UF | IFAS Extension
UNIVERSITY of FLORIDA

Palm Beach County

Palm Beach County Extension 559 N. Military Trail WPB, Florida 3315 Phone (561) 233-1700

SOUTH FLORIDA VEGETABLE PEST AND DISEASE HOTLINE

September 22, 2019

After a wet August, South Florida was spared an initially forecast of a direct hit by Hurricane Dorian which veered off to the north-east largely sparing the state. Wet conditions in August and uncertainty concerning Dorian resulted in some delays in land prep and planting but favorable conditions in September have allowed most growers to catch up.

FAWN Weather Summary

Date	Air Temp °F		Rainfall	Ave Relative Humidity	ET (Inches/Day)
	Min	Max	(Inches)	(Percent)	(Average)
Balm					
9/1 - 9/23/2019	66.78	96.53	1.21	82	0.17
Belle Glade					
9/1 - 9/23/2019	72.01	94.87	1.30	85	0.15
Clewiston					
9/1 - 9/23/2019	71.51	95.39	0.49	82	0.15
Ft Lauderdale					
9/1 - 9/23/2019	75.85	96.98	2.61	77	0.16
Homestead					
9/1 - 9/23/2019	70.77	93.11	2.46	81	0.16
Immokalee					
9/1 - 9/23/2019	69.57	95.72	0.49	82	0.16
Okeechobee					
9/1 - 9/23/2019	65.89	95.56	1.95	86	0.15
Wellington					
9/1 - 9/23/2019	67.24	96.76	3.52	81	0.16

“Remember, when in doubt - scout.”

Temperatures have been in the mid 90's in the days and mid 70's at night. A cold front moved south across the peninsula this week dipping nighttime temps into the upper 60's and lowering humidity to provide a brief hint that fall is on its way.

As is usually true this time of the year, the plastic is clean, the plants look pretty and growers are optimistic for a good year.

The National Weather Service forecast through Thursday indicates high pressure will continue to extend from the Carolinas through the Florida coast, keeping the tight pressure gradient across the region and breezy conditions which will diminish overnight. Deep layer ridging dominates much of the region leading to generally quiet and dry conditions for South Florida. The dry conditions will allow overnight lows to cool slightly, with upper 60s to lower 70s possible across portions of the interior. Rain chances may increase by late week into the weekend as low-level moisture advects in from the east. For additional information, visit the National Weather Service in Miami website at http://www.srh.noaa.gov/mfl/newpage/index.html

Insects

Whiteflies

Respondents on the East Coast indicate that they are seeing a few whitefly adults in pepper and eggplant.

Around SW Florida, whiteflies are generally pretty low but flare ups have been reported in few places.

Growers and scouts in the Manatee/Hillsborough are reporting mostly low whitefly pressure in tomato with some higher numbers being reported in eggplant. Growers are also reporting finding sporadic whiteflies in squash, melons and cantaloupe. Several growers note that reflective mulches appear to be doing a great job at keeping whiteflies at bay.

Around Homestead, growers are preparing land for fall crops, but scouts indicate that whiteflies and a wide range of pests and diseases are present in over-summered oriental vegetables.

While populations remain low, they can build up quickly, so growers should scout regularly to avoid being taken unawares later in the season. Preventative soil applications of either imidacloprid, thiamethoxam, dinotefuran, flupyradifurone or cyanatraniliprole should be used as normal in tomato and cucurbits.

Consider the use of metalized (UV reflective) mulch as an additional management practice for day-flying pests such as whiteflies, thrips, aphids, pepper weevil and even broad mites, the last of these which use flying insects to move around.

Table 1; Systemic insecticides applied to soil for whitefly control

Common name	Mode of Action	Trade Names	Rates
Imidacloprid	4A	Various	Check Label
Thiamethoxam	4A	Platinum 75 SG	1.66 - 3.67
	4A	Venom 70% Scorpion 35 SL Certador 10%	5 - 7.5 oz./ac 9 -1 0.5 fl oz./ac 32.5 - 47.5 fl oz./ac
Flurpyradifuron	4D	Sivanto 200 SL	21-28 fl oz./ac
Verimark	28	Verimark 18.7%	5-10 fl oz./ac

Efficacy Ratings for Insecticides and Miticides on Tomato

		Whiteflies	Other pests controlled			
MOA	Active Ingredient	Whiteflies	Southern Armyworm	Spider mites	Stinkbugs	Leafminer
4A	dinotefuran	E**			G	
4A	imidacloprid	E**				
4A	thiamethoxam	E**			G	
4D	flupyradifurone	E**				
23	spiromesifen	E†		E		
23	spirotetramat	E†		G		
7C	pyriproxyfen	E†				
28	cyantraniliprole	E**	E			E
1B	malathion	G*				
3A	beta-cyfluthrin	G*	F		G	
3A	bifenthrin	G*			G	
3A	esfenvalerate	G*	G			
3A	fenpropathrin	G*	F		F	
3A	lambda cyhalothrin	G*	F			
3A	permethrin	G*	G			
3A	zeta-cypermethrin	G*	G		F	
4A	acetamiprid	G				
9	pymetrozine	G†				
16	buprofezin	G†				
21 A	fenpyroxiamate	G		G		
4A	clothianidin	F**				
Unk.	horticultural oil	F†		G		
Unk.	Azadiractin	F†				
Unk.	Soap, insecticidal	F†				
* OP+Pyrethroids tank mix. † Effective primarily against nymphs ** Most Effective as a drench. Check labels before using any pesticide.						

For more whitefly management tips – see:
Management of Whiteflies, Whitefly-Vectored Plant Virus, and Insecticide Resistance for Vegetable Production in Southern Florida - http://edis.ifas.ufl.edu/in695

Worms

Worms remain mostly light in most locations.

Around Immokalee, growers and scouts report finding some worm eggs and new hatches of worms over the past week including a mixed bag of fruitworms, southern, beet and fall armyworms, and tomato hornworms.

In the Manatee Ruskin area, worms are also present in low numbers with a few hornworms being reported in tomato.

On the East Coast, respondents report finding hatches of beet armyworm showing up in moderate numbers in pepper last week.

In the EAA, fall armyworms are already making an appearance in young corn

Fall is worm time in south Florida.

Scouting is extremely important in detecting worms early before they can do significant damage. The Florida Tomato Scouting Guide indicates a pre-bloom threshold of 1 larva/6plants and post-bloom threshold of 1 egg mass or larva/field.

The different armyworms especially the younger instars are similar in color, size and markings and can be difficult to tell apart. The following information from the Florida Tomato Scouting Guide to help growers identify these different worms.

• **Beet armyworm:** (*Spodoptera exigua*) is generally less numerous than southern armyworm but is more difficult to control. The larva are generally green, mottled with white spots with black spot over the middle pair of true legs. 1 – 1.25 in. long at maturity. The adults have light brownish gray front wings with indistinct lines and are active at night. The eggs are laid in masses of 50 to 75 eggs covered with a felt like mass of scales from female's body. Eggs are generally found on underside of leaves and hatch in 3 days.

• **Southern armyworm:** (*Spodoptera eridania*) the larva are dark caterpillars with a yellowish brown head and a yellowish line along the side of body that is interrupted by a large dark spot on first abdominal segment. Approximately 2 in. long at maturity. Large larvae have 2 rows of dark triangles on dorsal surface. The young larvae feed on under surface of leaflets leaving upper epidermis intact to give a "window pane" appearance. The adult has the front wing streaked with cream, gray, light brown and black and hind wing white with some dark on margins. Large masses of 100 - 200 eggs covered with moth body scales are found on underside of leaves

• **The yellowstriped armyworm:** (*Spodoptera ornithogalli*), has a brownish head with a pale yellow inverted V on the upper front. It has distinct bright yellow lines on the top of the sides of the body. The yellowstriped armyworm occurs with both overall pale and dark colored bodies. It has two rows of black triangle shaped markings running the length of the body. Each row is offset from the center of the back. A thin white line runs lengthwise through each series of dark triangles. The yellowstriped armyworm is more common in north Florida.

• **Tomato fruitworm:** (*Helicoverpa zea*) larval color is variable, ranging from very dark to light green or pink with alternating longitudinal dark and light stripes. The skin is covered with short sharp micro spines. Adults are active at night, with a 1½ in. wing span. Males display a cream colored forewing with orange or olive cast, while females have a light yellow brown forewing with indistinct vertical lines. Eggs are waxy white and ribbed, with a flat base, and are deposited singly usually on lower surfaces of leaves adjacent to or near flowers. Eggs hatch in 2-3 days.

• **Cabbage or soybean looper:** (*Trichoplusia ni* or *Pseudoplusia includens*) Larva are pale green with white line alongside of the body and only 3 pair of prolegs. Mature size 1 – 1 1/4 in. Adult is a grayish brown moth that is active at night. Front wings marked near center with a figure 8 shaped, silver white spot. Eggs are greenish white, ridged but flattened laterally and are found singly on upper or lower leaf surfaces of upper canopy leaves. Hatches in 2 3 days.

Fortunately, growers have a wide array of excellent worm control materials at their disposal these days.

Consult the UF/IFAS Vegetable Production Handbook for labeled products.

Leafminer

Growers and scouts in the Manatee Ruskin area report they are starting to find low levels of leafminer starting to show up in some field ends and margins.

Broad Mite

Report indicate that a few broad mites are showing up in pepper around Fort Pierce and other scattered locations around South Florida.

Mole crickets

Scouts report finding a few plants cut off by mole crickets here and there in a couple of places.

Diseases

Pythium

Growers and scouts have reported some problems with pythium in a few places around South Florida particularly in early planted East Coast pepper that experienced heavy rain and windy conditions.

Pythium has also been reported causing some stand-loss on early planted beans around Belle Glade.

In other areas, scouts have reported scattered problems in tomato, pepper, watermelon and others.

Pythium is one of the Oomycetes or "water molds." It thrives in moist soils and multiplies and spreads rapidly under wet conditions. Although Pythium is capable of producing several spore types, zoospores and oospores are most important.

Zoospores are mobile. They are produced rapidly and in great numbers and contribute to the organism's ability to cause disease almost "over-night." Zoospores may be detected within half an hour after a site is flooded and can "swim" for up to 30 hours and move three or more inches through soil.

Oospores are extremely durable and can survive in soil and infected crop debris for more than 10 years. A number of broadleaf and grassy weeds may host Pythium spp. and serve as important sources of inocula.

Some growers report good success using Previcur Flex applied as a drench at transplanting.

Bacterial Spot

Growers and scouts in the Manatee Ruskin area report that bacterial spot is mostly low but is becoming more active in some older tomato plantings. Pepper remains mostly clean.

Mostly low levels of bacterial spot are being reported on tomato and susceptible pepper varieties in SW Florida. There have been a few confirmed reports of infected transplants coming from the plant house.

Bacterial spot is one of the most serious diseases of tomato and pepper in Florida because it can spread rapidly during warm periods with wind driven rains, and because fruit symptoms reduce marketability.

Bacterial spot is caused by several species of *Xanthomonas* spp. Four species have been identified on tomato: *X. euvesicatoria, X. vesicatoria, X. perforans, X. gardneri*. In Florida, the major species encountered is *X. perforans*.

Symptoms of bacterial spot appear as small, water-soaked, greasy spots on infected leaflets. On tomatoes, distinct spots with or without yellowing occur. Individual leaf spots may coalesce with each other, resulting in the browning of entire leaflets. Fruit spots often begin as dark specks with or without a white halo. As spots enlarge, they become raised and scab-like.

Entry into the plant occurs through stomata or wounds made by wind driven soil, insects, or cultural operations. Bacterial spot can be seed transmitted, but most inocula comes from volunteer plants or infected plant debris in the soil. Temperatures of 75-87°F are ideal for bacterial spot but infections can occur at higher or lower temperatures.

***Xanthomonas perforans* is seed-borne, which allows for the movement of strains on a global scale.**

An integrated approach is needed to manage this disease.

At the field level, most inocula comes from infected transplants, volunteer plants or infected plant debris in the soil. Entry into the plant occurs through stomata or wounds made by wind driven soil, insects, or cultural operations. Temperatures of 75-87°F are ideal for bacterial spot but infections can occur at higher or lower temperatures.

Exclusion is the best means of managing bacterial spot on tomato. Unfortunately, even the best bactericidal treatment offers only limited protection when environmental conditions are favorable for rapid disease development, especially during periods of heavy, wind-driven rains.

Sanitation is important. Pepper and tomato volunteers and solanaceous weeds should be destroyed between crops. Purchase only certified disease-free transplants and seed.

Infected transplants can provide for long distance transplant of the disease. To reduce the incidence of disease, transplant houses should be located away from tomato or pepper fields. Transplant trays should be inspected daily for signs of disease and trays should be rouged out and destroyed at the first sign of disease. Transplant house workers should wash and sanitize their hands frequently to avoid movement of bacteria from tray to tray and house to house.

Since water movement spreads the bacteria from diseased to healthy plants, workers and farm equipment should be kept out of fields when fields are wet because the disease will spread readily under wet conditions.

No resistant tomato varieties are available commercially. In pepper, a number of excellent varieties with resistance to races 1 -10 are available.

It is important to apply sprays before and during rainy periods. If conditions are favorable, frequent spraying may not be sufficient to maintain bacterial spot below damaging levels.

The traditional recommendation for bacterial spot control consists of copper and maneb or mancozeb. Attention to application techniques is as important as choice of material in achieving adequate control. The effectiveness of copper is limited, because of the widespread occurrence of copper tolerance among strains of Xanthomonas.

In the past few years, a number of products have come on the market that have given good results in research trials when used in rotation or together with traditional controls such as copper. These include Tanos (Dupont) as well as the SAR elicitor Actigard (Syngenta), Leap (Valent), Double Nickel 55 (Certis), Regalia (Maronne Bioinnovations) and Serenade and Sonata (AgraQuest). Leap is unique among the products mentioned above as it contains two active ingredients providing growers with disease management and caterpillar control.

In replicated trials at UF, two products Actigard (acibenzolar-S-methyl) and Cueva (copper octanoate) consistently performed better in the management of bacterial spot over standard applications copper hydroxide in repeated trials alone or when combined with other products.

Attention to application techniques is as important as choice of material in achieving adequate control.

Consult UF/IFAS recommendations for formulations, rates, and intervals of currently labeled materials for bacterial spot in Florida.

Target spot

As the season progresses, growers and scouts should be look for target spot as canopies develop and remain wet for extended periods in the morning.

Target spot is frequently misdiagnosed as in its early stages as symptoms are difficult to recognize and can be confused with bacterial spot and early blight. Scouting is important to detect early signs of the diseases Growers are often taken by surprise as in the beginning of the season while we are still experiencing frequent rains they are targeting bacterial spot and then as the rains subside and canopies develop target spot emerges as a larger concern.

The name derives from the bull's eye appearance that is often displayed in lesions caused by the disease. Since concentric rings are not always visible and not all lesions with concentric rings are target spot, it is recommended that a laboratory diagnosis be obtained to ensure that a correct diagnosis is made.

On tomato leaves and stems, foliar symptoms of target spot consist of brown-black lesions with subtle concentric rings giving them a target-like appearance. These can sometimes be confused with early blight. With early blight, the lesions are often associated with a general chlorosis of the leaf.

On tomato fruit, lesions are more distinct. Small, brown, slightly sunken flecks are seen initially and may resemble abiotic injury such as sandblasting. As fruits mature the lesions become larger and coalesce resulting in large pitted areas. Advanced symptoms include large deeply sunken lesions, often with visible dark gray to black fungal growth in the center. A zone of wrinkled looking tissue may surround the margins of lesions on mature fruit. Placing suspect fruit in a moist environment for 24 hours will often induce the growth of dark gray mycelia providing telltale diagnostic evidence of target spot infection.

Optimum conditions for disease development include temperatures from 68° - 82°F and long periods of free moisture.

In trials, wounding was essential for reproduction of the fruit symptoms. Wind-blown sand is probably important in outbreaks of target spot on tomato fruit in the field.

Strategies for the management of this disease require an integrated approach for best results. Growers should rotate fields to avoid carryover on crop residue and avoid rotations among solanaceous crops. Eliminate any volunteers and weed species that can act as a host.

Start with clean, healthy transplants and maintain proper fertility as nitrogen deficiencies favor the development of early blight.

Currently, target spot is controlled primarily by applications of protectant fungicides. It should be noted that tank-mix sprays of copper fungicides and maneb do not provide acceptable levels of target spot control.

Widespread resistance has been documented to Qol fungicides including both strobilurins and non-strobilurin fungicides in FRAC Group 11 and their use is not recommended for target spot control.

In addition, moderate resistance has been documented in the SDHI fungicides FRAC Group 7 which includes boscalid, penthiopyrad, fluopyram and fluxapyroxad. These should be used with caution and attention paid to rotating with alternative modes of action.

In recent efficacy trials, at the University of Florida – Approvia Top, Inspire Super, Luna Tranquility, Revus Top, Rhyme, and Scala are top performers. Contact protectant fungicides like mancozeb and Bravo are effective and should be used early in the crop cycle switching to more efficacious materials once disease is present.

Consult UF/IFAS recommendations for currently labeled fungicides for target spot control in Florida vegetables.

<u>Southern Corn Leaf Blight</u>

Southern corn leaf blight is caused by the fungus Bipolaris maydis. Although seedling blights can also be caused by B. maydis, symptoms of Southern corn leaf blight typically occur on leaves. Mature foliar lesions can be rounded on the sides but they tend to be parallel-sided, often restricted by the veins.

Lesions are light tan in the center with a reddish-brown border. A greenish growth near the center of the lesion may be evident if spores are present. Mature lesions range from 1/4 to 1 1/2 inches in length and may be tapered, flat or serrated on the ends.

Lesions caused by southern corn leaf blight are much smaller (up to ½ inch wide and 1 inch long) than those caused by northern corn leaf blight. Southern blight lesions are also lighter in color (light tan to brown), and have parallel sides rather than the tapering sides of lesions caused by *E. turcicum*.

When severe, lesions may become so numerous that they coalesce and turn the entire leaf necrotic. Southern blight, like northern blight, moves from the lower canopy to the upper canopy. Fungal sporulation may be observed with a simple hand lens on foliar lesions following periods of high humidity.

Typically, lower leaves are infected first progressing upward to higher leaves over time. Occasionally, infections of the ear husk, silks, kernels, cob, and floral bracts in tassels occur.

Sources of spores for infection include volunteer corn, old corn debris on the soil from previous crops, stored corn seed, fodder, and nearby corn plantings. Teosinte and some wild grasses are also susceptible.

Southern corn leaf blight is most prevalent during the fall growing season in south Florida but may also appear at the end of the spring growing season, particularly if unseasonably warm.

It is favored by warm to hot temperatures (68-90° F) and periods of extended leaf wetness. With optimal weather conditions, the time from infection by germinating spores to lesion formation with new spores may be as short as 3 to 5 days.

Temperatures near 73° F are ideal for production of spores, formation of germ tubes, infection, and formation of lesions. As temperatures ranging from 59° F and 86° F, the fungus is still active but progress of the disease will be delayed. Six hours of leaf wetness is all that is needed for spore germination and infection. Leaf wetness is not required for lesion expansion.

Although some control can be reducing inoculum through the use of crop rotation and deep plowing of old crop debris, control of Southern corn leaf blight is best achieved with resistant varieties. Resistant varieties are available and should be considered, particularly for fall plantings.

Where resistance is lacking, spraying with fungicides may be necessary, particularly with sweet corn produced in peninsular Florida. Spray programs with recommended fungicides should commence at the first sign of disease if favorable weather is likely.

Fungicides should be applied early, particularly if the forecast is for warm, humid weather. As with northern corn leaf blight, the sterol inhibitors and strobilurin fungicides are most efficacious. These products should be used together with a broad spectrum protectant to minimize development of fungal resistance.

Consult UF/IFAS recommendations for currently labeled fungicides for southern corn leaf blight control in Florida.

Tomato Yellow Leaf Curl Virus

Very low levels of TYLCV – mostly a few plants here and there in a couple of fields - are being reported on tomato around South Florida.

News You Can Use

Why the fungicide fell short of hopes

As the season progresses, problems with diseases, many of which that have been smoldering quietly for weeks, may suddenly become evident.

Bigger plants, more leaves and onset of reproductive growth all increase chances for diseases to occur. Also, the longer a plant is in the field, the greater the risk for disease.

As no management program is perfect, with time and favorable weather, onset of diseases like white mold, bacterial leaf spot, tomato spotted wilt, target spot, and downy mildew and others are almost inevitable.

Why didn't my fungicide program work?" The implication is that there was something wrong with the product from the time when it was poured from the jug. Below are reasons as to why performance of a fungicide may not meet a grower's expectations.

- Was the product applied according to the label, especially in terms of proper rate?

- Was the product applied in a timely manner? Typically, a timely manner for disease management means prior to or, at latest, as disease is FIRST present in a field. Unlike insecticides, where a

threshold is used prior to application, disease management requires one to stay ahead of the disease. Playing catch-up when disease is already well-established in a field is difficult, at best.

- Was the product applied so that there was sufficient drying time prior to an irrigation or rain event? Rainfall too soon after application can greatly reduce efficacy.

- Was the product applied in such a way as to have a realistic chance to reach its target? Fungal diseases often develop deep within a dense canopy of leaves or even at or below the soil line.

- Were steps taken (e.g., pressure, volume, timing of application and irrigation, etc.) to maximize likelihood of success?

- Are expectations for the performance of the product realistic? No fungicide is 100% effective, especially where too much rainfall favors disease and delays applications, where poor crop rotation increases the populations of the pathogens, and where disease-susceptible varieties are planted. Often a measure of success is not complete absence of disease, but that the disease is contained and does not spread.

There are two additional factors that could result in a grower's disappointment in the use of a fungicide. The first is where resistance begins to develop and a disease-causing pathogen is less sensitive to the fungicide than it was in the past. In such cases, the level of disease occurring in a field could be greater than expected. While fungicide resistance can (and does) occur, it is much less common than the issues listed above.

Claims made in advertising campaigns may create an overly optimistic expectation in the minds of the growers who use the product. Growers should consult with their local Extension agents to determine if research-based, non-biased information is available upon which to further bases choices of fungicides and nematicides.

Depending on weather and stage of growth, problems with diseases, many of which that have been smoldering quietly for weeks, may suddenly become evident. Take steps now to understand the true cause of the disease outbreak and realistic steps that may be taken to protect the crop.

Excerpted from Dr Bob Kemerait, "Why the fungicide fell short of hopes", Southeast Farm Press, August 2019

The Ultimate Weed Management Checklist

Keep weeds out of your fields. Prevent herbicide resistance. Use these tips.

1. Make a plan – Think long-term. Strategize to delay the evolution of herbicide resistance and reduce weed seeds.
2. Go full-rate – Apply full rates of effective pre- and postemergent herbicides with multiple modes of action (MOAs). Dead plants can't produce resistant progeny.
3. Get 'em when they're little – Spray weeds when they're shorter than 4 inches. Don't wait.
4. Spice things up – Don't stick with the same old single MOA. Use multiple, effective MOAs everywhere, every time.
5. Scout it out – Correctly ID weeds by species. Kill weeds that escape an herbicide application.
6. Zero tolerance policy – Destroy uncontrolled weeds, which might mean you have to pull them by hand. Seed from escaped weeds will contribute to the weed seedbank.
7. Don't ditch your ditches – Weeds aren't limited to your fields. Don't let them thrive in forgotten field edges, fence lines and waterways.
8. Keep it clean – Don't let weed seeds hitch a ride. Clean tillage and harvest equipment.

9. Do more than spray – Consider using mechanical and/or cultural control practices, like tillage or cover crops.
10. Re-evaluate and repeat – Review your weed-management results at the end of each season and revise to improve next year.

New Vegetable Horticulturist Named at SWFREC

Dr. Phillip Williams of Clemson University has been named assistant professor of vegetable horticulture at SWFREC. Dr. Williams currently works as program coordinator at the Edisto Research and Education Center in Blackville, South Carolina. He earned his Ph.D. in plant and environmental sciences and his B.A. in biology (plant biology concentration) from Clemson. He received his master's of agriculture (agronomy and soils) from Auburn University in Alabama.

Dr. Williams grew up on a 1,000-acre row crop family farm in South Carolina, which gained him experience in everything from machinery operation and maintenance to budgeting and agronomic practices. His candidate interview seminar was titled "Sustainability Managing Crops Using Technology and Cultural Practices without Yield or Quality Reductions."

Dr. Williams began work at SWFREC in August.

First Day of Fall – September 23, 2019

The September equinox is the moment when the Sun appears to cross the celestial equator, heading southward. Due to differences between the calendar year and the tropical year, the September equinox can occur at any time from September 21 to 24.

Alas, South Florida "Fall Weather" is Still a Ways Off!

In sub-tropical regions such as South Florida, the first taste of fall-like weather is usually delayed by about 4-6 weeks from the start of fall.

October is the transition month from wet/humid to drier/cooler weather.

We normally get one of two brief periods of slightly cooler temperatures and lower humidity before stronger fronts bring the first shot of cool air to South Florida.

Average Date of Fall Arrival is South Florida (based on the first average date of temperatures below 60^{o}F)	
LaBelle	October 21
Belle Glade	October 23
Immokalee	October 23
Moore Haven	October 25
Naples	October 29
Homestead/Redlands	October 30
West Palm Beach	November 2
Fort Lauderdale	November 4
Miami	November 8
Miami Beach	November 17
Courtesy of the National Weather Service in Miami Florida	

NEED MONEY FOR COLLEGE?

Apply for a scholarship today!

The South Florida Fair & Palm Beach County Expositions, Inc. is proud to annually award $45,000 in Scholarships to worthy students who have exhibited a desire to further their education.

Our purpose is to encourage young people, who might not otherwise have an opportunity, to pursue a college education.

Apply online at https://www.southfloridafair.com/p/thefair/scholarships/scholarshipapplication - deadline is Oct 20, 2019

Up Coming Meetings & Events

Florida Tomato Conference October 2 – 3

UF/IFAS Gulf Coast Research and Education Center in Wimauma, Florida

Food Safety Workshop / T-GAP = Wednesday, October 2, 2019

12:30 – 1:00 pm	Registration for Food Safety Workshop / T-GAP
1:00 – 1:30 pm	Pre-Test for Food Safety Workshop / T-GAP
1:30 – 5:30 pm	Food Safety Workshop / T-GAP

Tomato Institute = Thursday, October 3, 2019

8:30 – 9:00 am	Registration for Tomato Institute
9:00 – 11:30 am	Tomato Institute – Morning Session
11:30 – 1:00 pm	Researcher Award Lunch
1:00 – 4:00 pm	Tomato Institute – Afternoon Session

Tomato Institute Agenda

Morning Moderator: Dr. Phillip Williams, UF/IFAS, SWFREC, Immokalee

Welcome & Opening Remarks Dr. Kelly Morgan, UF/IFAS, SWFREC, Immokalee

2018-19 Season Review Mr. Michael Schadler, FTC & FTE, Maitland - The Tomato Suspension Agreement – What Happened, What Now, What Next? Mr. Michael Schadler, FTC & FTE, Maitland

TOMATO BREEDING AND GENETICS

- Breeding and Genetics to Improve Tomatoes for Florida Production Dr. Sam Hutton, UF/IFAS, GCREC, Wimauma
- Improving Florida Tomatoes through Applied Genetics: CRISPR Gene-Editing Dr. Tong Geon Lee, UF/IFAS, GCREC, Wimauma
- Generate Tomato with Broad-Spectrum Disease Resistance Using TransgeneFree CRISPR/Cas9 Technologies Dr. Zhonglin Mou, UF/IFAS, Gainesville
- Genome Editing to Create a Jointless Tomato Dr. Denise Tieman, UF/IFAS, Gainesville
- Developing Varieties with Superior Flavor Dr. Denise Tieman, UF/IFAS, Gainesville

MECHANICAL HARVESTING

- Fertility Management in Elite Breeding Lines with Potential for Mechanical Harvest Dr. Shinsuke Agehara, UF/IFAS, GCREC, Wimauma
- Ripening Rates and Postharvest Quality of Elite Breeding Lines with Potential for Mechanical Harvest Dr. Steve Sargent, UF/IFAS, Gainesville
- Mechanical Harvesting – Engineering the Harvester Mr. Kevin Baker, Pik Rite, Lewisburg, PA

RESEARCHER AWARD LUNCH 11:30 to 1:00

Afternoon Moderator: Ms. Lisa Hickey, UF/IFAS, Manatee County Extension

PEST AND DISEASE MANAGEMENT

- Evaluation of Nicotinamide Adenine Dinucleotide (NAD) as a New, Sustainable Tool to Manage Root-Knot Nematode Dr. Johan Desaeger, UF/IFAS, GCREC, Wimauma
- New Non-Fumigant Nematicide Combinations for Nematode Management Dr. Johan Desaeger, UF/IFAS, GCREC, Wimauma
- Improving Sampling and Identification of Thrips and Whitefly Dr. Xavier Martini, UF/IFAS, NFREC, Quincy
- Research Update on Tomato Chlorotic Spot Virus (TCSV) in South Florida Dr. Shouan Zhang, UF/IFAS, TREC, Homestead
- Tracking Xanthomonas Perforans Strains Linked to Bacterial Spot Outbreaks Using Whole Genome Sequencing Dr. Gary Vallad, UF/IFAS, GCREC, Wimauma

NEW PRODUCT PRESENTATIONS - New Product Presentations (From Select Beefsteak Sponsors)
Adjourn

Registration is required for any and all events. There is no cost to attend but we need a head count for planning purposes. Use this link to re-register https://www.floridatomatoes.org/conference-registration-form

SWFL Vegetable Growers Meeting October 10th

UF/IFAS Southwest Florida Research and Education Center 2685 SR-29 N Immokalee, Florida 34142

10:00 – Dr. Pam Roberts, Pathologist, UF/IFAS Southwest Florida Research and Education Center
'Disease management of key fall diseases on tomato, pepper, and cucurbits'

10:30 - Dr. Jawwad Qureshi, Entomologist, UF/IFAS Southwest Florida Research and Education Center
'Key Pests of Fall Vegetables'.

11:00 - Dr. Phillip Williams, Vegetable Horticulturist, UF/IFAS Southwest Florida Research and Education Center, 'Sustainably managing crops using technology and cultural practices without yield or quality reductions.

11:30 – Bart Hoopingarner and Shine Taylor, Gowan, Gowan's portfolio of products for vegetable growers.

Noon - Lunch – Courtesy of Bart Hoopingarner and Shine Taylor, Gowan

CCA CEU's will be provided.

RSVP – 239-658-3415 or email jderleth@ufl.edu

Rare Fruit Council Plant Sale: October 12th

9AM – 2PM at the South Florida Fairgrounds - 311 Fairgounds Rd West Palm Beach, Florida 33411

Hundreds of varieties and thousands of plants to choose from: Avocado, Bananas, Barbados Cherry, Black Sapote, Canistel, Carambola, Citrus, Dragon Fruit, Figs, Guava, Grumichama, Jackfruit, Jaboticaba, Longan, Lychee, Macadamia, Mamey Sapote, Mango, Mulberry, Papaya, Peach, Persimmon, Sugar Apple, Star Apple, Tamarind, Herbs & Spices, Specially formulated Fruitilizer and much much more!

http://www.pbrarefruitcouncil.org/

Worker Protection Standard (WPS) Train the Trainer: October 15th

8:30 AM - 3:30 PM in the PBC Extension Exhibit Hall A 559 N. Military Trail West Palm Beach, FL

The Worker Protection Standard (WPS) applies to farm, forest, nursery and greenhouse operations that produce agricultural plants. This workshop is approved to meet the latest mandatory trainer requirements. The training is organized as an interactive presentation to update you on the current requirements and to meet the mandatory trainer certification.

Cost: $25.00 (includes lunch and handouts)

Contact Ethel Scott at 561.233.1725 or EEScott@pbcgov.org with any questions and for registration.

Lettuce Advisory Committee Meeting October 24th

Lunch begins at 12PM at the UF IFAS Everglades Research and Education Center
3200 E Canal St S, Belle Glade, FL 33430

CEUs will be offered

Produce Food Safety Workshops: Fall 2019

Produce Safety Alliance Grower Training (Belle Glade) November 18th
This is the one-day course for fruit and vegetable growers and packers who fall under FSMAs Produce Safety Rule. FDA and PSA are very sensitive about how this course is advertised and promoted as the standardized curriculum. Even though there are currently no other recognized alternative courses to satisfy the training requirements of the Produce Safety Rule, they do not want us to say the course is required or mandated or anything like that…even though, by default, it kind of is. This is the "approved" advertising language from PSA:

WHO SHOULD ATTEND
Fruit and vegetable growers and others interested in learning about produce safety, the Food Safety Modernization Act (FSMA) Produce Safety Rule, Good Agricultural Practices (GAPs), and co-management of natural resources and food safety are encouraged to attend. The PSA Grower Training Course is one way to satisfy the FSMA Produce Safety Rule requirement.

WHAT TO EXPECT

Trainers will spend approximately seven hours of instruction time covering content contained in these modules:

- Introduction to Produce Safety
- Worker Health, Hygiene, and Training
- Soil Amendments
- Wildlife, Domesticated Animals, and Land Use
- Agricultural Water (Part I: Production Water; Part II: Postharvest Water)
- Postharvest Handling and Sanitation
- How to Develop a Farm Food Safety Plan

In addition to learning about produce safety best practices, key parts of the FSMA Produce Safety Rule requirements are outlined within each module. There will be time for questions and discussion, so participants should come prepared to share their experiences and produce safety questions.

BENEFITS OF ATTENDING

The course will provide a foundation of Good Agricultural Practices (GAPs) and co-management information, FSMA Produce Safety Rule requirements, and details on how to develop a farm food safety plan.
After attending the entire course, participants will be eligible to receive a certificate from the Association of Food and Drug Officials (AFDO) that verifies they have completed the training course.
Here's the list of upcoming PSA courses.

- 09/27/19 – Palmetto https://psa092719.eventbrite.com
- 10/1/19-Homestead https://psa100119.eventbrite.com
- 10/4/19-Palatka https://psa100419.eventbrite.com
- 10/10/19-Brooksville https://psa101019.eventbrite.com
- 10/15/19-Immokalee https://psa101519.eventbrite.com
- 10/17/19-Fort Pierce (Citrus Grower Training) https://psa101719.eventbrite.com
- 10/21/19-Monticello https://psa102119.eventbrite.com
- **11/18/19-Belle Glade https://psa111819.eventbrite.com**

Preventive Controls for Human Food Preventive Controls Qualified Individual (PCQI) Training
This three-day course for those covered under FSMAs Preventive Controls for Human Food Rule

- 11/4/19-11/6/19–Orlando https://fspca110419.eventbrite.com

HACCP for Florida Fresh Fruit and Vegetable Packinghouses This two-day course is not a requirement of FSMA rules, but may be required by some third party audit schemes

- **11/19/19 – 11/20/19 – Belle Glade https://haccp111919.eventbrite.com**

All workshops require advanced registration. https://crec.ifas.ufl.edu/extension/events/ Registration questions?

Questions? - Contact Sarah McCoy at sarahmccoy@ufl.edu

Beyond Basic Produce Food Safety: A Hands-On Analysis This one-day course is targeted at those who have already attended a food safety training and are looking for a more in-depth and hands-on experience. It is not a substitute for a PCQI or PSA Grower Training for FSMA.

- 10/9/19 – Lake Alfred https://beyondbasic100919.eventbrite.com
- 10/14/19 – Live Oak https://beyondbasic101419.eventbrite.com
- 11/12/19 – Naples https://beyondbasicproducefoodsafetycollier.eventbrite.com

Produce Safety Alliance Train-the-Trainer
This two-day course is for those interested in becoming PSA Trainers • 12/11/19-12/12/19-Apopka
https://psattt121119.eventbrite.com

Websites

PERC is the **Pesticide Educational Resources Collaborative** – the website provides a wealth of resources to help you understand and comply with the 2015 Revised WPS including training materials, the "new" WPS poster, handouts and WPS respiratory guide. http://pesticideresources.org//index.html

PERC - WPS Compliance Suite — Training Materials

Under the newly-revised Worker Protection Standard (WPS), training materials must be EPA-approved when officially training workers, handlers, and trainers. At present, the only EPA approved materials available can be found at the PERC website

- Expanded training concepts will be required starting January 2, 2018.
- Training must be delivered in a manner that can be understood, in a location relatively free from distractions.
- When training workers or handlers, the trainer must remain present at all times to be available to answer questions, even when showing a video.
- Trainers must be qualified, most often by holding a pesticide applicator's license or by completing an EPA-approved Train-the-Trainer course.

Training Materials for Workers and Handlers - http://pesticideresources.org/wps/temp/training/index.html

Need CORE CEU's? – here is an easy way to obtain CORE CEU's on-line by reading an article and answering questions regarding the online. A passing score obtains one Core CEU.

CEU Series: Mix and Load Pesticides Safely
CEU Series: Protect Crops and the Environment
CEU Series: Make Sure to Stow Your Pesticides before You Go
CEU Series: Avoid Mishaps When Handling Pesticides
CEU Series: Be Aware of Bees When Applying Pesticides
CEU Series: Place Priority on Preventing Pesticide Poisoning
CEU Series: Learning about Pesticide Resistance Is Anything but Futile

Go to http://www.growingproduce.com/?s=CORE+CEUs

Check out Southwest Florida Vegetable Grower on Facebook
https://www.facebook.com/pages/South-Florida-Vegetable-Grower/149291468443385 **or follow me on Twitter @SWFLVegMan** - https://twitter.com/SWFLVegMan

Contributors include**:** Joel Allingham/AgriCare, Inc, Gordon DeCou/Agri Tech Services of Bradenton, Dr Nick Dufault/ UF/IFAS, Jason Dyess, Rachel Giles, Carrie Harmon/UF/IFAS Plant Disease Clinic, Bruce Johnson/General Crop Management, Barry Kostyk/SWFREC, Leon Lucas/Glades Crop Care, Chris Miller/Palm Beach County Extension, Mark Mossler/UF/IFAS Pesticide Information Office, Gene McAvoy/Hendry County Extension, Alice McGhee/Thomas Produce, Dr.Gregg Nuessly/EREC, Chuck Obern/C&B Farm Dr. Rick Raid/

EREC, Dr Ron Rice/Palm Beach County Extension, Dr Pam Roberts/SWFREC, Wes Roan/6 L's, Dr. Dak Seal/ TREC, Kevin Seitzinger/Gargiulo, Kevin Short/ICM, Dr Gary Vallad/GCREC , Mark Verbeck/GulfCoast Ag, Dr. Qingren Wang/Miami-Dade County Extension, Alicia Whidden/Hillsborough County Extension, Dr Henry Yonce/KAC Ag Research and Dr. Shouan Zhang/TREC.

The **South Florida Pest and Disease Hotline** is compiled by **Gene McAvoy** and is issued on a biweekly basis as a service to the vegetable industry.

Gene McAvoy

Gene McAvoy

Associate Director for Stakeholder Relations
University of Florida IFAS Southwest Florida Research and Education Center

Regional Vegetable Extension Agent IV Emeritus

UF/IFAS SWFREC
2685 State Road 29 N
Immokalee, FL 34142

239-658-3400
863-673-5939 cell
gmcavoy@ifas.ufl.edu

Chris Miller

Dr. Christian Miller, Extension Agent II
Vegetable & Tropical Fruit Production
Palm Beach County Extension
559 North Military Trail, WPB, FL 33415

Phone: 561-233-1718

Email: cfmiller@ufl.edu

Web: http://discover.pbcgov.org/coextension/Pages/default.aspx

Special Thanks to the **generous support** of our **sponsors**; who make this publication possible.

Thomas Produce Company
Of South Florida
Grower and Shippers of Quality Vegetables
9905 Clint Moore Road
Boca Raton, Florida 33496

Shawn Barley
Wedgworth's Inc.
Big W Brand Fertilizer
(863) 441-9255 cell

Carol Howard
Mobley Plant World
1351 W Cowboy Way
LaBelle, Florida 33935
Phone 863-675 -2020

Ryan Richards
Wedgworth's Inc.
710 Broward Street
Immokalee, FL 34142
Phone 239-657-8254 Fax 239-657-2005

Special Thanks to the **generous support** of our **sponsors**; who make this publication possible.

Special Thanks to the **generous support** of our **sponsors;** who make this publication possible.

Certis USA

Bio-Pesticides for Crop Production

Joe Craig - 863-291-9203
Chuck Goodowns - 352-538-4471

Scott Houk

Dow AgroSciences LLC

Phone 239-948-3999
Email sehouk@dow.com

FMC
FMC Corporation
Eric Johnson
Cell 352-281-2325

EJ.Johnson@fmc.com www.fmccrop.com

Steve Mike Dave

Jamerson Farms

Growers, Packers and Shippers of
Florida's Finest Vegetables
Phone 239-229-5734 Fax 239-368-0969

Sarah Hornsby, CCA

Agricultural Crop Consulting, Inc

Scouting: Manatee, Hillsborough, Collier
Office/Fax 941-776-1122
Cell 941-713-6116
Email: AgCropCon@aol.com

Donald Allen

AGLIME SALES INC

PO Box 60
Babson Park, Florida 33827-0060
Office 863-638-1481 Fax 863-638-2312
Mobil 863-287-2925

BioSafe Systems LLC

OxiDate®
TerraClean®
StorOx®

Jarod Huck
352-789-9363

Luis Hansen
305.793.9206

info@biosafesystems.com

PUT YOUR NAME HERE

BASF Corporation

Adrian Jahna
863-443-2404
Adrian.jahna@basf.com

Certified for use in Organic Production
Jack Kilgore 239-707-7677
g8trmanjek@comcast.net

Special Thanks to the **generous support** of our **sponsors;** who make this publication possible.

NOTE: The acknowledgement of sponsorship in no way constitutes or reflects an official endorsement of these businesses or their products or services by either the University of Florida, IFAS or the Florida Cooperative Extension Service. Sponsors have no control over the content of this publication.