

Summer citrus production practices

Typical summer production tasks in citrus groves include leaf and soil sampling, preparing for hurricanes and tropical storms, and managing weeds, diseases and insect pests.

LEAF AND SOIL SAMPLING

Optimum growth and yield of high-quality fruit cannot be obtained without adequate nutrition. The most successful fertilizer program should be based on tissue analysis and knowledge of soil nutrient status through soil analysis, utilizing university-based recommendations. Deficiency or excess of an element will cause disturbance in plant metabolism and result in poor tree performance.

Leaf sampling

For reliable results and useful interpretation of lab analysis reports, proper procedures for leaf sampling and handling must be followed. Improperly collected leaf samples will provide misleading information about the nutritional status of the trees and the fertilizer programs.

Leaf samples must also be taken at the proper time of the year because nutrient levels within leaves are continually changing. For mature tree blocks, the best time to collect samples would



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be during July and August. Collected leaves should be 4- to 6-month-old spring flush leaves. If samples are taken later in the growing season, the summer flush would probably be confused with the spring flush during the sampling process. Each leaf sample should consist of about 100 leaves taken from non-fruiting twigs of 15 to 20 uniform trees of the same variety and rootstock, and under the same fertilizer program.

Soil sampling

The accuracy of a fertilizer recommendation depends on how well the soil sample from which the recommendation was based represents the area of the grove. In Florida, soil samples should be collected at the end of the summer rainy season and prior to fall fertilization — usually during September and October. However, soil sampling may be conducted at the same time as leaf sampling to save time and reduce cost.

Standard procedures for proper sampling, preparation and analysis have to be followed for meaningful interpretations of the test results and accurate recommendations. Each soil sample should consist of 15 to 20 soil cores taken at the dripline of 15 to 20 trees. These samples should be from within the area wetted by the irrigation system and to a depth of 6 inches. The area sampled should be uniform in terms of soil and tree characteristics and correspond to the area from which the leaf sample was taken. Individual cores should be mixed thoroughly in a plastic bucket to form a composite sample. A subsample of appropriate size should be taken from the composite mixture and put into labeled paper bags supplied by the lab. Soil samples should be air-dried but not oven-dried before shipping to the testing laboratory for analysis.

Consult UF-IFAS publication SL 253, "Nutrition of Florida Citrus Trees," at <http://edis.ifas.ufl.edu/pdf/files/SS/SS47800.pdf> for more details.

PREPARING FOR A HURRICANE/TROPICAL STORM

The hurricane season is upon us once again. Hurricanes may develop at any time during the June to November season. In order to best protect yourself and your grove, it is essential to develop a hurricane plan and prepare in advance.

Although there is not much that can be done to prevent damage to trees and

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Weeds can compete with trees for water, nutrients and light.

fruit from the wind, excess rainfall amounts have the potential to cause the most severe and longest lasting damage to citrus. There are precautions that can be taken to help minimize damage and protect your grove:

- Clean water-control structures and pump down ditches and grade areas to help facilitate drainage and water removal efforts after the storm.

- Make sure all emergency equipment is on hand and in good working condition. This includes gen-

erators, chain saws, torches and air compressors.

- Ensure radios are in working order.
- Secure all hazardous materials.
- Fill fuel, fertilizer and other liquid material tanks and secure them so they won't move in the wind and rain.

- Establish personnel assignments and make a list of all tasks that will need to be performed after the storm.

- Keep an updated list of contact information for workers at their place of safety so you can communicate with

them following the storm.

- Keep a list of emergency contact information for agencies you may need assistance from during or after the storm.

WEED CONTROL

Weeds can reduce the growth, health and survival of young trees, or affect the time they come into bearing and ultimately fruit production. Weeds compete with trees, particularly young trees, for water, nutrients and even light. Weeds can easily cover small trees if left uncontrolled. Weeds can also reduce efficacy of low-volume irrigation systems and intercept soil-applied pesticides. For the control of well-established perennial weeds, a postemergence herbicide with systemic metabolic activity should be used with pre-emergence soil residual products.

Timing and frequency of application are the keys to good vegetation management. Increased application frequency of lower rates of soil residual herbicides is more effective in young groves where vegetation presence is greater due to exposure of the grove floor to sunlight and where a greater herbicide safety factor is required.

To properly control weeds, they must be actively growing. Herbicides applied to drought-stressed weeds may result in poor control due to the lack of uptake and translocation of the applied herbicides.

Well-maintained, accurately calibrated equipment with good filtration, agitation, and uniform spray distribution is essential for effective vegetation management. A well-designed herbicide boom will reduce tree-skirt contact, spray drift and interference of heavy weed cover with individual nozzle outputs. The result will be reduced tree damage and fruit drop while improving control of target vegetation. Tree-skirt pruning and timing of postemergence applications can also reduce boom and spray contact with low-hanging limbs and fruit.

In determining management options, herbicide selection should be based not only on species and stage of vegetation development, but product solubility, leaching potential and soil type. Objectives are to reduce weed competition and interference through measured vegetation control/suppression with inputs having reduced potential for leaching through over-irrigation, runoff and erosion, chemical drift or other off-target impacts. For more details, go to 2011 Florida Citrus Pest Management Guide: Weeds (<http://edis.ifas.ufl.edu/CG013>).

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CITRUS BLACK SPOT

Citrus black spot is one of the most important fungal diseases of citrus. So far, it has been contained in Southwest Florida. The symptoms are necrotic lesions on fruit that make them unacceptable for the fresh market. When the disease is severe, black spot may cause extensive premature fruit drop that reduces yields.

The primary source of infection is ascospores (sexual spores) produced on dead leaves on the ground. Ascospores are forcibly ejected during rains or irrigation onto fruit and infection occurs mostly in late spring and summer.

Currently, there are two product groups registered for citrus in Florida for black spot control: coppers and the strobilurins. The strobilurin fungicides can be used at any time for disease control. Copper fungicides are more economical and have more residual activity than the strobilurins. However, copper fungicides applied in dry, hot weather can be phytotoxic to the fruit. Use of strobilurins in dry, hot weather will avoid fruit damage. Protective treatments using these fungicides must be properly timed, and up to five sprays may be required during the period of susceptibility.

Removal of dead leaves in groves reduces inoculum potential and may be an effective practice. Be sure to rotate between modes of action to minimize pesticide resistance issues. For more information, go to 2011 Florida Citrus Pest Management Guide: Citrus Black Spot (<http://edis.ifas.ufl.edu/cg088>).



Citrus black spot

GREASY SPOT

Management of greasy spot must be considered in all Florida citrus groves. Greasy spot spores germinate on the underside of the leaves, and the fungus penetrates through the stomates (natural openings on lower



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Greasy spot

leaf surface). Warm and humid nights when combined with high rainfall, typical of Florida summers, favor infection and disease development.

On Valencias, a single spray should provide acceptable control when applied from mid-May to June. On early and mid-season oranges and grapefruit for processing, two sprays may be needed, especially in the southern part of the state where summer flushes constitute a large portion of the foliage. Two applications also may be needed where severe defoliation from greasy spot occurred in the previous year. In those cases, the first spray should be applied from mid-May to June and the second soon after the major summer

flush has expanded.

Thorough coverage of the underside of leaves is necessary for maximum control of greasy spot, and higher spray volumes and slower tractor speeds may be needed than for control of other pests and diseases. For more information on greasy spot, go to 2011 Florida Citrus Pest Management Guide: Greasy Spot (<http://edis.ifas.ufl.edu/cg018>).

CITRUS CANCKER

Citrus canker is still a major problem in Florida citrus groves. Citrus fruit infected with canker cannot be packed for the fresh fruit market. Citrus canker can cause defoliation, fruit drop, twig die-back, severe tree decline and reduced yield.

Major citrus canker outbreaks generally occur when new foliage is emerging or when fruit are in the early stages of development. Frequent rainfall in warm weather, especially during thunderstorms, contributes to disease development. Leaf susceptibility is complicated by the Asian citrus leafminer.

Most spread of canker bacteria by wind and rain is over short distances. Spread over longer distances can occur during severe tropical storms, hurricanes and tornadoes.

Where canker is widespread, the primary means of control are: 1)

planting of windbreaks, 2) protection of fruit and leaves with copper sprays, and 3) control of the citrus leafminer.

Copper products are quite effective for preventing fruit infection, but much less effective for reducing leaf infection. Application of copper to young leaves protects against infection, but protection is soon lost due to rapid expansion of the surface area.

Most of the infection of oranges occurs from April to July. With endemic canker, five copper sprays (starting in early April) applied at three-week intervals are recommended for early processing oranges. Three applications (starting in mid April) at three-week intervals should be sufficient for Valencias and midseason varieties. Copper usage should be minimized since this metal accumulates in soil and may cause phytotoxicity to the fruit peel or create environmental concerns. For more information, go to 2011 Florida Citrus Pest Management Guide: Citrus Canker (<http://edis.ifas.ufl.edu/cg040>).

CITRUS LEAFMINER

Populations of leafminer build rapidly on the spring flush. Throughout the warm season, leafminer populations vary with the flushing cycles and subsequent flushes are often severely damaged. The summer period of high leafminer damage coincides with the rainy season when canker spread is most likely.

Citrus leafminer greatly exacerbates the severity of citrus canker. Leafminer tunnels infected by canker produce many times the amount of inoculum that is present in the absence of leafminer. On young trees, use of soil-applied systemic insecticides is the most effective means of preventing mining damage on the new flush and has little direct effect on natural enemies. Soil drenches directly to the base of the tree have been shown to provide at least eight weeks of control of leafminer.

Foliar sprays should be timed to coincide with the appearance of the first visible leaf mines which occur immediately following the feather leaf stage or from one to two weeks after budbreak.

The only products currently available for leafminer control on large trees are foliar insecticide sprays. While a number of products are effective against this pest, achieving control of leafminer using foliar sprays on large trees is difficult due to the unsynchronized flush typically encountered during summer and fall. However, since leafminers affect only developing leaves, coverage of

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peripheral leaves in the canopy should be adequate to exert suppression when applying foliar pesticides.

ASIAN CITRUS PSYLLID

The Asian citrus psyllid has become the most important insect pest of Florida citrus due to the presence of citrus greening disease, which is spread by the psyllid. Young trees that produce multiple flushes throughout the year are at greater risk of greening infection than mature trees because of the attraction of adult psyllids to the new flush. Even without greening, young trees in the field need to be protected for about four years from psyllids and leafminers to grow optimally.

Soil-applied systemic insecticides will provide the longest-lasting control of psyllids with the least impacts on beneficials.

Management options for psyllid control on bearing trees are much more limited than for non-bearing trees. At present, the only chemical control option that has been demonstrated to be effective for reducing psyllid populations on bearing trees is the use of broad-spectrum foliar insecticide applications. Broad-spectrum foliar sprays are most effective when used to control adult psyllids prior to the presence of new flush.

Psyllid management programs should begin by first targeting overwintering adult psyllids during the winter months when the trees are not producing flush. By eliminating these overwintering adults, psyllid populations will be greatly reduced in the spring. Additional sprays for psyllids should be made when observing an increase in adult populations during the summer.

Foliar insecticide applications should only be used when needed to minimize the impact on natural enemies that maintain psyllids at lower levels later in the year.

Management practices used within a grove can also affect psyllid populations, especially those practices that promote new flush such as hedging and topping and fertilization. Trees should always be sprayed with a broad-spectrum insecticide prior to or just after hedging and topping before any flush develops. For more information, go to 2011 Florida Citrus Pest Management Guide: Asian Citrus Psyllid and Citrus Leafminer (<http://edis.ifas.ufl.edu/in686>).

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Make Your Plans for the 2011 Citrus Industry Annual Conference



By Michael W. Sparks

Once again, the Florida Citrus Industry Annual Conference will return to the beautiful Hyatt Regency Coconut Point in Bonita Springs, Fla. The 2011 event takes place from June 15-17. Go to www.flcitrusmutual.com and register immediately if you haven't already.

The Conference room rate cutoff is May 16, so book a hotel room as well.

This will be Mutual's seventh year hosting the Conference. In 2010, we had almost 600 attendees for three days of fun, education, business and camaraderie. This year's Conference is sure to be a big hit as well.

The Educational Session agenda for 2011 touches on some of the industry's issues. First, FDOC economists will offer up a positive view of the global citrus market and the role of emerging production areas, including Central America, Mexico and China.

In addition, Syngenta's Good Science Guy – Dr. Jim Frank – is scheduled to give an entertaining and informative talk on how to avoid pesticide resistance.

The next part of the session will feature scientists presenting the most promising HLB research. Finally, the Florida Department of Agriculture and Consumer Services will unveil the new statewide Best Management Practices (BMPs) document. There will be several opportunities to earn CEUs.

We will also have a Spouse Event on Thursday titled "The Juicy Scoop." The event, which will educate attendees on the latest in health, nutrition, beauty and fashion, is sponsored by the Florida Department of Citrus.

Prepare for a lot of entertainment at this year's Conference. On Wednesday, courtesy of the International Federation of Fruit Juice Producers, an Elvis impersonator with a full scale backing band of dancers and horns will perform. And on Thursday after the industry banquet, we will have a dueling pianos show that is certain to get the house rocking. Friday's family dinner will have a disc jockey and dancing.

Because we want the Conference to be a family affair, keep in mind that "Camp Coconut" will be available to your children on Thursday and Friday night. The Conference will again stage several events designed to strengthen the voice of the Florida citrus growers in Tallahassee. The fund-raisers include a family fishing trip (in lieu of a tournament), silent auction and a golf tournament at the top rated Raptor Bay Golf Club.

We're looking forward to a great event and I hope to see you there.

Michael W. Sparks is the Executive Vice President/CEO of Florida Citrus Mutual, the state's largest citrus grower organization.



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