



EXTENSION CONNECTION

By Mongi Zekri



Citrus production practices for October

In Florida, there are numerous routine grove-care operations occurring in October. Some of these important practices include nutrition, irrigation/fertigation and pest management.

NUTRITION

To increase fertilizer efficiency, soil and leaf analysis data should be taken into consideration when generating a nutritional program. In warm areas such as Southwest Florida and the east coast where tree growth can continue through the winter, fertilizer applications should also be made in the fall

to satisfy vegetative growth demand. During the last few years, controlled release fertilizers (CRFs) have become very popular for Florida citrus production. They induce more growth and yield, due to a continuous supply of nutrients, particularly for HLB-infected trees. Because of their high efficiency, CRFs are applied at reduced rates and frequencies.

For more information, see *Nutrition of Florida Citrus Trees, 3rd Edition* (edis.ifas.ufl.edu/pdf/files/SS/SS47800.pdf) by Kelly T. Morgan and Davie M. Kadyampakeni.

IRRIGATION AND FERTIGATION

October can be one of the driest months in Florida. Drought can reduce fruit growth and increase fruit drop. Extension growth in shoots and roots as well as leaf expansion are all negatively correlated with water stress. Growth is closely related to turgor, and the loss of turgidity reduces photosynthesis, leaf and fruit enlargement, juice content and yield, while increasing leaf and premature fruit drop. Irrigation is important during dry falls to minimize premature fruit drop.

With microirrigation systems, fertigation should not be considered an option. It should be considered a necessity. Through fertigation, fertilizer is placed in the wetted area where feeder roots are extensive. Nutrients are applied more frequently in small amounts so that they are available when the tree needs them. Increased fertilizer application frequency can increase fertilizer efficiency and reduce leaching. Through fertigation, comparable or better yields and fruit quality can be produced with less fertilizer.

Additional information and citrus irrigation resources are available on the Florida Automated Weather Network website (fawn.ifas.ufl.edu).

PEST MANAGEMENT

Weeds can compete with citrus trees for soil moisture and nutrients. Weeds can also interfere with microsprinkler patterns and applications of agro-chemicals to the soil. Harvesting operations are more efficient when weeds are well managed.

Most citrus growers utilize a combination of pre- and post-emergent residual herbicides in their weed management programs throughout the season. Typically, a residual herbicide (often with a post-emergent herbicide) is applied in the fall to maintain a relatively weed-free grove through harvest.

Fruit drop has been observed when late summer/early fall applications of various post-emergent herbicides come into contact with low-hanging fruit. It is important to make sure the herbicide boom shield is functioning properly, and the off-center nozzle at the end of the boom is set to avoid the spray mixture from contacting the lower portion of the canopy.

Additional information about weed management is available in the 2020 Florida Citrus Production Guide (edis.ifas.ufl.edu/cg013).

Insect and mite management is a consideration for citrus growers in October. With citrus greening, Asian citrus psyllid management has become one of the most important considerations for citrus trees.

Spider mites prefer dry weather and low relative humidity that can occur in October.

Spider mites feed primarily on mature leaves and differ from rust mites by feeding beneath the epidermal layer of cells. They can cause cell destruction and reduce 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 October.

When populations of Texas citrus mites or citrus red mites are high, they will feed on developing fruit. Spider mites prefer dry weather and low relative humidity that can occur in October. Populations of Texas citrus mites 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 five to 10 motile spider mites per leaf develop, it is reasonable to apply a miticide. Infestations comprised predominantly of adult males should be considered in decline and do not require control. Petroleum oil provides some ovicidal activity against spider mite eggs. To avoid developing resistance, be sure to rotate miticide modes of action. 🍌

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Funding Fewer Projects



By Rick Dantzer, CRDF chief operating officer

The volume and breadth of Citrus Research and Development Foundation (CRDF) projects from over the years is astounding. We just passed our 11th year of existence. Here's an accounting of where we have been, where we are and where we are going.

Over its existence, CRDF has funded 457 projects at a cost of \$139,377,300.17. The Bayer project, at \$14,297,700, has been the most expensive. The least expensive, at \$5,425, was a project by Eric Triplett to develop an antimicrobial assay to inhibit *Liberibacter crescens*, the closest cultured relative of the citrus greening pathogen.

We assign the projects to 13 general categories. The category with the most projects is "HLB epidemiology and mitigation of HLB by cultural practices." The category with the fewest is "Citrus genomics and transcriptomics."

CRDF survives primarily on two sources of income:

1. Three pennies of box tax, most recently ratified by growers in February 2016. This authorization became effective on Aug. 1, 2016. It expires on July 31, 2022, if not re-authorized by referenda (grower referendum held every six years).
2. State legislative appropriation. For the last five years, the appropriation has been \$8 million per year, except for in 2018 when it was \$4 million.

In the last two years, the Legislature has required CRDF to spend \$5 million of the \$16 million appropriation on the Citrus Research and Field Trial program. So, in the last two years, we have had \$5 million fewer dollars to support our traditional research portfolio. We do not object to this requirement, but this redirection of funds has begun to pinch.

With fewer dollars, we began funding fewer projects. To illustrate how discerning CRDF has become, in 2018 it funded 38 of 113 pre-proposals. In 2019, it funded eight of 93. In 2020, only three of 27 were funded.

Nevertheless, CRDF still has 53 projects under contract, some of which last until 2023. Regardless, do not worry about whether we have sufficient funds for worthy projects. The board is exercising proper oversight of spending, and monies are available for industry needs.

For example, there are numerous projects CRDF is evaluating that will likely be considered "off-cycle," which is a mechanism available to our Commercial Products Delivery Committee, chaired by John Updike, to consider projects that aren't part of a request for proposal (RFP).

We fully expect funding trends to get back to where they were, where we work with growers to identify general research needs, draft an RFP to address them and request pre-proposals. Until then, expect CRDF to do more off-cycle projects or take more of a "directed research" approach, where we identify a specific need, determine who can best address it, and work with those scientists to develop a project and budget around it. This is an efficient way to fund research, but as a quasi-public body, we must adhere to certain safeguards and standards. However, it can be done.



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