



SOUTH FLORIDA VEGETABLE PEST AND DISEASE HOTLINE

April 4, 2019

Unseasonably warm and rainy weather in February and March helped intensify pest and disease pressure in a number of crops.

Weather has been relatively mild for the past few weeks and all areas report significant rainfall ranging from just over an inch and a half to over 3 inches. Spring vegetable harvest in most South Florida is posed to shift into high gear over the next few weeks with a wide range of vegetables coming to market.

FAWN Weather Summary

Date	Air Temp °F		Rainfall (Inches)	Ave Relative Humidity (Percent)	ET (Inches/Day) (Average)
	Min	Max			
Balm					
2/26 – 4/4/19	39.96	88.02	1.88	77	0.11
Belle Glade					
2/26 – 4/4/19	45.23	88.83	1.90	81	0.11
Clewiston					
2/26 – 4/4/19	42.86	88.66	2.47	79	0.12
Ft Lauderdale					
2/26 – 4/4/19	52.48	90.21	3.69	75	0.13
Homestead					
2/26 – 4/4/19	48.06	89.01	1.68	78	0.12
Immokalee					
2/26 – 4/4/19	41.82	91.53	2.05	81	0.12
Okeechobee					
2/26 – 4/4/19	39.24	87.93	2.71	80	0.11
Wellington					
2/26 – 4/4/19	47.3	88.43	3.42	80	0.12

“Remember, when in doubt - scout.”

The National Weather Service forecasts indicates that another short wave moves across the region on Friday, enhancing the chances of showers and thunderstorms for much of South Florida. High pressure will build in behind it for Saturday, causing a lull in weather activity for the day.

By Sunday, the ridge of high pressure pushes to the southeast, allowing for a southeast wind over the region and bringing back the chances of showers and thunderstorms for Sunday.

For the beginning of next week, another trough moves across the region, keeping chances of showers and thunderstorms in the forecast for the remainder of the forecast period.

In summary, an active weather pattern will ensue through next week, keeping the possibility of showers and even thunderstorms in the forecast.

For additional information, visit the National Weather Service in Miami website at <http://www.srh.noaa.gov/mfl/newpage/index.html>

Insects

Whiteflies

Whiteflies remain mostly low in the Manatee/Ruskin area.

Reports from respondents on the East Coast indicate that whiteflies are high in some tomato and eggplant fields. Respondents also report that high numbers are blowing into some squash from adjacent plantings.

Growers and scouts around Homestead report that whitefly numbers are high in a variety of vegetables including okra, eggplants, beans, cucurbits, and numbers are on the increase. Incidence of whitefly vectored viruses such as bean golden mosaic and TYLCV is high in some fields. Respondents report that bean golden mosaic virus incidence is 50 -70% in some beans.

Around Southwest Florida, whiteflies numbers are surging and have reached very high numbers in a number of areas. Some growers are reporting high to very high whitefly numbers in a number of eggplant, cucumber, squash, watermelon, and tomato fields and are spraying for whiteflies on a near daily basis. In such areas, populations are beyond control and growers can only hope to contain them for a few more weeks until the end of the season.

Incidence of TYLCV is also spiking in a number of tomato around SW Florida with some fields approaching 100% infection. Growers are also reporting significant levels of irregular ripening caused by high whitefly infestation.

Whitefly vectored viruses including cucurbit yellow stunting disorder virus and cucurbit crumple leaf virus are increasing in a number of watermelon fields around south Florida. Some growers have even abandoned some fields where incidence has reached extremely high levels.

Studies have shown a strong correlation between weather and whiteflies. Populations plummet following adverse conditions and buildup during periods of mild weather. Given that fact that we have had a relatively mild fall, there has been no check on populations or weedy hosts of whitefly transmitted cucurbit viruses, so without a weather related check in populations, there is significant potential for a buildup of whitefly populations and increases in whitefly-transmitted viruses this spring.

Once harvest is completed, field hygiene including rapid and timely crop destruction and clean up should be a high priority and should be an integral part of the overall strategy for managing whitefly populations, virus, and insecticide resistance. These practices will help reduce the onset of the initial infestation of whitefly, regardless of biotype, and lower the initial infestation level during the cropping period.

Promptly and efficiently, destroy all vegetable crops within 5 days of final harvest to decrease whitefly numbers and sources of plant viruses like TYLCV and CYSDV. Destroy old crops quickly and thoroughly after harvest, killing whiteflies and prevent re-growth.

Spray first with a tank mix of pyrethroids and Malathion to kill whiteflies in the old crop. Use a contact desiccant (“burn down”) herbicide in conjunction with a heavy application of oil (not less than 3 % emulsion) and a non-ionic adjuvant to destroy crop plants and to kill whiteflies quickly.

Time burn down sprays to avoid crop destruction during windy periods, especially when prevailing winds are blowing whiteflies toward adjacent plantings.

Treat spring plantings of tomato with a systemic insecticide in the transplant water. Preventative soil applications of either imidacloprid, thiamethoxam, dinotefuran, flupyradifurone or cyanatraniliprole should be used as a routine practice in tomato and cucurbits. (Table 1).

If on drip, make a second soil application in 30 days using a systemic insecticide of different mode of action.

Scout crops every week and apply insecticides as needed to maintain control. Target nymphs once the threat of immigration from old crops has passed. (Table 2).

Scouting is important for early detection of migrating whiteflies and contact insecticides should be used to knockdown incoming whiteflies.

Dr Dak Seal, Entomologist at UF/IFAS TREC reports that in trials, Sivanto applied on foliage and on soil as drench application provided significant reduction of whitefly eggs, nymphs and adults.

Admire and Verimark as a soil drench followed by Knack, Movento and Assail also provided significant reduction of whitefly related plant health problems in research trials.

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
Dinotefuran	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

MOA	Active Ingredient	Whiteflies	Other pests controlled			
		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		
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	fenpyroximate	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.						
Compiled by Dr Phil Stansly						

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>

Diamondback moth

Reports indicate that diamondback moth (*Plutella xylostella*) has reached uncontrollable levels in a number cabbage plantings around Lake Okeechobee and elsewhere in South Florida.

Diamondback moths are gray in color with a wingspread of less than one inch, and move rapidly when disturbed. Males display 3 yellowish diamond shaped markings on the back when the wings are folded together.

Larvae are light green, slightly tapered at each end, and are covered with tiny, erect black hairs. When full grown they are about 1/3 inch long. They wiggle rapidly when disturbed, often dropping from the plant and hanging by silken threads.

Plant damage is caused by larval feeding. They may feed on all parts of host plants chewing small holes in leaves, or may feed superficially, leaving a thin layer of intact tissue, creating a windowpane effect.

Although diamondback larvae are very small, they can be quite numerous, resulting in complete removal of foliar tissue except for the leaf veins. This is particularly damaging to seedlings, and may disrupt head formation in cabbage, broccoli, and cauliflower.

The presence of larvae can result in rejection of produce, even if the level of plant tissue removal is insignificant.

Diamondback moth only attacks members of the brassica/mustard family, and in Florida is primarily a problem in green cabbage and Napa cabbage. Growers should be very careful to inspect transplants when they arrive from the nursery to make sure larvae are not present.

Pheromone traps should be used to monitor adult populations. One or more hole per plant is often used as a threshold for control.

To the extent possible, growers should separate newer plantings from older infested plantings in space and time. Some growers and pest control operators find the most effective approach to managing diamondback moth is to rely primarily on *Bacillus thuringiensis* (BT) products which allow diamondback moth parasitoids help suppress populations.

Mixtures of chemical insecticides, or chemicals and microbials, are often recommended for diamondback moth control. Growers should consider using multiple modes of action in rotation including relatively recent chemistries such as the diamides (group 28, like Exirel and Coragen) and spinosyns (group 5, like Radiant). However, this is not a guarantee that the applications will be effective if the grower has a resistant population.

Systemic protection to diamondback moth is provided by the diamide insecticides Coragen (chlorantraniliprole) and Verimark/Exirel (cyantraniliprole) (MoA group 28). Radiant SC (spinetoram) and Proclaim (emamectin benzoate) can be used as rotational partners with Bt products and diamide insecticides for diamondback moth management.

Radiant (MoA group 5) and Proclaim (restricted use; MoA group 6) have translaminar activity, providing residual efficacy. Avaunt 30 WDG (indoxacarb, MoA group 22) and Rimon 0.83 EC (novaluron, an insect growth regulator, MoA group 15) can also be included in a diamondback moth programs.

Several broad-spectrum insecticides in the carbamate, organophosphate and pyrethroid classes are registered for use on diamondback moth.

Resistance to insecticides is widespread, and includes most classes of insecticides including some *Bacillus thuringiensis* products. Rotation of insecticide classes is recommended, and the use of *B. thuringiensis* is considered especially important because it favors survival of parasitoids. Even *B. thuringiensis* products should be rotated, and current recommendations generally suggest alternating the kurstaki and aizawa strains because resistance to these microbial insecticides occurs in some locations.

Although broad-spectrum insecticides might work (e.g., Lannate, Warrior II), they will harm beneficials and should be only be used later in the season as a cleanup if needed.

Partial list of insecticides registered for use on cabbage for management of diamondback moth and other caterpillars.			
MoA	Trade Name (Active Ingredient) *Restricted	REI	PHI
5	Radiant SC (spinetoram)	4	1
6	*Proclaim (emamectin benzoate)	12	7
11A	Agree WG (<i>Bacillus thuringiensis</i> subspecies <i>aizawai</i>)	4	0
11A	Biobit HP (<i>B. thuringiensis</i> subsp. <i>kurstaki</i>)	4	0
11A	Crymax WDG (<i>B. thuringiensis</i> subsp. <i>kurstaki</i>)	4	0
11A	DiPel DF (<i>B. thuringiensis</i> subsp. <i>kurstaki</i>)	4	0
11A	Javelin WG (<i>B. thuringiensis</i> subsp. <i>kurstaki</i>)	4	0
11A	Xentari DF (<i>B. thuringiensis</i> subsp. <i>aizawai</i>)	4	0
15	Rimon 0.83 EC (novaluron)	12	7
22	Avaunt (indoxacarb)	12	3
28	Coragen (chlorantraniliprole)	4	3
28	Exirel (cyantraniliprole) foliar	12	1
28	Verimark (cyantraniliprole) soil	N/A	4
un	Aza-Direct (azadirachtin)	4	0
un	Prokil Cryolite (cryolite)	12	7
Courtesy of Dr Hugh Smith: UF/IFAS GCREC			

Check UF/IFAS recommendations for currently labeled insecticides for diamondback larvae control in Florida crucifers.

Dr Hugh Smith, Entomologist at (UF/IFAS GCREC is collaborating with University of Georgia entomologists in monitoring insecticide resistance in diamondback moth populations in Florida and Georgia. Growers who would like their diamondback moth populations tested for insecticide resistance should please contact Hugh Smith at hughasmith@ufl.edu or 813-419-6588.

Pepper Weevils

On the East Coast, reports indicate that pepper weevils everywhere in pepper and are reaching high numbers in a number of fields. Growers report that they are also moving into eggplant and treatment have been required in a number of cases.

Around Immokalee, pepper weevils are going crazy. In some locations, they have reached such high numbers; they have eaten all fruit/blooms and buds off plants.

Weevils are a major problem in the Homestead area and serious infestations are being reported in a number of plantings irrespective of pepper varieties and location.

Dr Hugh Smith reports that pepper weevil is causing severe losses in bell peppers in in Manatee County. He notes that pepper weevil primarily attacks peppers but can also attack eggplant when densities are high.

Pepper weevil females lay eggs inside developing buds and young fruit. The weevil completes its development entirely within the fruit, emerging as an adult after a few weeks. The fact that the pepper weevil completes its development within the fruit protects it from insecticides and most natural enemies, making it difficult to control.

Scouting is importance as with other pests to detect infestations at an early stage. Since adults tend to move to lower, more protected and less visible plant parts as temperatures increase, scouting efforts should concentrate on a search for adults in leaf whorls, flowers and fruit during morning hours. Commercially available pheromone traps may also aid in early detection. These should be placed around the borders of pepper fields in an effort to detect early stages of infestation before flowering. Once infestations are detected, applications of pesticides to kill adults will help reduce numbers.

Infested fruits can be recognized before they fall by the yellow calyx and the presence of oviposition punctures that look like small dimples. Hot peppers like Jalapeno and Serrano's are often the first peppers to be affected. Fruit and flower buds should be examined for damage and fallen fruit and buds examined for presence of larvae. If possible, all damaged and fallen fruit should be removed and destroyed.

Chemical control is difficult because all stages but the adult are protected within the fruit, so that only the adult weevil is vulnerable to insecticides. Frequent sprays may be necessary starting in the initial stages of infestation in order to avoid unacceptable levels of damage.

Spraying needs to commence at the first sign of weevils or with flowering in fields with a history of problems.

Vydate (oxamyl), a restricted use carbamate (IRAC Group 1A) has been the backbone of pepper weevil management for many years. Vydate has been available since last year after a gap of a couple years. Vydate is applied at a rate of 2-4 pints per acre, with 24 pints maximum allowed per acre per season.

Good rotational partners for pepper weevil management include thiamethoxam (Actara) and cyantranilprole/cyazypyr (Exirel) along with Rimon, and Dimilin in a program with Vydate along with pyrethroids to knock down adults. As much as possible, growers should separate newer plantings from older infested plantings in space and time.

Growers should be aware that you cannot spray your way out of this problem but need to take a proactive IPM approach throughout the season including good sanitation and destruction of old fields and separation of planting in time and space with a crop-free period between fall and spring plantings where practicable.

Once weevils are well established in a field it is impossible to spray your way out of the problem and crop destruction may be the best option.

Corn silk fly

Silkfly populations have exploded this year in both Homestead and the EAA production areas and a number of respondents report that silkfly has been the worst that they have ever seen. In some instances, growers are spraying daily and even twice a day in an effort to manage the pest.

Growers have reported significant losses and some fields have gone unharvested due to substantial infestation.

Scouts report that silkfly numbers immediately after fields are sprayed are often low only to find much higher numbers later in the same day.

Because this insect is saprophytic, and feeds and can reproduce on a wide variety of over-ripe and rotting fruits, such as vegetables and sugarcane, in addition to sweet corn, South Florida provides a number of local food reservoirs where the insect can multiple rapidly and quickly reenter treated cornfields.

In addition, because of this movement from breeding areas to sweet corn production fields damage along field margins adjacent to such breeding grounds and in small corn fields with a large field edge to acreage ratio, damage can be substantial.

The fly is a year round pest of corn in South Florida and corn grown south of Lake Okeechobee is most at risk in the late winter and spring as numbers increase through the season. This year, silkfly populations increased rapidly earlier in the season than normal most likely assisted by unseasonably warm wet conditions in February.

This pest damages corn in several ways. By damaging silks, the larvae disrupt pollination and reduce kernel density. Larval feeding at ear tips will reduce grade from US Fancy to US No 1 or No 2. US No 1 must be free of worm or insect damage and US No 2 must be free from serious damage by worms or other insects.

In severe cases, near-mature larvae damage individual kernels distributed throughout ears rendering them completely unmarketable.

Silkfly management is further complicated by the relatively small number of insecticide products available to growers and limits on the number of applications allowed per season. Scouts report that growers have been making their way through all possible chemistries and having some success but at high expense.

Growers should manage cull piles, as these sources are preferred substrates for egg laying. Use of pyrethroids routinely may provide suppression of corn silk flies in sweet corn.

Worms

Reports from the East Coast indicates that worm pressure remains moderate.

Around the EAA, worms are mainly being controlled in sweet corn as collateral damage from sprays targeting silkfflies.

Around Manatee County, southern armyworm and loopers are hatching out in tomato. Pickleworms have been reported in squash.

Respondents around Southwest Florida report finding a variety of worms from armyworms to loopers.

Spider mites

Twospotted spider mites (*Tetranychus urticae*) are increasing in a number of locations around South Florida.

Around Homestead, spider mites are around and can be found in pepper, beans, eggplant, corn and tomato depending on location.

In Palm Beach, spider mites are showing up in eggplant.

Spider mites are increasing in older eggplant and some tomato in the Manatee Ruskin area and around SW Florida.

Use of pyrethroids can increase the incidence of mites due to impacts on beneficials.

Spider mite problems often flare up in hot, dry weather, so high densities during the cool early spring and winter months are unusual.

Twospotted spider mite has a very broad host range, effecting many crops and establishing on many wild hosts. The following insecticides/acaricides are registered for use on tomato. Other more broad-spectrum materials are also available.

MOA	Trade Name	Active Ingredient	PHI	Comments/Other Pests Controlled
6	*Agri-Mek SC	abamectin	7	Restricted. Liriomyza leafminers, Thrips palmi, broad mites, russet mites, CPB, Tomato pinworm
20B	Kanemite 15 SC	acequinocyl	1	broad mites
20D	Acramite-50WS	bifenazate	3	One application per season
21A	Portal	fenpyroximate	1	tomato russet mite, broad mites
23	Oberon 2SC	spiromesifen	1	broad mites, tomato russet mite, whiteflies
25	Nealta	cyflumetofen	3	
-	Aza-Direct	azadirachtin	0	Antifeedant, repellant, insect growth regulator. OMRI-listed.
-	Grandevo	Chromobacterium subtsugae	0	Thorough coverage is necessary for effective control.
-	M-Pede 49% EC	Soap, insecticidal	0	
-	MET52 EC	Metarhizium anispoliae strain F52	0	
-	PFR-97	Isaria fumosorosea Apopka strain 97)	0	Repeat applications at 3-10 days are needed to maintain control.
-	SuffOil-X	mineral oil		
-	Sulfur	many brands		
-	Ultra Fine Oil, Saf-T-Side, others	oil, insecticidal	0	May burn fruit and foliage when temperature is high. Do not apply within 2 weeks of an oil spray or EC formulation.
-	JMS Stylet-Oil	oil, insecticidal	0	

Consult the Vegetable Production Handbook of Florida for additional information.

Broad Mite

Respondents on the east coast report that broad mites remain active in pepper and eggplant. Pressure ranges from low to moderate depending on location.

Growers in Southwest Florida report that broad mites are still around in some pepper fields.

Around Homestead, broadmites are patchy in occurrence in pepper and eggplant.

Thrips

On the East Coast, thrips range from high to low.

In some locations around Palm Beach County with multiple consecutive plantings of pepper or with a source nearby, populations are generally high.

According to scouts, to the north of PBC, thrips are numerous but are mostly species that are more controllable and can be killed off easier and larvae are controlled or stay fairly low.

Thrips are also causing problems in eggplant and cucumbers in some areas.

Around SW Florida, growers and scouts report flights of thrips coming off citrus and thrips are increasing across the area. At present, most populations appear to be Florida flower thrips - *F. bispinosa*.

Growers and scouts in Homestead report that thrips populations are high. Reports indicate that common blossom thrips populations appear to be higher than previous years and TCSV incidence is reaching alarming levels in some fields. Around Homestead, the presence of alternate hosts such as weeds and ornamentals provide an important source of thrips that move readily to vegetables. Some of these hosts have been found to be positive for TCSV.

Thrips vectored TCSV incidence in tomato is high in a number of Homestead tomato fields. In some tomato fields, infestation level is running 40-60%. Florida 40 and Sanibel are very susceptible to TCSV. Many growers are planting Red Bounty, which seems to be resistant to TCSV.

Around Homestead, the melon thrips population is still high on a wide variety of susceptible crops. Dr Dak Seal reports that growers have limited management tools. He reports that applications of Radiant, Torac, Exirel, and Novaluron in weekly rotation looks effective in controlling melon thrips.

Melon thrips infest tomato at a very low density and is considered a minor pest. Its capability to transmit tospovirus is still not clear. It occurs in all tospovirus infested tomato fields.

Around the EAA, green beans are holding a high population of thrips 5-10 per bloom. Prices have been low and farmers are laying off pesticide applications.

Aphids

On the East Coast, aphid numbers are high in a number of pepper fields.

Respondents in SW Florida report that aphids are active and have needed treatment in some places but are mostly being controlled by sprays aimed at whiteflies.

A few aphids are showing up on lettuce and are also present in celery in the EAA.

Aphids remain mostly low around Homestead but can be a threat to a variety of crops.

Excessive and unnecessary use of insecticides should be avoided. Early in the season, aphid infestations are often spotty, and if such plants or areas are treated in a timely manner, great damage can be prevented later in the season.

Sulfoxflor (Closure) is the best insecticide to control green peach aphid. Softer pesticides including insecticidal soaps such as M-Pede), nicotinoids like Admire, Provado, Assail and others including Beleaf, Movento and Fulfill will provide good control and help reduce impact on beneficials.

Leafminer

Around Southwest Florida, leafminers are spotty in occurrence.

In Palm Beach, County, reports indicate that leafminer pressure is remains mostly low.

Around the EAA, leafminers are mostly low but continue to be a nuisance in some celery.

Reports from Homestead indicate that leafminer are present in susceptible crops.

Stinkbug

Stinkbug are causing some problems in pepper, tomato and eggplant in a number of locations around South Florida.

Diseases

Late Blight

Late blight found in tomatoes in Manatee and Hillsborough counties, but did not make an appearance this year in SW Florida in South Florida.

Samples from a Tri-County Agricultural Area potato farm collected by UF/IFAS Hastings Agricultural Extension Center Staff have been confirmed to be infected with Phytophthora infestans the pathogen that causes potato late blight by the UF/IFAS Plant Diagnostic Center.

Additional testing is under way to determine the biotype; resistant or non-resistant.

Considering a good chance for rain tomorrow and early next week, monitoring fields for late blight in areas where the disease has been reported is advised.

Bacterial Spot

Reports from Homestead indicate that bacterial spot is widespread and severe on tomato and non-resistant varieties of pepper.

Around SW Florida, growers and scouts report that bacterial spot flared up in tomato in a number of locations following rainy conditions last month. In the most severe cases, lesions are present on fruit and up to the top of the stake.

Some bacteria continue to creep along in some East Coast tomatoes.

Around Manatee County, Dr Gary Vallad, Pathologist at UF/IFAS GCREC reports that some growers are battling bacterial spot in tomatoes and notes that it is bad in some locations (and notes often mistaken as target spot), especially on the Fusarium wilt race 3 resistant varieties.

Bacterial Blight

Common bacterial blight has been active in green beans around Belle Glade.

Bacterial blight is also present on green beans around Homestead.

With common bacterial blight, caused by *Xanthomonas campestris* pv. *phaseoli*, the first evidence of infection appears in the form of water-soaked spots on the leaves. With age, lesions enlarge and coalesce. The entire leaf finally turn brown and drops.

Stem lesions appear as long, reddish colored spots. When the plant begins to set fruit, lesions are formed at the nodes, which girdle the stem.

The disease can cause spots on the pods, which start as water-soaked (greasy) areas and later become surrounded by a brick-red border. Such spots cause severe quality loss in both fresh market beans and may result in rejection of an entire field.

This disease may be seed-borne. Entry into the plant is through the leaf stomata. Rain and damp weather encourage development of bacterial blight. Common blight is more of a problem in warm weather.

Since the disease can be seedborne, one of the most effective controls is to plant certified blight-free seed grown in drier areas of the western United States. Even a trace of infected seed when planted can initiate severe infection of entire fields.

It is especially important to avoid spreading the disease by keeping pickers and cultivators out of the field when the foliage is wet to reduce the amount of spread in the field.

Spraying with fixed copper is of some benefit if applied at first signs of the disease.

Target spot

Around Immokalee, target spot remains active and really hasn't slowed down all season in tomato.

Reports from the East Coast indicates that target spot is present on tomato.

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 QoI 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.

Early Blight

Low levels of early blight are starting to show up on tomato in a couple of locations around South Florida.

Phytophthora

On the East Coast, Phytophthora incidence is high in some pepper and older squash. Incidence is increasing in some places but occurrence is patchy and many fields remain clean.

Phomopsis

Phomopsis has been reported at moderate levels in some East Coast eggplant.

Growers and scouts are also reporting problems with Phomopsis on eggplant around SW Florida.

Phomopsis blight, caused by the fungus *Phomopsis vexans*, is a destructive disease of eggplant worldwide. Young seedlings can be attacked soon after emergence. Dark lesions may form slightly above the soil line, become sunken, and eventually result in cankers that girdle the stem. Seedlings affected in this manner will typically collapse and die.

The fungus will attack leaves throughout crop development; older leaves are most susceptible. Lesions are usually circular, gray to brown, and develop a light center as they mature. Numerous fruiting bodies of the fungus, called pycnidia, can often be seen in the center of the older lesions. They appear as tiny, black pimples embedded in the host tissue. Affected leaves may turn yellow and drop prematurely. Spots and cankers can also form on mature stems and branches.

The most important symptoms are those that occur on the fruit, as these render the fruit unfit for market. Injury begins as pale, sunken, circular to oval areas on the surface. These later enlarge, and become markedly depressed.

Several spots may coalesce, affecting large portions of the fruit. The key to diagnosis of Phomopsis fruit rot is the observation of the pycnidia or fruiting bodies embedded in the flesh of the lesion interiors. These black pimple-like structures are often arranged in a roughly concentric pattern.

The causal fungus survives between crops in plant debris in the soil. Since the non-cropping season in southern Florida is very short, enhancing the survival potential of the pathogen. Spores of the fungus ooze out of the pycnidia in a sticky matrix. The major means of spread of the pathogen is in splashing rain.

Phomopsis blight is favored by hot, wet weather.

Since Phomopsis persists on and in seed, and overwinters in residue from diseased plants prompt destruction of infected plant material after the cropping season is important in reducing initial inoculum. In transplant production, use of certified seed and pathogen-free planting media is essential. Growers should ensure that transplants taken to the field are free of disease.

A spray program with a protectant fungicide is necessary to maintain yield and quality. Various copper fungicides are labeled for this purpose.

Fusarium

Fusarium remains active in some tomato around Immokalee.

Respondents on the East Coast report that Fusarium is increasing in some tomato and older pepper around Palm Beach County.

Sclerotinia

Respondents in Palm Beach County report that sclerotinia is slowing down in most places.

Low levels of sclerotinia are also taking out individual plants here and there in some pepper and tomato fields around SW Florida probably as result of infections initiated a few weeks ago when cooler temperatures and high humidity prevailed.

Growers and scouts report finding a low incidence of white mold in snap beans (close to harvest) in the Clewiston area.

Powdery Mildew

Growers and scouts around Palm Beach County report that powdery mildew is high in many mature squash fields but remains low in younger fields.

Reports from SW Florida indicate that powdery mildew is widely present in squash and is now showing up in some older pepper and tomato as well.

Around Homestead, powdery mildew is active in squash and some beans.

Powdery mildew remains low in watermelons but growers should remain alert if weather turns hot and dry.

Downy Mildew

Respondents indicate that downy mildew remains active around South Florida in cucurbits like squash and cucumber.

Downy mildew is also causing problems with basil.

Respondents in the Belle Glade area report that crucifer downy mildew has picked up hitting kale, arugula, cabbage and some of the spring mix crops, like mizuna and tatsoi. Dr Rick Raid, Pathologist at EREC recommends that growers should be on a preventative program, hitting the crop soon after emergence if downy has been spotted in the immediate area.

Dr Rick Raid, Pathologist at EREC reports that lettuce downy mildew, caused by *Bremia lactucae*, has been observed and is active in the EAA.

He advises growers to be on a consistent preventative program using mancozeb and a phosphite rotated with a fungicide specific for oomycetes such as Revus, Zampro, Orondis, Ranman, Reason, Forum, Presidio, Previcur flex, Aliette, etc.

Growers can check with their suppliers and read the label carefully before using for plant back, use patterns, and rates. Dr Raid asks that growers submit samples if they suspect they have downy mildew.

Gummy Stem Blight

Around SW Florida, gummy stem blight is present on some watermelon and has reached serious levels in some fields.

Around Manatee County, low levels of gummy stem blight have been reported in watermelon.

On the East Coast, gummy stem blight is active in some cucumber.

Gummy stem blight can be successfully managed using a combination of control strategies. Control of primary sources of inoculum is important. Growers should purchase clean seed and avoid transplants that have gummy stem blight or other diseases.

Multiple applications of fungicides are necessary to control gummy stem blight. It is important to begin a fungicide program prior to the first sign of gummy stem blight. In south Florida, the spray program should be initiated soon after emergence. In other areas of the state, fungicide spray programs can be initiated when the vines begin to “run.” Fungicides like mancozeb or Bravo in rotation will provide good protection before disease is established in the field

In recent years, strains resistant to the strobilurin fungicides have been detected throughout the Southeast, so it is important that growers practice resistance management and avoid repeated applications of these and all fungicides. Materials such as Folicur (Tebuconazole), Pristine (BASF) a mixture of boscalid and pyraclostrobin, and Topsin (thiophanate methyl) have shown good efficacy against resistant strains of the disease.

Tomato Yellow Leaf Curl Virus

Around SW Florida, respondents indicate that TYLCV is starting to increase in a number of tomato fields, both in older planting as well as in some younger fields. Incidence has reached 100% in some locations.

Around Homestead, reports indicate that TYLCV in tomatoes is wide spread and severe in a number of locations.

Tomato Chlorotic Spot Virus

Around Homestead, respondents report tomato chlorotic spot virus is reaching alarming levels (>40%) in some fields.

Around Palm Beach County, tomato chlorotic spot virus remains very low with only a few isolated plants being reported here and there.

Bean Golden Mosaic Virus

Respondents from Homestead report that bean golden mosaic virus (BGMV) is widely present in snap beans and note that some fields display 50-70% infection.

Northern Corn Leaf blight

Around the EAA, northern corn leaf blight caused by the fungus *Exserohilum turcicum* has flared up over the past few weeks

Initial symptoms of the disease include yellow spots that develop on the foliage. These enlarge to form tan or straw-colored dead areas about 4 to 6 inches long and one half inch wide.

NCLB produces a long, elliptical lesion, while those of southern corn leaf spot tend to be oblong and much smaller than those produced by NCLB. 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*.

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

Resistant varieties are available and should be considered, particularly for spring plantings.

Fungicide application can effectively control Turcicum when applied at the right time. Fungicide should be applied when lesions first become visible on the lower leaves or when disease is reported to be in the area. Threat is highest from mid Feb into April but it may be seen during the fall as well.

Triazoles and strobilurins both provide control, with some pre-mixes giving superior control. These products should be used with a broad-spectrum protectant to minimize development of fungal resistance.

Use EDBC fungicides such as mancozeb as a protectant before disease is present. Apply 4- 6 sprays on a 5 – 7 day basis. Use a surfactant/sticker as corn leavers are waxy and spray tends to run off. Rotate with a stobulurin such as Headline etc. As corn matures or disease becomes present, rotate between triazoles such as Folicur, Monsoon, Propimax etc and strobilurins or premixes of the two.

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

Cucurbit yellow stunting disorder virus

Around SW Florida, cucurbit yellow stunting disorder virus (CYSDV) is present in watermelon and appears to be increasing in a number of locations as crops approach maturity.

In some cases, infections are severe and growers have abandoned fields in a few cases.

CYSDV was initially found in Florida in 2007. It is a crinivirus in the family Closteroviridae. The virus is vectored by whiteflies and can persist in the whitefly adult for up to 9 days, the longest time of any crinivirus.

It affects all cucurbit crops, causing reduced fruit size and sugar content. CYSDV was previously thought to be restricted to the Cucurbitaceae family, but it is now recognized that CYSDV also infects crop and weed species such as alfalfa, lettuce, snap bean, alkali mallow and Wright groundcherry.

Symptoms resemble those of a nutritional deficiency or water stress and the most obvious symptoms are seen on older leaves.

Symptoms begin as interveinal mottling on older leaves, intensify with age and become systemic throughout the plant. Veins remain relatively green as the rest of the leaf turns yellow. —the opposite of what happens when squash is infected with SqVYV. Leaves may roll upward and become brittle.

Melon and cucumber exhibit the most severe symptoms, which can be confused with nutrient deficiency or other yellowing viruses. Since symptoms resemble a nutritional deficiency, it may initially be overlooked by growers.

Melon fruit does not express obvious symptoms, although sugars can be reduced dramatically.

It can take up to four weeks for symptoms to develop after infection, so it is easy to move the virus long distances in infected but symptomless transplants without realizing that the plants are infected. CYSDV has also been found infecting weedy cucurbits like smell melon in Florida.

Cucurbit leaf crumple virus

Cucurbit leaf crumple virus (CuLCrV) is also widely present in watermelon. In most fields, it is present as scattered isolated plants although it has become more widespread and common in recent weeks.

Cucurbit leaf crumple virus is a begomovirus in the family Geminiviridae. Once acquired by the whitefly, CuLCrV may be transmitted for the rest of its life.

CuLCrV causes a suite of symptoms primarily characterized by leaf chlorosis, distortion, curling and crumpling, and plant stunting and wilting, leading to significant reduction in total yield.

It appears to be more damaging to squash than to cantaloupe and watermelon; however, internal fruit quality issues in watermelon (discoloration and reduced sugar) is often observed on -infected watermelon.

The fruit of yellow squash plants develop green streaks. In watermelon, yellowing of leaves and crumpling can occur

All cucurbits are susceptible except for acorn and butternut squash and a number of melons, such as Galia, honeydew, casaba, and golden crehshaw. CuLCrV has also been found infecting green beans, balsam apple, and smell melon in Florida.

Squash vein yellowing virus

To date, only isolated cases of squash vein yellowing virus (SqVYV), often called vine decline by growers has been reported in SW Florida.

As of this writing, no cucurbit varieties resistant to these viruses are available.

Managing the whitefly vector and weed hosts of the virus are the only options for reducing losses at this time.

Whitefly resistance to insecticides is a serious problem with a number of products no longer highly effective for killing adult whiteflies. Whitefly nymphs are easier to control than adults. This is because adults feed on more than 600 different host plants that include weeds and other cultivated crops.

Cultural controls including weed control, sanitation and crop free periods are essential for a strong resistance management program as application of insecticides for whitefly control is not an especially effective method to manage virus spread in the field.

See Recommendations for Management of Whiteflies, Whitefly-Transmitted Viruses, and Insecticide Resistance for Production of Cucurbit Crops in Florida - <http://edis.ifas.ufl.edu/in871>

News You Can Use

Paraquat Dichloride Training for Certified Applicators

As required by EPA's Paraquat Dichloride Human Health Mitigation Decision and amended paraquat dichloride (a.k.a. paraquat) product labels, certified applicators must successfully complete an EPA-approved training program before mixing, loading, and/or applying paraquat. The training provides important information about paraquat's toxicity, new label requirements and restrictions, and the consequences of misuse.

All applicators, mixers and loaders will be eventually required to complete Paraquat safety video course and test once the new labeling goes into effect this fall.

Paraquat users are encouraged to begin completing the training now that it is available. This is to ensure that users are in compliance, but as importantly, so you become familiar with the training and can serve as a resource for your handlers as we begin this transition.

The EPA-approved training module can be accessed using the following link. It requires users to create an account with user name and password. All applicators, mixers and loaders should be directed to this site to satisfy the training requirement.

The video is about 30 minutes in length and is followed by a quiz, which must be completed with a passing score.

<https://www.epa.gov/pesticide-worker-safety/paraquat-dichloride-training-certified-applicators>

This training was developed by paraquat manufacturers as part of EPA's 2016 risk mitigation requirements and has been approved by EPA.

FAQ's

1. Why are there additional training requirements to use paraquat?

Since 2000, there have been 17 deaths – three involving children – caused by accidental ingestion of paraquat. These cases have resulted from the pesticide being illegally transferred to beverage containers and later mistaken for a drink and consumed. A single sip can be fatal. In addition to the deaths by accidental ingestion, since 2000 there have been three deaths and many severe injuries caused by the pesticide getting onto the skin or into the eyes of those working with the herbicide. To prevent these tragedies, EPA is requiring this special training for certified applicators who use paraquat. One of the purposes of the paraquat training is to reinforce that paraquat must not be transferred to or stored in improper containers.

2. Who is required to take this training?

Any person who intends to use paraquat must be a certified applicator and is required to take the training. "Use" includes pre-application activities involving mixing and loading the pesticide; applying the pesticide; and other pesticide-related activities, including, but not limited to, transporting or storing opened

pesticide containers, cleaning equipment, and disposing of excess pesticides, spray mix, equipment wash waters, pesticide containers, and other paraquat-containing materials.

3. Who is permitted to use paraquat?

The use of paraquat, which is a restricted use pesticide, is restricted to certified pesticide applicators only; noncertified persons working under the supervision of a certified applicator are prohibited from using paraquat, including mixing, loading, applying the pesticide, and other pesticide-related activities.

4. What are the training requirements for paraquat products?

To use paraquat products, you must be a certified applicator. In addition, paraquat-specific training is required by new paraquat labels and must be completed prior to using products with the new labeling. All paraquat labels are expected to include a link to the training by Fall 2019. The training provides important information about paraquat's toxicity, new label requirements and restrictions, and the consequences of misuse. **The training must be retaken every three years.** Although this training is a paraquat label requirement, a state may choose to approve it for continuing education. For state-specific requirements, contact your state lead pesticide agency. To find the contact information for your state lead pesticide agency, see the National Pesticide Information Center's webpage on state pesticide regulatory agencies.

5. How does the paraquat training module differ from the certified applicator training requirements?

Pesticide applicators become certified by proving they are competent to apply or supervise the use of restricted use pesticides (RUPs), generally by examination. Many states approve courses that certified applicators can take to maintain their certification. The examinations and training courses pertain to a category or type of pesticide application (e.g., agricultural plant pest control, seed treatment, structural pest control). Conversely, the paraquat training module emphasizes the importance of handling paraquat safely because of its extreme toxicity. The training highlights product-specific restrictions, including that paraquat products bearing the new labeling can be handled by certified applicators only (i.e., **paraquat can no longer be handled by those working under the supervision of a certified applicator.**)

6. One of the label requirements is to maintain a record of the completed training. How will certified applicators show proof that they completed the required training?

Once the certified applicator successfully completes the training, a certificate will be automatically generated. Per the new labeling, applicators are required to retain certificates of training completion. In addition, paraquat registrants have arranged for the National Pesticide Safety Education Center (NPSEC) to retain certification records should the user, state regulators, or enforcement personnel need access.

7. Who is responsible if a certified applicator overlooks a label requirement, even if the paraquat-specific training covered that point?

The intent of the training is to provide the user with the best possible understanding of paraquat product safety issues. Ultimately, it is the user's responsibility to handle the product in strict accordance with the product labeling.

8. Will there be different training modules from different manufacturers?

This training module is the official module and meets all of EPA's requirements.

9. Is a Spanish version available?

Not at this time, although EPA says it will consider alternative training options for approval.

Note that use of diquat for tomato crop destruct may provide an option for some growers:

Verdure X- https://s3-us-west-1.amazonaws.com/www.agrian.com/pdfs/Verdure-X1_Label.pdf

Regalone - https://s3-us-west-1.amazonaws.com/www.agrian.com/pdfs/Reglone_Label1n.pdf

Sec 24C Burndown https://s3-us-west-1.amazonaws.com/www.agrian.com/pdfs/Reglone_Section_24c2e.pdf

New H-2A Visa Checklist Tool is Now Available

Posted by Elizabeth Creech

United States Department of Agriculture in Farming

Apr 04, 2019

Are you a farmer who needs seasonal or temporary workers for planting, cultivating, or harvesting crops? The H-2A temporary agricultural workers program – often called the H-2A Visa Program – helps American farmers who anticipate a lack of available domestic workers fill employment gaps by hiring workers from other countries.

With our new Checklist Tool, participating in the Program is now easier than ever.

H-2A Visa Checklist Tool - <https://www.farmers.gov/manage/h2a/h2a-checklist>

Our interactive H-2A Visa Checklist Tool is the latest addition to the farmers.gov website.

While interest in the H-2A Visa Program grows each year, farmers often find the application process challenging, with information and parts of the process spread across multiple state and federal agencies.

The new farmers.gov H-2A Visa Checklist brings program requirements, fees, forms, and important dates into one location. Answer just a few questions, select the start date for your workers, and get a “to-do checklist” built around your H-2A hiring needs. Then, print or download the checklist as a reference. If you’d prefer to keep it simple, just download calendar reminders from the checklist to your personal device (PC or mobile).

The H-2A Visa Program

Just looking for some basic program information? Visit our H-2A Visa Program page today.

<https://www.farmers.gov/manage/h2a>

It covers only what beginners really need to know up front, in plain language, and will help you:

- Learn the H-2A visa application basics.
- Create your personalized H-2A visa application checklist built around your hiring needs.
- Estimate the costs of hiring workers through the H-2A Visa Program.
- For Farmers, By Farmers

Our H-2A Visa Program page – complete with Checklist Tool – is the latest feature on farmers.gov, a dynamic, mobile-friendly website combined with an authenticated portal where customers can apply for programs, process transactions, and manage accounts.

On farmers.gov, you can also:

Use our disaster assistance discovery tool that asks five simple questions – in a step-by-step guided experience – to provide a personalized list of USDA disaster assistance programs that might meet your individual business needs.

Read success stories about and by America’s farmers, ranchers, forest landowners, and partners for news producers can use.

View farm loan history, payments, and alerts – all from a personal dashboard in the authenticated farmers.gov portal.

These and other farmer-focused features are being built through an iterative process to deliver the greatest immediate value to America’s agricultural producers. Together, we’re growing farmers.gov as a digital resource for farmers, by farmers.

Elizabeth Creech is part of the team building farmers.gov to best support America’s farmers, ranchers, and forest landowners. She can be reached at elizabeth.creech@wdc.usda.gov.

On Farm Readiness Review

The Florida Department of Agriculture and Consumer Services (FDACS) is working with the FDA to provide outreach and education to Florida fruit and vegetable growers who will be impacted by the “Standards for the Growing, Harvesting, Packing and Holding of Produce for Human Consumption” (commonly referred to as the Produce Safety Rule).

The Produce Safety Rule requires one representative from a farm to attend the Produce Safety Alliance Grower Training (or other FDA-recognized curriculum). The Produce Safety Alliance Grower Training helps growers to understand each part of the regulation and how to comply.

FDACS is collaborating with the University of Florida Institute of Food and Agricultural Sciences Extension Service to deliver Produce Safety Alliance Grower Trainings and On-Farm Readiness Reviews.

FDACS is offering growers/packers/harvesters an opportunity to participate in a free On-Farm Readiness Review to determine what they might encounter in a FSMA inspection.

An On-Farm Readiness Review is an educational opportunity intended to walk producers through what an actual inspection on their farm may look like, before a real inspection is conducted.

To sign up or learn more about the free, educational On-Farm Readiness Review program, complete and submit the form below.

<https://www.freshfromflorida.com/Business-Services/Fruit-and-Vegetables/Food-Safety-Modernization-Act-Produce-Safety-Rule/On-Farm-Readiness-Review>

Someone from FDACS as well as UF/IFAS will conduct the OFRR to help prepare you for future inspections which will begin in 2019.

For more information on the program, contact:

Sydney S. Armstrong
FSMA Coordinator
Division of Fruit and Vegetables
Florida Department of Agriculture and Consumer Services

(863) 578-1944 OFFICE
(863) 298-2011 CELL
Sydney.stone@FreshFromFlorida.com

Upcoming 2019 UF/IFAS Food Safety Workshops

Produce Safety Alliance Grower Training - a one-day course for fruit and vegetable growers and packers who fall under FSMAs Produce Safety Rule

04/09/19 – Dade City - <https://psa040919.eventbrite.com>
04/23/19 – Wimauma - <https://psa042319.eventbrite.com>
05/01/19 – Kissimmee - <https://psa050119.eventbrite.com>
06/06/19 – Homestead - <https://psa060619.eventbrite.com>

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.

04/16/19 – Live Oak - <https://beyondbasic041619.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

03/19-21/19 – Lake Alfred - <https://fspca031919.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

Questions or need help with registration, contact Travis Chapin – tkchapin@ufl.edu or (863) 956-8642.

Up Coming Events

April 28th, 2019

Sweet Corn Fiesta

The annual [Sweet Corn Fiesta](#), presented by the Sunshine Sweet Corn Farmers of Florida, takes place at the [Yesteryear Village](#) in West Palm Beach from 11am to 5pm. Activities include local food vendors, live music, children's rides and the ever popular sweet corn shucking, eating, and old-fashion bathing suit competitions.

Admission: Adults: \$10, Children ages 6-11: \$5, Ages 5 & under: Free, Children's unlimited ride wristband: \$5

Up Coming Meetings

April 10th, 2019

IFAS Certified Crop Adviser- CEU Session

This session will offer 5.0 CEUs in “Pest Management” and 5.0 CEUs in “Nutrient Management” themes.

This session is webcast to five centers- Gainesville, Lake Alfred, Balm, Immokalee and Ft. Pierce.

To register, please use the following link and pick the ticket to the center of your choice:

<https://www.eventbrite.com/e/certified-crop-advisor-training-april-10-2019-tickets-56577270138>

29th Annual Farm Safety Day

UF/IFAS SWFREC

Immokalee, FL

May 3rd & May 4th

Safe and competent equipment operators are important to you as an employer. Accidents, which cause damage, injury or death to employees, equipment and crops, are costly. We believe all types of accidents can be reduced with proper employee training. Our training has been designed to help your employees perform better, operate safely to prevent accidents, fulfill necessary training requirements and build pride in themselves and their farm company.

\$20.00 per person, which will include educational sessions, handouts, pencils, refreshments, lunch, and a cap.

It is very important that we know the date (Friday, May 3 or Saturday, May 4, 2019) and the language capabilities for each attendee.

For more information or to register, please contact Barbara Hyman (hymanb@ufl.edu) at 239 658 3400.

Websites

Food Safety Modernization Act – draft guidance issued. FDA will call for comments.

Draft Guidance for Industry: Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption

<https://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/ucm606284.htm>

Guide to Minimize Food Safety Hazards of Fresh-Cut Produce: Draft Guidance for Industry

<https://www.federalregister.gov/documents/2018/10/22/2018-23005/guide-to-minimize-food-safety-hazards-of-fresh-cut-produce-draft-guidance-for-industry-availability>

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>

A Trip Down Memory Lane - Patrick Smith recounts a memory of a Florida that sadly once was, is no more and will never be again.

https://www.youtube.com/watch?time_continue=4&v=Qw5uJ3m60rk&fbclid=IwAR16eIPtBRd15mb_NXNAEbXyTzENIjSrgO2BO1Yo7wDla5huL_Tq_bheoiY

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>

UF/IFAS Palm Beach County Extension: <http://discover.pbcgov.org/coextension/Pages/default.aspx>

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

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