

Summer production practices

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Summer season is rapidly approaching and so is the need to adapt standard production practices to maintain a healthy and productive citrus grove. Over the last year, citrus greening has taken front stage in the minds of most growers. Despite the urgency of the citrus greening epidemic, production managers and growers need to keep a watchful eye on standard production practices that previously occupied much of the summer season and work schedule.

The goal of this article is to highlight traditional summer pest management and nutritional programs. However, this focus is not intended to minimize the need for effective psyllid and greening management programs. Important to remember is that actual grove practices will vary with grove and seasonal conditions.

FOLIAR DISEASES

A number of foliar diseases will affect all citrus cultivars. The major diseases to address during the summer include citrus greasy spot and citrus canker.

GREASY SPOT management programs must be considered for all cultivars and both fresh and processed crops. Greasy spot can cause defoliation, reduce yield and can weaken the tree, making it more susceptible to attack by other pests. The severity of the disease in the summer is usually seen in late fall and winter, contributing to significant leaf drop. Leaves of all varieties and ages are susceptible. For spore germination and infection to occur, suitable environmental conditions, including night temperatures exceeding 72°F for more than six hours and relative humidity of greater than 90 percent are needed.

In most cases, two sprays are required for successful control and may vary depending on variety and the disease pressure of the previous year. The first spray should be scheduled in May-June and the second in July-August. Thorough coverage of the underside of leaves is very important and necessary for the control of greasy spot. Products available for the control of greasy spot include: petroleum oil, copper, Abound, Enable, Gem and Headline. For more information about greasy spot, please review the chapter in the annual University of Florida Citrus Pest Management Guide at <http://edis.ifas.ufl.edu/CG018>.

CITRUS CANKER is a damaging disease of leaves, fruit and stems that can affect all citrus cultivars. Grapefruit and some early cultivars including Earlygold are highly susceptible to canker and especially problematic. Navels, Pineapple and Hamlin oranges are moderately susceptible; less suscepti-

ble varieties include mid-season oranges and Valencia.

Citrus canker outbreaks occur on emerging shoots and expanding fruit. Frequent rains with high wind are the main contributor to the spread. Where canker is established, the primary means of control are:

- 1) planting windbreaks,
- 2) controlling citrus leafminer, and
- 3) protecting fruit and leaves for a short period of time with copper sprays.

Windbreaks are the single most effective means of managing the spread of canker. They work by reducing wind speed and making canker spread within an area less problematic.

For more information on selection of plant species and design of windbreaks, see the CREC Web site at <http://www.crec.ifas.ufl.edu/extension/windbreaks/index.htm>

Citrus leafminer feeding and tunneling damages the leaf. These wounded areas are highly susceptible to the canker bacterium and can easily be a major factor in increasing disease severity.

Copper fungicides are most frequently used to suppress infection on fruit, but are less effective on leaves. Since leaves expand at a faster rate than fruit, this expansion will produce unprotected areas on the leaf surface that allow infection to

occur. Oranges are susceptible once the fruit reaches a size of about ¾-inch in diameter and becomes somewhat resistant in mid- to late July. Grapefruit and other highly susceptible cultivars (Earlygold) will remain susceptible until the fruit is fully expanded in late September or October.

To suppress canker on fruit, sprays at 21-day intervals of copper fungicides should be applied beginning in late April and continuing until the fruit be-

comes resistant to the bacteria. Fruit susceptibility varies with season and cultivar. For more information on citrus canker, please see the section in the annual Citrus Pest Management Guide at <http://edis.ifas.ufl.edu/CG018>

FOLIAR PESTS

CITRUS MITES can be found on all citrus varieties in Florida. Mites feed on green stems, leaves and fruit. Damage characteristics will differ by cultivar, fruit size and maturity. Mite damage can reduce fruit size and blemish external quality.

To effectively control mites, routine scouting should occur during the year with inspection of both leaves and fruit. Cultivars intended for the fresh market will require



A fertilizer spreader at work in a grove

greater scouting and pest control practices to maintain an acceptable level of external fruit quality.

When selecting a pesticide to control mites, growers should remember to rotate classes of insecticidal products when possible to minimize resistance development. Additional information on mite control can be found in the annual Citrus Pest Management Guide or on the Web at <http://edis.ifas.ufl.edu/CG002>.

As mentioned earlier in the above canker discussion, CITRUS LEAF-MINER can greatly increase the severity of citrus canker. The insect wounds the leaf, making it easier for the canker bacterium to enter and proliferate within the leaf. Citrus leafminer populations will build rapidly on the late spring, summer flush and on each subsequent flush and then decline during the cooler winter months. The control of citrus leafminer is a very important component of the overall pest management program and is necessary to reduce the severity of citrus canker. Products for the control of citrus leafminer include Admire, Agri-Mek, Assail, Micromite, Delegate, petroleum oil and Spintor.

Over the last year it would have been almost impossible not to hear presentations or read articles regarding the control of the ASIAN CITRUS PSYLLID. The psyllid has easily become the most important insect pest in Florida citrus due to its ability to spread citrus greening. Since greening has been found in all commercial citrus production regions, you should assume that greening is in your grove and you will have to develop adequate greening and psyllid management programs to address this major pest and disease.

Female psyllids require new foliage flushes to lay their eggs. Once the leaves begin to fully expand and harden, they are no longer suitable for nymphal development. When suitable flushes are not present within your grove, the adults will forego reproduction until new flushes are available. Once the psyllid acquires the greening bacterium, it can transmit it for its entire life span.

Psyllid management programs will vary with tree age, as young trees tend to flush more frequently or out of sync with mature trees. Products for psyllid control will also vary with tree age or size. Recommended products for psyllid control include Temik, Sevin, Lorsban, Danitol and numerous imidacloprid products of which some may be applied to either the soil or foliage.

When developing programs to suppress psyllids, you must remember that

many of the products selected may have an adverse impact on many of the beneficial insects that suppress many of the scale and other pests commonly found in citrus. It is expected that many of the scales that have been adequately controlled in the past will emerge as pests in the near future.

Information on both citrus leafminer and psyllids can be found in the annual Citrus Pest Management Guide at <http://edis.ifas.ufl.edu/IN686>

WEEDS

In Florida with our warm temperatures, long days and frequent rains, we have ideal conditions for the rapid development of weed growth within citrus groves. Weeds should be controlled to minimize competition with the tree for water, nutrients and light. Weeds can be controlled using various residual or contact herbicide materials when applications are appropriately timed for the weeds present and stage of growth. Growers also need to remember that some herbicide products have use limitations and restrictions based upon tree age, soil types or county locations.

Effective scouting for weeds and their growth stage will improve weed control programs by allowing products to be effectively selected. Understanding the impact of weeds on soil applied insecticide materials for the control of psyllids and citrus leafminer is important. These soil applied materials should be applied to relatively weed free soil to allow for maximum tree uptake. For more information on weeds, please consult the annual Citrus Pest Management Guide or the web version at <http://edis.ifas.ufl.edu/CG013>

FERTILITY PROGRAM

Standard fertility programs for mature trees are based upon the practice of making multiple applications within the year or crop season. The first application is usually applied in the late winter or early spring and then followed by an application to be timed between April and late May. The third and final application should be applied in the fall (late September – mid-October). Soil applications of high amounts of dry fertilizer materials should be avoided during the summer rainy season to minimize the leaching of these materials below the root zone and reduce contamination of ground and surface waters.

Compared to conventional ground application, fertigation improves fertilizer efficiency. To effectively fertigate crops, growers must properly maintain microirrigation systems to apply water

and fertilizer uniformly. Limit injection time to prevent the application of too much water, because excessive water leaches plant nutrients below the root zone. In addition, too much water saturates the soil, causing damage to roots.

Keep in mind that fertilizer and water are wasted when fertigating a very wet soil to keep up with a fertigation schedule. Water and nutrient uptake are drastically reduced under waterlogged soil conditions. The total amount of nutritional materials applied should be combined from all sources including foliar, fertigation and soil applied to determine the total annual application rate.

To fine tune your nutritional program, annual soil and leaf sampling and analyses are recommended. For reliable results and useful interpretation of lab analysis reports, follow the proper procedures for leaf and soil sampling and handling because improperly collected samples will provide misleading information about the nutritional status of the trees and need for a specific fertilizer program.

Soil testing is usually completed at the end of the summer rainy season and prior to the fall fertilizer application. The main elements analyzed with the soil test are pH, phosphorus (P), calcium (Ca), magnesium (Mg) and copper (Cu). The best time for leaf sampling is in July and August so that 4- to 6-month-old spring flush leaves are sampled. Leaves should be taken from non-fruiting twigs of uniform trees. The major elements analyzed in the leaf tissue testing are nitrogen (N), P, potassium (K), Ca, Mg, Cu, zinc (Zn), manganese (Mn), iron (Fe), and boron (B).

For the latest recommendation on plant nutrition for citrus in Florida, consult the recently revised University of Florida publication, SL253, Nutrition of Florida Citrus Trees, Second Edition. This publication is available on-line at <http://edis.ifas.ufl.edu/SS478>. A limited number of copies may be available at some of the Extension Service Offices statewide.

Citrus production in Florida has certainly become more difficult and complicated in recent years due to citrus canker and citrus greening. However, growers should not forget standard production practices that have made Florida an outstanding location to produce good yield of high quality fruit for many years.

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