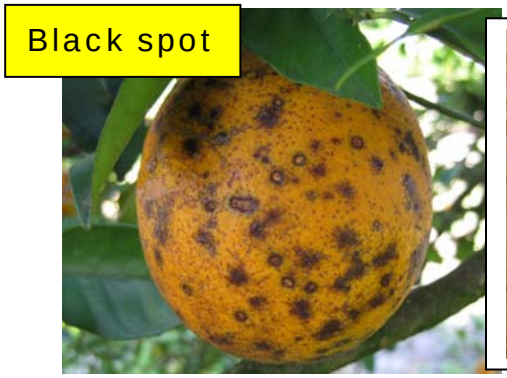
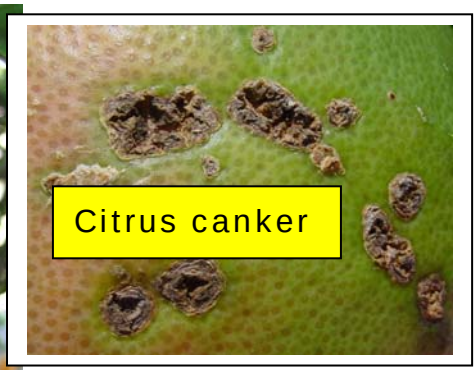
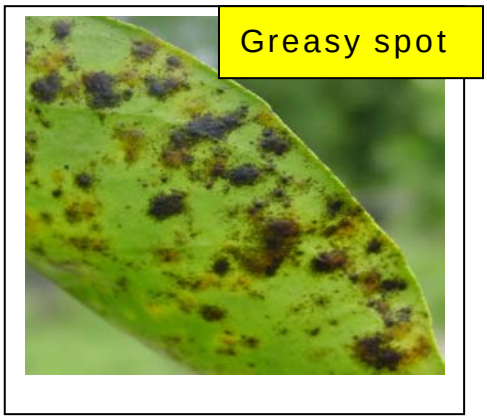
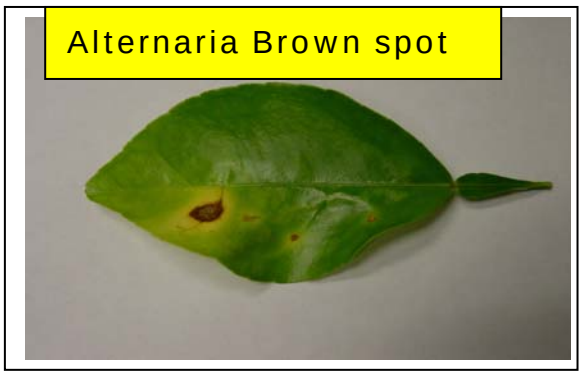
Fungicide effectiveness

Products	Canker	Greasy Spot	Alternaria	Scab	Melanose	Black spot	PFD
Copper	**Good**	**Good**	**Good**	Moderate	**Good**	Moderate	**Weak**
Oil	None	**Good**	None	None	None	None	None
Ferbam	None	Weak	Moderate	Moderate	Weak	Weak	Moderate
Headline	None	**Good**	**Good**	**Good**	**Good**	**Good**	**Good**
Abound	None	**Good**	**Good**	**Good**	**Good**	**Good**	**Good**
Gem	None	**Good**	**Good**	**Good**	**Good**	**Good**	**Good**
Pristine	None	**Good**	**Good**	**Good**	**Good**	**Good**	**Good**
Quadris Top	None	**Good**	**Good**	**Good**	**Good**	**Good**	**Good**









DROUGHT

Water stress is the physiological condition to which a plant is subjected whenever the rate of water loss from the leaves by transpiration exceeds the rate at which water is absorbed by the root system. Water stress can be the result of excessive transpiration or slow absorption from a dry soil or a combination of these two factors. Any degree of water imbalance can produce a deleterious change in physiological activity of growth and reproduction. Short-term drought often reduces production and prolonged drought can cause total crop failure. Severe drought between March and July can reduce fruit set, fruit development and fruit growth. The number of fruit, fruit size, and tree canopy are reduced with water stress. Extension growth in shoots and roots, and leaf expansion are all negatively correlated with water status. Trees subjected to water stress are generally reduced in size. Vegetative growth is particularly sensitive to water deficit. Growth is closely related to turgor and the loss of turgidity reduces photosynthesis, leaf and fruit enlargement, juice content and yield, and increases wilting and leaf and premature fruit drop. Growers cannot afford water stress or water restrictions during this critical period. Irrigation is of particular importance during the springtime, which coincides with the important stages of leaf expansion, bloom, fruit set, and fruit enlargement.

PLANT GROWTH REGULATORS (PGRs)

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, and reduce preharvest fruit drop. 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. READ THE LABEL. 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. 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

Chemical thinning of tangerines with NAA to increase fruit size and reduce branch breakage and alternate bearing

NAA (naphthalene acetic acid) encourages greater physiological-drop (usually in May for Florida citrus). Sunburst and Murcott are especially likely to benefit from judicious use of NAA. READ THE LABEL

NAA rate

Since concentration is so important, growth regulator treatments are usually expressed on a concentration basis (part per million or ppm) rather than ounces per acre. Rates of 250-500 ppm NAA have been most effective in thinning citrus varieties. For mature groves of large trees, 125-150 gallons per acre is probably adequate and lower volumes should be used for smaller trees by turning off some sprayer nozzles. Growers uncomfortable with calculations on a ppm basis can use the ounces of NAA/125 gallons, at appropriate ppm, as a rate per acre when applying at 125 gallons/acre. All NAA applications should include a surfactant at 0.05% and should not be tank mixed with other materials, unless you confirm that it is compatible with NAA.

For most healthy, unstressed groves, NAA should be applied at 120 ounces Fruit Fix 200 (or similar product, NOT Citrus Fix, which is 2,4-D rather than NAA plus 6.5 ounces of surfactant per 100 gallons, at 125 gallons per acre. Murcott should receive a lower rate 60-96 oz NAA/100 gallons.
READ THE LABEL

Timing

NAA should be applied near the beginning of physiological drop, when most fruitlets are about 1/2 inch in diameter, which typically occurs 6 to 8 weeks postbloom**. Rain within six hours of treatment, drought stress, or very hot or cool conditions may affect response.**

Environmental conditions can greatly influence uptake and activity of NAA. Higher temperatures and delayed drying of spray solution both contribute to greater thinning action. Best results are likely to occur when applied between 75° and 85° F. Higher temperatures may cause excessive thinning. Since uptake continues for several hours after the spray dries, heavy rain within six hours of application may significantly reduce NAA action.

PLANT GROWTH REGULATORS FOR CITRUS IN CALIFORNIA

The plant growth regulators 2,4-dichlorophenoxyacetic acid (2,4-D), gibberellic acid (GA_3) are registered for preharvest use on California citrus crops. 2,4-D is used mainly to delay and reduce unwanted fruit abscission (fruit drop), GA_3 is used mainly to delay senescence (overripening).

In order to be effective, plant growth regulators must be absorbed by plant tissue. Good spray coverage is essential and climatic conditions that favor absorption are therefore desirable.

Both 2,4-D and GA_3 seem to be compatible with urea, potassium foliar sprays, zinc and manganese micronutrient sprays, and neutral copper sprays, but the timing of growth regulator applications may not coincide with the best time for nutrient sprays.

2,4-dichlorophenoxyacetic acid (2,4-D). 2,4-D is used to control preharvest fruit drop, increase fruit size (oranges, grapefruit, mandarin, and mandarin hybrids), and to control leaf and fruit drop following an oil spray. When you use 2,4-D to reduce drop of mature fruit, apply the compound before (preferably *shortly* before) fruit drop becomes a problem, but far enough ahead of flowering to minimize undesirable effects that 2,4-D would otherwise have on the spring cycle of growth. For navel oranges, October through December sprays are common. October, however, may be too early to effectively reduce fruit drop if conditions favor it (e.g., warm winter, protracted harvest). January sprays may be somewhat risky, especially when environmental factors favor an earlier-than-usual spring flush of growth.

For mature grapefruit and 'Valencia' orange trees, 2,4-D can be applied to control drop of mature fruit or as a dual-purpose spray (to control mature fruit drop and to improve fruit size for the next year's crop). Fruit-sizing sprays require excellent coverage. In general, 'Valencia' orange is more responsive than grapefruit to fruit-sizing sprays. For mandarin and mandarin hybrids, 2,4-D fruit sizing sprays are applied 21 to 35 days after 75% petal fall.

Gibberellic acid (GA_3). The purpose of applying GA_3 to citrus trees in California is to delay fruit senescence. Make applications while the fruit are still physiologically young, but are approaching maturity. GA_3 can have a negative effect on flowering and thus on production for the following year, especially if it is applied much later than specified on the current label or in these guidelines. It delays changes in rind color, an effect that can be considered either desirable or undesirable. For example, if you apply GA_3 to navel orange trees while the fruit still have green rinds, delayed coloring will have a negative effect on your ability to harvest and market the fruit early in the season. In contrast, this effect is desirable for late-harvested fruit because it delays rind senescence, which results in fruit that are paler in color than the deeper-colored fruit from untreated trees. GA_3 applications amplify the re-greening of "Valencia" oranges. This is considered undesirable and can be minimized if you apply the compound no later than the date specified on the label or in these guidelines. GA_3 application may result in leaf drop, which can be severe, especially when it is applied to navel orange trees that are under heat or water stress. When this happens, the tree may also suffer twig dieback. By including 2,4-D in the GA_3 spray, you may be able to reduce this kind of damage.

C. J. Lovatt, Botany and Plant Sciences, UC Riverside
C. W. Coggins, Jr., Botany and Plant Sciences, UC Riverside

PLANT GROWTH REGULATORS IN FLORIDA

By Davies, Ismail, Stover, and Wheaton, UF-IFAS

Plant growth regulator (PGR) 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.

Importance of material concentration and spray volume

Most registered pesticides are effective over a fairly broad concentration range with little likelihood of phytotoxicity. 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 surfaces closest to the sprayer manifold tend to retain much more material than other plant surfaces. Because material concentration is especially important in PGR use, water volumes below 250 gallons/acre are not recommended.

PGR uptake

Unlike most agrichemicals applied to crop plants, 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, after application, and plant stress level.

Effect of surfactants and tank mixes

Surfactants and other spray adjuvants can affect uptake in several ways. Surfactants and oils spread spray materials over leaf surfaces, and increase uptake by enhancing the total area contacted by spray solution. Many surfactants, urea, ammonium salts and oils can also directly enhance uptake by helping materials penetrate the plant cuticle. Organosilicone surfactants and some oils can result in very rapid uptake by carrying material through plant pores known as stomates. Surfactants can significantly enhance entry of PGRs into plant tissues, however, most PGR studies in citrus were conducted without surfactants or with less effective surfactants than many currently available. Use of untested surfactants may significantly enhance uptake, resulting in excessive plant response and/or phytotoxicity. Tank mixing with other spray materials may influence PGR uptake through surfactants or oils in material formulation or may bind PGR molecules rendering them ineffective.

Importance of weather conditions

Studies with other crops have shown that weather conditions greatly influence PGR uptake. Uptake generally increases with both temperature and duration of spray drying. Application at night or in early morning often enhances uptake because greater drying time more than compensates for somewhat lower temperature.

Dew following application is likely to enhance PGR uptake by prolonging drying. Considerable uptake often occurs after spray has dried, therefore, rain within a few hours of application may significantly reduce PGR effectiveness. Many PGRs degrade rapidly in sunlight. Growers should consider the likely influence of environmental factors in timing PGR sprays. It is illegal to apply 2,4-D when wind speed is above 10 miles/hour and distance to susceptible crops downwind is specified at lower wind speeds.

Influence of plant stress

Trees under significant drought, cold, or pest stress may respond excessively to PGR treatments. Therefore, application of PGRs is recommended only to healthy citrus trees.

Leaf curling

Even when properly applied, some PGRs may cause leaf curling, especially when sprayed on young leaves.

Recommended Chemical Controls

READ THE LABEL. See Table 1.

Rates for pesticides are given as the maximum amount required to treat mature citrus trees unless otherwise noted. To treat smaller trees with commercial application equipment including handguns, mix the per acre rate for mature trees in 250 gallons of water. Calibrate and arrange nozzles to deliver thorough distribution and treat as many acres as this volume of spray allows.

Table 1. Recommended Plant Growth Regulators.

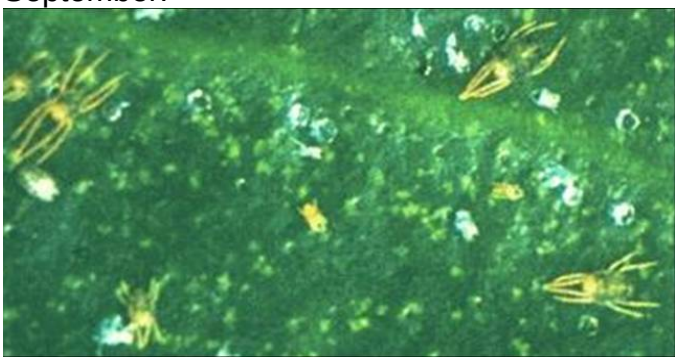
Growth Regulator	Rate/Acre[1]	Variety and Activity	Time of Application/Cautions
Fruit Fix K-Salt **200** (Naphthaleneacetic acid, NAA, 200 g/gal liquid formulation)	8-20 pt. Use lower rates on Murcotts.	Tangerines, Murcotts, & Tangelos. Fruit thinning to increase fruit size and reduce alternate bearing.	May/June drop, typically mid-May. Activity is temperature dependent. Severe overthinning may result from applications made to trees of low vigor and/or under stress conditions. Heavy rain within several hours of application may reduce activity.
[1]Rates are based on application in 250 gallons per acre to mature trees. Proportional reduction in water and material rates is desirable for smaller trees. Application of Pro-Gibb at full rate to juice oranges in 125-150 gallons per acre to mature trees has been effective. The effects of applications in concentrate sprays are unknown.			
[2]Greater uptake at lower spray solution pH. Do not use in water above pH 8.			

Table 1. Recommended Plant Growth Regulators.

Growth Regulator	Rate/Acre[1]	Variety and Activity	Time of Application/Cautions
Citrus Fix (2,4-Dichlorophenoxyacetic acid isopropyl ester 3.36 lb/gal)	3.2 oz	Orange, Temple and grapefruit. Reduction of preharvest drop.	Nov-Dec. Do not apply during periods of leaf flush. Observe restrictions to avoid drift.
Citrus Fix (2,4-Dichlorophenoxyacetic acid isopropyl ester 3.36 lb/gal)	2.4 oz	Navel orange. Reduction of summer and fall drop.	6-8 wks after bloom for summer drop or Aug-Sept for fall drop. Do not apply fall spray when fruit is to be harvested early. Do not apply during periods of leaf flush. Observe restrictions to avoid drift.
Pro-Gibb (Gibberellic acid, GA_3, 4.0% liquid concentrate)[2]	20 oz	Seedless grapefruit. Delay of rind aging process and peel color development. Combine with Citrus Fix for fruit drop control.	Nov-Dec. Greater response prior to colorbreak but early harvest is disrupted by delayed coloring and irregular green spotting may develop. Surfactants increase activity but may cause fruit marking, so use is not recommended. Application within 6 weeks of copper or oil may increase rind marking. Application in Dec may reduce subsequent crop and regreen fruit.
Pro-Gibb (Gibberellic acid, GA_3, 4.0% liquid concentrate)[2]	10-20 oz	Tangelo. Improvement of fruit set. Can result in small fruit size from excessive cropping and/or leaf drop.	Full bloom. Surfactants not recommended.
Pro-Gibb (Gibberellic acid, GA_3, 4.0% liquid concentrate)[2]	20 oz	Minneola tangelo. Delay of stem rind deterioration.	Apply 2 weeks before aniticipated colorbreak. Application after or during coloring may cause rind staining or blotchy color development.
Pro-Gibb (Gibberellic acid, GA3, 4.0% liquid concentrate)2	18 oz	Oranges for processing. Delay of rind aging process and peel color development. Delays decline in peel firmness and increases juice extraction weight during processing.	Apply at or near colorbreak. Application may delay bloom the following year. Do not apply after December 1.
Tre-Hold (Naphthaleneacetic acid, NAA, 1.0% liquid concentrate)	Apply undiluted to trunk only as thorough spray or light brush application.	Nonbearing citrus. Inhibition of trunk sprout growth.	Prior to sprout growth. Caution-may inhibit sprouting desired for tree recovery following freeze. Excessive heavy application may result in tree damage. Do not apply after Sept 1.

Spider Mites

The Texas citrus mite is the predominant species in most citrus groves throughout the state. The citrus red mite is usually second in abundance, but in some nursery operations it is the predominant species. The Texas citrus and citrus red mites occur on citrus throughout the year and usually are most abundant in groves during the dry season. They are found most commonly on the upper leaf surface of recently mature flush, and all stages of the mites orient along the mid-vein. As populations increase, they move to leaf margins and fruit. Spider mites feed primarily on mature leaves and differ from rust mites by feeding beneath the epidermal layer of cells. They are capable of removing cellular contents, causing cell destruction and reducing photosynthesis. Mesophyll collapse and leaf drop can result when trees are stressed by high spider mite infestations in combination with sustained dry, windy conditions that may occur in the late fall, winter or early spring months. When populations of Texas citrus mite or citrus red mites are high, they will also feed on developing fruit. Spider mites prefer dry weather and low relative humidities in the range of 30 to 60% and generally do not pose a sustained problem in the higher humidity conditions that occur between June and September.



Populations of Texas citrus and citrus red mites aggregate among leaves within and between citrus trees.

Spider mites are suppressed to low densities by several species of predacious mites, insects, and entomopathogens in some groves. However, when populations averaging 5 to 10 motile spider mites per leaf develop between September and May, it would be reasonable to apply a miticide, especially if the trees are stressed. However, infestations comprised predominantly of adults, particularly males, are in decline and would not require control. Adult mites are recognized by their large size relative to immatures and females distinguished by their round shape and shorter legs compared to males.

Need for controlling spider mites is based on temperature and humidity conditions, spider mite population levels, tree vigor, and time of the year. Petroleum oil provides some ovicidal activity against spider mite eggs. None of the other miticides provide ovicidal activity, and their residual activity must be sufficiently long-lasting to kill subsequently emerging larvae.

Application of Miticides

Selection of a miticide should be based on the target pests to be controlled, avoiding risks of phytotoxicity, products that will be tank mixed, the time of year, treatment to harvest interval, and prior use of a product. All miticides except petroleum oil should be used only once a year to minimize resistance development. For example, dicofol can be effectively used for spider mite or rust mite control during the supplemental early spring or postbloom intervals. The product is most effective when applied at ONE of these times. Conversely, Comite would be recommended in the fall or supplemental late fall intervals. Vendex is effective in one of the following four periods: supplemental spring, postbloom, fall, or supplemental fall periods. Petroleum oil spray applications can be effectively applied during the postbloom, summer, or fall intervals. Sulfur is included since it has a short treatment to harvest interval and provides a highly effective means of cleaning up rust mite infestations prior to harvest when needed. Use of sulfur should be minimized given its toxic effects on several beneficial arthropods.

Recommended Chemical Controls

READ THE LABEL.
TO MINIMIZE RISK OF RESISTANCE, DO NOT APPLY A SPECIFIC MITICIDE MORE THAN ONCE PER ACRE PER SEASON OTHER THAN PETROLEUM OIL.

Control Thresholds and Appropriate Sample Sizes for 10 Acres

If the control threshold is:	Sample size (Sample trees should be uniformly scattered across a 10-acre block. Do not sample adjacent trees.)
5 mites/leaf	Examine 4 leaves/tree from 6 trees/area from 4 areas/10 acres = 96 leaves on 24 trees/10 acres
8 mites/leaf	Examine 4 leaves/tree from 6 trees/area from 3 areas/10 acres = 72 leaves on 18 trees/10 acres
10 mites/leaf	Examine 4 leaves/tree from 5 trees/area from 2 areas/10 acres = 40 leaves on 10 trees/10 acres
15 mites/leaf	Examine 4 leaves/tree from 4 trees/area from 2 areas/10 acres = 32 leaves on 8 trees/10 acres

TABLE 2. CITRUS MITICIDE SELECTION.*

Supplemental (early Spring)	Post Bloom	Summer	Fall	Supplemental Fall
--	--	Agri-mek + oil	--	--
--	--	--	Comite	Comite
Envidor	Envidor	Envidor	Envidor	Envidor
--	Petroleum oil	Petroleum oil	Petroleum oil	--
--	--	--	Sulfur	Sulfur
--	--	Micromite	Micromite	--
--	--	--	Nexter	Nexter
Movento	Movento	Movento	--	--
Vendex	Vendex	--	Vendex	Vendex

*Except for petroleum oil, do not use the same miticide chemistry more than once a year.

For more information and details, go to:

Florida Citrus Pest Management Guide: Rust Mites, Spider Mites, and Other Phytophagous Mites at:
http://www.crec.ifas.ufl.edu/extension/pest/PDF/2015/Rust%20Mites.pdf

Pollination of Citrus by Honey Bees

Pollination in most citrus is not really required.

1. Citrus flowers are perfect, having both sexes on the same blossom so that self-pollination takes place regardless of pollinators. But bees (pollinators) are distributed throughout citrus groves in any case.
2. Female-sterile varieties are not benefited by pollinators.
3. Some seedless varieties may benefit, but evidence is lacking.

This by no means indicates pollination is not necessary in citrus.

1. There is a growing number of citrus varieties which require cross pollination because they are self-incompatible.
2. A positive linear relationship between fruit size and number of seeds per fruit exists.
3. Where cross pollination is required, use of honey bees remains the most consistent, effective and economical means of ensuring adequate yields.

Grapefruit: Although consensus suggests pollination is not required, there is evidence that open pollination benefited at least one variety (Marsh) by setting four times the fruit which had twice the number of seeds.

Pummelo: This variety appears to be grown commercially only in the Orient and is self-incompatible. Evidence suggests that pollinating by bees is important whether the plant is self-fertile or self-sterile.

Lemons: Most studies indicated the value to be minimal. However, there is evidence that seedlessness can result from self pollination, and that seedlessness may contribute to a reduction in fruit set.

Limes: Few studies have been done. One suggests limited pollination benefit from bees on Tahiti lime which is strongly parthenocarpic. Another suggested sweet limes would benefit from pollination by setting up to twenty percent more fruit.

Oranges: A large variation between cultivars exists in oranges making any sort of general statement difficult. Studies on certain varieties, however, have been accomplished:

- **Washington Navel**: Although it has been suggested that cross pollination on Washington Navels is not required to increase yield, there is evidence to show that pollination by bees may contribute to less fruit drop.
- **Valencias**: Most investigators contend that this variety benefits little from pollination by bees. One study, however, indicates fruit size was increased as the seed number increased.
- **Other sweet oranges**: Not much study has been done on these, but there is some indication that pollination is beneficial. It has also been suggested that reduced fruit set in so-called "off years" may be offset by honey bee pollination.

Mandarin and Mandarin-Hybrid Complex: Many varieties of this complex are self-incompatible and require pollination.

In summary it may be concluded that honey bees are unquestionably important in the pollination of citrus, though some varieties benefit more than others. In addition, there is the belief that ample quantities of bees are always present in groves because of their rich nectar resources.

Protecting bees from pesticides

Most major bee poisoning incidents occur when plants are in bloom. However, bees can be affected in other circumstances as well. Keep the following suggestions in mind when applying pesticides.

Use pesticides only when needed: Foraging honey bees, other pollinators, and insect predators are a natural resource and their intrinsic value must be taken into consideration. Vegetable, fruit, and seed crop yields in nearby fields can be adversely affected by reducing the population of pollinating insects and beneficial insect predators. It is always a good idea to check the field to be treated for populations of both harmful and beneficial insects.

Do not apply pesticides while crops are in bloom: Insecticide should be applied only while target plants are in the bud stage or just after the petals have dropped.

Apply pesticide when bees are not flying: Bees fly when the air temperature is above 55-60°F and are most active from 8 a.m. to 5 p.m. Always check a field for bee activity immediately before application. Pesticides hazardous to honey bees must be applied to blooming plants when bees are not working, preferably in the early evening. Evening application allows time for these chemicals to partially or totally decompose during the night.

Do not contaminate water: Bees require water to cool the hive and feed the brood. Never contaminate standing water with pesticides or drain spray tank contents onto the ground, creating puddles.

Use less toxic compounds: Some pest control situations allow the grower-applicator a choice of compounds to use. Those hazardous to honey bees must state so on the label. **Use less toxic formulations:** Not all insecticides have the same effects when prepared in different formulations. Research and experience indicate:

- New microencapsulated insecticides are much more toxic to honey bees than any formulation so far developed. Because of their size, these capsules are carried back to the colony. These insecticides should never be used if there is any chance bees might collect the microcapsules. Always consider using another formulation first.
- Dusts are more hazardous than liquid formulations.
- Emulsifiable concentrates are less hazardous than wettable powders.
- Ultra-low-volume (ULV) formulations are usually more hazardous than other liquid formulations.

Identify attractive blooms: Before treating a field with pesticides, it is a good idea to check for the presence of other blooming plants and weeds which might attract bees.

EL NIÑO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC DISCUSSION

issued by

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

5 March 2015

ENSO Alert System Status: El Niño Advisory

Synopsis: There is an approximately 50-60% chance that El Niño conditions will continue through Northern Hemisphere summer 2015.

During February 2015, El Niño conditions were observed as the above-average sea surface temperatures (SST) across the western and central equatorial Pacific (Fig. 1) became weakly coupled to the tropical atmosphere. The latest weekly Niño indices were +0.6°C in the Niño-3.4 region and +1.2°C in the Niño-4 region, and near zero in the Niño-3 and Niño-1+2 regions (Fig. 2). Subsurface temperature anomalies increased (Fig. 3) associated with a downwelling oceanic Kelvin wave, which was reflected in positive subsurface anomalies across most of the Pacific (Fig. 4). Consistent with weak coupling, the frequency and strength of low-level westerly wind anomalies increased over the equatorial Pacific during the last month and a half (Fig. 5). At upper-levels, anomalous easterly winds persisted across the east-central Pacific. Also, the equatorial Southern Oscillation Index (EQSOI) remained negative for two consecutive months. Convection was enhanced over the western equatorial Pacific and near average around the Date Line (Fig. 6). Overall, these features are consistent with borderline, weak El Niño conditions.

Compared to last month, several more models indicate El Niño (3-month values of the Niño-3.4 index equal to or greater than 0.5°C) will continue throughout 2015 (Fig. 7). This is supported by the recent increase in subsurface temperatures and near-term model predictions of the continuation of low-level westerly wind anomalies across parts of the equatorial Pacific. However, model forecast skill tends to be lower during the Northern Hemisphere spring, which contributes to progressively lower probabilities of El Niño through the year. In summary, there is an approximately 50-60% chance that El Niño conditions will continue through Northern Hemisphere summer 2015 (click CPC/IRI consensus forecast for the chance of each outcome).

Due to the expected weak strength, widespread or significant global impacts are not anticipated. However, certain impacts often associated with El Niño may appear in some locations during the Northern Hemisphere spring 2015.

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 are also updated monthly in the Forecast Forum of CPC's Climate Diagnostics Bulletin. Additional perspectives and analysis are also available in an ENSO blog. The next ENSO Diagnostics Discussion is scheduled for 9 April 2015. To receive an e-mail notification when the monthly ENSO Diagnostic Discussions are released, please send an e-mail message to: ncep.list.enso-update@noaa.gov.

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

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

WATER WATCH

Keeping an Eye on Water Resources

District-Wide Conditions for February 17, 2015

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

The South Florida Water Management District recorded virtually no rainfall during the past 7 days, providing a respite from significantly above-average dry season rainfall in the Kissimmee region. Earlier this month, heavy rainfall in the Kissimmee contributed to flows into Lake Okeechobee, which remains nearly a foot higher than this time last year.

The dry period this past week also benefited nesting wading birds and wildlife, which require a dry season recession of water levels for successful nesting.

South Florida's dry season typically runs from mid-October to mid-May, with about 18 inches of rain on average.

Water Levels in Key Locations (February 17)		
Location	**Today's level**	**Water Supply Floor**
WCA-1	16.64 feet	14.00 feet
WCA-2A	12.04 feet	10.50 feet
WCA-3A	9.82 feet	7.50 feet

Water Conservation

- South Florida is under the District's Year-Round Landscape Irrigation Rule, which limits residential and business landscape irrigation to two or three days per week.
  - To determine watering days and times in your area, contact your local government or visit www.sfwmd.gov/2days.
- Permitted water users such as nurseries, agriculture, golf courses and utilities can find water use conditions in their permits online at www.sfwmd.gov/ePermitting.
- For tips and information about water conservation, visit www.savewaterfl.com.

Lake Okeechobee Operations

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

Lake Okeechobee Levels	
Today (Feb. 17)	**14.77** feet
Historical Average for Today	**14.56** feet
This Date One Year Ago	**14.01** feet

Moving Water South

- For an interactive map with weekly updates on the volumes of water being moved south by SFWMD operations, visit www.sfwmd.gov/movingwatersouth.

United States Department of Agriculture
National Agricultural Statistics Service

CITRUS MARCH FORECAST MATURITY TEST RESULTS AND FRUIT SIZE

Cooperating with the Florida Department of Agriculture and Consumer Services
2290 Lucien Way, Suite 300, Maitland, FL 32751-7057
(407) 648-6013 · (855) 271-9801 FAX · www.nass.usda.gov/fl

March 10, 2015

Florida All Orange Production Down 1 Percent
Florida Non-Valencia Orange Production Down 2 Percent
Florida Valencia Orange Production Unchanged
Florida All Grapefruit Production Unchanged
Florida All Tangerine Production Unchanged
Florida Tangelo Production Unchanged
Florida FCOJ Yield 1.55 Gallons per Box (42° Brix)

2014-2015 SEASON FORECAST DATES
[Release time 12:00 p.m. EDT]

April 9, 2015	May 12, 2015
June 10, 2015	July 10, 2015

Citrus Production by Type and State – United States

Crop and State	Production [1]			2014-2015 Forecasted Production [1]	
	2011-2012	2012-2013	2013-2014	February	March
	(1,000 boxes)	(1,000 boxes)	(1,000 boxes)	(1,000 boxes)	(1,000 boxes)
Non-Valencia Oranges [2]					
Florida	**74,200**	**67,100**	**53,300**	**48,000**	**47,000**
California [3]	45,500	42,500	39,000	40,000	40,000
Texas [3]	1,108	1,499	1,400	1,670	1,670
United States	120,808	111,099	93,700	89,670	88,670
Valencia Oranges					
Florida	**72,500**	**66,500**	**51,300**	**55,000**	**55,000**
California	12,500	12,000	11,000	10,000	10,000
Texas [3]	311	289	376	345	345
United States	85,311	78,789	62,676	65,345	65,345
All Oranges					
Florida	**146,700**	**133,600**	**104,600**	**103,000**	**102,000**
California	58,000	54,500	50,000	50,000	50,000
Texas [3]	1,419	1,788	1,776	2,015	2,015
United States	206,119	189,888	156,376	155,015	154,015
Grapefruit					
Florida-All	**18,850**	**18,350**	**15,650**	**15,000**	**15,000**
White	**5,350**	**5,250**	**4,150**	**4,000**	**4,000**
Colored	**13,500**	**13,100**	**11,500**	**11,000**	**11,000**
California [3]	4,000	4,500	4,000	4,000	4,000
Texas [3]	4,800	6,100	5,700	6,000	6,000
United States	27,650	28,950	25,350	25,000	25,000
Lemons					
California [3]	20,500	21,000	19,000	20,000	20,000
Arizona [3]	750	1,800	1,800	2,200	2,200
United States	21,250	22,800	20,800	22,200	22,200
Tangelos					
Florida	**1,150**	**1,000**	**880**	**700**	**700**
Tangerines					
Florida-All	**4,290**	**3,280**	**2,900**	**2,500**	**2,500**
Early [4]	**2,330**	**1,910**	**1,750**	**1,450**	**1,450**
Honey	**1,960**	**1,370**	**1,150**	**1,050**	**1,050**
California [3 5]	10,800	13,000	14,500	15,500	15,500
Arizona [3 5]	200	200	200	220	220
United States	15,290	16,480	17,600	18,220	18,220

[1] Net pounds per box: oranges in California-80, Florida-90, Texas-85; grapefruit in California-80, Florida-85, Texas-80; lemons-80; tangelos-90; tangerines and mandarins in Arizona and California-80, Florida-95.
[2] Navel and miscellaneous varieties in California. Early (including Navel) and midseason varieties in Florida and Texas. Includes small quantities of tangerines in Texas and Temples in Florida.
[3] Estimates carried forward from January forecast.
[4] Fallglo and Sunburst varieties.
[5] Includes mandarins, tangelos, and tangors.

Regressions

Regression data used are from the 2006-2007 through 2013-2014 seasons. All references to "average", "minimum", and "maximum" refer to these 8 seasons unless noted.

All Oranges 102.0 Million Boxes

The 2014-2015 Florida all orange forecast released today by the USDA Agricultural Statistics Board is 102.0 million boxes, down 1.0 million boxes from February and 2 percent less than last season's production. The total includes 47.0 million boxes of non-Valencia oranges (early, midseason, Navel, and Temple varieties) and 55.0 million boxes of Valencia oranges. For the previous 8 seasons used in the regressions, the March forecast has deviated from final production by an average of 3 percent with 3 seasons below and 5 above, with differences ranging from 3 percent below to 9 percent above.

Non-Valencia Oranges 47.0 Million Boxes

The forecast of non-Valencia orange production is lowered by 1.0 million boxes to 47.0 million boxes, based on certified utilization to the 1st of the month. The Row Count survey conducted March 2-3 showed 99 percent of the rows harvested. The Navel portion of the non-Valencia forecast is final at 1.4 million boxes, 3 percent of the non-Valencia total.

Valencia Oranges 55.0 Million Boxes

The forecast of Valencia production remains at 55.0 million boxes. Limited harvest has begun. Projected fruit size is below the minimum, requiring 245 pieces of fruit to fill a 90-pound box. Projected droppage is well above average at 28 percent.

All Grapefruit 15.0 Million Boxes

The forecast of all grapefruit production remains at 15.0 million boxes. The white grapefruit forecast is unchanged at 4.0 million boxes and the colored grapefruit forecast remains at 11.0 million boxes. Although size and drop components were final last month, a follow-up survey was conducted in February. Results show fruit size for both white and colored grapefruit has continued below average, the droppage rate for white grapefruit is below the maximum, and the colored grapefruit droppage is near maximum. The Row Count survey conducted March 2-3, 2015, indicated 58 percent of the colored grapefruit rows and 39 percent of the white grapefruit rows have been harvested.

All Tangerines 2.5 Million Boxes

The forecast of all tangerine production remains at 2.5 million boxes. The early tangerine varieties (Fallglo and Sunburst) are 1.45 million boxes and the later maturing Honey tangerine variety are unchanged at 1.05 million boxes. Early tangerine harvest is complete for this season, while the harvesting of the Honey tangerine continues at a normal pace. Although size and drop components were final last month, a follow-up survey was conducted in February. Results show fruit size has continued below the minimum and droppage remains at a near maximum level.

Tangelos 700 Thousand Boxes

The tangelo forecast remains at 700,000 boxes. Estimated utilization to March 1 is 676,000 boxes, including an allocation for non-certified fruit. The Row Count survey conducted March 2-3, 2015, showed 89 percent rows have been harvested.

FCOJ Yield 1.55 Gallons per Box

The projection for frozen concentrated orange juice (FCOJ) is lowered from 1.57 to 1.55 gallons per box of 42° Brix concentrate. The yield projection for the non-Valencia oranges is lowered from 1.46 to 1.45 gallons per box and the projection for Valencia oranges is lowered from 1.69 to 1.65 gallons per box. Last season's final yield for all oranges was 1.569080 gallons per box, as reported by the Florida Department of Citrus. Last season's final yields for the components were 1.521318 for non-Valencia oranges and 1.642463 for Valencia oranges.

The Twenty Fifth Annual Farm Safety Day

Friday, 8 May 2015
Saturday, 9 May 2015

AN IMPORTANT MESSAGE TO EMPLOYERS

Safe and competent equipment operators are important to you as an employer. Accidents, which cause damage, injury or death to employees, equipment and crops, are costly. We believe all types of accidents can be reduced with proper employee training. Our training has been designed to help your employees perform better, operate safely to prevent accidents, fulfill necessary training requirements and build pride in themselves and their farm company.

Certificates

The 2015 Southwest Florida Farm Safety Day is almost here. Farm Safety Day is an educational event designed to emphasize the importance of farm/equipment safety. Each participant is presented with a certificate of attendance and **the employer will be provided with a certificate of training that can be placed into the employee's file**.

Registration Info

The deadline for registration is April 30th, 2015. It is the employer's responsibility to assure that the employee is present at 7:30 AM on Friday, May 8th or on Saturday, May 9th at the Immokalee IFAS Center, 2685 State Rd. 29 North, Immokalee, FL 34142 to receive their nametag. Upon arrival each participant will check in at the registration table and receive a packet containing their nametag, instructions (in both English and Spanish) session handouts, an evaluation form, rodeo cap and pencil. They will be directed to their respective course sessions.

Please give us the names of those who will be attending our 25th Farm Safety Day on **Friday, 8 May or Saturday, 9 May 2015 (please select the date)**. The cost is **$25.00** per person, which will include educational sessions, handouts, pencils, refreshments, lunch, and a cap.

Make checks payable to: SW Florida Citrus Advisory Committee

Mail registration and checks to:
University of Florida, IFAS, SWFREC
Attention: Barbara Hyman
2685 State Rd. 29 North
Immokalee, FL 34142

Or fax registration to: 239 658 3469
Deadline is Thursday, April 30, 2015

Don't wait. The number of trainings offered and attendance at each training are LIMITED. Class size is limited to the first 80 Spanish-speaking and 20 English-speaking people.

TWENTY FIFTH ANNUAL SAFETY DAY

Friday, 8 May 2015
Saturday, 9 May 2015

Location: University of Florida, IFAS, SWFREC
2685 State Rd. 29 North
Immokalee, FL 34142

SCHEDULE:

7:30-8:10	Check In, Coffee, Juice, Refreshments, Door Prizes
8:10-9:00	Session 1 (Begin sessions)
9:00-9:10	Break (change session, door prizes)
9:10-10:00	Session 2
10:00-10:10	Break (change session, door prizes)
10:10-11:00	Session 3
11:00-11:10	Break (change session, door prizes)
11:10-12:00	Session 4
12:00-1:30	Lunch and Adjourn

1. Ladder Safety in Citrus Harvesting
2. Worker Protection Standards for Pesticide Handlers
3. First Aid Response
4. Working Around Agriculture Equipment

The 2015 FARM SAFETY DAY
REGISTRATION FORM

Please give us the names of those who will be attending our 25th Farm Safety Day on **Friday, 8 May or Saturday, 9 May 2015** at the Immokalee IFAS Center, 2685 State Rd. 29 North, Immokalee, FL 34142. The cost is **$25.00** per person, which will include educational sessions, handouts, refreshments, lunch, and a cap.

Make checks payable to:
SW Florida Citrus Advisory Committee

Mail registration and checks to:
University of Florida, IFAS, SWFREC
Attention: Barbara Hyman
2685 State Rd. 29 North
Immokalee, FL 34142

Or fax registration to: 239 658 3469
Deadline is Thursday, April 30, 2015

Company Name:
Administrative Contact Person:
E-mail address:
Mailing Address:
Telephone: Fax: County:_____

Please list the employees who will be attending our safety training and please check their language preference*****. If there is not enough space to fill in all attendants, please attach an additional sheet with the necessary information.

Name	Friday or Saturday	English	Spanish	Name	Friday or Saturday	English	Spanish

***Please Note: It is very important that we know the date (Friday, 8 May or Saturday, 9 May 2015) and the language capabilities for each attendee.**
Next to each attendee's name please mark in which language they are more fluent.
If there are any questions, please contact **Barbara Hyman (hymanb@ufl.edu) at 239 658 3400.**
Don't wait. The number of trainings offered and attendance at each training are LIMITED. Don't wait. Class size is limited to the first 80 Spanish-speaking and 20 English-speaking people.

Sponsorship for the
Annual Farm Safety Day

The Southwest Florida Farm Safety Day has been conducted annually since 1991. The program is strongly supported by area citrus, vegetable, sugarcane, and sod growers. Southwest Florida agricultural employers collectively send employees annually to receive training on various safety- related topics. The 2015 Annual Farm Safety Day will be held on **Friday, 8 May and Saturday, 9 May 2015** and will feature a very comprehensive farm safety program.

We ask you to consider sponsorship of the 2015 Annual Farm Safety Day to help make it a success. Any profits generated will support extension and other farm safety related programming, such as WPS training, agent in-service-training, teaching tools and related equipment, and travel for extension agents to approved conferences and meetings.

Annual expenses are estimated to be approximately $3,000. Costs include breakfast, lunch, refreshments, handouts, hats, door prizes, and other supplies. Participants receive certificates of attendance and employers receive certificates of training that can be placed into the employee's file. The highlight of the Farm Safety Day is farm/equipment safety education.

We hope you will be able to help sponsor the 2015 Annual Farm Safety Day. We have enclosed a sponsorship form for your use. Please return the form and your sponsorship check as indicated on the form no later than April 30, 2015.

Thank you in advance for your generous support!

Dr. Mongi Zekri
Farm Safety Day Coordinator
Multi-County Citrus Agent, SWF
Hendry County Extension Office
P.O. Box 68
LaBelle, FL 33975

UF UNIVERSITY of FLORIDA
IFAS Extension

2015 Annual Farm Safety Day

WHEN: Friday, 8 May and Saturday, 9 May 2015
WHERE: Southwest Florida Research & Education Center, Immokalee

AUDIENCE: Anticipate 150 farm workers, managers, equipment operators, and crew leaders from the 5-county area of Southwest Florida.

COST: Sponsorships: ____ $300 *Platinum*
____ $200 *Gold*
____ $100 *Silver*

Sponsorship goes to support awards, expenses, and other extension programs.

==========

SPONSORSHIP REGISTRATION FORM

Business_____

Name:_____

Address:_____

City:_____ Zip Code: FL_____

Contact Person:_____

Phone:_____ Fax:_____

☐ Check here if you are a $300 sponsor and desire an exhibit space.

Please make checks payable to: **SW Florida Citrus Advisory Committee**

Mail to:

Dr. Mongi Zekri
Multi-County Citrus Agent
Hendry County Extension Office
PO Box 68
LaBelle, FL 33975-0068

Purpose of the Institute

Citrus Greening or Huanglongbing (HLB) continues to spread throughout citrus production areas of Florida. The 2015 Florida Citrus Growers' Institute is an opportunity for Florida citrus growers to come together to learn about effective management of HLB and other challenging diseases affecting the industry. Topics this year include citrus tree root health, strategies for countering HLB, Asian citrus psyllid management, and other citrus pest improvement.

Continuing Education Units

Continuing Education Units (CEU's) will be offered for holders of restricted use pesticide licenses (RUP) and certified crop advisors (CCA). CEU's have been granted in the following categories: private applicator, agricultural tree crop and demonstration & research for RUP holders. CEU's have been requested for CCA's in the appropriate CEU categories.

Sponsors

Platinum

Bayer CropScience

Syngenta Crop Protection

Gold

Valent

Silver

DuPont Crop Protection

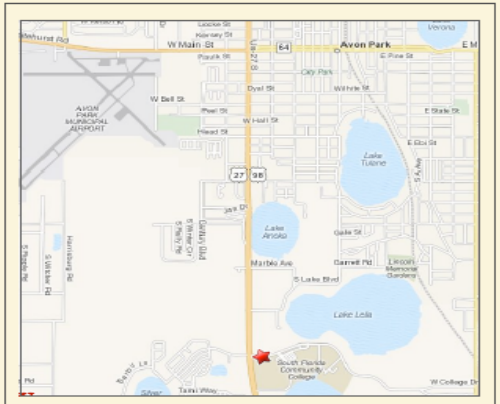
FMC Corporation

Gowan

Bronze

Farm Credit

Triangle Chemical Company



Directions

The South Florida State College is located at 600 West College Drive in Avon Park.

From the South: Take U.S. Hwy. 27/98 north towards Avon Park, turn east onto W. College Drive and follow the signs to the Theatre.

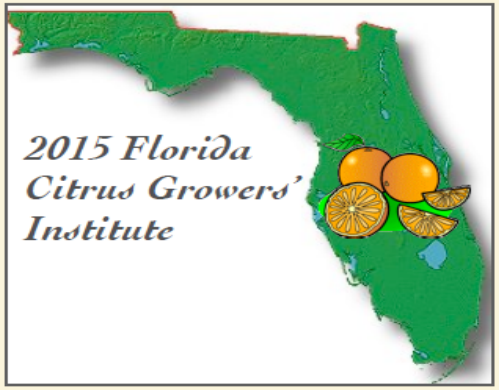
From the North: Take U.S. Hwy. 27/98 south to Avon Park, continue south to W. College Drive, turn east onto W. College Drive and follow the signs to the Theatre.

From the East: Take U.S. Hwy. 98 north to where U.S. Hwy. 27/98 merge south of Sebring. Proceed on U.S. Hwy. 27/98 north towards Avon Park, turn east onto W. College Drive and follow the signs to the Theatre.

From the West: Take S.R. 64 east to Avon Park, turn south on U.S. Highway 27/98 to W. College Drive, turn east onto W. College Drive and follow the signs to the Theatre.

South Florida State College
Theatre for Performing Arts
600 W. College Drive
Avon Park, FL

Florida Citrus Growers' Institute



Conducted by

University of Florida, IFAS Extension

Citrus Research and Development Foundation

South Florida State College
Theatre for Performing Arts
Avon Park, Florida
April 7, 2015

2015 Florida Citrus Growers' Institute

PROGRAM AGENDA
TUESDAY, APRIL 7, 2015

8:00 AM - Registration

8:30 AM - Welcome and Introductions
Dr. Steve Futch, UF/IFAS CREC

CITRUS TREE HEALTH AND PSYLLID MANAGEMENT
Moderators: Mr. Chris Oswalt, CES, Bartow, FL &
Ms. Laurie Hurner, CES, Sebring, FL

8:45 AM - Understanding Bicarbonates and the Impact on Tree Health - *Dr. Kelly Morgan,* UF/IFAS SWFREC

9:10 AM - Nutrient Programs for Citrus - *Dr. Arnold Schumann,* UF/IFAS CREC

9:35 AM - Psyllid Management - *Dr. Michael Rogers,* UF/IFAS CREC

10:00 AM - Break

10:15 AM - Are CHMA's Working as Expected - *Dr. Phil Stansly,* UF/IFAS SWFREC

PROJECTS TO BATTLE HLB
Moderators: Dr. Mongi Zekri, CES, LaBelle, FL &
Mr. Parker Platts, CES, Ft. Pierce, FL

10:40 AM - Funded Projects to Aid Growers in the HLB Battle - *Dr. Harold Browning,* Chief Operating Officer, Citrus Research and Development Foundation, Inc., Lake Alfred, FL

11:05 AM - Incapacitating Psyllids to Host the Greening Bacteria or Transmit the Disease - *Dr. Kirsten Pelz-Stelinski,* UF/IFAS CREC

11:30 AM - Antimicrobial Therapies for HLB and Canker - *Dr. Stephanie Slinski,* Citrus Research and Development Foundation, Inc., Lake Alfred, FL

12:00 PM - Lunch

1:00 PM - Chemotherapy or Antibiotic Treatments of HLB Infected Trees - *Dr. Wayne Dixon,* FDACS/DPI

1:25 PM - Efficiency and Advances in Thermotherapies Against HLB - *Dr. Reza Ehsani,* UF/IFAS CREC

BREEDING FOR HLB TOLERANCE AND CANKER CONTROL
Moderators: Mr. Gary England, CES, Tavares, FL
& *Dr. Cami McAvoy,* CES, Bushnell, FL

1:50 PM - Breeding to Mitigate HLB in Citrus - *Dr. Jude Grosser,* UF/IFAS CREC

2:15 PM - HLB Tolerant Rootstocks - *Dr. Kim Bowman,* USDA/ARS

2:40 PM - Reasons for Inconsistent Control of Canker - *Dr. Jim Graham,* UF/IFAS CREC

3:05 PM - Adjourn

CES: County Extension Service

CREC: Citrus Research & Education Center, Lake Alfred, FL

FDACS/DPI: Florida Department of Agriculture & Consumer Services/ Division of Plant Industry, Gainesville, FL

SWFREC: Southwest Florida Research & Education Center, Immokalee, FL

UF/IFAS: University of Florida, Institute of Food and Agricultural Sciences

USDA/ARS: United States Department of Agriculture/Agricultural Research Service, Ft. Pierce, FL

The Institute of Food and Agricultural Sciences (IFAS) is an Equal Opportunity Institution.

FLORIDA CITRUS GROWERS' INSTITUTE
April 7, 2015

PREREGISTRATION IS REQUIRED

Name:_____

Company:_____

Address:_____

City/State/Zip:_____

Phone:_____ Email:_____

Please send registration to: Gail Crawford, Polk County Extension Service, P.O. Box 9005, Drawer HS03, Bartow, FL 33831.

By April 3, 2015 By phone: 863-519-1042, Fax: 863-534-0001, email: dorothyc@ufl.edu or Eventbrite at: https://flcitrusinstitute2015.eventbrite.com/

Flatwoods Citrus

☐ If you did not receive the ***Flatwoods Citrus*** newsletter and would like to be on our mailing list, please check this box and complete the information requested below.

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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