Spring production tips

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With spring weather rapidly approaching, citrus trees will begin new growth with flower bud formation. Cultural programs for the upcoming spring season need to be formalized to maximize fruit yield and health of citrus trees.

In this article, we will address some of the common production practices which growers should consider for the spring season. Additional and detailed information can be found in University of Florida publications: 2006 Florida Citrus Pest Management Guide, SP-43; Nutrition of Florida Citrus Trees, SP-169; and Water and Florida Citrus, SP-281; EDIS web site at http://edis.ifas.ufl.edu/ or by contacting your local county extension agent.

FERTILIZATION

Many growers have already applied or are in the process of applying their first application of fertilizer for the 2006-07 citrus crop. Most growers apply fertilizer at least three or four times annually, with the first application in late winter or early spring. The applications are timed to maximize tree utilization and to promote tree and fruit growth.

Nitrogen (N) and potassium (K) fertilizer applications with a 1:1 ratio of N to K_2O are recommended. Phosphorous (P_2O_5) is recommended to be applied either annually at 25 percent of the N rate or once every four years at the full N rate. If leaf testing on calcareous soils reveals that high soil calcium may be limiting potassium (K) uptake, the K_2O rate should be increased by 25 percent to have an N:K_2O ratio of 1:1.25. Magnesium (Mg) should be applied regularly at 1/5 (20 percent) of the N rate unless leaf analysis shows more than 0.5 percent Mg. If leaf Mg deficiency symptoms occur, Mg should be applied in the fertilizer, and the rate should be increased up to 30 percent of the N rate until symptoms are no longer present in mature leaves of subsequent flushes. The remainder will be divided into May and late September or October applications.

The objective of a well-formulated fertilizer program is to apply at least two-thirds of the total annual amount when the fruit is rapidly expanding and prior to the beginning of the summer rainy period. Applications should be minimized during June through early September as fertilizer applied during this time of the year is subject to leaching below the root zone during periods of heavy rainfall.

Applications of nitrogen or other nutritional elements that are applied to enhance bloom or for other horticultural reasons should be deducted from the annual recommended rates. Other nutritional materials such as manganese (Mn) and boron (B) may be applied in the fertilizer or in a post bloom spray. Boron applications should be applied in either the post bloom spray or in the soil fertilizer program, but not both since the margin between toxicity and deficiency is rather narrow.

Fertilizer management should include calibration and adjustment of fertilizer spreaders, booms, pumps, or irrigation systems to accurately deliver fertilizer amounts and place fertilizers within the tree root zone. To improve fertilizer efficiency, soil and leaf analysis data should be studied, evaluated, and considered when generating a fertilizer program and selecting a fertilizer formulation.

Supplemental irrigation is of particular importance during the dry period (February-May), which coincides with the critical stages of leaf expansion, bloom, fruit set, and fruit enlargement.

IRRIGATION

As we transition from the cooler winter weather to the spring, the days begin to lengthen, temperature increases, plant growth begins, and rainfall diminishes, particularly in the drier spring months. Supplemental irrigation is of particular importance during the dry period (February-May), which coincides with the critical stages of leaf expansion, bloom, fruit set, and fruit enlargement.

In the spring period, growers should water their trees when one-fourth to one-third of the available soil water has been removed by plant transpiration and soil evaporation.

After July, irrigation is less critical. It can be applied at less frequent intervals allowing for up to 50 percent of the available soil water to be depleted before the next scheduled irrigation. The amount of water removed

from the soil can be determined by using various soil water measuring devices. These could include electronic probes, tensiometers or sensors.

Depending on rainfall, irrigation of mature citrus trees should be scheduled to apply water two or three times per week with the irrigation duration to be 3-5 hours in length. Young trees would be irrigated on a similar schedule using shorter durations. Of course, other factors will also affect irrigation frequency, including soil type, tree size, and environmental factors. Good water management practices should include precise irrigation scheduling and well-designed, uniform irrigation systems to minimize waste. Non-uniform irrigation will cause excess water to be applied in some areas while leaving other areas deficient.

Growers and production managers should not only be aware of the losses resulting from irrigation systems that apply water and chemicals non-uniformly, but should adopt the recommended ways to minimize these losses.

PEST AND DISEASE MANAGEMENT

The disease with the greatest potential to present problems during the bloom period is postbloom fruit drop or PFD. It should be controlled on all varieties, but particularly on navel and Valencia oranges if extended periods of rainfall occur during flowering. The spores of the fungus are produced directly on the surface of infected petals and splash-dispersed by rains to other healthy flowers. Infections occur within 24 hours and symptoms are visible in 4-5 days. The PFD model which has been developed to aid growers in determining when to spray is available on the University of Florida's web site at http://edis.ifas.ufl.edu

For more information, call the toll-free "Citrus Disease Hotline" sponsored by Syngenta Crop Protection (1-866-365-3017) for the latest reports on PFD and other citrus diseases. On the "Hotline" Pete Timmer, extension plant pathologist at the University of Florida/IFAS Citrus Research and Education Center, will provide current information on recent outbreaks, the status of the bloom, and other relevant news. Information on PFD and other foliar fungal diseases is also available on Timmer's citrus pathology website at http://www.crec.ifas.ufl.edu/timmer/

Alternaria brown spot affects Minneola and Orlando tangelos, Dancy tangerine, Murcotts, and less frequently Nova, Lee, and Sunburst. Spores are produced on fallen infected leaves as well as leaves on the tree. (See "Managing alternaria brown spot," page 16.)

In 2004, citrus trees damaged by hurricanes in central Florida exhibited an increase in the occurrence of melanose. All commercially grown citrus varieties are susceptible to melanose, which is generally only of concern for fruit destined for the fresh market. The disease over-winters in recently (< one-year-old) killed citrus wood.

Citrus scab will also need to be addressed during this time of year for selected varieties like grapefruit, Temples, Murcotts, tangelos, and some tangerine hybrids. Spores of the fungus are produced directly on scab pustules on previously infected fruit and leaves where they are dispersed to healthy tissue by water splash.

Copper and other fungicides are available for the control of Alternaria, melanose and scab.

Citrus rust mites and pink citrus rust mites are found on all citrus varieties during this same time period. The mites feed on leaves, stems and fruit. The pink citrus rust mite may develop higher numbers than the citrus rust mite earlier in the season (April-May). The market in which the fruit will be sold, i.e. fresh or processed, will determine the need for control. Citrus rust mite is mainly a pest problem on fruit grown for the fresh market. However, on some cultivars such as Sunburst, Fallglo and Ambersweet, rust mite damage can be severe on stems and foliage, and may cause leaf injury and leaf drop.

The citrus spider mite complex prefers conditions that occur in the spring. These mites thrive in dry, hot conditions of low humidity and can cause significant damage if populations are allowed to become excessive. Resulting damage may include defoliation and twig dieback, also know as firing.

With citrus greening being found in Florida in August 2005, the need for controlling the citrus psyllid will become more important. The citrus psyllid is the vector of this new disease. Immature psyllids feed on growing citrus terminals, causing permanent leaf and shoot distortion, and are primarily found when new flush is present whereas the adults can be found throughout the year.

WEED CONTROL

Weeds growing around both young and mature trees will compete with the tree for nutrients, water, space and light; impact irrigation patterns; and intercept soil-applied pesticides. In developing an effective weed control program, growers should minimize the negative aspects that weeds present in a citrus grove over time.

Weed species will vary within the grove as well as between groves. Careful consideration should be given to the weeds present in the grove as well as those which were problems in the past. Once the predominant weed species in an area have been determined, a weed control plan can be developed. This plan will most likely utilize both pre- and postemergence herbicides in multiple applications to effectively control weeds throughout all growing seasons.

Most weed control programs are more effective if herbicide applications are timed to address weeds prior to emergence or while they are in a seedling stage. Once weeds are well established and in a mature stage, the program will require higher rates to eliminate the weeds.

A successful weed control program will be improved by selecting the optimum herbicide or herbicide mixture to enhance weed control. Climatic extremes (drought or cold weather) that stress weed growth or germination may result in poor herbicide performance. Additionally, most preemergence herbicides will require some form of incorporation into the soil with rainfall or irrigation within several weeks of application. Applications of herbicide during the drier months of April and May can also impact weed control due to the lack of incorporation into the soil where the weed seeds are germinating.

Properly calibrated and maintained equipment ensures a more uniform distribution of nutrients and pesticides. This, combined with other conservation practices, reduces production costs, soil surface runoff, and chemical movement to nearby surface waters. Equipment that has not been properly maintained and calibrated will have problems delivering accurate amounts and properly distributed nutrients or other chemicals to the target site.

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