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Institute of Food and Agricultural Sciences

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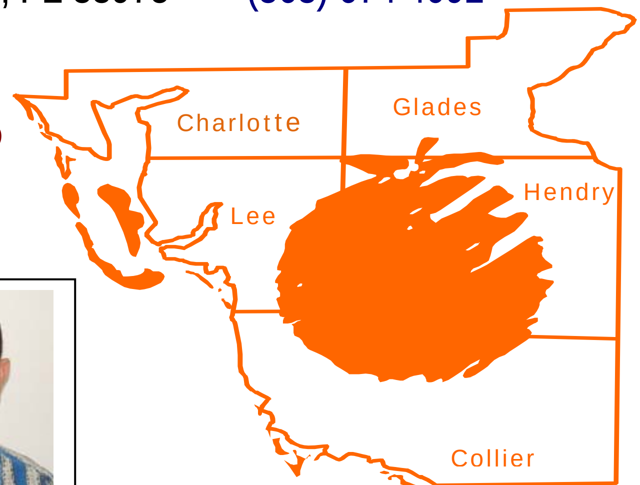
# Flatwoods Citrus




**Vol. 16, No. 2** **February 2013**

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

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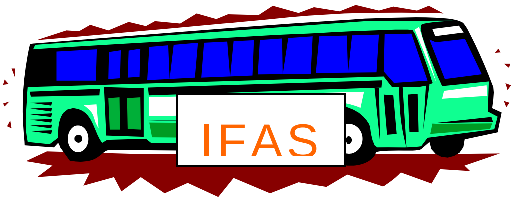
**Previous issues of the Flatwoods Citrus newsletter can be found at:**
**http://citrusagents.ifas.ufl.edu/agents/zekri/index.htm**
**http://irrec.ifas.ufl.edu/flcitrus/**

# IMPORTANT EVENTS

## HENDRY COUNTY EXTENSION AG TOURS



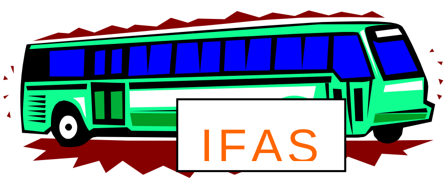

**Saturday, 9 March 2013**
**For more information or to sign up,**
**call Debra at 863 674 4092**

## Scouting and Management of Citrus Fungal Diseases

1. Identification, symptoms and management strategies for Alternaria brown spot, melanose, citrus scab, citrus black spot and greasy spot fungal diseases, and the copper model.
   ***Dr. Megan Dewdney***
2. The new CHMA sectional mapping program and CHMA practices through the state.
   ***Mr. Brandon Page***

Date: Tuesday, March 12th, 2013, Time: 10:00 AM – 12:00 Noon
Location: Southwest Florida REC (Immokalee)
2 CEUs for Pesticide License Renewal
2 CEUs for Certified Crop Advisors (CCAs)
Pre-registration is required. To reserve a seat, call 863 674 4092, or send an e-mail to Dr. Mongi Zekri at maz@ufl.edu
**Lunch Sponsor: Ed Early, DuPont Ag. Products**

## COLLIER COUNTY EXTENSION AG TOUR




**Wednesday, 20 March 2013**
**For more information or to sign up,**
**call Robert Halman at 239 353 4244**

## ANNUAL FLORIDA CITRUS GROWERS' INSTITUTE

Date & Time: Tuesday, 2 April 2013, 8:00 AM – 3:30 PM
Location: Avon Park Campus of South Florida Community College

## Farm Safety Day, Saturday, May 18, 2013, 7:30 AM – 1:30 PM

Location: Southwest Florida REC (Immokalee)

**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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# 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.

# NUTRITION OF CITRUS TREES

Fertilizer management should include calibration and adjustment of fertilizer spreaders, booms, pumps, or irrigation systems to accurately deliver fertilizer rates and place fertilizers within the tree rootzone. To increase fertilizer efficiency, soil and leaf analysis data should be studied and taken into consideration when generating a fertilizer program and selecting a fertilizer formulation. Dry fertilizer application should be split into 3 to 4 applications per year with a complete balanced fertilizer. For mature trees, the highest nutrient requirement extends from late winter through early summer. This coincides with flowering, heavy spring flush, fruit set, and fruit development and expansion. For best fresh fruit quality, nutritional requirements, particularly nitrogen (N), should decrease late in the summer and fall. Based on tree demands, 2/3 to 3/4 of the yearly fertilizer amount should be applied between February and June. In warm areas such as southwest Florida where tree growth can continue certain years during the winter, fertilizer applications should also be made in the fall to satisfy vegetative growth demand. However, fall fertilizer applications may sometimes delay fruit color development and fruit maturity for early and mid-season cultivars. For more information, go to **"Nutrition of Florida Citrus Trees, 2nd Edition"** By Thomas A. Obreza and Kelly T. Morgan http://edis.ifas.ufl.edu/pdffiles/SS/SS47800.pdf

## IFAS fertilizer guidelines for nonbearing citrus trees

| Year in grove | Lb N/tree/year (range) | Lbs Fertilizer/tree/year (range) | | Lower limit of application frequency | |
|---|---|---|---|---|---|
| | | 6-6-6 | 8-8-8 | Dry | Fertigation |
| 1 | 0.15 – 0.30 | 2.5-5.0 | 1.9-3.8 | 6 | 10 |
| 2 | 0.30 – 0.60 | 5.0-10.0 | 3.8-7.5 | 5 | 10 |
| 3 | 0.45 – 0.90 | 7.5-15.0 | 5.6-11.3 | 4 | 10 |

## IFAS fertilizer guidelines for bearing citrus trees (4 years and older)

| Oranges | Grapefruit | Other varieties | Lower limit of application frequency | |
|---|---|---|---|---|
| Lbs N/acre/year (range) | | | Dry | Fertigation |
| 120 - 200 | 120 - 160 | 120 - 200 | 3 | 10 |

Rates up to 240 lbs/acre may be considered for orange groves producing over 700 boxes/acre and up to 180 lbs/acre for grapefruit groves producing over 800 boxes/acre. Young trees planted on previously uncropped soils should receive fertilizer containing the following ratio of elements: nitrogen-1, phosphorus-1, potassium-1, magnesium-1/5, manganese-1/20, copper-1/40, and boron-1/300.

# For more information on citrus nutrition, **get to the following EDIS publications:**

Increasing Efficiency and Reducing Costs of Citrus Nutritional Programs
Mongi Zekri, Thomas Obreza and Arnold Schumann
http://edis.ifas.ufl.edu/SS442 [pdf]

Irrigation, Nutrition, and Citrus Fruit Quality
Mongi Zekri, Thomas A. Obreza and Robert Koo
http://edis.ifas.ufl.edu/SS426 [pdf]

Micronutrient Deficiencies in Citrus: Iron, Zinc, and Manganese
Mongi Zekri and Thomas A. Obreza
http://edis.ifas.ufl.edu/SS423 [pdf]

Micronutrient Deficiencies in Citrus: Boron, Copper, and Molybdenum
Mongi Zekri and Thomas A. Obreza
http://edis.ifas.ufl.edu/SS422 [pdf]

Macronutrient Deficiencies in Citrus: Calcium, Magnesium, and Sulfur
Mongi Zekri and Thomas A. Obreza
http://edis.ifas.ufl.edu/SS421 [pdf]

Macronutrient Deficiencies in Citrus: Nitrogen, Phosphorus, and Potassium
Mongi Zekri and Thomas A. Obreza
http://edis.ifas.ufl.edu/SS420 [pdf]

Plant Nutrients for Citrus Trees
Mongi Zekri and Thomas A. Obreza
http://edis.ifas.ufl.edu/SS419 [pdf]

Nitrogen Fertilizer Sources: What Does The Future Hold for Citrus Producers?
Tom Obreza, Larry Parsons, and Kelly Morgan
http://edis.ifas.ufl.edu/SS457 [pdf]

Controlled-Release Fertilizers for Florida Citrus Production
Tom Obreza and Bob Rouse
http://edis.ifas.ufl.edu/SS433 [pdf]

Prioritizing Citrus Nutrient Management Decisions
Thomas A. Obreza
http://edis.ifas.ufl.edu/SS418 [pdf]

Managing Phosphorus Fertilization of Citrus using Soil Testing
Thomas A. Obreza
http://edis.ifas.ufl.edu/SS332 [pdf]

Effects of P and K Fertilization on Young Citrus Tree Growth
Thomas A. Obreza
http://edis.ifas.ufl.edu/SS331 [pdf]

Fertigation Nutrient Sources and Application Considerations for Citrus
Brian Boman and Tom Obreza
http://edis.ifas.ufl.edu/CH185 [pdf]

Citrus Fertilizer Management on Calcareous Soils
Thomas A. Obreza, Ashok K. Alva, and David V. Calvert
http://edis.ifas.ufl.edu/CH086 [pdf]

## IMPORTANCE OF FERTILIZER SPREADER CALIBRATION AND MAINTENANCE

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

**Calibration**

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

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

**Product & application**

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

**Maintenance and Cleaning**

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

# FOLIAR FEEDING

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

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

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

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

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

While foliar feeding has many advantages, it can burn plants at certain rates under certain environmental conditions. It is important, therefore, to foliar feed within the established guidelines. There are a number of conditions that can increase the chances of causing foliar burn. A plant under stress is more susceptible to damage. Stressful conditions include drying winds, disease infestations, and poor soil conditions. The environmental conditions at the time of application are also important factors. Applications when the weather is warm (above $80^0$F) should be avoided. This means that during warm seasons, applications should be made in the morning or evening. Additionally, applications should not be at less than two-week intervals to give the plant sufficient time to metabolize the nutrients and deal with the added osmotic stress.

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

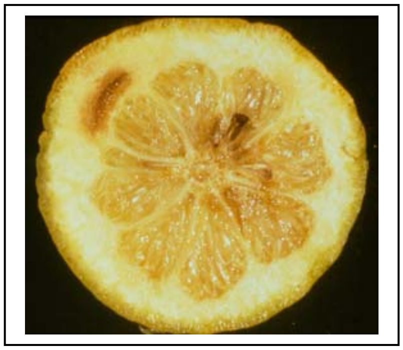
**Post-bloom foliar applications <u>(applied in April when the spring flush leaves are about fully expanded)</u> of potassium nitrate or mono-potassium phosphate have been found to increase fruit yield and size.**

- **<u>8 lb $K_2O$ per acre per application</u>**
- **<u>Foliar applications are not a substitute for a good soil nutritional program.</u>**

# Boron (B)

Boron is particularly necessary where active cell division is taking place. Boron plays an important role in flowering, pollen-tube growth, fruiting processes, nitrogen (N) metabolism, and hormone activity. Florida sandy soils are low in B, and a deficiency of this element in citrus occasionally occurs under field conditions. The deficiency may be aggravated by severe drought conditions, heavy lime applications, or irrigation with alkaline water. Boron is very mobile in the soil profile of sandy soils and readily leaches by rainfall or excess irrigation.

Boron deficiency is known as "hard fruit" because the fruit is hard and dry due to lumps in the rind caused by gum impregnation. The chief fruit symptoms include premature shedding of young fruits. Such fruit have brownish discoloration in the white portion of the rind (albedo), described as gum pockets or impregnations of the tissue with gum and unusually thick albedo. Older fruit are undersized, lumpy, misshaped with an unusually thick albedo containing gum deposits. Seed fails to develop and gum deposits are common around the axis of the fruit.



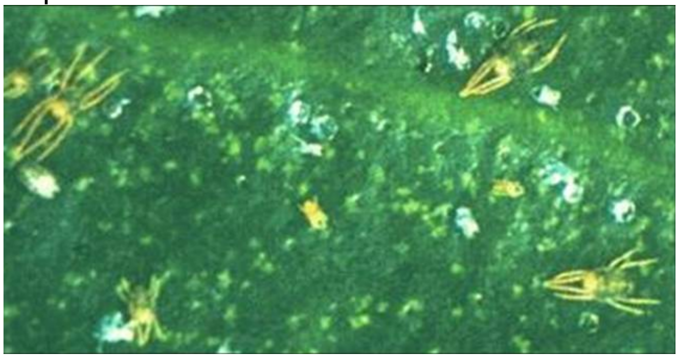
The first visual symptoms of B deficiency are generally the death of the terminal growing point of the main stem. Further symptoms are a slight thickening of the leaves, a tendency for the leaves to curl downward at right angles to the midrib, and sometimes chlorosis.

Young leaves show small water soaked spots or flecks becoming translucent as the leaves mature. Associated with this is a premature shedding of leaves starting in the tops of the trees and soon leaving the tops almost completely defoliated. Fruit symptoms appear to be the most constant and reliable tool for diagnostic purposes.

To treat citrus affected with B deficiency, B compounds can be applied either foliarly or in the fertilizer. As a maintenance program, apply B in the fertilizer at an annual rate equivalent to 1/300 of the N rate. In Florida, foliar spray applications have been found much safer and more efficient than soil application. Soil applications frequently fail to give satisfactory results during dry falls and springs and may result in toxicity problems if made during the summer rainy season. Boron solubility in the soil is reduced at soil pHs below 5 and above 7. Foliar spray may be applied during the dormant period through post bloom, but preferably during early flower development. Treating at this growth stage is important because boron does not move very readily from other parts of the tree to the buds. Applying boron at this time will assist in flower initiation and pollen production, satisfy the needs for pollen tube growth, and enhance fruit set. For maintenance spray application, 0.25 lb/acre of B may be used. Boron levels in the leaf tissue should not drop below 40 ppm or exceed 120 ppm (dry wt basis). Where deficiency symptoms are present, double the amount suggested. Use care not to apply more than the recommended amount because it is easy to go from deficiency to excess.

# This Year, SPIDER MITES are early too

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 |

**Citrus Miticide Selection[1]**

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

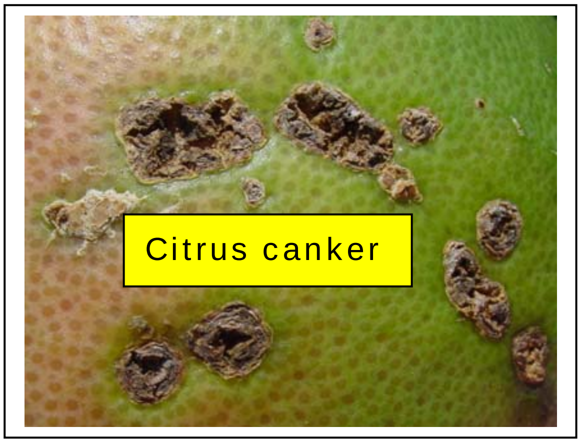
[1]Except for petroleum oil, do not use the same miticide chemistry more than once a year.

**For more information and details, go to:**

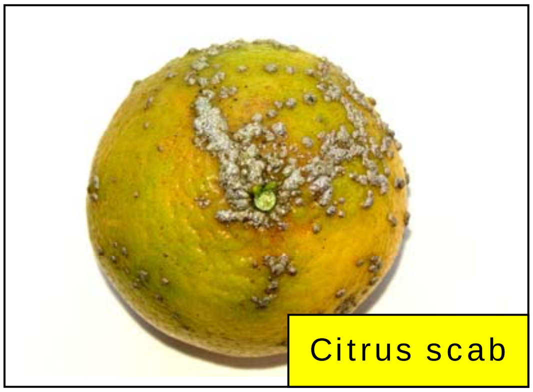
**Florida Citrus Pest Management Guide: Rust Mites, Spider Mites, and Other Phytophagous Mites at http://edis.ifas.ufl.edu/cg002**

# Fungicide effectiveness

| | Canker | Greasy Spot | Alternaria | Scab | Melanose |
|---|---|---|---|---|---|
| **Copper** | Good | Excellent | Good | Moderate | Excellent |
| **Oil** | None | Good | None | None | None |
| **Ferbam** | None | Weak | Moderate | Good | Weak |
| **Headline** | None | Good | Very good | Excellent | Good |
| **Abound** | None | Good | Very good | Excellent | Good |
| **Gem** | None | Good | Good | Excellent | Good |
| **Enable** | None | Excellent | Poor | Good | Weak |





## PESTICIDE RESISTANCE AND RESISTANCE MANAGEMENT

Many pest species, such as mites, are exceptionally well-equipped to respond to environmental stresses because of their short generation time and large reproductive potential. The use of chemical sprays to control insect, mite, and some fungal diseases of citrus pests creates a potent environmental stress. There are now many examples of pests that have responded by developing resistance to one or more pesticides. Pesticide-resistant individuals are those that have developed the ability to tolerate doses of a toxicant that would be lethal to the majority of individuals. The mechanisms of resistance can vary according to pest species and/or the class of chemical to which the pest is exposed. Resistance mechanisms include an increased capacity to detoxify the pesticide once it has entered the pest's body, a decreased sensitivity of the target site that the pesticide acts upon, a decreased penetration of the pesticide through the cuticle, or sequestration of the pesticide within the organism. A single resistance mechanism can sometimes provide defense against different classes of chemicals and this is known as ***cross-resistance***. When more than one resistance mechanism is expressed in the same individual, this individual is said to show ***multiple resistance***.

Because the traits for resistance are passed from one generation to the next, continued stress from a pesticide may, over time, create resistance in the majority of individuals in a population. From an operational perspective, this process would be expressed as a gradual decrease and eventual loss of effectiveness of a chemical. Resistance to a particular chemical may be stable or unstable. When resistance is stable, the pest population does not revert to a susceptible state even if the use of that chemical is discontinued. When resistance is unstable and use of the chemical is temporarily discontinued, the population will eventually return to a susceptible state, at which time the chemical in question could again be used to manage that pest. However, in this situation, previously resistant populations may eventually show resistance again.

Of the factors that affect the development of resistance, which include the pest's biology, ecology and genetics, only the operational factors can be manipulated by the grower. The key operational factor that will delay the onset of pesticidal resistance and prolong the effective life of a compound is to assure the survival of some susceptible individuals to dilute the population of resistant individuals.

The following operational procedures should be on a grower's checklist to steward sound pesticidal resistance management for acaricides, insecticides, fungicides, and herbicides:

1. Never rely on a single pesticide class.
2. Integrate chemical control with effective, complementary cultural and biological control practices.
3. Always use pesticides at recommended rates and strive for thorough coverage.
4. When there is more than one generation of pest, alternate different pesticide classes.
5. Do not use tank mixtures of products that have the same mode of action.
6. If control with a pesticide fails, do not re-treat with a chemical that has the same mode of action.

**For more information**, go to:
**Florida Citrus Pest Management Guide: Pesticide Resistance and Resistance Management**
at: **http://edis.ifas.ufl.edu/CG026**

# Fresh vs. processed fruit

## MANAGEMENT DECISIONS

Basic horticultural input to increase production efficiency and maximize profits includes optimization of fertilization, irrigation, weed control, and pest management. Florida citrus is marketed either for the fresh market or processed market. Irrigation, fertilizer and pest management strategies employed by growers for fruit destined for these different markets must differ. It is a waste of money to seek to achieve fresh market fruit quality in a processing fruit production operation.

In the production of fresh market fruit, good fruit size and a high level of control of external blemishes are needed to achieve maximum profitability. A great input of pesticides and a high level of pest scouting can be economically justified. If pest or windscar damage occurs early in the season, the grove can be switched to a processing program without suffering severe economic losses.

Grapefruit, navel oranges, tangerines, and tangerine hybrids have high values as fresh fruit and relatively low value for processing. These varieties are also more severely affected by diseases such as scab, melanose, Alternaria brown spot, and greasy spot rind blotch than are sweet orange cultivars. They must be monitored closely and timely applications must be made to control rust mites and fruit blemishing fungal diseases. If a high degree of control is not achieved and the fruit must be processed, the producer will experience a loss.

In the production of fruit for processing, yields and internal quality must be maintained with minimal input. Irrigation, fertilizer, and weed control should be maintained but control of foliar fungal diseases and arthropod pests should be reduced or omitted. When the protection of foliage and fruit are considered, only a few diseases and pests are of primary importance, namely greasy spot fungus on foliage.

Close observations, informed decision-making, and pesticide application only on an as-needed basis should reduce the level of input and associated costs in most seasons.

# RESET MANAGEMENT

For maximum efficiency of a production unit or grove, it is essential that every tree location is occupied by a tree and that every tree be healthy. Prompt replacement of dead and declining trees means higher average long-term returns from the grove. If the declining trees remain in the grove, they keep getting weaker and yield less fruit each year and therefore the potential production capacity for the grove keeps declining even though production costs remain the same. It is very important to remove and replace such trees once it is clear that they are declining and they are not profitable. However, the reason for the decline should be found and the condition should be corrected so that the replacement tree does not suffer the same fate.

Replanting in a mature grove seems justified only when a minimum of 8 ft between canopy driplines, not from trunk-to-trunk, is available for canopy development of the new trees.

Caring for young citrus trees is not an easy task. Resets should be watered, protected, fertilized, and weeded regularly. Because of their frequent flushing cycles, young trees are more sensitive and more attractive to pests than mature trees. Therefore, special care is needed to have the citrus psyllid and citrus leafminer under control. A rigorous program including systemic and contact pesticides is recommended. Resets often present an even greater problem because trees are usually scattered throughout the grove. Scattered resets frequently have serious weed problems since removal of the previous tree allows the area to receive more sunlight and provides more favorable conditions for weed growth.

Keeping weeds under control during the established period of the reset is very important. Weeds compete with young citrus trees for moisture and nutrients and they must be controlled. Weed control around a reset site should be considered at pre-plant, early post-plant, and after the tree is established. Control of weeds prior to planting should be provided. If residual herbicides are used, they should be used in greatly reduced rates and well in advance of planting so that harmful residues do not remain which might damage the reset. Contact or growth regulating herbicides are usually preferred since they do not leave residual effects.

If the grove is under a fertigation program, there is no need for special care in terms of nutrition for resets. The use of controlled-release fertilizers for resets may be a better option rather than making several trips to scattered resets throughout large blocks with soluble dry fertilizers. Young citrus trees require frequent but moderate water application for survival and proper growth. Drainage is as important as irrigation. Excess water must be removed from the rootzone.

USDA

United States Department of Agriculture
National Agricultural Statistics Service

# CITRUS

## FEBRUARY FORECAST
## MATURITY TEST RESULTS AND FRUIT SIZE

Cooperating with the Florida Department of Agriculture & Consumer Services
2290 Lucien Way, Suite 300, Maitland, FL 32751
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February 8, 2013

**All Orange Production Down Less than 1 Percent**
**Valencia Orange Production Down 1 Percent**
**All Grapefruit Production Unchanged**
**All Tangerine Production Down 3 Percent**
**Tangelo Production Down 9 Percent**
**FCOJ Yield 1.62 Gallons per Box (42° Brix)**

| FORECAST DATES – 2012-2013 SEASON | |
|---|---|
| [Release time 12:00 p.m. EDT] | |
| March 8, 2013 | May 10, 2013 |
| April 10, 2013 | June 12, 2013 |
| July 11, 2013 | |

### Citrus Production by Type and State – United States

| Crop and State | Production [1] | | | 2012-2013 Forecasted Production [1] | |
|---|---|---|---|---|---|
| | 2009-2010 | 2010-2011 | 2011-2012 | January | February |
| | (1,000 boxes) | (1,000 boxes) | (1,000 boxes) | (1,000 boxes) | (1,000 boxes) |
| **Non-Valencia Oranges [2]** | | | | | |
| **Florida** | **68,600** | **70,300** | **74,200** | **66,000** | **66,000** |
| California [3] | 42,500 | 48,000 | 45,500 | 46,500 | 46,500 |
| Texas [3] | 1,360 | 1,700 | 1,108 | 1,220 | 1,220 |
| United States | 112,460 | 120,000 | 120,808 | 113,720 | 113,720 |
| **Valencia Oranges** | | | | | |
| **Florida** | **65,100** | **70,200** | **72,400** | **76,000** | **75,000** |
| California [3] | 15,000 | 14,500 | 13,500 | 13,000 | 13,000 |
| Texas [3] | 275 | 249 | 311 | 286 | 286 |
| United States | 80,375 | 84,949 | 86,211 | 89,286 | 88,286 |
| **All Oranges** | | | | | |
| **Florida** | **133,700** | **140,500** | **146,600** | **142,000** | **141,000** |
| California [3] | 57,500 | 62,500 | 59,000 | 59,500 | 59,500 |
| Texas [3] | 1,635 | 1,949 | 1,419 | 1,506 | 1,506 |
| United States | 192,835 | 204,949 | 207,019 | 203,006 | 202,006 |
| **Grapefruit** | | | | | |
| **Florida-All** | **20,300** | **19,750** | **18,850** | **18,000** | **18,000** |
| **White** | **6,000** | **5,850** | **5,350** | **5,000** | **5,000** |
| **Colored** | **14,300** | **13,900** | **13,500** | **13,000** | **13,000** |
| California [3] | 4,500 | 4,310 | 4,400 | 4,000 | 4,000 |
| Texas [3] | 5,600 | 6,300 | 4,800 | 5,280 | 5,280 |
| United States | 30,400 | 30,360 | 28,050 | 27,280 | 27,280 |
| **Lemons** | | | | | |
| California [3] | 21,000 | 20,500 | 20,500 | 20,500 | 20,500 |
| Arizona [3] | 2,200 | 2,500 | 750 | 1,800 | 1,800 |
| United States | 23,200 | 23,000 | 21,250 | 22,300 | 22,300 |
| **Tangelos** | | | | | |
| **Florida** | **900** | **1,150** | **1,150** | **1,100** | **1,000** |
| **Tangerines** | | | | | |
| **Florida-All** | **4,450** | **4,650** | **4,290** | **3,800** | **3,700** |
| **Early [4]** | **2,250** | **2,600** | **2,330** | **2,000** | **2,000** |
| **Honey** | **2,200** | **2,050** | **1,960** | **1,800** | **1,700** |
| California [3 5] | 9,900 | 10,600 | 10,900 | 11,800 | 11,800 |
| Arizona [3 5] | 350 | 300 | 200 | 200 | 200 |
| United States | 14,700 | 15,550 | 15,390 | 15,800 | 15,700 |

[1] Net pounds per box: oranges in California-80 (75 prior to the 2010-2011 crop year), Florida-90, Texas-85; grapefruit in California-80 (67 prior to the 2010-2011 crop year), Florida-85, Texas-80; lemons-80 (76 prior to the 2010-2011 crop year); tangelos-90; tangerines and mandarins in Arizona and California-80 (75 prior to the 2010-2011 crop year), 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 previous forecast.
[4] Fallglo and Sunburst varieties.
[5] Includes tangelos and tangors.

## All Oranges 141.0 Million Boxes

The 2012-2013 Florida all orange forecast released today by the USDA Agricultural Statistics Board is 141.0 million boxes, down less than 1 percent from January, and 4 percent less than last season's production. The total includes 66.0 million boxes of the non-Valencia oranges (early, midseason, Navel, and Temple varieties) and 75.0 million boxes of Valencia oranges.

The hurricane seasons of 2004-2005 and 2005-2006 have been excluded from the usual 10-year regression analysis and from comparisons of the current season to previous seasons. For those previous 8 seasons, the February forecast has deviated from final production by an average of 3 percent with 2 seasons above and 6 below, and differences ranging from 4 percent below to 9 percent above. All references to "average" or "minimum" refer to the previous 8 non-hurricane seasons unless otherwise noted.

## Non-Valencia Oranges 66.0 Million Boxes

The forecast of non-Valencia production is unchanged at 66.0 million boxes. Size and drop components were final last month. The Row Count survey conducted on January 29-30, 2013 shows 79 percent of the early-midseason rows, and 97 percent of the Navel rows have been harvested. Estimated utilization to February 1st, with an allocation for non-certified fruit, has surpassed 54.1 million boxes. The Navel forecast, included in the non-Valencia portion of the forecast, is unchanged at 2.2 million boxes.

## Valencia Oranges 75.0 Million Boxes

The forecast of Valencia production is lowered by 1.0 million boxes to 75.0 million boxes. Current fruit size is above the minimum and is projected to be near the minimum at harvest. Droppage measurements showed a steep increase in the past month and are expected to be well above average at harvest.

## All Grapefruit 18.0 Million Boxes

The forecast of all grapefruit production is unchanged at 18.0 million boxes. The white grapefruit forecast continues at 5.0 million boxes; the colored grapefruit forecast remains at 13.0 million boxes. Final fruit sizes for both white and colored grapefruit are the smallest in a series which began with the 1968-1969 season. Final droppage rates for both white and colored grapefruit are the highest in any season not affected by a freeze or hurricane. The Row Count Survey conducted January 29-30, 2013 indicated 27 percent of the colored grapefruit and only 14 percent of the white grapefruit were harvested.

## All Tangerines 3.7 Million Boxes

The forecast of all tangerine production is lowered 100,000 boxes to 3.7 million boxes. The early tangerine forecast (Fallglo and Sunburst) is unchanged at 2.0 million boxes. Early tangerine harvest is complete for this season. The forecast of the later maturing Honey variety is reduced to 1.7 million boxes. Final Honey fruit size, the smallest in a series which began with the 1980-1981 season, would require 321 pieces of fruit to fill a 1-3/5 bushel box. The droppage rate is slightly below the maximum.

## Tangelos 1.0 Million Boxes

The forecast of tangelo production is lowered 100,000 boxes to 1.0 million boxes. Estimated utilization to the 1st of February is 900,000 boxes. The Row Count survey conducted January 29-30, 2013 showed 74 percent of the rows were harvested.

## FCOJ Yield 1.62 Gallons per Box

The projection for frozen concentrated orange juice (FCOJ) is raised to 1.62 gallons per box of 42° Brix concentrate. The yield projection for the non-Valencia oranges is lowered to 1.49 gallons per box while the projection for Valencia oranges is raised to 1.73 gallons per box. Last season's final yield for all oranges was 1.628480 gallons per box, as reported by the Florida Department of Citrus. Last season's final yield for the components were 1.529715 for non-Valencia oranges and 1.745597 for Valencia oranges.

## Forecast Components, by Variety — Florida: February 2013

[Survey data is considered final in December for Navels, January for early-midseason oranges, February for grapefruit, and April for Valencias]

| Type | Bearing trees | Fruit per tree | Droppage | Fruit per box |
|---|---|---|---|---|
| | (1,000 trees) | (number) | (percent) | (number) |
| ORANGES | | | | |
| Early-midseason | 23,741 | 1,032 | 18 | 274 |
| Navel | 1,013 | 409 | 27 | 137 |
| Valencia | 32,049 | 661 | 18 | 227 |
| GRAPEFRUIT | | | | |
| White | 1,314 | 550 | 22 | 120 |
| Colored | 3,581 | 492 | 20 | 125 |

# Flatwoods Citrus

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Multi-County Citrus Agent
Hendry County Extension Office
P.O. Box 68
LaBelle, FL 33975

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City:______________________State:___________Zip:__________

Phone:_________________________

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## ***Racial-Ethnic Background***

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

## ***Gender***

__Female

__Male