

# Citrus Notes



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for  
Polk &  
Hillsborough  
Counties

## IMPORTANT DATES

**AUGUST 14-15, 2019**

**CITRUS EXPO**  
Ft. Myers, FL

**AUGUST 19, 2019**

**PACKINGHOUSE DAY**  
Lake Alfred, FL

**SEPTEMBER 10, 2019**

**OJ BREAK**  
Bartow, FL

**OCTOBER 8, 2019**

**OJ BREAK**  
Lake Alfred, FL

## CONTACT INFO

### POLK & HILLSBOROUGH COUNTY EXTENSION SERVICE

PO Box 9005, Drawer HS03  
Bartow, FL 33831  
(863) 519-1052  
Email: [wcoswalt@ufl.edu](mailto:wcoswalt@ufl.edu)

### HILLSBOROUGH COUNTY EXTENSION SERVICE

5339 County Road 579  
Seffner, FL 33584  
(813) 744-5519  
Ext. 541231

2019

## Citrus Expo



The Citrus Expo and Vegetable & Specialty Crop Expo will be held at the Lee County Civic Center on August 14 & 15, 2019. This year there will be a hands-on session presented by UF/IFAS citrus research faculty to be held the afternoon of Thursday, August 15. I have included a flyer with information on the program. For additional Expo information and registration, please visit <http://citrusexpo.net/>.

Citrus

## Packinghouse Day

The annual Citrus Packinghouse Day will be held on Monday, August 19, 2019, at the UF/IFAS Citrus Research and Education Center in Lake Alfred. Program registration begins at 8:30 a.m., and the program starts at 9:30 a.m. I have included a program flyer with additional information about the program.

September

## OJ Break

Our September OJ Break will be held at the Stuart Conference Center, 1710 US Highway 17 S in Bartow. The program will be held on Tuesday, September 10, 2019, beginning at 10:00 a.m. Additional program information will be forthcoming in the September issue of Citrus Notes. Make plans now to attend your local citrus grower meeting.

Lebeck

## Mealybug

Last month there was an appearance of lebeck mealybug in a citrus grove in

Highlands County. My colleague, Laurie Hurner, hosted an informational on the significance of this insect pest. Our UF/IFAS Extension Entomologist Dr. Lauren Diepenbrock lead the meeting along with the folks from FDACS, DPI. To date, Dr. Diepenbrock has published a few informational fact sheets on this pest. I have included one of these in this issue of Citrus Notes.

2017-18

## Florida Citrus Statistics

The annual Florida Citrus Statistics report for the 2017-18 season is now available. You can view it online at [https://www.nass.usda.gov/Statistics\\_by\\_State/Florida/Publications/Citrus/Citrus\\_Statistics/2017-18/fcs1718.pdf](https://www.nass.usda.gov/Statistics_by_State/Florida/Publications/Citrus/Citrus_Statistics/2017-18/fcs1718.pdf). The more relevant facts from this report, Polk County was first in total citrus production producing 9,260,000 boxes of fruit. This was even with the damage caused by Hurricane Irma. Polk retained the top spot in the production of oranges and tangerines/tangelos and was in the top 10 of grapefruit producing counties. Polk also has the most total acreage in a single Florida county.

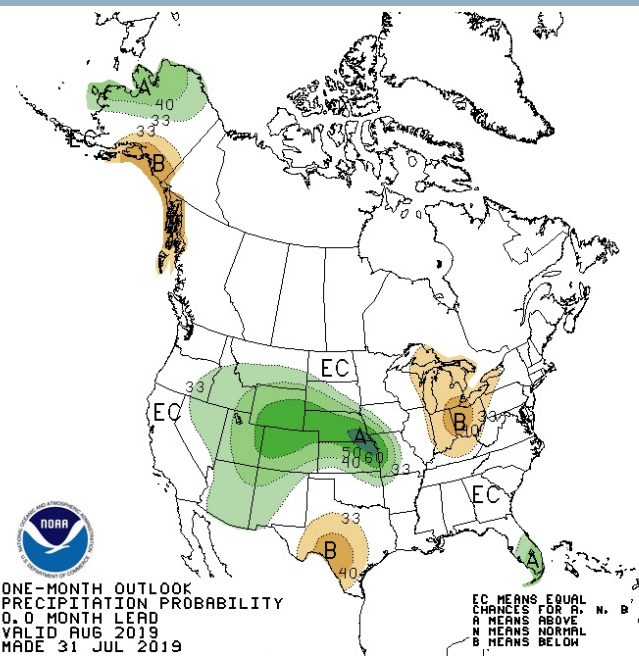
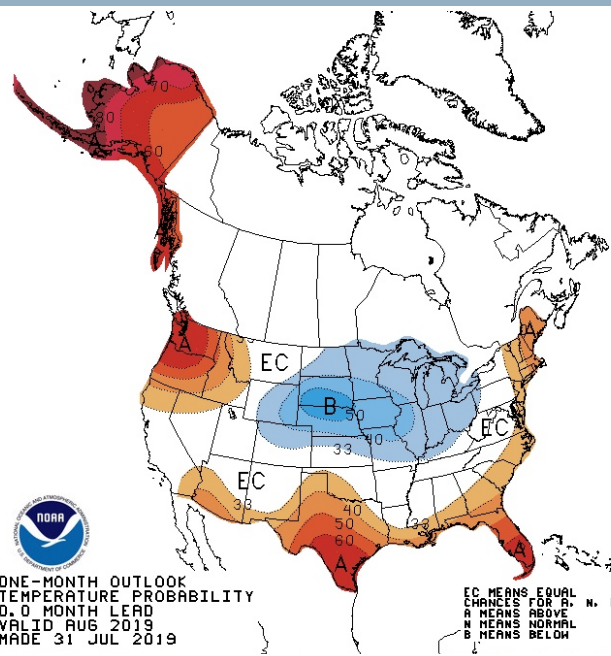
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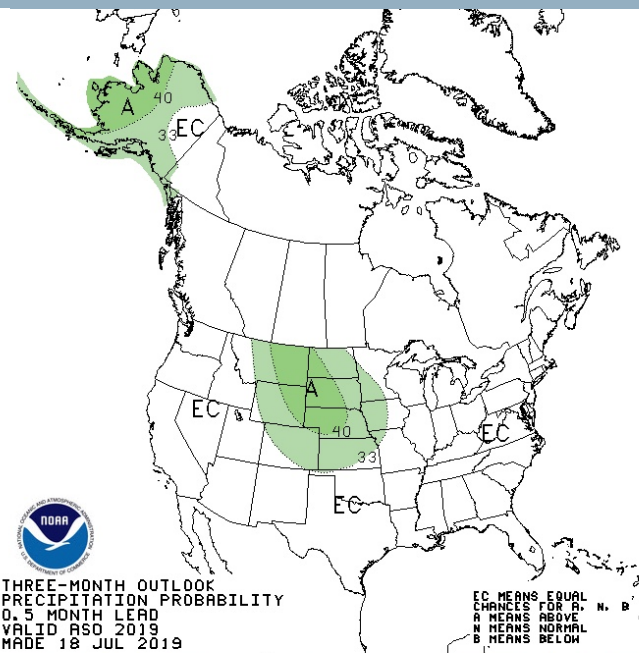
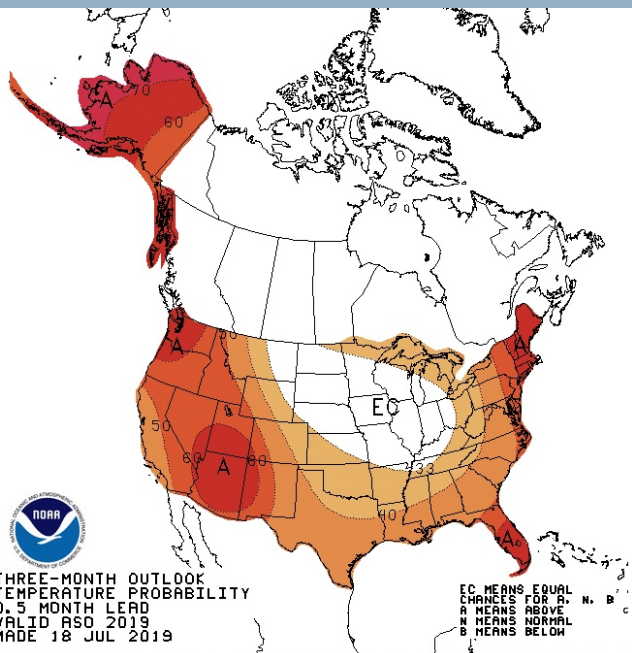
# WEATHER OUTLOOK

## MONTHLY OUTLOOK FOR AUGUST 2019 - TEMPERATURE AND PRECIPITATION



# WEATHER OUTLOOK

## MONTHLY OUTLOOK FOR AUG/SEPT/OCT 2019 - TEMPERATURE AND PRECIPITATION



### Late Summer/Early Fall Weather Outlook

Based on the latest El Niño/Southern Oscillation (ENSO) forecast, conditions have recently been transitioning from El Niño to ENSO-neutral conditions. This transition to

ENSO-neutral conditions should continue into fall and winter.

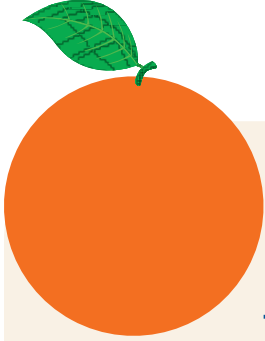
The latest hurricane forecast update from the researchers at Colorado State University indicated some slight changes from their April 2019 forecast. Namely, with the odds of a weak El Niño

persisting from now through October have decreased, the probability of hurricanes making landfall is near the long-term average. Their updated forecast indicates one additional named storm and 2 additional hurricanes from their April 2019 forecast.

# Citrus Expo

## Hands-On

UF|IFAS  
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You don't want to miss the first ever Hands-On

Session after the Citrus Expo trade show. This unique event will consist of interactive stations to visit. Each station will display recent research projects and technology for Florida citrus. There will also be an area to 'Meet the Specialists', UF/IFAS Citrus Extension Faculty, who will be available to answer your questions one-on-one. Plan to join us for this special event!

Light refreshments will be available.

Be one of the first 150 attendees and receive a set of UF 16 oz. drinking glasses.

### Location

Lee Civic Center  
Davidson House  
11831 Bayshore Road  
North Fort Myers, FL 33917

### Date

Thursday, August 15, 2019  
2:00 pm - 4:00 pm

CEUs will be available.



## Topics and Presenters

### DRIS

**Presenter:** Arnold Schumann, Ph.D., UF/IFAS CREC  
**Demonstration:** Web-based and smartphone apps to diagnose citrus nutrient deficiencies, pests, and diseases.

### Soil Moisture Sensors

**Presenters:** Rhuano Ferrarezi, Ph.D., UF/IFAS IRREC; Sandra Guzman, Ph.D., UF/IFAS IRREC  
**Demonstration:** A range of sensors and loggers or handheld readers, discussing pros and cons, installation, operation and potential cost along with online tools for remote data acquisition.

### Root Pathology

**Presenter:** Evan Johnson, Ph.D., UF/IFAS CREC  
**Demonstration:** Leaf baiting for Phytophthora that can be done for simple presence/absence testing of irrigation water or potting medium along with citrus seedling rhizotrons to view root dynamics.

### Weed Science

**Presenter:** Ramdas Kanissery, Ph.D., UF/IFAS SWFREC  
**Demonstration:** Weed identification at the seedling stage, common herbicide phytotoxicity symptoms, and the importance of using water conditioners when mixing herbicides.

### Water Treatment Technology

**Presenters:** Matt Krug, UF/IFAS SWFREC; Travis Chapin, UF/IFAS CREC  
**Demonstration:** Different ways to manage and monitor microbial quality of pre-harvest agricultural water – either through water testing or through water treatment.

### Soil and Water pH

**Presenters:** Kelly Morgan, Ph.D., UF/IFAS SWFREC; Davie Kadyampakeni, Ph.D., UF/IFAS CREC  
**Demonstration:** Discuss the data supporting soil acidification and provide instruction on laboratory and field pH measurements of soil and water.

### Fungal Diseases

**Presenter:** Megan Dewdney, Ph.D., UF/IFAS CREC  
**Demonstration:** Examine fungal disease samples and the cultures of the pathogens visually and with microscopes to better identify the disease and discuss management.

### Psyllid Attract-and-Kill Trap

**Presenter:** Lukasz Stelinski, Ph.D., UF/IFAS CREC  
**Demonstration:** View the attract-and-kill device that attracts adult psyllids and discuss the creation, purpose, and usage of the trap.

### Weather Stations

**Presenter:** Rick Lusher, UF/IFAS Florida Automated Weather Network; Chris Oswald, UF/IFAS Extension Polk County  
**Demonstration:** Various decision-making tools that use real-time weather data from the Florida Automated Weather Network (FAWN).

### Citrus Mites

**Presenter:** Lauren Diepenbrock, Ph.D., UF/IFAS CREC  
**Demonstration:** Learn to identify problematic mite pests in citrus and determine the best management actions in groves.

### Diaprepes Root Weevil

**Presenter:** Larry Duncan, Ph.D., UF/IFAS CREC  
**Demonstration:** Display of larvae and adult life stages of the Diaprepes Root weevil along with entomopathogenic nematodes.

## Meet the Specialists

### UF/IFAS SWFREC

Sarah Strauss, Ph.D.  
Ioannis Ampatzidis, Ph.D.  
Ute Albrecht, Ph.D.  
Tara Wade, Ph.D.  
Ozgur Batuman, Ph.D.

### UF/IFAS CREC

Christopher Vincent, Ph.D.

### UF/IFAS IRREC

Mark Ritenour, Ph.D.



# Packinghouse Day

2019 Program

## Packinghouse Day

**When:** Monday, August 19<sup>th</sup>, 2019 (note new day of the week)

**Where:** Citrus Research and Education Center  
700 Experiment Station Road, Lake Alfred, FL 33850

**Time:** Registration opens at 8:30 A.M., Program starts at 9:30 A.M.

Members of Florida Citrus Packers will hold their annual organizational and business meeting starting at 1:30 p.m. following lunch.

**Lunch Sponsor:** DECCO

**Coffee & Donuts Sponsor:** JBT FoodTech

**No pre-registration required**

### Topics will include:

- Plant Growth Regulators (Brassinosteroids & Abscisic acid): Effects on 'Tango' and 'Valencia' External & Internal Fruit Quality
- Update on Trade Issues Related to Fresh Citrus
- Degreening Difficult-to-Color Fresh Citrus Varieties
- Update on Pesticide Maximum Residue Limits
- Citrus Undercover Production System (CUPS) Fresh Fruit Quality and Shelf Life
- Development of Nano-emulsion Wax Coatings and Use of Essential Oils
- Food Safety Update
- Exhibitor Updates on Their Latest Products and Services

For questions and the latest details, contact Mark Ritenour at 772-577-7359 ([ritenour@ufl.edu](mailto:ritenour@ufl.edu)).

# Lebbeck Mealybug

*Nipaecoccus viridis* (Newstead)

L.M. Diepenbrock and J.D. Burrow



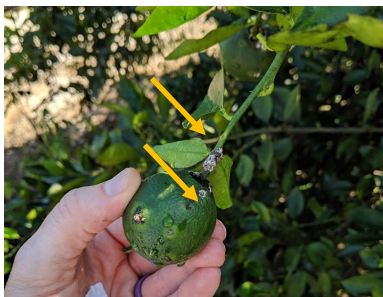
*N. viridis* crawlers. Photo Credit: T.R. Weeks, UF/IFAS CREC



Ovisac under the microscope. Photo Credit: L.M. Diepenbrock, UF/IFAS CREC



Female without ovisac. Photo Credit: L.M. Diepenbrock, UF/IFAS CREC



*N. viridis* in the field. Photo Credit: L.M. Diepenbrock, UF/IFAS CREC

Lebbeck Mealybug, *Nipaecoccus viridis*, is an exotic mealybug previously documented on dodder and tallow wood in Palm Beach County and intercepted at ports of entry. In June 2019, it was documented feeding on and damaging citrus in Highlands County, Florida. It is a known pest of citrus in the Middle East, Mediterranean, and Southern African regions. It has a wide range of hosts in Florida including: citrus, mango, pomegranate, grapevine, and several ornamental plants like hibiscus and mulberry.

## Life Stages

Mated females will produce hundreds of eggs in her lifetime. These eggs develop into crawlers, which are mobile nymphs (offspring). Nymphs resemble, and are easily confused for, scale nymphs. They are very small, reddish-purple, and have legs and antennae that are visible under magnification.

The adult male is 1.3-2.5 mm long is brown-purple. It has well developed front wings.

The female has three nymphal stages and slowly moves between stages to new feeding sites. The adult is oval, reddish-purple and is 2.4-4 mm long and 1.5-3 mm wide. Once the female begins laying eggs, it develops a white-pale yellow ovisac (egg sack) that houses tiny red eggs and is covered in wax. A female produces approximately 1,000 eggs in her lifetime. In the Middle East, the female is known to live up to 50 days and die shortly after laying all of her eggs.

## Spread

Crawlers are very small and can easily be moved on people, animals, farm tools (like pruning shears), farm equipment (trucks, sprayers, tractors), the wind, and are even purposefully moved by ants to new hosts. In other countries, ants have been found farming these mealybugs for their honeydew and serve to protect them from predators.

## Scouting

*N. viridis* prefers to feed on rapidly growing plant material. On fruit, it is most commonly found on the calyx button (area where fruit is attached to stem), but can be anywhere on fruit surface. It prefers new flush and feeds in the axil (angle area between leaf and stem) and branch junctions.



Axil: angle between leaf and stem

1. This document is one of a series of the Entomology and Nematology Department, UF/IFAS Extension. June 2019.

2. Lauren M. Diepenbrock, assistant professor, Department of Entomology and Nematology and Jamie D. Burrow, Extension program manager, UF/IFAS Citrus REC; UF/IFAS Extension, Gainesville, FL 32611. Artwork: T. R. Weeks, UF/IFAS Citrus REC.



Adult female next to ovisac with another female. Photo Credit: T.R. Weeks, UF/IFAS CREC



Leaf damage due to insect feeding. Photo Credit: T.R. Weeks, UF/IFAS CREC



*N. viridis* on blossom end of fruit. Inset: *N. viridis* on calyx button. Photo Credit: T.R. Weeks, UF/IFAS CREC



Fruit damage from *N. viridis* feeding. Photo Credit: T.R. Weeks, UF/IFAS CREC

### Common Misidentification

The *N. viridis* ovisac is commonly mistaken for cottony cushion scale ovisac. They are distinctly different in appearance. *N. viridis* is disorganized, clumpy, and looks dirty; whereas, cottony cushion scale is organized, has long ridges, and is a clean, white color.



Cottony cushion scale life stages. Photo Credit: P.M. Choate, UF

### Damage

The damage and feeding sites are distinct from other wax-producing pests (mealybugs and scales), which it has been mistaken for in several fields. *N. viridis* prefers to feed and reproduce on fast growing tissues like new growth, new branches, and fruit. Fruit feeding causes hardened lumps and/or discoloration. Leaves also become twisted/distorted from feeding.

Fruit drop is the biggest factor in crop loss. In South Africa, fruit drop has caused 50% or more crop loss. The fruit damage is distinct and makes the fruit unsightly and unmarketable for fresh fruit markets.

### Grove Management

Management for *N. viridis* in Florida is yet to be determined. In its home region, predatory insects (wasps, lady beetles, lacewings) can largely keep populations in check. However, if the populations of predatory beneficial insects are reduced, for example, by broad spectrum insecticides, the lack of predators will allow large populations to build up.

Like all insects that feed within a protected space, adults will be hard to eradicate. Timing for insecticidal actions to crawler activity, much like that done for scale populations, will be key to control.

### Human Precautions

Because this pest is easy to move unintentionally, it is highly recommended to sanitize all materials that may have come into contact with them to prevent spread. Power wash large equipment, sanitize smaller tools with a combination of bleach and water before moving to a new grove.

If moving between groves, it is suggested to change clothes and wipe exposed skin surfaces.

### References

Plant Pests of the Middle East

[http://www.agri.huji.ac.il/mepests/pest/Nipaecoccus\\_viridis/](http://www.agri.huji.ac.il/mepests/pest/Nipaecoccus_viridis/)