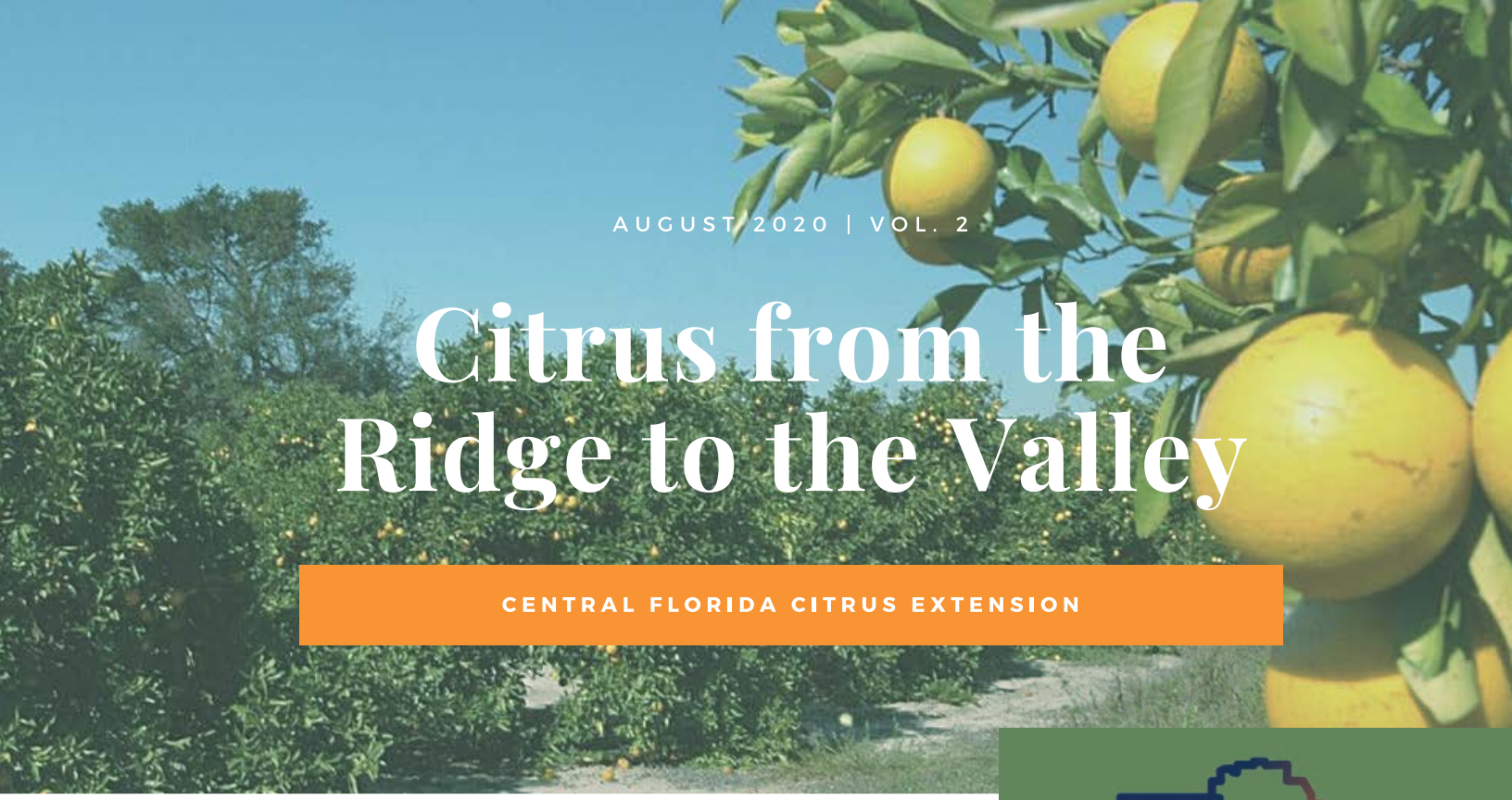

AUGUST 2020 | VOL. 2

Citrus from the Ridge to the Valley

CENTRAL FLORIDA CITRUS EXTENSION

The Summer Heat is On!

We are through half of 2020, which has been a very challenging year and we hope everyone is doing well. Grove activities are in full swing, with herbicide applications, mowing, and nutritional sprays being done all across the industry. The summer heat is in full force and most of us are getting at least some rain daily. This issue of our area newsletter includes the following topics:

- Summertime Leaf Sampling and Analysis
- Summer Weather Outlook
- The New 3rd Edition, Nutrition of Florida Citrus Trees
- Important Paraquat Mitigation Update
- Overview of the BMP Program for Florida Citrus
- Rootstock Selection Resources

We hope you can find these topics beneficial in your operations. As we continue to navigate through the COVID-19 pandemic, our usual meetings, workshops, and events, have all been either postponed or offered virtually. But please be assured that we are still here to answer your questions, address your concerns and issues through phone, email, or field visits as needed.

Laurie Hurner has been serving our citrus growers in Highlands County for over 6 years. She has moved on to become the Assistant County Administrator for Highlands County. We will certainly miss her as our UF/IFAS Citrus Extension Agent, and wish her the best of luck in her new position. Thank you for all you have done for our industry!

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2020 Florida Citrus Growers' Institute

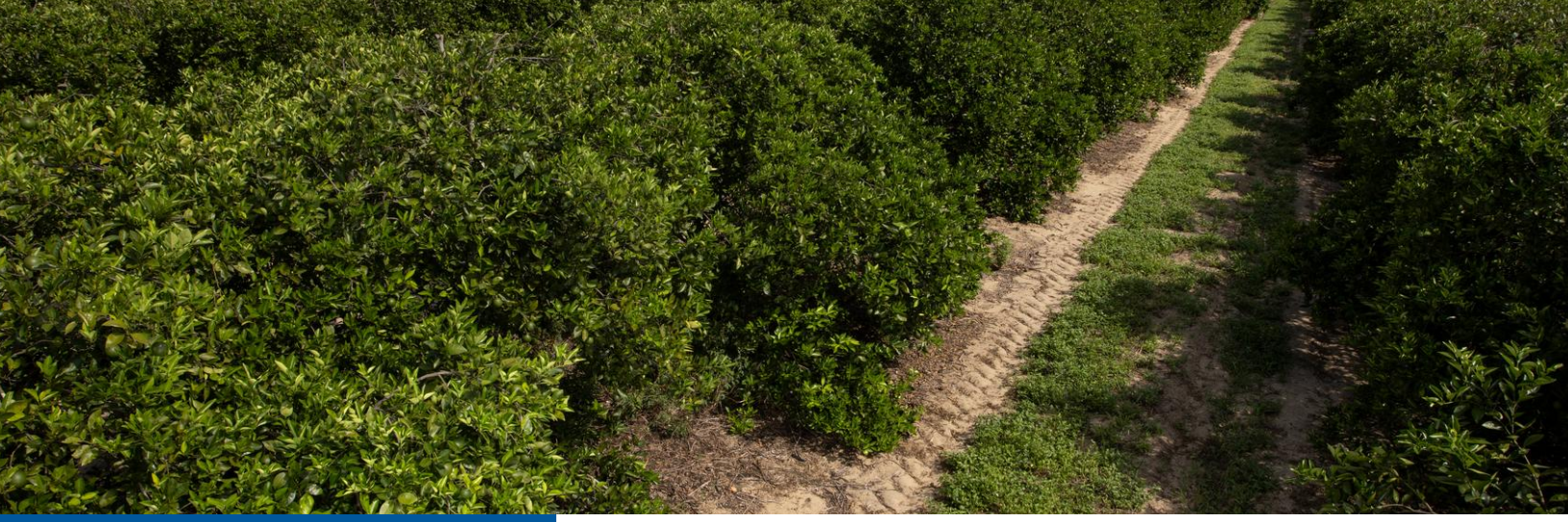
If one happens to be a few CEU's short of a full complement for renewal of either a Restricted Use Pesticide License (RUP) and/or a Certified Crop Advisor Certification (CCA), then you do not have to look much further. Due to the COVID experience, we canceled our 2020 Florida Citrus Growers' Institute scheduled last April. To date, we have five presentations available for viewing. We have approval for four of the five presentations (at the current time) for CEU's for both the RUP and CCA licenses. We have grouped the four presentations into groups of two for one CEU apiece. The RUP CEU's are in the following categories: private application, agricultural tree crop, and demonstration and research. The CCA CEU's total of 0.5 in crop management and 1.5 in pest management categories. To get access to these educational presentations, visit the UF/IFAS Commercial Citrus Extension Agents website (https://citrusagents.ifas.ufl.edu/). Look for the link to the 2020 Florida Citrus Growers' Institute and select "view presentation and earn CEU's." Once you select the link, you can view any of the five presentations individually or view them for CEU credit. A heads-up is that if one needs both CEU's for a RUP and CCA, select the RUP CEU link. If one wants only CCA CEU's then select the CCA link. Good luck, and we hope to have additional Institute presentations available shortly so periodically check back into the website for updates.

If you have any issues with accessing or receiving CEU credits, please let one of us know.

Packinghouse Day

Packinghouse Day is a program that is focused on the fresh citrus fruit industry in Florida. If you are a fresh fruit grower or interested in learning more about this segment of the industry, you can participate in this event. Packinghouse Day will be held virtually this year, due to COVID-19, on Thursday August 20, 2020, from 9:30 AM - 12:00 PM. Some of the topics discussed are phytosanitary issues, regulatory requirements, food safety, HLB tolerant hybrids, and more. There will be a Q&A session following the food safety/COVID-19 talks. Please submit questions to Dr. Mark Ritenour prior to the program: ritenour@ufl.edu.

The program is free to participants and registration is required using the below link:
https://ufl.zoom.us/webinar/register/WN_Efotq14nREqcXh7K6gaBEA



Summertime is Analysis Time - Leaf Sampling

BY CHRIS OSWALT

The leaves should be washed before analysis to remove any surface contamination.

Allow leaves to dry thoroughly before placing in mailing package.

We discussed soil sampling and analysis in our last issue of the newsletter and we indicated that in this issue, we would be discussing leaf sampling and analysis.

The discussion around soil sampling and analysis demonstrated the limited amount of information generally gleaned from the analysis. Soil analysis is a picture “in time” that does not quantitate the nutrition levels that are actually in the tree. A leaf sample analysis is useful because it measures what nutrients do make it into the tree. The analysis will provide information on the sufficiency or deficiency of the analyzed nutrients found in the tree. A leaf analysis will also provide this information on more nutrients than one would get from a soil analysis. These include; nitrogen (N), phosphorus (P), potassium (K), calcium (Ca), magnesium (Mg), sulfur (S), manganese (Mn), zinc (Zn), copper (Cu), iron (Fe), and boron (B).

A leaf sample should be a collection of 100 leaves taken from 15 to 20 trees, and it is suggested these be the same trees or areas from which one collects soil samples. These 100 leaves need to be mature spring flush leaves, 4 to 6 months old from non-fruiting twigs. The leaves should be uniform and free of significant damage by insects or disease. The trees should be uniform in appearance and the leaves collected should have the petioles still attached to the leaves. Once collected, they can be put into clean paper bags noting the sample designation. The leaves should be washed before analysis to remove any surface contamination. Leaf washing is often done at the lab if one requests this service or the lab may routinely provide it. Just make sure to check with the lab on their sample processing procedures.

Summertime is Analysis Time – Leaf Sampling (continued)

BY CHRIS OSWALT

Acquiring the correct leaf sample is of utmost importance. Many factors can affect the nutrient level in citrus leaves, and by normalizing the sample, we can reduce a significant amount of the variability between samples and trees. One common issue potentially overlooked is leaf age. Leaf age can have a significant effect on leaf nutrient levels. As the leaves age, some of the macro and secondary nutrient levels can fall or, as in the case of calcium, rise with age. Typically, variation due to leaf age will be more of an occurrence with nutrients that are considered mobile within the plant. This mobility allows these nutrients (N. P, K Mg, and S) to move out of older foliage into new foliage. Other nutrients, especially the micronutrients and calcium, are immobile (Ca, Fe, Zn, Cu, Mn, and B) and remain at reasonably constant levels or slightly rise with leaf age. To reduce this variability in leaf samples, select leaves of the appropriate age from non-fruiting twigs (Figure 1).

Figure 1 - Appropriate aged leaves for sampling

Summer Weather Outlook

BY CHRIS OSWALT

This summer, we have remained unscathed as it relates to significant counterclockwise rain and wind events. Although there have been a few named ones so far this year, (we are through the letter "I") word is we have had above activity compared to an average year. So, what from a forecast standpoint are the predictions for the rest of the summer and fall? According to Colorado State University's Tropical Weather & Climate Research, the July hurricane forecast is now for 20 (up from 16 in the April forecast) named storms, including the six so far this year. At this point, we have 14 more forecasted for this hurricane season. Of these 14, nine will become hurricanes, and an additional four will become major (category 3-4-5) hurricanes. The forecasters have some reasons for the increase in activity, namely the cool neutral El Nino Southern Oscillation (ENSO) continuing in the equatorial Pacific Ocean. Their thinking is a possible transition to weak La Nina conditions later this summer. These conditions, coupled with above-normal sea surface temperatures in the tropical and subtropical Atlantic Ocean. The link https://edis.ifas.ufl.edu/ch178 is to a UF/IFAS publication on Hurricane preparedness for citrus groves, and it should help prepare for before and following a hurricane event.

To finish up the Aug/Sept/Oct, summer weather forecast calls for a significant increase probability (50 to 60%) for above-normal temperatures (Figure 2). On the other hand, the rainfall forecast is for an increased probability (40%) of having an above-normal chance for rainfall (Figure 3).

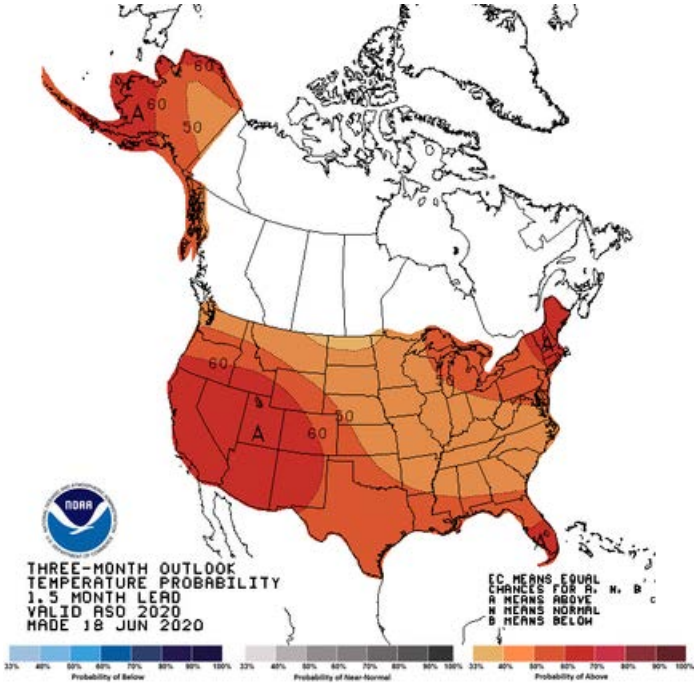


Figure 2 - Temperature

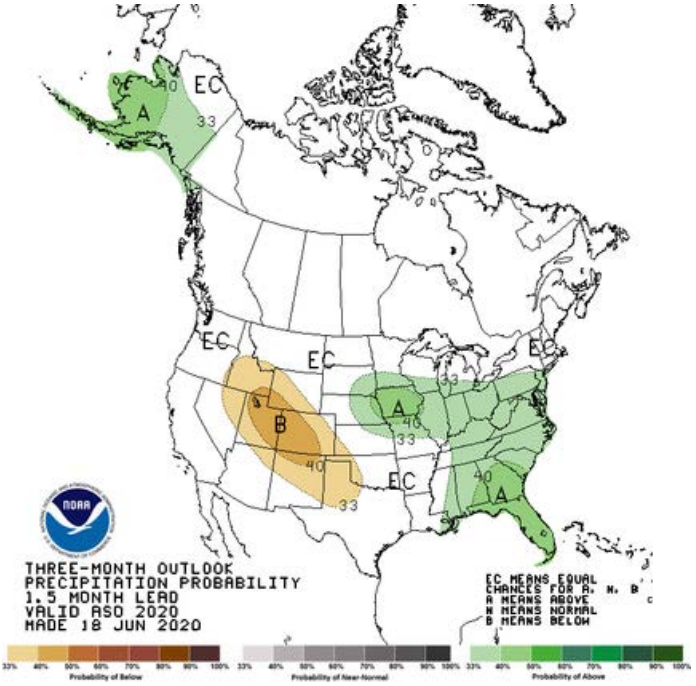
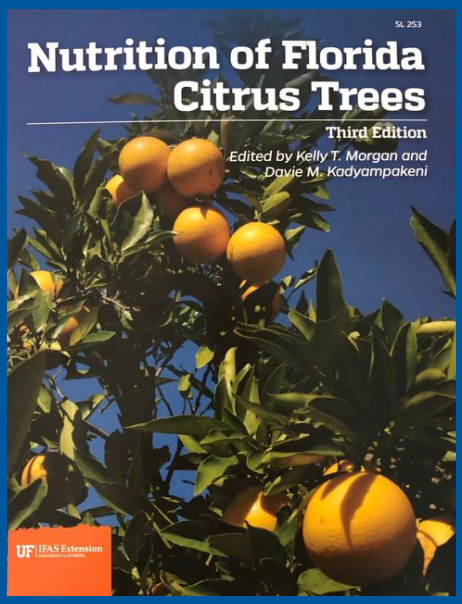


Figure 3 - Rainfall

Nutrition of Florida Citrus Trees, 3rd Edition

BY LAURIE HURNER

The anxiously awaited third edition of the Nutrition of Florida Citrus Trees is now available. Dr. Kelly Morgan and Dr. Davie Kadyampakeni have done a fantastic job of editing and updating this very important guide. For those unfamiliar with this excellent resource, the guide is made up of 14 chapters covering topics like:



- Production areas, soils, and land preparation
- General soil fertility and citrus tree nutrition
- Soil and leaf tissue testing
- Precision agriculture for citrus nutrition management
- Fertilizer sources and formulations
- Methods of fertilizer application
- Recommended fertilizer rates and timing
- Irrigation management to improve nutrient uptake
- Environmental issues and BMPs
- Special Situations
- And more……

According to the authors of chapter 1, “the information provided in the 2008 2nd edition is still sound for healthy citrus trees under Florida production conditions. Much of the information provided in this document on nutrients, application methods, leaf and soil sampling, and irrigation scheduling are also effective for huanglongbing (HLB) affected trees. However, research conducted since HLB was detected in Florida in 2005 has established changes in many production practices, including nutrient rates, irrigation scheduling, soil pH management, and use of Citrus Under Protective Screens (CUPS).” Changes to the 2nd edition of this document will appear in boxes at the beginnings of the appropriate chapters. Hard copies of the nutrition guide are being delivered to the local Extension offices at this time. Contact your local citrus Extension agent to pick up your copy.

Paraquat Mitigation Update

BY LAURIE HURNER

As you may remember, in 2016 EPA completed a risk management assessment on the chemical paraquat. At that time EPA, in conjunction with the manufacturers of paraquat, amended the product labels to include new label requirements of users. One of the requirements is that certified applicators must successfully complete an EPA-approved training program before mixing, loading, and or/applying paraquat. EPA requires this training due to the number of deaths (including those of children) caused by the ingestion of the chemical. The biggest cause of these deaths has been the illegal transfer of the chemical for transport into beverage containers and then consumed. It is very important to remember also, that any person who intends to use paraquat MUST BE A CERTFIED APPLICATOR and take the training. The new label also indicates that all users of paraquat, which is a restricted-use product, must have a current restricted-use pesticide license. Noncertified people working under the supervision of a certified applicator is PROHIBITED from using paraquat. This includes mixing, loading, applying, and any other pesticide-related activity.

Training is required for **EVERY** applicator

Here are a few things to remember regarding the paraquat training requirement:

1. Training is required of every paraquat applicator every three years.
2. The certified applicator is required to maintain a record of completing the paraquat training. At the end of the computer training a certificate of completion will be automatically generated.
3. The training is online and not provided by the Extension service.
4. Applicators can access the training at www.usparaquattraining.com

In an effort to help applicators stay safe, the makers of paraquat have developed the "Five Golden Rules for safe use" which can be found at www.paraquat.com/en/safety

These rules are:

- **Exercise caution at all times**
- **Read and understand the product label**
- **Wash after spraying**
- **Maintain sprayer**
- **Use personal protective clothing and equipment**

The Label Is The Law!

Photo Credit: UF/IFAS

Best Management Practices for Citrus

BY AJIA PAOLILLO

Agricultural BMPs have become an important component in ensuring that our water supply is protected from excess nutrient loading and pollution. This article will be the first in a series, which will give an overview of the BMP program, highlight the benefits of being enrolled, regulatory compliance requirements and recent changes to the requirements for fertilizer application records. The next articles in the series will explore the different categories of BMPs and how they can be implemented in Florida citrus production. The University of Florida/IFAS works in collaboration with the Florida Department of Agriculture and Consumer Services (FDACS) to educate growers on BMPs applicable for citrus. FDACS regulates program participation, implementation, and documentation of the BMPs.

Most citrus growers already participate in BMPs because of their continuing commitment to protecting the environment and our water supply. Some growers are located in areas which are part of a Basin Management Action Plan (BMAP). A BMAP is a plan for improving the water quality in an area with an identified impaired water basin. This plan is implemented in order to reduce the Total Maximum Daily Load (TMDL) for pollutants within the basin. The TMDL is the maximum amount of a pollutant that can enter a water source while maintaining the state standards established for water quality. Each pollutant has its own TMDL requirement. In agriculture, nutrient TMDL levels, especially nitrogen and phosphorus, are of most concern. Growers in these areas must either implement FDACS BMPs or monitor water quality through routine sampling according to the requirements dictated by the Florida Department of Environmental Protection (FDEP) and the water management district in the area.

There are 7 categories of BMPs which have been established for citrus production. These BMPs are outlined in the Water Quality/Quantity Best Management Practices for Florida Citrus publication, produced by FDACS:

1. Grove Development and Renovation
2.Nutrient Management
3.Irrigation Management
4.Drainage Management
5.Sediment and Erosion Control
6.Water Resource Protection
7.Integrated Pest Management

Photo Credit: UF/IFAS

Irrigation Management and Integrated Pest Management are two of the BMPs growers can implement in the program.

Photo Credit: Whitney Cranshaw, Colorado State University, Bugwood.org

Best Management Practices for Citrus (continued)

BY AJIA PAOLILLO

Citrus growers, along with other agricultural producers realize that the land is their livelihood. When enrolling in the BMP program a grower is showing their commitment to being a good steward of the land. Enrolling in this program can offer benefits for the grower. When a grower adopts and follows BMPs in their operation, they are considered in compliance with state water requirements. This is beneficial to the growers if a problem arises in the area involving excess nutrient and pollution levels. The record-keeping requirement provides growers documentation that they are complying with approved BMPs. There are different types of BMPs and not all fit a certain situation. When deciding which BMPs to implement in your operation, consider the cost and technology involved. In some cases, depending on funding availability, cost-share programs have helped growers with the cost of implementing BMP's. By adopting some BMPs, a grower may be able lower input costs and increase productivity. For example, by implementing a BMP which reduces nutrient loss through leaching, a grower may save money on fertilizer inputs which would have otherwise been lost and not utilized by the plant.

Recordkeeping is required in this program and is the grower's documentation of BMP implementation. Each category of BMPs has specific records required for the grower to keep. These records must be made accessible to an FDACS representative when they request the information, usually during an Implementation Verification field visit. These field visits allow FDACS representatives the opportunity not only to verify that BMP's are being properly followed, but also to talk with the grower and offer assistance to help improve or work through any issues they are facing in the program. On June 30, 2020 Governor DeSantis approved the new Clean Waterways Act which outlines new regulations for many agencies across Florida to improve water quality, including changes to the BMP program. These changes will now have FDACS representatives conducting the Implementation Verification field visits every 2 years. Another major change to the program involves the documentation of fertilizer applications. Growers will now need to submit records from the previous 2 years, documenting fertilizer applications, including nitrogen and phosphorus. This information will be collected by FDACS during the field visits. You can find the new Clean Waterways Act at https://www.flsenate.gov/Session/Bill/2020/712.

If you have additional questions, please contact your FDACS area representative or UF/IFAS Citrus Extension agent.
In the next newsletter, I will address the steps to enroll in the BMP program and start to explore the BMPs used in citrus production.

Guides for Selecting the Right Rootstock

BY AJIA PAOLILLO

Choosing the correct rootstock is the foundation on which to build future success.

With the large number of the citrus rootstock varieties available, how can you make the best decision about what to use? Before HLB, we had the common rootstocks that were researched over time and we could basically predict how they would grow and produce trees in our specific environment. As we know, HLB changed all of that, and nothing is predictable anymore. Growing citrus has become highly specialized requiring a great deal of attention be paid to the selection of production inputs to any individual grove. When considering a rootstock, it's important to look at factors at each location beginning with soil type, drainage, soil pH, and salinity. Understanding how your soil factors impact the health and productivity of a rootstock is the basis on which to make a specific rootstock selection. A rootstock that may perform well on the Ridge's sandy well-drained soils may have a difficult time in the poorly-drained soils of the Flatwoods. Pest and disease pressure should be considered when choosing a rootstock. Burrowing and citrus nematodes, and diseases such as Phytophthora, can cause extensive economic damage. By choosing a tolerant or resistant rootstock, you can lessen these effects on the trees. Incidence of HLB should also be considered, although at this time, no rootstock is considered resistant.

Scion selection will also affect the choice of rootstock. In some instances, scion/rootstock incompatibility can occur. In the Florida Citrus Rootstock Selection Guide, 4th Edition (Castle et al.), it is noted that mandarin hybrid varieties can exhibit incompatibility with trifoliate orange-hybrid rootstocks, and other rootstock combinations should be carefully evaluated as new mandarin type varieties are released. Rootstocks can also influence different horticultural traits of the scion variety. Tree vigor is affected by the rootstock selection. For example, Rough Lemon produces a large vigorous tree versus the dwarfing characteristic of Flying Dragon. Keep this in mind when looking at the parentage of rootstocks as well. This is a major consideration as many new plantings and resets are utilizing high-density spacing. Fruit quality is impacted by the rootstock variety, which can affect the juice quality, fruit size, and yield. Unfortunately, though, as I stated above, HLB severely impacts otherwise normal tree growth and fruit quality. Fortunately, for growers, there are great resources to help you decide what rootstock is best for a particular situation.

Guides for Selecting the Right Rootstock (continued)

BY AJIA PAOLILLO

The University of Florida/IFAS and the USDA breeding programs have released many new rootstocks for growers to choose from and produced guides to help make informed planting decisions. These guides are based on years of field research with results that are categorized and rated for each of the rootstocks.

The Florida Citrus Rootstock Selection Guide, 4th Edition, by Dr. Bill Castle et al., is available as a paper fold-out chart, along with an interactive web-based program. The paper guide lists 48 rootstocks from UF/IFAS and the USDA which are divided into 3 groups: Commercial, Minor Commercial, and Recently Released. Ratings are given for each rootstock based on available data for eight horticultural traits, six tolerances, and seven diseases and pests. The interactive web-based program allows the grower to choose desired characteristics on which to base a rootstock recommendation. After making the selections, the system produces a list of rootstocks meeting the grower's requirements. These tools can be used together to help decide on an appropriate rootstock.

Dr. Kim Bowman of the USDA breeding program recently announced a new rootstock website. This website gives detailed information, based on field research trial results of commonly used rootstocks and USDA rootstocks released over the last 20 years. This website lists potential tree height and vigor, and fruit quality characteristics relating to the different rootstock varieties.

Choosing the correct rootstock is the foundation on which to build future success. The right rootstock can yield great results or end in lost profits. The guides mentioned above are valuable resources available for growers to help make the best planting decisions. It is also very beneficial to build a good relationship with the citrus nursery or nurseries where you purchase trees. They can also help to guide your decisions and ensure that you have the trees you want, when you need them. Below you will find links to the guides mentioned above:

Florida Citrus Rootstock Selection Guide, 4th Edition:

- EDIS Paper Fold-out (printable PDF): https://edis.ifas.ufl.edu/hs1260
- Interactive web based program: https://crec.ifas.ufl.edu/extension/citrus_rootstock/

USDA New Rootstock Website: https://citrusrootstocks.org/

Rootstock field trial
Photo Credit: C. Oswalt, UF/IFAS

The right rootstock can yield great results or end in lost profits.

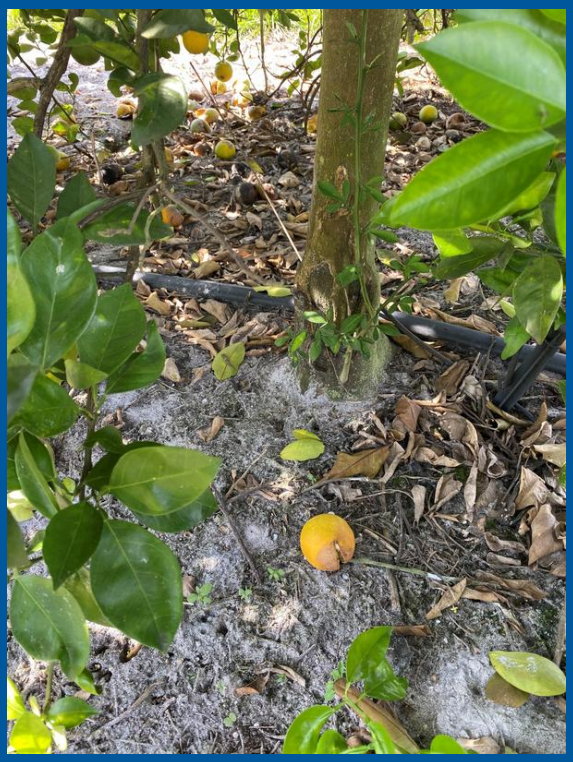


Photo Credit: C. Oswalt, UF/IFAS

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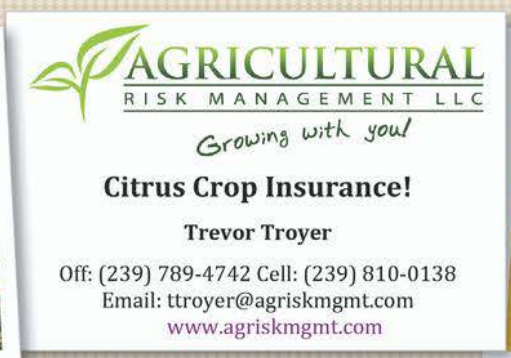

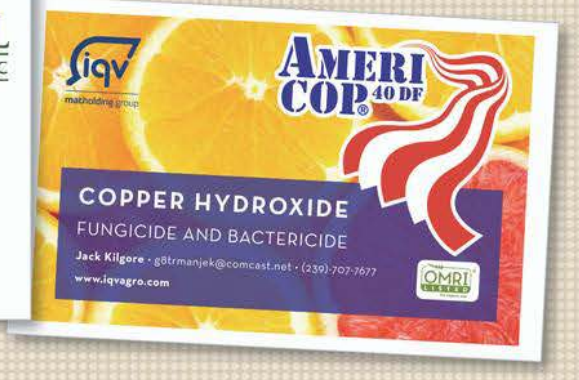

Don't see your name or company listing? IT IS NOT TOO LATE!!!!!!!

Contact Laurie Hurner at: lhurner@ufl.edu or 863.402.6540 today!