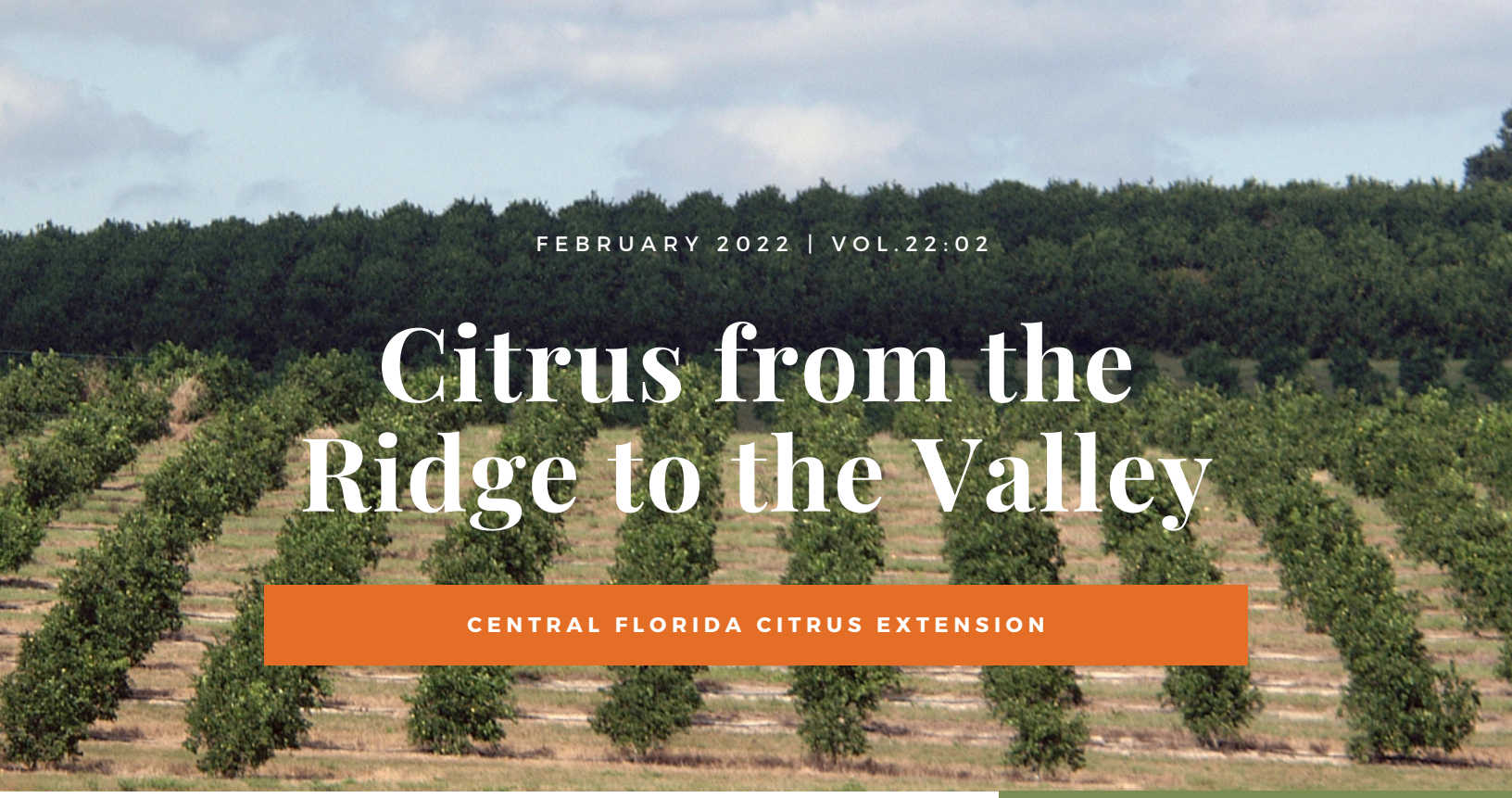


FEBRUARY 2022 | VOL.22:02

Citrus from the Ridge to the Valley

CENTRAL FLORIDA CITRUS EXTENSION

February 2022

Inside this issue of the newsletter you find timely information on:

- Freeze damage considerations
- Winter/spring weather outlook
- Irrigation management
- Plant nutrition

We also have some upcoming events that we hope you will able to attend. Flyers for events are inside the newsletter.

2022 Florida Citrus Growers' Institute

Once again, we are planning on being back together in-person for the 2022 version of the Florida Citrus Growers' Institute. The program will be held on April 5, 2022, on the campus of South Florida State College's Jay Wildstein Center for the Preforming Arts in Avon Park. Make plans now to join us for the all-day educational event complete with CEU's for Certified Crop Advisors and Restricted Use Pesticide license holders and lunch.

The Foundation for the Gator Nation
An Equal Opportunity Institution

UF | IFAS Extension
UNIVERSITY of FLORIDA

Chris Oswalt
UF/IFAS Extension
Polk and Hillsborough counties
(863) 519-1052
wcoswalt@ufl.edu

Ajia Paolillo
UF/IFAS Extension
DeSoto, Hardee, Manatee counties
(863) 251-4763
ajiacunningham@ufl.edu

Lourdes Pérez Cordero
UF/IFAS Extension
Highlands County
(863) 402-6540
lperezcordero@ufl.edu

2022 Florida Citrus Production School

UF | IFAS Extension
UNIVERSITY of FLORIDA

February 10, 17, & 24
7:00pm - 9:00pm
Cost: $10/session

Turner Agri-civic Center, Exhibit Hall
2260 NE Roan St
Arcadia, FL 34266

Session 2 - February 17, 2022

Nematode Management - Dr. Larry Duncan, UF/IFAS CREC
Pest Identification and Management - Ajia Paolillo, UF/IFAS

CEUs Available:
2 for Ag Tree, Ag Row, and Private
2 Certified Crop Advisor - Integrated Pest Management

Pre-register today at
https://floridacitrusproductionschoolsession2.eventbrite.com

Session 3 - February 24, 2022

Produce Safety Rule requirements - Taylor O'Bannon, UF/IFAS CREC
Nitrogen and Phosphorus recordkeeping - Ajia Paolillo, UF/IFAS

CEUs Available:
2 CEUs for Ag Tree, Ag Row, and Private will be available
Certified Crop Advisor - Nutrient Management (1) and Soil & Water Management (1)
Pre-register today at
https://floridacitrusproductionschoolsession3.eventbrite.com

For more information contact:
Ajia Paolillo, UF/IFAS Extension
ajiacunningham@ufl.edu
863-251-4763

2022 Winter/Spring Weather Outlook

BY CHRIS OSWALT

The latest NOAA 2022 late winter/early spring weather outlook for temperature and rainfall has us looking at an increased probability of likely above-normal temperatures (fig 1). The rainfall outlook (fig 2) has us looking at likely below-normal chance for rainfall. The El Nino Southern Oscillation (ENSO) forecast is for La Nina conditions (around 67% chance) for the balance of the spring of 2022 (Mar-May). The forecast for the April to June is to transition into ENSO-neutral conditions (about 51% chance). So, we continue with La Nina conditions which are, on average, usually warm and dry winters with plenty of sunshine (fig 3).

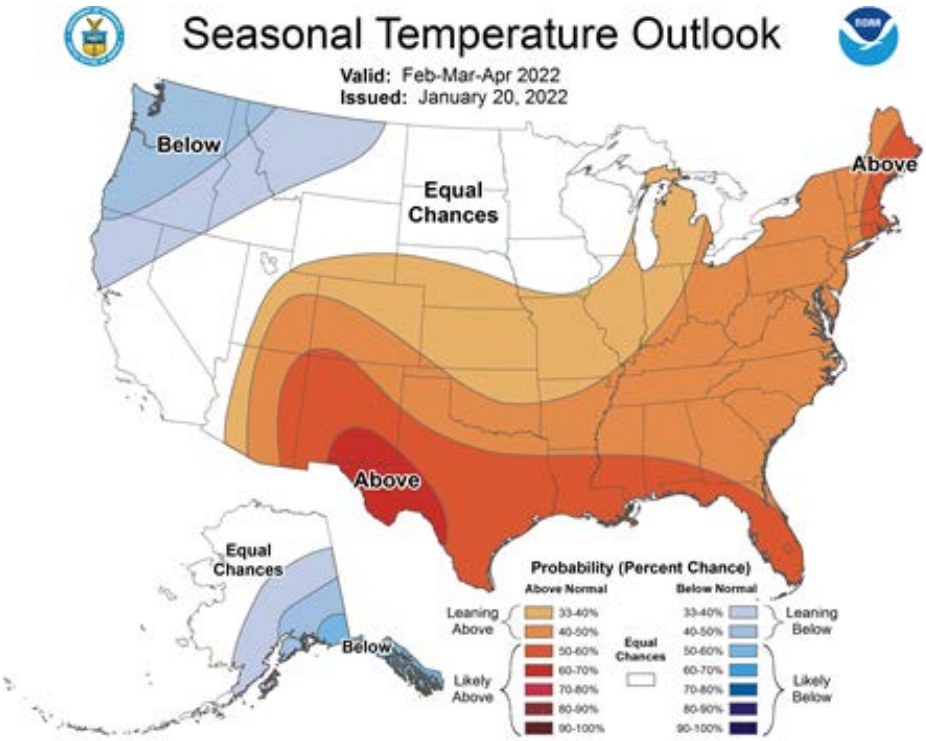


Figure 1 Winter 2021-22 temperature outlook

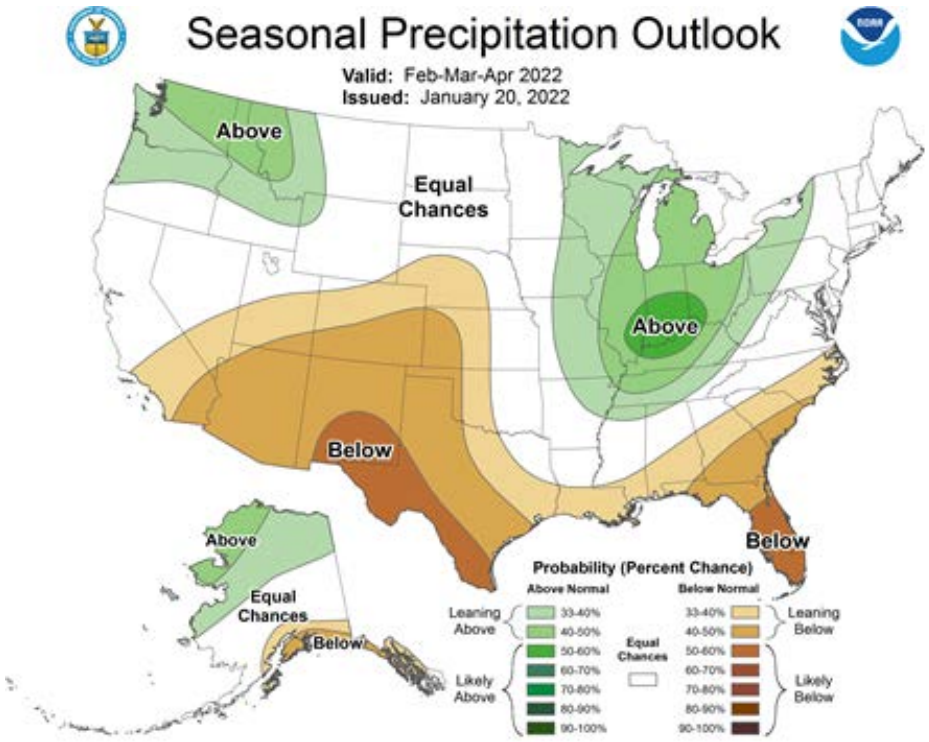


Figure 2 Winter 2021-22 precipitation outlook

2022 Winter/Spring Weather Outlook, ctd.

BY CHRIS OSWALT

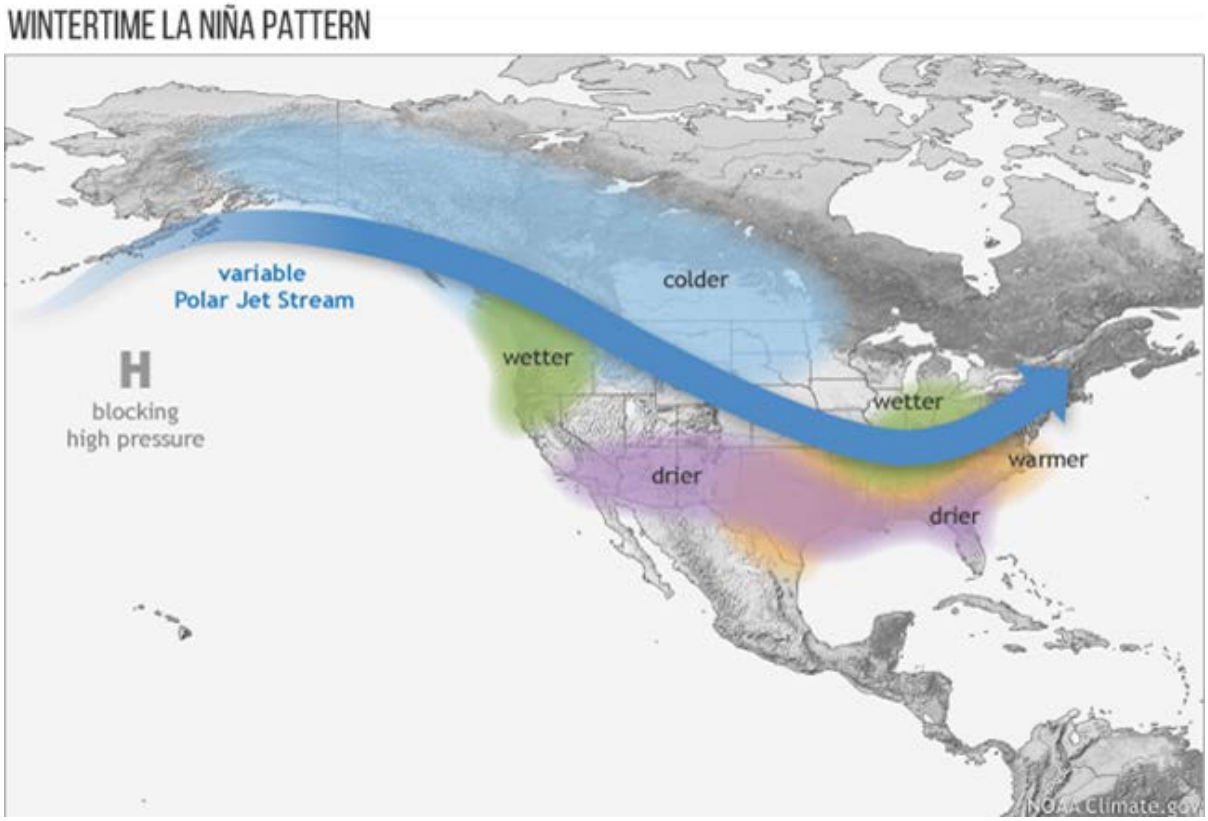


Figure 3 Winter La Nina weather pattern

As for the drought forecast for February 2022 (fig 4), even though we are going to have a higher probability of dry conditions, it appears based on the forecast we are not going to develop into drought conditions in February.

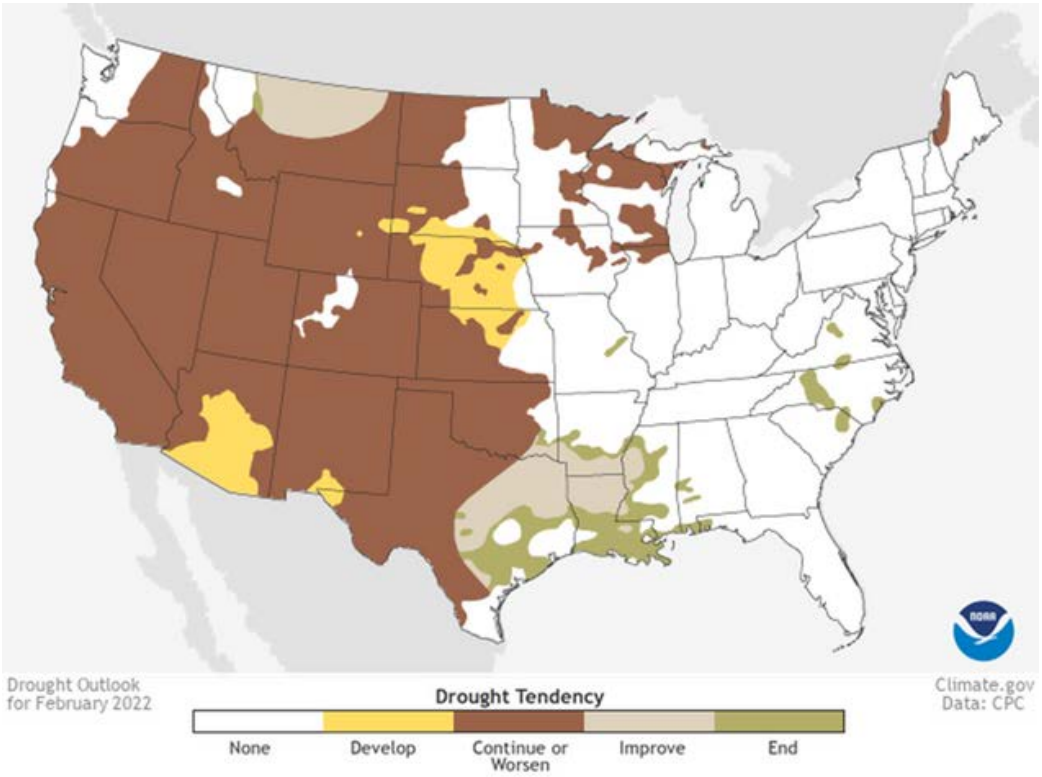


Figure 4 Drought tendency forecast for February 2022

Freeze Damage Considerations

BY CHRIS OSWALT

We have seen minimum temperatures over the past few weekends that we have not seen for several years. On two of these mornings' winds were calm, and dewpoints were close enough to the minimums that there was a significant amount of frost over the entire production area. Conditions for frost formation are associated with calm winds, clear skies, optimal radiational heat loss resulting in significant differences in minimum temperature between high and low ground, and typically cold pockets. Depending on location, we have seen no damage, some new flush and flower damage, some defoliation, some wood splitting, and likely fruit damage. This variation under radiation freeze conditions makes it difficult to make general statements about large geographical areas. Under these conditions, temperatures could have easily varied by 10 degrees over relatively short distances.

At this point, it would be good to review just a few horticultural principles before we all feel obligated to act on the damage. First and foremost, document your injury. There are many different citrus insurance policies, and specifics about such are beyond this article, so contact your agent and document the damage. Documentation will be important since the damage was variable because of the frost/freeze, as mentioned earlier.

Depending on the damage, irrigation will need to be adjusted or modified. Leaves are the surface from which water leaves the citrus tree. If there is minor damage to foliage, then go on as usual. If some level of defoliation has occurred, then one should reduce the amount of irrigation to correspond to the remaining healthy leaves. If there has been some level of defoliation, there will likely be a new flush emerging soon, and the tree's water requirements will need to be adjusted to ensure further leaf expansion.

Suppose you are modifying your irrigation due to damage. In that case, you should also change your fertilization practices by adjusting amounts and application frequency to correspond to the remaining healthy leaves and remaining tree canopy. Nutrients applied to the ground are pickup by the tree in the soil water solution and are translocated via transpiration from the leaves. If leaf area is reduced, nutrient uptake will likely be affected until new leaves become functional and fully expanded.

Freeze Damage Considerations, ctd.

BY CHRIS OSWALT

Weed control will become more critical with any loss in canopy density. This loss in density results in more sunlight reaching the ground under the tree canopy. This increase in sunlight will stimulate weed growth under the tree canopy. Weeds can compete with your recovering tree for fertilizer and water.

If there is significant damage, it will be best to take a wait-and-see approach. We may not know the extent of the damage caused by the twig splitting observed in some locations. In these cases, it is best not to be in a hurry. If there was some fruit damage, then it goes without saying that getting that fruit harvested and delivered into the plant as quickly as feasible would be a plus.

Frostproof FAWN Tower Update aka Babson Park

BY CHRIS OSWALT

Just wanted to provide you all with an update on the installation of the new Frostproof FAWN tower. As you may have noticed the tower went offline last year due to some changes at the original location. These changes necessitated the removal and relocation of the tower to a new comparable location in the Frostproof area. Great news is that a new site has been selected and we are in the final stages of getting the tower back up online on the FAWN website (https://fawn.ifas.ufl.edu). It is now referred to as the Babson Park site on FAWN. Thanks to all the support we had in getting the tower relocated and back online.

Upcoming Citrus Fruit Display and Tasting

Below is the date and location of the upcoming citrus fruit display and tasting. Come out to see and taste the varieties on display and give your feedback. For more information on each of these events please visit this link to the New Varieties Development & Management Corporation http://nvdmc.org/upcoming-events/ or contact Peter Chaires at pchaires@nvdmc.org

- February 15, 2022 - 10am: UF/IFAS Citrus Research and Education Center Plant Improvement Team

Florida Business Damage Assessment Survey

The Florida Department of Economic Opportunity (DEO) and State Emergency Response Team (SERT) have activated the Business Damage Assessment Survey in response to the freezing weather that occurred during the weekend of January 28-30, 2022. The survey will gather information from agriculture businesses affected by the freezing weather and share the results with various local, state and federal agencies to implement appropriate disaster relief programs.

TAKE THE SURVEY TODAY AT
FloridaDisaster.biz/BusinessDamageAssessments

Contact

For additional assistance, contact 850-245-7112
or esf18@em.myflorida.com

HELPING FLORIDA BUSINESSES
FLORIDADISASTER.BIZ
PREPARE, RESPOND & RECOVER

www.FloridaDisaster.biz

SERT
DEO FLORIDA DEPARTMENT of ECONOMIC OPPORTUNITY

Nutrition in Citrus

BY LOURDES PÉREZ CORDERO

Florida soils are known to be sandy in nature. Because sand particles are larger than silt and clay particles, sandy soils are known to have a low nutrient and water holding capacity. Therefore, applying fertilizer is an important practice in citrus groves to avoid inhibition of normal tree function, fruit production, and lower fruit quality. Chlorosis or yellowing of the leaves is usually one of the most visible and recognizable symptoms of nutrient deficiency. However, for each nutrient that is deficient there is a characteristic chlorotic pattern shown on the leaves. These can be visible in mature leaves and/or younger ones depending on the nutrient. For example, Mg deficient plants will typically show an inverted V shape pattern along the midrib of mature leaves, while in Zinc deficiency, the veins remain dark green, and a pale-yellow color dominates around them.

Citrus leaves portraying Zn deficiency. Photo credit: Lourdes Pérez Cordero

Organic matter is a carbon-based material that has been deposited and decomposed in the soil. Its presence increases the cation exchange capacity, which is the ability of soil particles of adsorbing positively charged nutrients. This helps improve the soil's nutrient and water holding capacity, which in turn reduces leaching.

Nutrient Uptake

HLB-affected trees tend to have smaller root systems when compared with healthy trees. Even though this increases nutrient deficiency and stress on the plant, the roots are still functional. Nutrient uptake and soil pH are of utmost importance to ensure tree health. The optimal soil pH for effective Florida citrus production ranges from 6.0 to 6.5. Research suggests that this pH range can help increase the availability of K, P, Ca, Mn, Zn, and Fe in the soil. Even though current studies are finding that pH as low as 5.8 may benefit the root system and growth of HLB-affected trees more than healthy trees, the pH of your soil should not be lower than 5.0.

To promote growth, plants require 17 essential nutrients, starting with Carbon, Hydrogen and Oxygen. These are obtained from gas exchange and water uptake. The rest can be classified as macro- & micronutrients.

Macronutrients:

Are elements that plants need in large quantities. These are divided into two categories, primary and secondary elements.

·Primary elements: Nitrogen (N), Phosphorus (P), Potassium (K)
·Secondary elements: Calcium (Ca), Magnesium (Mg), Sulfur (S)

Micronutrients:

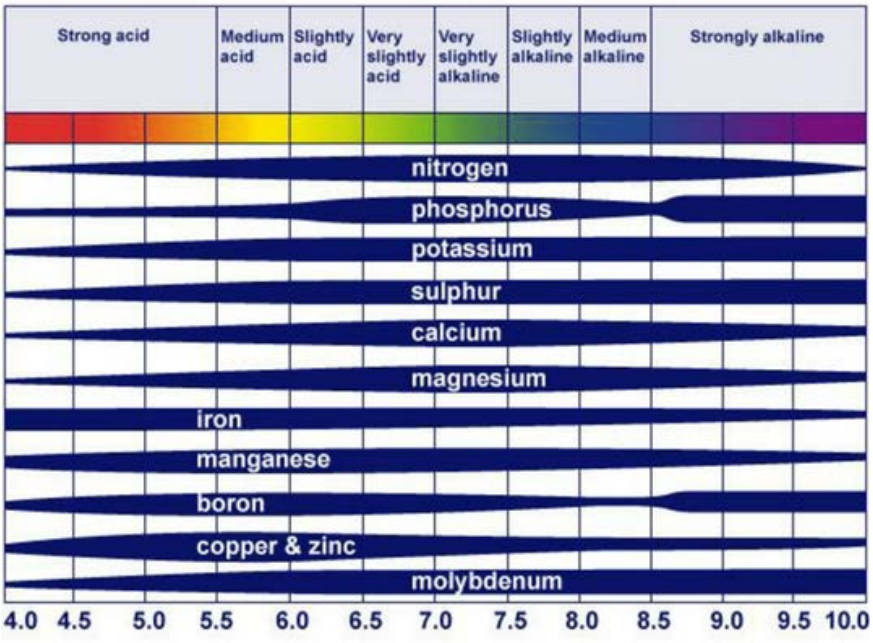
These are elements that plants need in smaller quantities. Do not think about them as less important than macronutrients, since each one contributes to healthy plant growth.

·Iron (Fe), Zinc (Zn), Manganese (Mn), Boron (B), Copper (Cu), Molybdenum (Mo), Nickel (Ni), Chlorine (Cl)

Extreme pH conditions can affect nutrient availability in the soil, which means that the plant might not be able to utilize these nutrients. If the soil pH is too high, it can cause micronutrients to become insoluble, therefore unavailable. On the other hand, extremely low soil pH can negatively affect certain macronutrients availability by increasing solubility and potential leaching. On the picture below, the relationship between soil pH and nutrient availability is demonstrated.

Nutrition in Citrus, ctd.

BY LOURDES PÉREZ CORDERO



Relationship between soil pH and nutrient availability (Roques et al, 2013)

Sampling Laboratories:

To maintain soil fertility and tree health, annual soil and leaf sampling is recommended. Results from soil and leaf samples help you to determine your trees' nutritional needs. Please remember that there isn't a "one size fits all" deal when it comes to nutrition, soil and plant health. Each grove will have their own nutritional parameters depending on the crop, rootstocks, soil, common agricultural practices, etc. There are multiple laboratories that you can send soil samples to. In the two websites listed below you will find sampling, testing, pricing and shipping information of the Extension Soil Testing Lab and the Nematode Assay Lab. Each lab provides different tests and prices depending on the needs of the grower or client. Note that the Extension Soil Testing Lab offers a "Citrus Producer Soil Test" option that can be useful for commercial citrus growers.

Extension Soil Testing Laboratory: https://soilslab.ifas.ufl.edu/ESTL%20Home.asp

- Producer Soil Test
- Phosphorus Index Soil Test
- Citrus Producer Soil Test
- Bahia Producer Soil Test
- Container Media Test
- Water Test
- Pine Nursery Test
- Plant Tissue Test

Nematode Assay Laboratory: https://entnemdept.ufl.edu/nematology-assay-lab/

- Standard Soil Extraction
- Mist Extraction from Turf Plugs
- Mist Extraction from Plant Roots
- Molecular Species ID Sequencing
- Nematode Community Analysis

For more information on soil fertility and tree nutrition, please refer to the UF/IFAS Nutrition of Florida Citrus Trees book or contact your local extension agent.

Physical Damage to Irrigation Equipment

BY AJIA PAOLILLO

Throughout the year, it is a good practice to check your irrigation system for leaks, wear, corrosion, and other physical damage that can limit the efficiency of the system. Proper irrigation provides the tree with the water it needs especially during periods of drought and during the important stages of flowering, fruit set and enlargement, and leaf expansion. Irrigation reduces water stress in the trees, thereby enabling the tree to be more productive. Damaged equipment can lead to insufficient irrigation or an excessive use of water, which is not only wasteful but can increase fuel costs. If you are utilizing fertigation or chemigation, then the product you are injecting may potentially be wasted or the trees will not receive the appropriate rate if your system is not operating properly. When there is not enough water applied, yield reduction and canopy loss may be experienced.

Pumps, pipes, valves, and tubing get many hours of use through the year and are subject to normal wear and tear, along with incidental damage that may occur. If you inspect your system routinely you may be able to catch an issue before it becomes worse. Some of the first signs of an issue are changes in the usual line pressure, volume, and/or flow of the system, excessively dry or wet irrigated areas, or even wilted trees. These changes can be caused by broken pipes, torn poly tubing and damaged or missing emitter heads. Keeping records of irrigation run times and gallons of water used, can help alert you to a problem.

Pumps can breakdown, causing an immediate emergency situation, especially in drought conditions. Regularly check pumps for signs of damage and perform routine maintenance as needed. Valves can leak when worn out or not properly fitted or tightened after maintenance. Poly pipe tubing can be damaged by not only grove equipment, but also by wildlife. Some animals may chew on the pipe and tubing or physically cause the microjet to be pulled out of the soil from their activity under the trees, such as rooting around or digging. Harvesting operations or grove equipment may also cause emitters to be knocked over. Emitter heads can get broken or lost, causing more water to flow than intended. Plugs used for holes in the larger poly tubing can become dislodged causing a significant leak.

Train employees to be on the look-out for these signs and ensure they have the proper tools and materials needed to address a problem. Keep updated records of maintenance and equipment replacement for easy reference. As we know, every input to the grove costs money and that also includes your irrigation and the various system components needed to run efficiently.

Irrigation Guidelines

BY AJIA PAOLILLO

As we begin to move from winter into spring, the irrigation requirements of citrus trees change. Typically, February through May is our drier time of year with low rainfall amounts in most areas. However, during this period the trees are actively producing leaves and flowers, setting fruit, and pumping resources to the growing fruit during cell division and fruit enlargement. Water requirements increase during this time enabling the tree to perform these important tasks. Citrus Greening (HLB) compromises the root systems in trees and depending on disease severity trees can lose 50-80% of their root system. The remaining roots are still as efficient as those of healthy trees, there is just less of them. This makes it more challenging for the tree to take up the water it needs to grow and produce fruit. Soil types differ within our citrus growing region, with some having a higher water holding capacity than others. Research recommendations have suggested that regardless of soil type, irrigation should be applied to trees more frequently for less durations reducing the amount of water applied at a given irrigation event.

What we are trying to achieve is a sufficient amount of available water in the soil for healthy tree growth and fruit production. Let's look at some terms that will help us understand what defines available water in the soil, and how we measure allowable soil water depletion guiding irrigation scheduling. Field capacity is a term used to describe the point in which all the air pockets in the soil are filled with water and drainage through the soil profile stops. Soils reach field capacity typically after a large rain event. Field capacity is the point at which there is the most available water in that soil. In contrast, the permanent wilting point is when there is not enough available water in the soil for the tree to uptake. The drier the soil, the less available water for the trees. We determine the depletion of available soil water as the difference between field capacity and permanent wilting point.

What is the appropriate amount of allowable soil water depletion at any given time during the year and use that for irrigation scheduling? The amount of irrigation needed depends on the time of year, rainfall, and the needs of the tree. As stated above, during February through May, rainfall is low but the trees' water requirements increase. The recommended guideline of available soil water depletion during these months should not be more than 25%. Once the summer rains begin around June, available soil water depletion should be 50%.

Irrigation Guidelines, ctd.

BY AJIA PAOLILLO

The UF/IFAS Florida Automated Weather Network (FAWN) https://fawn.ifas.ufl.edu/ has tools that can assist growers with irrigation scheduling. The first is the Microsprinkler Irrigation Tables (Figure 1) https://fawn.ifas.ufl.edu/tools/irrigation/citrus/tables/ . Here you will find three tables: Young Trees (1-3 yrs.), Mature Ridge Trees, and Mature Flatwoods Trees. These tables provide information on recommended soil water depletion depending on time of year along with a suggested irrigation schedule. The second tool is the Citrus Micropsprinkler Irrigation Scheduler (Figure 2) https://fawn.ifas.ufl.edu/tools/irrigation/citrus/scheduler/ . This module utilizes tree spacing, emitter specifications, soil type, and local FAWN tower to provide a guideline for irrigation.

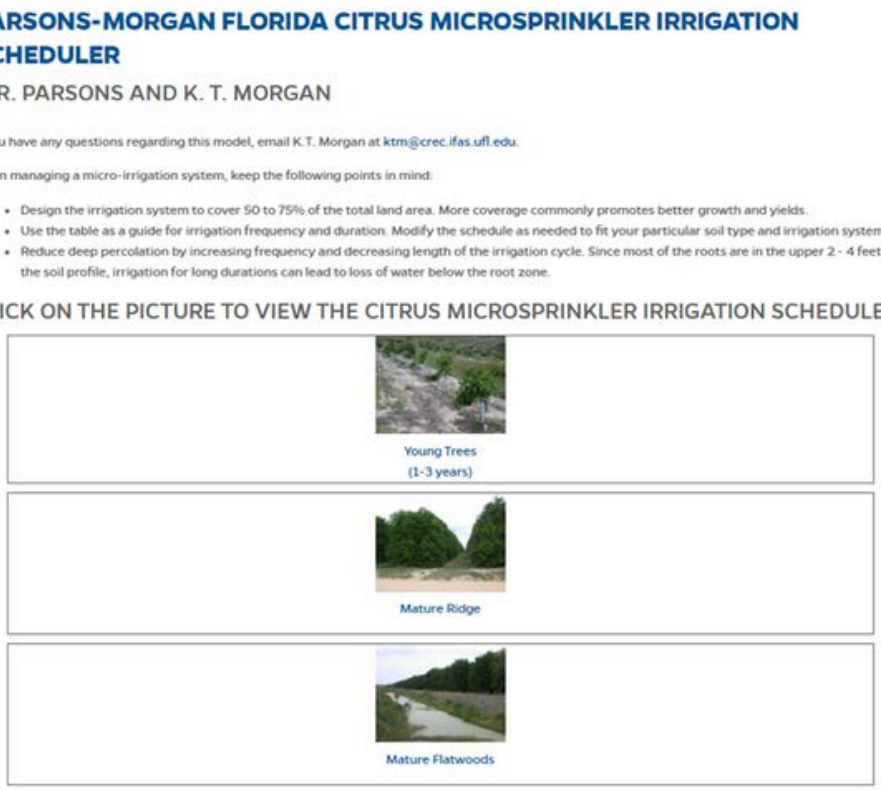


Figure 1

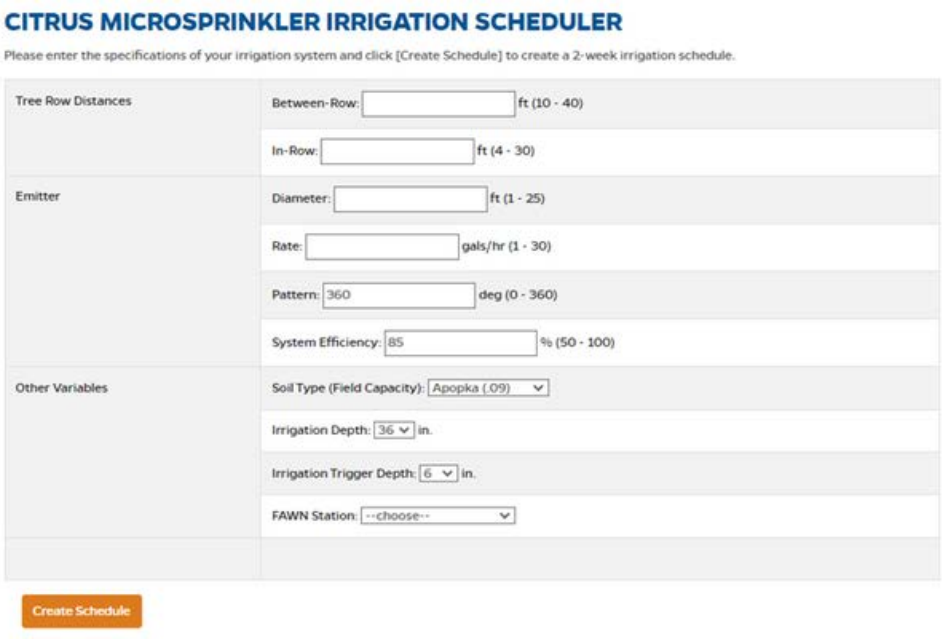


Figure 2

UF | IFAS Extension
UNIVERSITY of FLORIDA

SAFTEY MORNING 2022

March 2, 2022 8am-12pm
Turner Agri-Civic Center
2250 NE Roan St, Arcadia

This program will provide the necessary training for pesticide handlers to be in compliance with the Worker Protection Standard (WPS). Participants will also be given safety information on other important topics when working in citrus groves.

- Cost is $5/person*
- Check-in starts at 7:30am
- English and Spanish sessions will be available
- Restricted Use Pesticide License CEUs have been requested
- Certified Crop Advisor CEUs have been requested

PROGRAM TOPICS:

- WPS Handler Training
- Equipment Safety
- Personal Protective Equipment
- First Aid and Heat Stress
- Environmental Hazards
- Decontamination

Pre-registration is required using Eventbrite:

https://safetymorning2022.eventbrite.com

or by mailing the registration form and fees to:
Ajia Paolillo
2150 NE Roan St.
Arcadia, FL 34266
Please make checks payable to:
Citrus Advisory Committee

For more information please contact Ajia Paolillo 863-251-4763
*An additional fee of $1.94 will be added when using Eventbrite for registration.

SAFTEY MORNING 2022

March 2, 2022 8am-12pm
Turner Agri-Civic Center
2250 NE Roan St, Arcadia

UF | IFAS Extension
UNIVERSITY of FLORIDA

Cost: $5/person

Registration Form

Company Name/Contact Person:_____

Company Mailing Address:_____

_____

Name	Language Session	
	English	Spanish

Pre-registration is required. Please mail registration form and fees to:
Ajia Paolillo, UF/IFAS Extension DeSoto County
2150 NE Roan St.
Arcadia, FL 34266

Please make checks payable to:
Citrus Advisory Committee

PRIVATE APPLICATOR TRAINING CLASS

- **Location:** UF/IFAS Extension Polk County (1702 S Holland Pkwy, Bartow, FL 33830)
- **Hours:** 8:30am-3:00pm (Testing is from 1:00 pm – 3:00 pm)
- **Date:** February 25, 2022
- **Phone:** 863-519-1049 or 863-519-1041
- **Cost:** $10.00
- **Instructor:** Luis O. Rodriguez, UF/IFAS Small Farms and Pesticide Education Agent, Polk County.
- **Registration at:** https://www.eventbrite.com/e/private-applicator-training-class-tickets-241374957997

Core Exam Review Class

Location:
UF/IFAS Hardee County Extension
507 Civic Center Dr.
Wauchula, FL 33873

Time: 8:30am-12:30pm

***Cost: $15 class**
$41 class & study guide

- This review class will discuss the required information for the Core exam for Restricted Use Pesticide Licenses in Florida.
- Pre-registration required: https://coreexamreview3102022.eventbrite.com
- Participants may take the Core exam after the class has ended.
- Exam seating is limited to 4 people.

4 Core CEUs for Restricted Use Pesticide licenses are available for this class

For more information or to schedule your exam, please contact
Ajia Paolillo, UF/IFAS Multi-County Citrus Agent
(863) 251-4763 ajiacunningham@ufl.edu

***Eventbrite charges an additional fee when purchasing tickets and guides**

Are you interested in being a sponsor for this newsletter?

IF YOU BECOME A SPONSOR, YOUR INFORMATION WILL BE FEATURED IN THE 10 ISSUES OF THIS NEWSLETTER FOR 2022.

For pricing and other information, please contact

Chris Oswalt (863) 519-1052
wcoswalt@ufl.edu
or
Ajia Paolillo (863) 251-4763
ajiacunningham@ufl.edu
or
Lourdes Pérez Cordero (863) 402-6540
lperezcordero@ufl.edu

2022 Newsletter Sponsors

syngenta

Thank you for your support!

If you would like to be a sponsor, please contact
Chris Oswalt: wcoswalt@ufl.edu or
Ajia Paolillo: ajiacunningham@ufl.edu