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Flatwoods Citrus



Vol. 26, No. 12 **December 2023**

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Multi-County Citrus Agent, SW Florida



Mongi Zekri

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CEUs for pesticide license renewal

Earn CORE CEUs online through articles written by UF-IFAS Citrus Extension Agents in the Citrus Industry magazine
<http://citrusindustry.net/ceu/>

The following series of articles and quizzes are available with their expiration dates noted:

- . 2023 #4: How to Properly Transport and Store Pesticides (10/31/24)**
- . 2023 #3: A Guide to Safe, Effective Pesticide Use (7/31/24)**
- . 2023 #2 What To Do When You've Been Exposed to a Pesticide (4/30/24)**
- . 2023 #1: Key Terms to Know When Using Pesticides (1/31/24)**

Each article grants one General Standards (Core) CEU when submitted and approved toward the renewal of a Florida Department of Agriculture and Consumer Services restricted-use pesticide license.

Florida Citrus Production Guide

<https://crec.ifas.ufl.edu/resources/production-guide/>

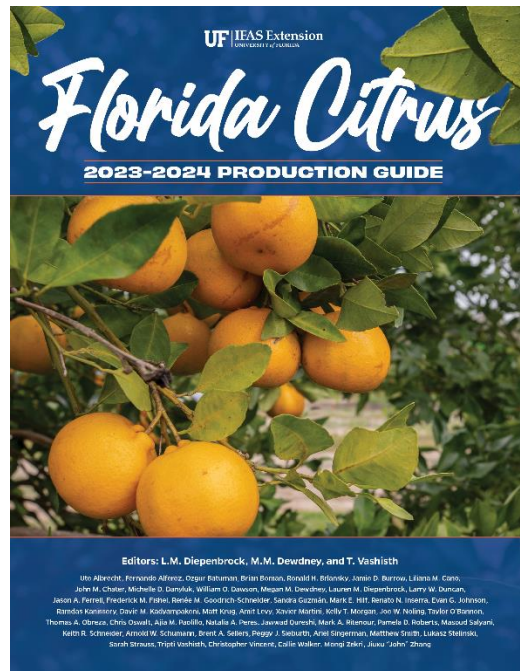
The objective of the Florida Citrus Production Guide is to assist citrus growers in the identification of pest management options and the selection of appropriate control measures. This publication should serve as a reference once it has been determined that control measures might be warranted. It is not intended to replace pesticidal product labels which contain important usage information and should be immediately accessible for reference. Violations of directions for use printed on the label are against State and Federal laws. Care should be taken to select only those treatments best suited for control of the specific pest(s) identified as requiring suppression. Products listed in all tables have been shown to be efficacious, non-phytotoxic to citrus, and relatively safe on non-target arthropods and microorganisms when used as directed. However, it is important to realize that results may not be consistent under different environmental, application, and tank mix conditions.

PRODUCTION GUIDE MENU

- [General](#)
- [Horticultural Practices](#)
- [Mites, Insects & Nematodes](#)
- [Diseases](#)
- [Weeds](#)
- [Pesticides](#)

If you did not pick up your hard copy of the newly updated Florida Citrus Production Guide, you can find the electronic version online <https://crec.ifas.ufl.edu/resources/production-guide/>

If you need hard copies, you can get them free from your Citrus Extension Agent or from the Citrus Research & Education Center in Lake Alfred and the Southwest Florida Research and Education Center in Immokalee.



Special Thanks to sponsors of the "Flatwoods Citrus" newsletter for their generous contribution and support. If you would like to be among them, please contact me at 863 674 4092 or maz@ufl.edu



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EL NIÑO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC DISCUSSION

issued by

CLIMATE PREDICTION CENTER/NCEP/NWS

9 November 2023

ENSO Alert System Status: [El Niño Advisory](#)

Synopsis: El Niño is anticipated to continue through the Northern Hemisphere spring (with a 62% chance during April-June 2024).

Above-average sea surface temperatures (SST) across the equatorial Pacific Ocean [\[Fig. 1\]](#) were indicative of a strong El Niño, with anomalies increasing in the central and east-central Pacific in the past month. The latest weekly Niño index values were +1.4°C in Niño-4, +1.8°C in Niño-3.4, +2.1°C in Niño-3, and +2.2°C in Niño-1+2 [\[Fig. 2\]](#). Area-averaged subsurface temperatures anomalies increased slightly [\[Fig. 3\]](#) associated with the initiation of a downwelling oceanic Kelvin wave, which strengthened above-average subsurface temperatures in the central equatorial Pacific [\[Fig. 4\]](#). Low-level wind anomalies were westerly in the east-central Pacific, while upper-level wind anomalies were easterly in the western and central Pacific. Convection/rainfall was enhanced around the International Date Line, extending into the eastern Pacific. Suppressed convection/rainfall strengthened around Indonesia [\[Fig. 5\]](#). The equatorial Southern Oscillation Index (SOI) and the station-based SOI remained negative. Collectively, the coupled ocean-atmosphere system reflected a growing El Niño.

The most recent IRI plume favors El Niño to continue through the Northern Hemisphere spring 2024 [\[Fig. 6\]](#). Based on latest forecasts, there is a [greater than 55% chance](#) of at least a "strong" El Niño ($\geq 1.5^{\circ}\text{C}$ in Niño-3.4 for a seasonal average) persisting through January-March 2024. There is a 35% chance of this event becoming "historically strong" ($\geq 2.0^{\circ}\text{C}$) for the November-January season. Stronger El Niño events increase the likelihood of El Niño-related climate anomalies, but do not necessarily equate to strong impacts (see [CPC seasonal outlooks](#) for probabilities of temperature and precipitation). In summary, El Niño is anticipated to continue through the Northern Hemisphere spring (with a 62% chance during April-June 2024; [\[Fig. 7\]](#)).

This discussion is a consolidated effort of the National Oceanic and Atmospheric Administration (NOAA), NOAA's National Weather Service, and their funded institutions. Oceanic and atmospheric conditions are updated weekly on the Climate Prediction Center web site ([El Niño/La Niña Current Conditions and Expert Discussions](#)). Additional perspectives and analysis are also available in an [ENSO blog](#). A probabilistic strength forecast is [available here](#). The next ENSO Diagnostics Discussion is scheduled for 14 December 2023.

**Climate Prediction Center
National Centers for Environmental Prediction
NOAA/National Weather Service**



CITRUS

DECEMBER FORECAST MATURITY TEST RESULTS AND FRUIT SIZE

Cooperating with the Florida Department of Agriculture and Consumer Services
851 Trafalgar Ct, Suite 310E, Maitland, FL 32751-4132
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December 8, 2023

Florida All Orange Production Unchanged from the October Forecast
Florida Non-Valencia Orange Production Unchanged
Florida Valencia Orange Production Unchanged
Florida All Grapefruit Production Up 26 Percent
Florida All Tangerine and Tangelo Production Up 10 percent

FORECAST DATES - 2023-2024 SEASON	
January 12, 2024	April 11, 2024
February 8, 2024	May 10, 2024
March 8, 2024	June 12, 2024
July 12, 2024	

Citrus Production by Type – States and United States

Crop and State	Production ¹		2023-2024 Forecasted Production ¹	
	2021-2022 (1,000 boxes)	2022-2023 (1,000 boxes)	October (1,000 boxes)	December (1,000 boxes)
Non-Valencia Oranges ²				
Florida	18,250	6,150	7,500	7,500
California ³	31,500	36,500	37,000	37,000
Texas ³	170	570	450	450
United States	49,920	43,220	44,950	44,950
Valencia Oranges				
Florida	22,950	9,650	13,000	13,000
California ³	7,600	6,700	7,500	7,500
Texas ³	30	560	350	350
United States	30,580	16,910	20,850	20,850
All Oranges				
Florida	41,200	15,800	20,500	20,500
California ³	39,100	43,200	44,500	44,500
Texas ³	200	1,130	800	800
United States	80,500	60,130	65,800	66,800
Grapefruit				
Florida-All	3,330	1,810	1,900	2,400
Red	2,830	1,560	1,650	2,100
White	500	250	250	300
California ^{3,4}	4,100	4,000	3,500	3,500
Texas ³	1,700	2,250	2,200	2,200
United States	9,130	8,060	7,600	8,100
Lemons ³				
Arizona	1,250	1,400	1,500	1,500
California	25,200	26,500	23,000	23,000
United States	26,450	27,900	24,500	24,500
Tangerines and Mandarins ⁵				
Florida	750	480	500	550
California ³	17,500	23,700	23,000	23,000
United States	18,250	24,180	23,500	23,550

¹ Net pounds per box: oranges in California-80, Florida-90, Texas-85; grapefruit in California and Texas-80, Florida-85; lemons-80; and tangerines and mandarins in California-80, Florida-95.

² Early non-Valencia (including Navel) and midseason non-Valencia varieties in Florida; Navel and miscellaneous varieties in California; Early and mid-season varieties in Texas.

³ Estimates carried forward from October.

⁴ Includes pummelos in California.

⁵ Includes tangelos.

All Oranges 20.5 Million Boxes

The 2023-2024 Florida all orange forecast released today by the USDA Agricultural Statistics Board is 20.5 million boxes, unchanged from the October forecast. If realized, this will be 30 percent more than last season's final production. The forecast consists of 7.50 million boxes of non-Valencia oranges (early, mid-season, and Navel varieties) and 13.0 million boxes of Valencia oranges. An 8-year regression was used for comparison purposes. All references to "average", "minimum", and "maximum" refer to the previous 10 seasons, excluding the 2017-2018 season, which was affected by Hurricane Irma, and the 2022-2023 season, which was affected by Hurricanes Ian and Nicole. Average fruit per tree includes both regular bloom and the first late bloom.

Non-Valencia Oranges 7.50 Million Boxes

The forecast of non-Valencia production is 7.50 million boxes, unchanged from the October forecast. Final fruit size is projected to be below the minimum at harvest. Current droppage is above average and projected to be above average at harvest. The Navel forecast, included in the non-Valencia forecast, is 300,000 boxes, comprising 4 percent of the non-Valencia total.

Valencia Oranges 13.0 Million Boxes

The forecast of Valencia production is 13.0 million boxes, unchanged from October. Current fruit size is below average and is projected to be below average at harvest. Current droppage is projected to be above average at harvest.

All Grapefruit 2.40 Million Boxes

The forecast of all grapefruit production is 2.40 million boxes, up 500,000 boxes from the October forecast. If realized, this will be 33 percent more than last season's final production. The red grapefruit, now at 2.10 million boxes, is increased 450,000 boxes from the October forecast. Fruit size of red grapefruit at harvest is projected to be above average, and droppage is projected to be average. The white grapefruit forecast is raised 50,000 boxes and is now 300,000 boxes. Projected fruit size of white grapefruit at harvest is slightly above average while projected droppage is below average.

Tangerines and Tangelos 550,000 Boxes

The forecast of tangerines and tangelos is 550,000 boxes, up 50,000 boxes from the October forecast. This forecast number includes all certified tangerine and tangelo varieties.

Reliability

To assist users in evaluating the reliability of the December 1 Florida production forecasts, the "Root Mean Square Error," a statistical measure based on past performance, is computed. The deviation between the December 1 production forecast and the final estimate is expressed as a percentage of the final estimate. The average of squared percentage deviations for the latest 20-year period is computed. The square root of the average becomes statistically the "Root Mean Square Error." Probability statements can be made concerning expected differences in the current forecast relative to the final end-of-season estimate, assuming that factors affecting this year's forecast are not different from those influencing recent years.

The "Root Mean Square Error" for the December 1 Florida all orange production forecast is 10.2 percent. However, if you exclude the four abnormal production seasons (four hurricane seasons), the "Root Mean Square Error" is 8.4 percent. This means chances are 2 out of 3 that the current all orange production forecast will not be above or below the final estimate by more than 10.2 percent, or 8.4 percent excluding abnormal seasons. Chances are 9 out of 10 (90 percent confidence level) that the difference will not exceed 17.7 percent, or 14.7 percent excluding abnormal seasons.

Changes between the December 1 Florida all orange forecast and the final estimates during the past 20 years have averaged 7.28 million boxes (6.75 million, excluding abnormal seasons), ranging from 0.95 million boxes to 18.2 million boxes including abnormal seasons, (1.30 to 16.3 million boxes excluding abnormal seasons). The December 1 forecast for all oranges has been below the final estimate 2 times, above 18 times, (below 2 times, above 14 times, excluding abnormal seasons). The difference does not imply that the December 1 forecast this year is likely to understate or overstate final production.

Forecast Components, by Type – Florida: December 2023

[Survey data is considered final in December for Navels, January for early-midseason (non-Valencia) oranges, February for grapefruit, and April for Valencia oranges]

Type	Bearing trees (1,000 trees)	Fruit per tree (number)	Droppage (percent)	Fruit per box (number)
ORANGES				
Early-midseason (non-Valencia) ¹ ...	13,299	342	42	337
Navel.....	570	138	37	138
Valencia.....	24,868	279	40	265
GRAPEFRUIT				
Red.....	1,418	356	31	119
White.....	194	479	26	119

¹ Excludes Navels.

Flower bud advisory #2 is now available at

<https://crec.ifas.ufl.edu/research/citrus-production/flower-bud-induction/>.

By **Dr. Tripti Vashisth**

Season Forecast: This is predicted to be a El Niño–Southern Oscillation (ENSO) winter, which means Florida will experience more rainfall pattern than normal. The daily temperatures are predicted to be average for this time of year however, due to higher than usual rainfall (associated overcast) slightly cooler temperatures can be predicted.

Under these conditions, enough hours below 68° F are likely to accumulate to induce an economic level of flower buds, but excessive rainfall can interfere with bud induction as both low temperature and drought stress are needed for strong floral bud induction.

Current Condition: Currently, most of the citrus producing regions are in low to moderate flower induction levels. So far Umatilla has accumulated about 590 IH, areas surrounding Lake Alfred are about 470 IH, Immokalee at 430 IH, and Indian River at lowest accumulation, around 420 IH. Generally, once the tree is in low to moderate induction an intermittent warm period along with rainfall can be sufficient to induce bud break thus leading to prolonged bloom however, under current predicted conditions (in majority of citrus producing region) we do not expect many hours above 75° F for next two weeks, thus day temperature should not be conducive for significant bud break.

Next 15 days will be intermediate for cool temperature accumulation with about 150 to 200 IH in most of the citrus producing area. More IH in next couple of weeks will be good and push the trees toward moderate to high flower bud induction period. Once the trees are in moderate to high floral induction, a rainfall along with extended warm temperatures can be sufficient to advance bud break leading to multiple blooms. If you are in region of Florida where warm temperature along with rainfall is predicted, multiple waves of flowering can be expected as the warm spell can push the induced buds. In such cases to suppress prolonged/multiple waves of flowering consider spraying gibberellic acid in next couple of weeks. Keep track of induction hours in your area.

General Information: Cool weather stops growth and then promotes induction of flower buds as more cool weather accumulates. After moderate induction, a warm spell when coincides with rainfall can initiate differentiation, which after sufficient days of warm temperatures will lead to bloom. Trees will be very vulnerable to growth stimulation by a warm period (over 75 F) after they accumulate 300-400 hours of cool temps if soil moisture is adequate.

Keep track of induction hours in your area and watch for projected warm periods from the weather services. Normal healthy trees could have their induction boosted by applying some drought stress. **Unfortunately, with vulnerable root systems associated with HLB you shouldn't risk heavier preharvest fruit drop of the current crop by using water stress to prevent unwanted early vegetative growth and enhance induction of flowers.** Based on weather predictions, if you are concerned about early flowering in your region, a gibberellic acid (GA) application can prevent some early flowering.

Gibberellic Acid Application Consideration: Gibberellic acid sprays can be used to suppress early spring flowering but the timing of application is critical for GA to be effective. GA (to suppress flowering) should be applied before warm temperatures (that is before differentiation begins). Previous research on HLB-affected trees has shown that when GA applied monthly in fall, early flowering was suppressed. Therefore, if you have a weak crop load and are forecasted to have warm spells, GA application can be considered to suppress off season flowering.

GA induced suppression of flowering benefits HLB-affected trees by preserving carbohydrate that can be later used by growing fruit and tree. Therefore, growers who are considering GA application to suppress flowering should carefully choose time to spray. GA application should be targeted at moderate-high flower bud induction period to get most effect. A late GA application might not be useful either. *As a general rule of thumb in most of the citrus producing regions of Florida moderate to high flower bud induction should be by 2-3rd week in December. Therefore, a GA spray in second or third week of December can be effective in reducing floral bud induction.* Once the induction level is above 600 or 650 hours the spray will not completely stop all of the flowering, but a more concentrated flowering should occur after the second warm period.

DO NOT spray GA after first of January to manage flowering.

GA can keep the fruit green, therefore can be a concern for fresh market fruit.

Flowering related management considerations for HLB-affected trees:

- DO NOT drought stress HLB-affected trees even though drought stress promotes flower induction and suppress vegetative growth, you should not risk current crop due to additional drought stress. Drought stress can exacerbate fruit drop. Daily, lower volume irrigations to minimize fall drought stress is suggested, especially when the weather is warm,
- Flowering enhancing fertilizer to increase the number of flowers are NOT suggested for severely HLB-affected trees as they are very less likely to benefit because of 2 reasons: (1) HLB-affected trees have more dead wood therefore, there are fewer buds available to become flower, interestingly a good branch of severe HLB trees has same flowering potential as mild HLB trees. So additional flowering promoting fertilizer is not needed. (2) High twig dieback and low fruitlet retention is the main concern with severe HLB trees in regards to fruit set. Only 2% of the total flowers turn into harvestable crop therefore, pushing tree to flower more is not advisable as that is likely to waste trees' energy and resources in extra flowers.

UF/IFAS CITRUS RESEARCH AND EDUCATION CENTER



Citrus Insect Pest Spray Programs

Dr. Jawwad Qureshi and Dr. Phil Stansly, UF IFAS- Immokalee

Asian citrus psyllid (ACP) control has been the main objective of Florida citrus growers for more than 10 years. While some may question the value of controlling ACP in trees with high HLB incidence, replicated field studies have shown the economic benefit of maintaining young flush pathogen free. Good ACP control starts with effective dormant sprays that will control ACP when populations are low, reducing ACP infestation and thus HLB infection of the all-important spring flush. Pyrethroids (Danitol, Baythroid or Mustang) and organophosphates (dimethoate, chlorpyrifos, or Imidan) provide great winter season control of ACP. Best not to use pyrethroids or OPs again during the year except for border sprays which will reduce the need for whole block applications. Follow up with bloom sprays of labeled products to clean up stragglers. Subsequent whole block sprays should target ACP as well as other pests like rust mites and leafminers that may be problematic.

The table below offers alternative products for different months, depending on which pests are of major concern at the time. Neonicotinoids like imidacloprid, thiamethoxam or clothianidin have not been included as spray options due to their importance for controlling ACP in young trees. Superscripts after the pesticide name are now in sequential order to facilitate use and correspond to superscripts after pests controlled. Make choices based on: (1) effectiveness against ACP and other pests that may be problematic, (2) avoiding repetition of any insecticide mode of action in the interest of resistance management, and (3) rebuilding and maintaining an effective natural enemy complex in the grove. Confining the broad-spectrum insecticides (pyrethroids and organo-phosphates) to the winter season and border sprays during growing season will help conserve these products as well as populations of beneficial insects and mites.

Spray Options for Citrus Pest Management

Dormant Season

Growing Season

Months	Nov-Dec	Jan	Feb-Mar	Apr	May - June	July - Aug	Sep-Oct
Products * Labeled for bloom	OP ¹ (e.g. Imidan, Dimethoate, chlorpyrifos)	Pyrethroid ² (Mustang Danitol Baythroid)	*Sivanto ³ *Movento ⁴ *Portal ⁵ *Micromite ⁶ Intrepid ⁷ Exirel ⁸	Portal ⁵ Micromite ⁶ Exirel ⁸ Apta ⁹ Sivanto ³ Oil ¹³	Movento ⁴ Delegate ¹¹ Abamectin ¹² Knack ¹⁴ Exirel ⁸ Apta ⁹ Sivanto ³ Oil ¹³ MinectoPro ¹⁰	Sivanto ³ Apta ⁹ OP ¹ MinectoPro ¹⁰ Oil ¹³	Movento ⁴ Delegate ¹¹ Apta ⁹ Sivanto ³ Oil ¹³
Pests	ACP Weevils	ACP Weevils	ACP Mites Leafminer Weevils Scales Aphids	ACP Mites Leafminer Weevils Aphids	ACP Rustmite Leafminer Scales	ACP	ACP Rustmite Leafminer
<p>ACP+++ 1,2,3,4,8,9,10 ACP++ 5,11 ACP+ 6,12 Leafminer 6,7,8, 9,11, 12 Rustmite^{4, 12} Scales^{4,13} Aphids^{3,4} Mealybugs^{3,4} (+++ excellent, ++ good, + fair)</p>							

2023 - 2024 WINTER WEATHER WATCH PROGRAM



NOVEMBER 15, 2023 TO MARCH 15, 2024
REGISTRATION FEE: \$100.00

It's once again time to register for the upcoming 2023 - 2024 Winter Weather Watch Program. Upon receiving your \$100.00 registration payment, you will be sent an unlisted telephone number with which you can retrieve the latest Ag Forecasts, 24/7. **Please do not give this number to others.** The *Winter Weather Watch Program* is funded by the registration fees to pay for telephone equipment rentals, long distance calls, repairs and our consulting meteorologist. I will be putting a text messaging list together for notifying subscribers of unscheduled weather forecast updates. If you would please indicate which number to use for this service in the following format on your subscription form, i.e. (863) 519-1052 (txt). One additional request would be to indicate the counties that you are interested in receiving weather forecasts. If you have one that is not listed please let me know and I might be able to take it under consideration.

2023 - 2024 Winter Weather Watch Program

NAME: _____ PHONE NUMBER: _____

ADDITIONAL PHONE NUMBERS: _____

COMPANY: _____

MAILING ADDRESS: _____

EMAIL ADDRESS: _____

CITY: _____ ZIP CODE: _____

COUNTIES OF INTEREST:

INLAND PASCO

INLAND CHARLOTTE

INLAND HILLSBOROUGH

INLAND LEE

POLK

GLADES

HIGHLANDS

HENRY

HARDEE

INLAND COLLIER

DESOTO

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Winter Weather Watch



UF UNIVERSITY of FLORIDA
IFAS Extension
Polk County Extension

Polk County Cooperative Extension Service
Chris Oswalt Phone: 863-519-1052
Email: wcoswalt@ufl.edu



UF/IFAS Polk County Cooperative Extension Service

The 2023-24 version of the Winter Weather Watch will begin on November 15, 2023. Time is short so send in your subscription form to receive timely agricultural winter weather forecasts and information.



The 2023-24 edition of the Polk County Winter Weather Watch program will begin on November 15, 2023. The program provides growers with winter weather forecast information specifically geared toward agricultural interests in West Central and Southwest Florida. The program provides subscribers with an unlisted phone number for (24 hour/7 days a week) access to daily weather forecasts. The zone forecasts are from the National Weather Service (NWS) and are listed on the automated phone menu, so you can select the products you are interested in. Forecasts include the zone forecasts, 6-10 and 8-14 day outlook forecasts. In addition to the forecasts we have special weather narratives provided as needed in the event of freezing temperatures and a weekly outlook provided by our own meteorologist David Faysash (Fred Crosby is actually stepping back starting this season). When freezing temperatures are predicted in our area additional updates will include the afternoon zone forecast and the modified sunset brunt minimum temperature equation. We will also provide the weekly citrus leaf freezing temperatures (also

available on FAWN) and the 2023-24 Winter Weather Watch manual.

Subscriptions for the Winter Weather Watch program are only \$100.00 for the entire 4 month period (Nov 15 to Mar 15). The cost is about the same as one tank (well maybe two now days) of gas for your pickup truck. You can subscribe to the Winter Weather Watch by completing and returning a "subscription form" or calling Joy Spencer at 863-519-1041 or email at j.spencer@ufl.edu



Forecast Schedule

The following schedule lists the products available from the Winter Weather Watch. **Please note with David onboard this season the forecast schedule has been modified.** The times and specific days of the week and the forecasted minimum temperature dictate when these forecasts products will be updated. Our Winter Weather Watch area tentatively includes the following areas by county: Pasco, Hillsborough, Polk, Highlands, Hardee, Manatee, Sarasota, DeSoto, Charlotte, Lee, Glades, Hendry and Inland Collier.

Introducing David Faysash

David has a bachelor's and master's degree in Meteorology from the Florida State University. As a graduate student he specialized in satellite remote sensing of land surface temperatures and atmosphere-biosphere interactions. David teaches meteorology courses at Valencia College in Orlando and Hillsborough Community College in Tampa. He was the outreach director for the West Central Florida Chapter of the American Meteorological Society where he organized and taught teacher in-

service trainings about the weather. David has lived in Wesley Chapel (Pasco County) since 2001 and has been avidly watching West Central Florida's weather since then.

Fred Crosby indicated he would be willing to work with David this first season with the idea of eventually passing the torch on to David. I have spoken with David and think that he will also bring additional insight to the NWS forecasts as related to our agricultural enterprises.

FORECAST SCHEDULE

Forecast Product	Above 32° F	32°-29° F	Below 28° F
<i>Zone*</i>	<i>Daily 8:30 a.m.</i>	<i>Daily 8:30 a.m.</i>	<i>Daily 8:30 a.m.</i>
<i>6-10 & 8-14 Day Outlooks*</i>	<i>Mon/Wed/Fri 8:30 a.m.</i>	<i>Mon/Wed/Fri 8:30 a.m.</i>	<i>Mon/Wed/Fri 8:30 a.m.</i>
<i>Weekly Outlook</i>	<i>Friday 5:00 p.m.</i>	<i>Friday 5:00 p.m.</i>	<i>Friday 5:00 p.m.</i>
<i>Leaf Freezing Temperatures</i>	<i>Friday 5:00 p.m. & on the Florida Automated Weather Network (FAWN)</i>	<i>Friday 5:00 p.m.</i>	<i>Friday 5:00 p.m.</i>
<i>Special Weather Narratives</i>	<i>As Needed</i>	<i>Daily 8:30 a.m. & 6:00 p.m.</i>	<i>Daily 8:30 a.m. & 6:00 p.m.</i>
<i>Afternoon Zone*</i>	<i>None</i>	<i>Daily 4:00 p.m.</i>	<i>Daily 4:00 p.m.</i>
<i>Sunset/Brunt</i>	<i>None</i>	<i>As Needed</i>	<i>Daily 7:00 p.m.</i>

*NWS products are subject to changes in schedule timing based on NWS release of these products.

Suggested Use Pattern of Injectable Antimicrobials for Huanglongbing (HLB) Management (February 2023)

This document is a suggested use pattern of injectable antimicrobials in Florida citrus. This is not an official University of Florida recommendation. Information is based on FIFRA Section 24(c) Special Local Need Label for ReMedium TI[®](10/28/2022) and Rectify™ (01/30/2023).

Antibacterial Product Application Schedule

Application schedule should be adjusted based on expected harvest time and flowering. The red boxes indicate possible timing of injection. Note that only one application per year is recommended, although non-bearing trees are allowed to be injected up to twice annually with a 4-month interval.

Citrus Type	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Early Season Varieties (Ex. Hamlin, Navel, Fallglo)												
Mid Season Varieties (Ex. Murcott, Pineapple, Midsweet)												
Late Season Varieties (Ex. Valencia)												
Grapefruit (Ex. Ray Ruby, Flame, Ruby Red)												

The latest possible injection application should be determined based on the 180-day PHI from the expected harvest date.
Color scale from most desirable (dark) to least desirable (light)

Application

- DO NOT apply during bloom.
- Recommended use after harvest and during spring.
- Recommended to apply when leaves are fully expanded for efficient uptake and distribution within tree.
- Phytotoxicity can occur in the hottest months of the year.
- ONLY inject once product is fully dissolved.
- ONLY use freshly prepared solution and protect solution from sunlight.

THE LABEL IS THE LAW!

Refer to the label for additional information.
This guide does not supersede the label.

Injection Sites

- Do not re-use injection sites.
- The rootstock is the recommended location for injection, but it may not always be possible.
- Subsequent injections should be above or below the initial site by 2 inches and to the right or left by 2 to 3 inches.
- Do NOT use any post-wounding treatments as these may interfere with wound healing.

ANTIBACTERIAL PROGRAMS DO NOT REPLACE ASIAN CITRUS PSYLLID MANAGEMENT PROGRAMS.



Trunk damage from injections

Considerations

- Injection into the trunk can cause significant damage to the tree.
- In all trees, it is best to minimize hole diameter.
- Trees with a trunk diameter of less than 2.5 inches are best not injected.
- Minimizing the hole size will minimize tree damage.

¹ U. Albrecht, associate professor, Department of Horticultural Sciences, Southwest Florida Research and Education Center, O. Batuman, assistant professor, Department of Plant Pathology, Southwest Florida REC, and Megan M. Dewdney, associate professor, Department of Plant Pathology, Citrus REC; UF/IFAS Extension; Gainesville, FL 32611.

ReMedium TI® (EPA # SLN FL220005) Rectify™ (EPA # SLN FL230001)		
Pre-harvest Interval (days)	180	
Bearing trees	Max. Number of Applications per Calendar Year	1
	Min. Re-treatment Interval (days)	365
Non-bearing trees	Max. Number of Applications per Calendar Year	2
	Min. Re-treatment Interval (days)	120
Re-entry Interval (hours)	12	
Maximum amount of product per tree per year	1.65 g	
FRAC Group	41	

ReMedium TI® or Rectify™ Dose per Tree by Trunk Diameter ¹					
Volume	Bearing			Non-bearing	
	Trunk Diameter	5,500 ppm	11,100 ppm	Trunk Diameter	1,100 ppm
25 ml	2.15" – 3"	0.138 g	0.275 g	1.25" – 1.75"	0.0275 g ¹
50 ml	3" – 4.25"	0.275 g	0.55 g	1.75" – 2.125"	0.055 g ¹
100 ml	4.25" – 6"	0.55 g	1.1 g	–	–
150 ml	> 6.0"	0.825 g	1.65 g	–	–

¹can be injected twice per year but may cause more harm than benefit

ReMedium TI® and Rectify™ Personal Protective Equipment (PPE) for Applicators and Handlers	
Coveralls over short sleeved shirt and shorts	Yes ¹
Long sleeve shirt and pants	Yes ²
Chemical-resistant gloves	Yes ^{1,2}
Shoes and socks	Yes ^{1,2}
Protective eyewear	Yes ^{1,2}
Respirator	Yes ^{1,3}
Application Method	Injection

¹Mixers and injection device fillers
²Applicators
³At least a particulate respirator with any N,R, or P filter, NIOSH approval prefix TC-84-A

Crop Type

Citrus (group 10-10): Grapefruit, lemon, lime, orange, tangelo, tangerine, citron, kumquat, pummelo, and hybrids of these.

DANGER

Muriatic acid is highly corrosive and can cause severe skin burns and eye damage. Do not inhale fumes.






CAUTION

Injection of oxytetracycline dissolved in acidified solution may cause trunk damage with long-term effects not yet established.

MURIATIC ACID SAFETY

U. Albrecht, O. Batuman,
and M.M. Dewdney ¹

Muriatic acid, also known as Hydrochloric Acid or Hydrogen Chloride (HCl), is a highly caustic liquid. To protect workers from burns and other injuries, it is important to use appropriate safety precautions.

Personal Protective Equipment (PPE) for Handlers	
Protective clothing – Chemical resistant apron or Tyvek (OSHA level C)	
Chemical-resistant gloves – gauntlet-style, neoprene, nitrile, butyl rubber, PVC	
Rubber boots	
Protective eyewear – Tightly fitting safety goggles (NIOSH rating D3) and 8-inch face shield. DO NOT wear contact lenses	
Ventilation	Good room ventilation and local exhaust required if used in an enclosed space
Respirator for enclosed spaces with insufficient ventilation - NIOSH-Approved air-purifying respirator with acid gas cartridge and HEPA filter	
Other protective equipment	Eye wash station, safety shower, spill kit

DANGER
Muriatic acid is highly corrosive and can cause severe skin burns and eye damage. Do NOT inhale fumes.



[The GHS hazard pictograms for free download \(reach-compliance.ch\)](https://reach-compliance.ch)

- Keep in original container
- Always add acid to water NOT water to acid
- Wash thoroughly after handling
- Do NOT eat, drink, or smoke when using product

1. U. Albrecht, associate professor, Department of Horticulture Sciences, Southwest Florida Research and Education Center, O. Batuman, assistant professor, Department of Plant Pathology, Southwest Florida REC, and Megan M. Dewdney, associate professor, Department of Plant Pathology, Citrus REC; UF/IFAS Extension; Gainesville, FL 32611.



Gulf Citrus Growers Association Scholarship Foundation, Inc.

11741 Palm Beach Blvd., #202, Fort Myers, FL 33905
(239) 690-0281 / Fax: (239) 690-0857

About the Gulf Citrus Growers Association

The citrus growers of southwest Florida are committed to supporting education as a long-term investment in the future of our industry. The first Gulf Citrus scholarship was awarded in 1992 through the Gulf Citrus Growers Association, a trade organization representing growers in Charlotte, Collier, Glades, Hendry and Lee Counties.

The Gulf Citrus Growers Association Scholarship Foundation was established in 2000 as a non-profit entity to oversee the distribution of these awards. Scholarship applications are accepted throughout the year and are reviewed semi-annually by a Scholarship Selection Committee comprised of academic and industry members. The number and amount of awards vary depending upon the number of applications received and available funds.

Applicants who are not selected may submit a new application for consideration in the next selection cycle. Previous award winners may also reapply.

Scholarship Criteria

Preferred requirements for scholarships are as follows:

AA, BS, MS and PhD Degrees:

- Completion of all placement testing and a **declared major** in agriculture or related major.
- Completion of **12 credit hours** towards agriculture or related degree.
- Minimum overall grade point average of **2.5** for AA and BS degrees; **3.0** for MS and PhD degrees.
- A demonstrated **commitment** to complete the degree at a state college, community college or university.

Applicants must complete the attached application and have their official transcripts sent directly by their universities to:

Gulf Citrus Growers Association Scholarship Foundation, Inc.

Dr. Mongi Zekri, Application Coordinator

Hendry County Extension Office

P. O. Box 68

LaBelle, FL 33975

(863) 674-4092 / Fax: (863) 674-4636

E-mail: maz@ufl.edu

***** APPLICATION & OFFICIAL TRANSCRIPTS MUST BE RECEIVED NO LATER THAN JULY 31 OR JANUARY 5*****



Gulf Citrus Growers Association Scholarship Foundation, Inc.

11741 Palm Beach Blvd., #202, Fort Myers, FL 33905
(239) 690-0281 / Fax: (239) 690-0857

Scholarship Application

Personal Data

Name: _____ Date of Birth: _____

Home Address: _____

City/State: _____ Zip: _____ Phone: _____

Mailing Address: _____

City/State: _____ Zip: _____ Phone: _____

E-mail: _____

Employer: _____

Address: _____

City/State: _____ Zip: _____ Phone: _____

Does your employer reimburse you for tuition or other expenses incurred toward your degree? Yes ___ No ___

Educational Information

College or University in which you are enrolled: _____

Department / Degree Program: _____

I am working toward the following: AA ___ BS ___ MS ___ PhD ___ Other ___

Courses Taken in Major (completed):

Courses (in which you are currently enrolled):

Total Credit Hours Toward Degree: _____ Cumulative Grade Point Average (GPA): _____

Expected Date of Graduation: _____

Please answer the following questions in complete sentences with as much detail as possible.

What are your career goals? _____

What is the potential value of your education to the citrus industry *in southwest Florida*?

I authorize the release of this application and any relevant supporting information to persons involved in the selection of recipients for Gulf Citrus Growers Association scholarships.

Applicant's Signature

Date

*****APPLICATION & OFFICIAL TRANSCRIPTS MUST BE RECEIVED NO LATER THAN JULY 31 OR JANUARY 5*****

Please return this application and have your official transcripts sent directly by your university to:

Gulf Citrus Growers Association Scholarship Foundation, Inc.
Dr. Mongi Zekri, Application Coordinator
Hendry County Extension Office
P. O. Box 68
LaBelle, FL 33975
(863) 674-4092 / Fax: (863) 674-4636
E-mail: maz@ufl.edu

Flatwoods Citrus newsletter by regular mail is no longer available. You will receive your copy only through e-mail or through the following link:

<https://citrusagents.ifas.ufl.edu/newsletters/>

If you did not receive the *Flatwoods Citrus* newsletter and would like to be on our e-mailing list, please check this box and complete the information requested below.

If you wish to be removed from our e-mailing list, please check this box and complete the information requested below.

Please send: Dr. Mongi Zekri
Multi-County Citrus Agent
Hendry County Extension Office
P.O. Box 68
LaBelle, FL 33975
or E-mail: maz@ufl.edu

Subscriber's Name: _____

Company: _____

Phone: _____

E-mail: _____

Racial-Ethnic Background

__ American Indian or native Alaskan

__ White, non-Hispanic

__ Asian American

__ Black, non-Hispanic

__ Hispanic

Gender

__ Female

__ Male