

JULY/AUGUST 2021 | VOL. 21:06

Citrus from the Ridge to the Valley

CENTRAL FLORIDA CITRUS EXTENSION

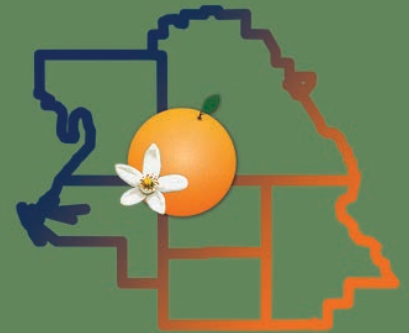
July/August 2021

As we make our way through these summer months, hopefully many of you had the opportunity to take a break and maybe even go on vacation. Below are the topics you will find in this issue of our newsletter:

- Firewall Label Update Reminder
- 2021 Citrus Packinghouse Day Information
- Weather Outlook
- Evaluating Your Citrus Nutrition Program
- Screens for Excluding Asian Citrus Psyllids from Citrus
- Greasy Spot Rind Blemish Survey
- Pesticide Training Materials Giveaway
- Citrus Pathology Course Information
- Restricted Use Pesticide Exam Vouchers
- Core Pesticide Exam Review Class
- Produce Safety Rule - Grower Training Classes



The Florida Citrus Expo will be an in-person event held on August 18 and 19, 2021, at the Lee Civic Center in Ft. Myers. This year's program, along with registration information, can be found at: <https://citrusexpo.net/>. Plan now to attend this education and trade show event. Pre-registration closes on August 12, 2021.



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Firewall 50WP Fungicide/Bactericide

BY CHRIS OSWALT

On April 23, 2021, Firewall 50WP received a section 3 label, and this would pre-empt the section 18 label we have been using up until that date. The labels are nearly identical except for the pre-harvest interval (PHI) changed from 40 to 60 days in the new (section 3) label. You all likely know how this works; if you have the product with a section 18 label, you must follow the label on the material you have on hand. If you buy a new product with the section 3 label, you must follow that label. So, if you are not sure, read the label.



UF/IFAS Citrus Packinghouse Day

Please save the date. The UF/IFAS Citrus Packinghouse Day will be held on August 26, 2021, in Lake Alfred at the UF/IFAS Citrus Research and Education Center.

This program is free for attendees, but pre-registration is required. Use this link to register: <https://packinghouseday2021.eventbrite.com>



Save the Date

**Citrus Packinghouse
Day**

August 26, 2021

UF/IFAS Citrus REC
700 Experiment Station Road
Lake Alfred, Florida

UF | IFAS Extension
UNIVERSITY of FLORIDA



Weather Outlook

BY CHRIS OSWALT

Halfway through the 2021 summer, the latest NOAA weather outlooks for temperature and rainfall have us looking at an increased probability of above-average temperatures for August (fig 1). The rainfall outlook (fig 2) has us looking at an equal chance or probability for above, below, or normal rainfall. In addition, the El Nino forecast is for a 51% chance of continuing in a neutral El Nino condition for the period from August to October with a 66% chance of a transition into a La Nina condition for the winter period (November to January 2022). Technically we are in a NOAA La Nina Watch condition as of the first week of July.

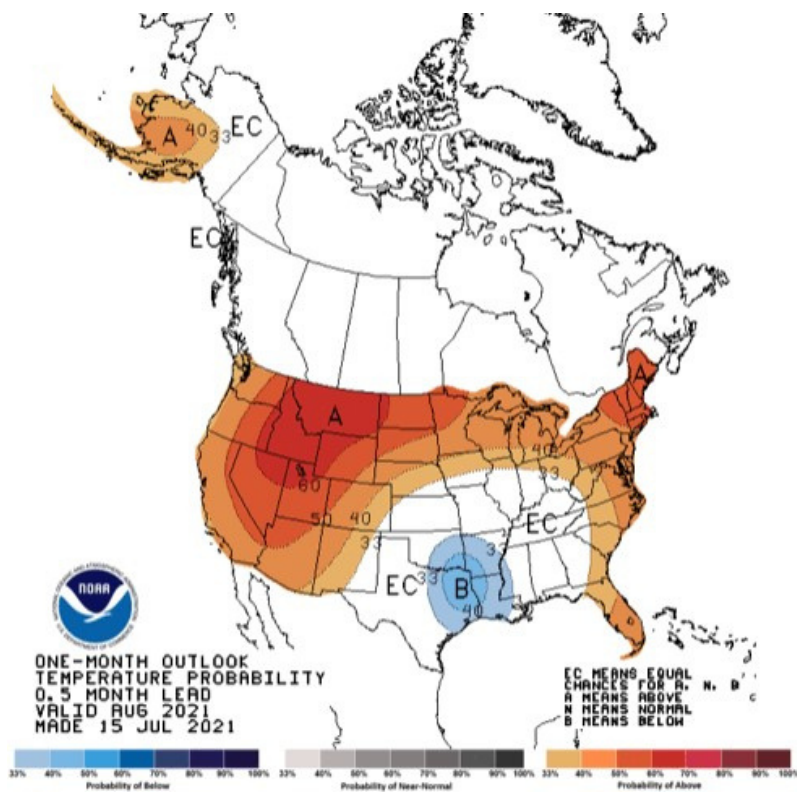


Figure 1

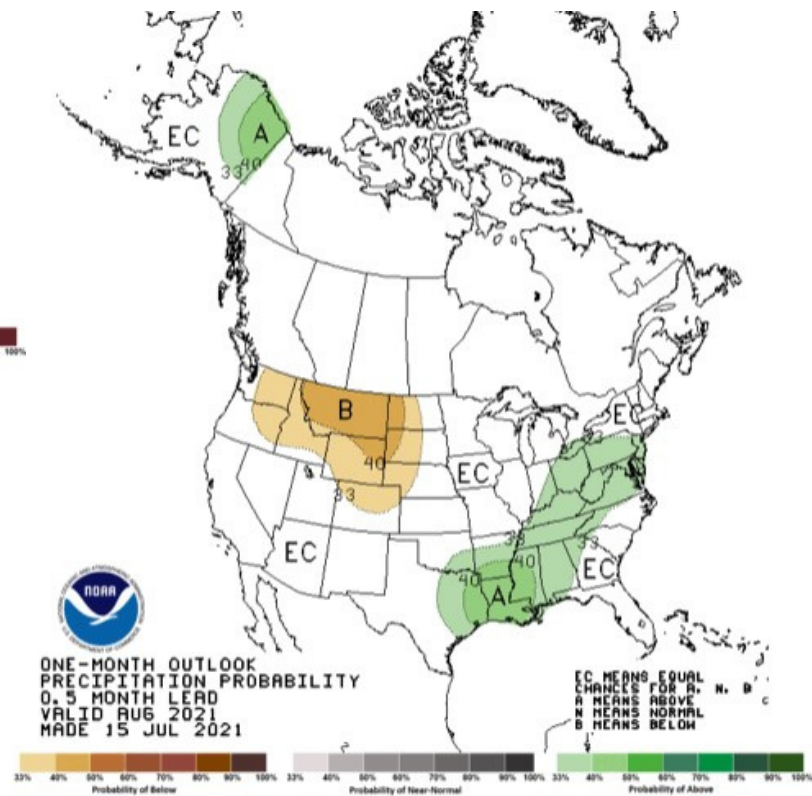


Figure 2



Evaluating your Citrus Nutrition Program

BY CHRIS OSWALT

So, welcome to July, the true beginning of the summer here in Florida. This time of the year, growers need to schedule their collection of citrus leaf samples for nutritional analysis. Our current guidance on evaluating the nutritional status of citrus trees is based on a specific sampling methodology. The process requires that 100 four to six-month-old spring flush leaves off non-fruiting twigs be collected from 15 to 20 uniform citrus trees within the sample site. The number of samples you would want to collect would be determined by the area of grove that you want to manage for nutrition.

An example will be if you use fertigation as a delivery method for your fertilizer and the system runs the entire grove at one time. You are somewhat limited in what you can do differently within the fertigated zone based on a collection of multiple nutritional leaf samples. In this case, the analysis would represent the entire block. If there are differences in soil types that you are willing to address by changing nutrition practices, then separating these areas would allow you to fine-tune your nutrition program—enough about sampling methodology, you get the point. Samples will then need to be submitted to the analytical laboratory of your choice. Shortly after submission, you should receive the results of this analysis.

Now let us talk about the analysis you get back and how this can keep us on track. Macro (nitrogen, phosphorus, and potassium) and secondary nutrients (calcium, magnesium, sulfur, chlorine, and sodium) are typically reported in percentages and represent the lion's share of the nutrients found in citrus leaves. Micronutrients (manganese, zinc, copper, iron, boron, and molybdenum) generally are reported in parts per million (ppm) or milligrams per kilogram (mg/kg). So for comparison sake, if your leaf nitrogen is reported as 2.75%, that would be 27,500 ppm; conversely, if your zinc level is 200 ppm, that would be 0.02%, and you can better understand the magnitude of macro versus micronutrient levels in a leaf. The interpretation of citrus leaf nutrient levels is based on years of nutritional research done on citrus trees. In Florida, the standard guideline table presents ranges for deficient, low, optimum, high, and excessive and based on where these nutrient levels fall for any given sample. Samples with values in the deficient and or the low range should be addressed by modifying your fertilizer program to address the tree's needs. Pretty straightforward, but what if you have multiple instances where you need to determine the order in which the deficiencies are most limiting. That is where something like the diagnosis and recommendation integrated system or DRIS can help you sort out this order of need.



Evaluating your Citrus Nutrition Program (ctnd.)

BY CHRIS OSWALT

The DRIS program allows you to enter the results of your nutritional leaf analysis. This program was optimized for Florida oranges and related varieties before the onset of citrus greening. It was not optimized for lower nitrogen requiring varieties like grapefruit here in Florida. The DRIS analysis uses a nutrient index approach to interpret citrus leaf nutrition based on the dry mass of the leaves. This seems most appropriate for greening infected citrus leaves in Florida since it considers the increased weight (due to starch accumulation) of these infected citrus leaves. All the information needed to run your analysis in DRIS is located at the following website: <http://www.makecitrusgreatagain.com/cgi-bin/driscgiproject1>. Table 1 is an example of a typical citrus leaf nutrient analysis and the corresponding DRIS output using that analysis data.

| | %N | %P | %K | %Mg | %Ca | %S | B (ppm) | Zn (ppm) | Mn (ppm) | Fe (ppm) | Cu (ppm) | | |
|----------------|---|-----------|---------|-------------|---------|------|---------|----------|----------|----------|----------|----|------|
| Lab Analysis | 3 | 0.15 | 1.9 | 0.37 | 2.8 | 0.23 | 98 | 47 | 13 | 47 | 5 | | |
| Recommended * | 2.5-2.7 | 0.12-0.16 | 1.2-1.7 | 0.30-0.49 | 3.0-4.9 | | 38-100 | 25-100 | 25-100 | 60-120 | 5-16 | | |
| | | | | | | | | | | | | | |
| | N | P | K | Mg | Ca | S | B | Zn | Mn | Fe | Cu | DM | NBI |
| DRIS Analysis | 29 | 144 | 25 | -36 | -28 | -55 | 82 | 267 | -272 | -39 | -146 | 29 | 1122 |
| DRIS Diagnosis | DEFICIENT: Mn LOW: Fe<Ca HIGH: K EXCESS: N | | | | | | | | | | | | |
| Color Key | Deficient | Low | Optimum | Excess/High | | | | | | | | | |

Table 1. Typical leaf analysis and the resulting DRIS analysis.

* From Nutrition of Florida Citrus Trees, 3RD edition, SL253, Editors: Morgan, K.T. and D.M. Kadyampkeni. University of Florida/IFAS. <https://edis.ifas.ufl.edu/pdf%5CSS%5CSS47800.pdf>.

From this example, the evaluation of the analysis doesn't differ from the typical lab analysis of the results. Still, it does provide the ranking of the severity of the deficient and low nutrient values (manganese, iron, then calcium) as well as the ranking of high and excess values (nitrogen higher than potassium).



Screens for excluding Asian citrus psyllids from citrus

BY DR. ARNOLD SCHUMANN, UF/IFAS CREC

The Asian citrus psyllid (*Diaphorina citri* Kuwayama [Hemiptera: Liviidae]) is a major obstacle in Florida citrus production. The pesky insect transmits *Candidatus Liberibacter asiaticus*, a bacterial pathogen of citrus putatively causing Huanglongbing (HLB). A part of HLB management involves vector management with insecticide sprays. However, the psyllid has developed some resistance to many insecticides. Building a physical barrier around trees in nurseries or groves can prevent contact between citrus trees and psyllids. This article is for growers, scientists, and industries that are interested in this approach to protect citrus from HLB.

Two approaches utilize a physical barrier of high-density polyethylene (HDPE) screen. One is CUPS (Citrus Under Protective Screen) where the entire grove is enclosed under a screen. The other is IPC (individual protective covers) where individual trees are enclosed. Our goal was to identify the largest opening in the screen that will exclude psyllids because larger openings provide better ventilation and light penetration required for citrus growth.

The psyllid body size had a range of 487.7 to 767.5 micrometers tall by 487.5 to 737.5 micrometers wide (1000 micrometers equals 1 millimeter or 0.039 inches). Eight woven screens and two knitted screens were examined, though six are shown in Figure 1. Mesh size in woven screens refers to the number of openings per inch, while the code size in knitted screens is percentage of light blocked: Note that code 40 does not equal 40 mesh. The knitted screens we examined were included in this discussion only to inform the readers about their different characteristics, which are not suited for psyllid exclusion and are not recommended for CUPS or IPC.



Screens for excluding Asian citrus psyllids from citrus, (continued).

BY DR. ARNOLD SCHUMANN, UF/IFAS CREC

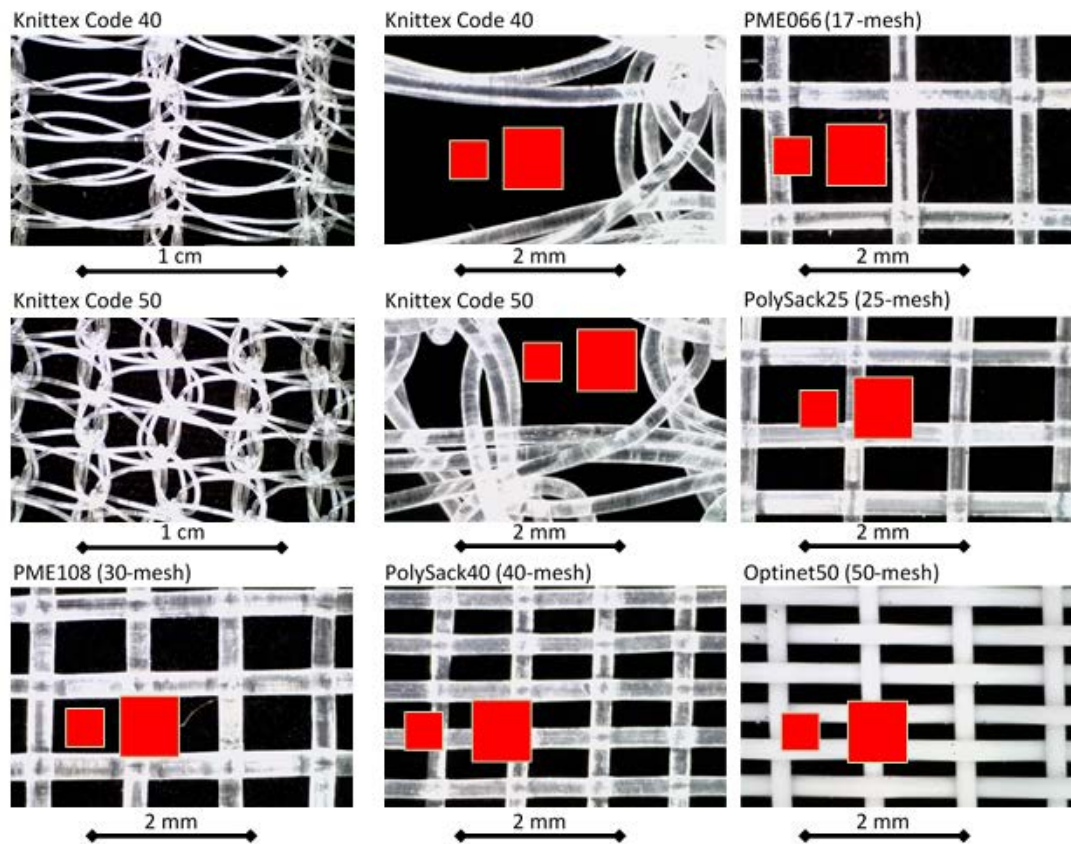


Figure 1. Close-up view of woven screens evaluated for their ability to exclude psyllids. Red squares show the range in size of psyllid body cross-sections.

Adult psyllids penetrated screen PME066 (17-mesh) with 74.5% able to pass through the screen. Polysack25 (25-mesh) and PME108 (30-mesh) allowed 1.1% and 0.3% of psyllids through respectively. No psyllid passed Polysack40 (40-mesh) or PME1610 (40-Mesh, not shown). On a statistical basis, we cannot state that the 40-mesh screen is psyllid proof based on these finite laboratory test conditions, but the larger width of the adult psyllids compared to the narrowest dimension of the screen holes means that psyllid penetration is highly unlikely. We were confident enough in its effectiveness to use 40-mesh screen when the screen was replaced at the CUPS grove at the Citrus Research and Education Center. While we did not test knitted screens for psyllid penetration, they have openings larger than a woven screen that would allow 74.5% of psyllids through, and should clearly not be used for psyllid exclusion. We suggest the use of woven screens with openings of 385 μ m or less (~40 mesh) because these exclude the Asian citrus psyllid. More information can be found in our full research article: <https://academic.oup.com/jee/article/113/4/2026/5840497> and the EDIS extension article: <https://edis.ifas.ufl.edu/pdf/SS/SS702/SS702-Ds06m8fntt.pdf>

Acknowledgment

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Greasy Spot Rind Blotch

Citrus fruit regreening continues to reduce fresh packouts for some Florida blocks later in the season but is also now impacting packouts as early as December.

The symptoms are consistent with greasy spot (<https://edis.ifas.ufl.edu/pdffiles/PP/PP27000.pdf>; *Mycosphaerella citri*) but a direct causal relationship has not been proven and so the “greasy green” disorder (as some call it) may also be related to other possible factors such as variety, nutrient application method/amount, phytotoxicity from different tank mixes, field temperatures, etc. We need your input concerning conditions, cultivars, current practices, and any other observations you might have related to this disorder.

We are asking Florida fresh citrus growers and packers to complete a brief, anonymous survey related to their experiences with the disorder this past season. This will help us design research experiments next season (if funded) to understand the causal factor(s) and develop strategies to control this disorder.

Access the survey at: https://ufl.qualtrics.com/jfe/form/SV_etVlhE4eLqO49Tg



Please contact Dr. Mark Ritenour if you experience any problems or have questions about the survey.

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Pesticide Training Materials



PERC is led by University of California of Davis Continuing and Professional Education and Oregon State University and is funded by a 5-year cooperative agreement (#X8-83616301) from the U.S. EPA. PERC aims to support the development of resources/materials about the safe use of pesticides by applicators and handlers in agricultural, commercial, and residential settings. Materials could include brochures, factsheets, posters, videos, manuals, and mobile tools, while addressing the needs of low-literacy and multilingual audiences. These materials will help prevent pesticide exposure incidents for pesticide applicators, handlers, workers, and their families. The PERC supports the U.S. EPA's Strategic Goal 1, Objective 1.4 - Ensure Safety of Chemicals in the Marketplace.

PERC is giving away free selected printed works to thank you for your support and participation in our shared mission, over the past five years. One time only, act quickly! Free shipping is included!

What's available?

- WPS manuals and guides (English and Spanish)
- Large and small laminated central posting posters (nine languages)
- WPS worker and handler training DVDs and thumb drives (English and Spanish)

Quantities: Please estimate how many of each item you could reasonably use/distribute within one year. Noncommercial use is assumed; see our policy on [Using PERC's Works](#).

Browse: Check out the list of available items and their descriptions [here](#).

Make your request: To place your product request, [click this link](#) to complete a web-based form.

Who is eligible?

- Agricultural employers, farm labor contractors
- State lead pesticide agencies
- Tribal pesticide programs
- University pesticide safety education programs
- Licensed/certified pesticide applicators
- Trainers of agricultural workers/pesticide handlers under the WPS
- Non-profit organizations serving farmworkers

Deadline: **Product requests will be accepted through August 23, 2021.**

Confirmation: You will receive an on-screen message that you submitted your request form. From that screen, save the link of your submitted form to edit or make additional requests by August 23. We will email you if we have any questions about your order.

Shipping: For items already on our shelves, we will ship in September. For items we need to print, we expect to ship those in October/November.

To all of our stakeholders: Thank you for serving on our Advisory Board, committees, project teams, and translation teams. Thank you for using, reviewing, and distributing the educational materials we produce. Thank you for letting us know about your unmet needs. We are so excited to continue this work with PERC 2.0 (2021-2026); join us!

Please direct your questions about the PERC stimulus at PERCsupport@ucdavis.edu.

Citrus Pathology PLP5115C

BY CHRIS OSWALT

The following graduate level course is being offered this fall, please see the course information below.



UF IFAS CALS
UNIVERSITY of FLORIDA

CITRUS PATHOLOGY

Course for Graduate Students
PLP5115c - 3 credits

FALL 2021



TOPICS

From Anthracnose to Xanthomonas, this Citrus Pathology course will focus on the understanding of disease pathogenicity and control strategies for many fungal, bacterial and viral diseases of citrus. The course will be taught by leading experts with experience specifically in citrus pathology and disease mechanisms. Students will participate in lectures, field visits, and presentations. One term research paper on a disease of citrus (student choice) will be required for course completion.



LEARNING OBJECTIVES

Citrus is a major crop in the state of Florida. Citrus diseases are an economically important aspect of citrus production. Since 1986, many exotic citrus pathogens and their vectors have been introduced into Florida, and most have become established. The overall goal of this course is for students to gain knowledge about both the endemic as well as exotic citrus diseases and current methods being used to detect, diagnose and manage these diseases. By the end of this course, student should be able to:

- Recognize the symptoms, the causal agents, and the vector of numerous endemic citrus diseases.
- Understand the epidemiology of citrus diseases
- Become familiar with the current management practices



Citrus Research and Education Center
Lake Alfred, FL, 33850 and via Zoom.



Monday: 09:35 am - 11:30 am.
Friday: 12:50 pm - 01:40 pm.

Contact information

INSTRUCTOR: DR. NABIL KILLINY



Department of Plant Pathology
IFAS-CREC-University of Florida
Phone: (863) 956-8833
E-mail: nabilkilliny@ufl.edu

Restricted Use Pesticide License Vouchers

As you may or may not know, the Florida Department of Agricultural and Consumer Services (FDACS) requires you to have a voucher to take a restricted use pesticide exam. Remember, if you have not earned the required amount of CEU's for renewal, you can renew your license by taking the exams again. A reason to renew with CEU's, is that it has a lot fewer moving parts in the process. FDACS has changed the website address where you would acquire a voucher, and the new website is <https://aesecomm.fdacs.gov/Default.aspx>. Please use the new website if you find yourself in need of taking an exam.

Core Exam Review Class

August 26, 2021
8 am to 12 pm

*Cost: \$10 class
\$36 class & study guide

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

This review class will discuss the required information for the Core exam for Restricted Use Pesticide Licenses in Florida.

Participants may take the Core exam after the class has ended.
Exam seating is limited to 2 people.

Registration

Advanced registration is required through Eventbrite
<https://www.eventbrite.com/e/core-exam-review-class-florida-restricted-use-pesticide-license-tickets-165950216565>

Class size is limited to 6 people.

No walk-ins will be permitted.

Core CEUs for Restricted Use Pesticide licenses are being requested,
approval is pending

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

2021 Fall Food Safety Events



Produce Safety
ALLIANCE



Produce Safety Alliance Grower Training

A one-day course for fruit and vegetable growers and packers who fall under FSMA's Produce Safety Rule.

- 9/21/21– Ft. Pierce PSA Training
<https://psa092121.eventbrite.com>
- 10/19/21 Naples PSA Training
<https://psa101921.eventbrite.com>
- 11/10/21– Monticello PSA Training
<https://psa111021.eventbrite.com>
- 11/17/21– Belle Glade PSA Training
<https://bit.ly/3fxotdx>

Remote- Produce Safety Alliance Grower Training

A three-day, three-hour virtual course for fruit and vegetable growers and packers who fall under FSMA's Produce Safety Rule.

- 8/30-9/2/21– Remote PSA Training
Sold Out
- 11/30-12/2/21– Remote PSA Training
<https://psa113021.eventbrite.com>

Bridging the GAPS: Approaches for Treating Water On-Farm

Join this one-day course with extension specialists across the Southeast to learn about approaches for treating water on-farm and implementing systems to meet requirements of the Produce Safety Rule.

- 9/22/21- Fort Pierce BTG Training
<https://bridgingthegaps092221.eventbrite.com>



FOOD SAFETY PREVENTIVE CONTROLS ALLIANCE

Preventive Controls for Human Food- Preventive Controls Qualified Individual (PCQI) Training

This three-day course for those covered under FSMA's Preventive Controls for Human Food Rule

- 11/2-11/4/21–Lake Alfred
Contact: taylorlangford@ufl.edu for registration.

Questions?

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To stay up to date with upcoming food safety events visit:

<https://www.eventbrite.com/organizations/events>

Eventbrite registration questions? Contact Sarah McCoy at sarahmccoy@ufl.edu

2021

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