



# SOUTH FLORIDA VEGETABLE PEST AND DISEASE HOTLINE

April 14, 2020

**Hot dry conditions have ruled for the past few weeks.** Most days have seen highs in the low-mid 90’s. East Coast locations saw a bit more rain with totals ranging from a quarter of an inch to just over an inch depending on location. West Coast locations have been abnormally dry with most places recording around a tenth of an inch for the period.

**Hot dry weather and windy conditions have increased daily evapotranspiration and growers have responded by increasing the number irrigation cycles.**

**FAWN Weather Summary**

Date	Air Temp °F		Rainfall (Inches)	Ave Relative Humidity (Percent)	ET (Inches/Day) (Average)
	Min	Max			
<b>Balm</b>					
3/20 – 4/13/2020	48.13	96.58	0.12	76	0.15
<b>Belle Glade</b>					
3/20 – 4/13/2020	55.56	95.20	0.51	80	0.14
<b>Clewiston</b>					
3/20 – 4/13/2020	54.90	95.92	0.60	69	0.15
<b>Ft Lauderdale</b>					
3/20 – 4/13/2020	61.25	96.53	0.88	75	0.16
<b>Homestead</b>					
3/20 – 4/13/2020	57.70	91.63	1.30	79	0.15
<b>Immokalee</b>					
3/20 – 4/13/2020	52.50	98.01	0.15	75	0.16
<b>Okeechobee</b>					
3/20 – 4/13/2020	47.57	98.38	0.06	77	0.14
<b>Wellington</b>					
3/20 – 4/13/2020	57.67	95.31	0.21	78	0.15

**“Remember, when in doubt - scout.”**

**Corona virus pandemic related closures of schools, hotel, restaurants, theme parks and cruise ships across the country basically cut off food service demand for produce adversely affecting markets around the end of March and resulting in a sharp decline for produce.** Growers have been forced to dump product and walk away from thousands of acres of vegetables for which the demand disappeared. South Florida should wind down rapidly as growers look to plantings coming in up the road.

**The National Weather Service forecast indicates the low over the Southern Gulf coast states will move to the northeast tonight and be in the Great Lakes region on Monday.** A cold front associated with the low will stall over Northern Florida on Monday. This will lead to a southerly wind flow over South Florida along with dry air working into the area from the south.

**Long-range models have the front remaining nearly stationary through middle of next week before slowly moving into Central Florida late this week.** This will keep South Florida in a south to southwest wind flow this week. There will be an increase in moisture through the middle to end of this week over South Florida leading to isolated to scattered showers and even a few thunderstorms especially over the interior and east coast metro areas each day.

**The stationary front is forecast to move back northward next weekend allowing for the winds to become more easterly next weekend.** Moisture will remain in place leading to scattered showers and isolated thunderstorm next weekend with the best coverage over the interior and west coast metro areas.

**Highs will continue to remain in the lower to mid-90s over most of South Florida through the middle of this week with heat indices getting up into the lower 100s over most of the area, except for the west coast metro areas where heat indices will only reach into the mid to upper 90s.** Lows will also be warm across South Florida this week with 70s over most areas, except upper 60s around Lake Okeechobee region.

**For additional information, visit the National Weather Service in Miami website at <https://www.weather.gov/mfl/>**

## **Insects**

### **Whiteflies**

**Whiteflies are blowing up in a number of locations around SW Florida.** Around Immokalee, hundreds of acres have been abandoned due to irregular ripening and high TYLC incidence. TYLCV incidence of 50-80% is being reported in several fields. Whitefly pressure is also high in watermelon and other cucurbits.

**Around Central Florida, tomato growers are already experiencing whitefly and virus issues in Spring crops.** Reports indicate that some farms have pulled up entire first plantings due to very high incidence of TYLCV. Respondents indicate that whiteflies are also increasing in melons. High levels of silverleaf is present in some squash and moderate in melons.

**On the East Coast respondents report that whitefly pressure is very high in older eggplant and high in older tomato.** Younger tomato in the vicinity of older tomato is showing high incidence of TYLCV. Whitefly populations are also high in cucumber and pepper

**Reports from Homestead indicate that whitefly numbers have reached high levels in all susceptible vegetable crops.**

With whitefly populations beginning to build and continued warm weather, growers are advised to take precautions to protect spring crops especially those like tomato and watermelon where whitefly vectored viruses are a threat. Studies conducted by Dr Bill Turechek at USDA ARS looking at whitefly populations and virus incidence indicates that there is a high correlation between mild winters and the level of problems experienced in any particular year.

#### 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	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.

Preventative soil applications of either imidacloprid, thiamethoxam, dinotefuran, flupyradifurone or cyantraniliprole should be used preventatively in tomato and cucurbits.

Proper scouting is essential to manage silverleaf whitefly. Over the years, UF entomologists have developed usable action thresholds that have been successful for many tomato farmers. However, these thresholds are only guidelines. Farm managers may modify them to fit their particular situations and expectations. \*

## Silverleaf whitefly thresholds

**0-3 true leaves 10 adults/plant\***

**3-7 true leaves 1 adult/leaflet**

**NOTE - \*If the source of whiteflies is believed to be tomato or melons, where virus is present, the threshold will be lower!**

### 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

Management of whiteflies later in the season depends on early suppression of whitefly populations, growers need to be aggressive with the best systemic materials (Venom, Sivanto Prime, Verimark) early in the season. Growers who are on seepage and not drip are at a particular disadvantage if whiteflies and virus are high early in the season.

Field hygiene should be a high priority and should be an integral part of the overall strategy for managing whitefly populations, whitefly vectored viruses, and insecticide resistance.

- **Disrupt the virus-whitefly cycle in winter by creating a break in time and/or space between fall and spring crops, especially tomato and cucurbits.** The absence of a crop-free period especially in South Florida plays a major role in some of the problems we are seeing and has been exacerbated by growers holding crops longer than usual for a 3<sup>rd</sup> or 4<sup>th</sup> pick due to high prices.
- **Destroy crops quickly and thoroughly after harvest, killing whiteflies and preventing re-growth.**
- **Promptly and efficiently destroy all vegetable crops within 5 days of final harvest to decrease whitefly numbers and sources of plant viruses.**
- **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.**

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>

## **Pepper weevils**

**On the East Coast, pepper weevil pressure ranges from light to very high.** Numbers are highest in Palm Beach County and decline going north into. Growers are also reporting damage in some eggplant where pressure is high.

**Around SW Florida, pepper weevil populations have exploded in most pepper fields and in the worst-case scenarios are consuming small fruit.**

**Around Homestead pepper weevils remains a major problem in pepper.** Serious infestations can be observed in all plantings irrespective of pepper varieties and planting location.

**In addition to the pepper weevil (*Anthonomus euginii*), we are hearing scattered reports of Cuban pepper weevil showing up around South Florida.** Cuban pepper weevil adults are easily distinguished from the glossy black *A. euginii*, bearing numerous rough or raised areas, and a considerable amount of brown coloration. Larva are similar in appearance to *A. euginii*.

**Sanitation and a crop-free period, if accompanied by destruction of alternate hosts, can disrupt the life cycle.** It is very important to eliminate wild solanaceous host plants if pepper weevil is to be managed effectively.

**Adult population estimates are best obtained by visual examination and yellow sticky traps.** Action thresholds are one adult per 400 terminal buds or 1% of buds infested.

**Insecticides are commonly applied to the foliage at short intervals once buds begin to form.** Insecticidal suppression is feasible, but insecticides vary considerably in effectiveness, and even in the presence of chemical insecticides some loss commonly occurs. Actara, Vydate, diamides and pyrethroids can be used in a program to control this pest. Consult UF/IFAS recommendations for currently labeled insecticides for pepper weevil control in Florida.

## **Worms**

**Growers and scouts in the EAA army worm populations have been lower in corn than they were in the fall possibly due to extremely dry conditions but note they are still showing up on field margins.**

**Beet armyworm have been stubborn in celery, but growers are managing to keep them under control.**

**Around SW Florida, scouts report they are still finding scattered worms, loopers, southern armyworms, tomato fruitworms and some beet armyworms.** Some watermelon growers are experiencing problems with worms feeding on watermelon rinds. Melonworms remain active in cucumbers and squash.

**On the East Coast, respondents report an uptick in worm pressure with beet armyworms showing up in pepper and melonworms in cucumber,**

**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.

**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.**

## **Diamondback moth**

**Diamondback moth (*Plutella xylostella*) larvae continue to cause damage to cruciferous crops in Palm Beach, Manatee/Hillsborough, Miami Dade and Tri-County (St. Johns, Putnam and Flagler) Agricultural Area.**

**Diamondback moth larvae are small green caterpillars with a pair of prolegs on their posterior end that form a “V” shape.** This helps distinguish them from other caterpillars commonly found attacking crucifers, including imported cabbage worm and cabbage looper.

**It takes about four weeks from egg to emergence of adult from the pupa for this pest.**

**Diamondback moth larvae only feed on plants in the crucifer family, including cabbage, broccoli, kale, mustards, radish, turnips, watercress and Brussel sprouts.**

**In Florida, diamondback moth is primarily a problem in green cabbage and Napa cabbage but can occur in broccoli and other crucifers.** Young diamondback moth larvae feed on the surface of the leaf, producing “windowpane” type damage. There are many weeds in Florida in the crucifer family that serve as hosts for diamondback moth, including yellow rocket, shepherds purse, pepperweed, and wild radish.

**There are at least three types of parasitic wasp in Florida that attack either the larval or pupal stage of diamondback moth.** Early season reliance on *Bacillus thuringiensis* (Bt) products does not interfere with the activity of these natural enemies and can offset the severity of infestations.

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

**Since adults may carry over between crops on plant debris, cultural controls such as separation of crops in time and space and sanitation including rapid crop destruction after harvest are important.**

**Growers should be very careful to inspect transplants when they arrive from the nursery to make sure larvae are not present.**

**Diamondback moth develops resistance to insecticides easily, particularly pyrethroids.** Rotation of insecticide modes of action and avoidance of pyrethroids are important for managing diamondback moth. Resistance develops when successive generations of diamondback moth are treated with the same modes of action. A way to avoid or delay the development of resistance in diamondback moth is to group insecticides by mode of action in time intervals that correspond to the 30-day life cycle of the pest.

**Sampling around Florida and the Southeast has indicated varying levels of resistance to a range of active ingredients.** Resistance and susceptibility to AI’s can vary greatly between populations often with in a relatively small geographical area. If you apply a pesticide properly at recommended rates and do not get the control expected, you may be dealing with a resistant population, try switching AI’s and do not go back with the same product or similar AI.

**The table below lists some of the insecticides that demonstrated efficacy against diamondback moth collected from Florida cabbage fields in the spring of 2019.** The mode of action number for each group is indicated in the central column. Insecticides with the same mode of action group can be applied more than once within a 30-day treatment interval, which starts when the first application of a given mode of action is made. Distinct modes of action should be used for each thirty-day interval once insecticide applications are initiated.

**Protection of crucifer crops from damage often requires application of insecticide to plant foliage, sometimes as frequently as twice per week.** Complete coverage especially the undersides of leaves where larvae are most often found.

**The diamide insecticides (mode of action group 28) are important for management of diamondback moth larvae.** If cabbage is being planted when diamondback moth populations are known to be present, the grower should consider a transplant tray treatment of Verimark (cyantraniliprole), or an at-plant treatment of Verimark or Coragen (chlorantraniliprole). At-plant treatments in cabbage would typically be applied with a water cart. Verimark and Coragen can also be applied near the root zone via soil shank injection, however this is not optimal because these two insecticides are not highly mobile in the soil.

**Application via drip tape is another option, however the use of drip tape in Florida cabbage is not common.** Diamide insecticides that can be applied to the foliage are Coragen, Exirel and Harvanta 50 SL (cyclaniliprole). The active ingredient in Exirel is cyantraniliprole, the same as in Verimark, which can only be applied via transplant tray or the soil. Please consult the insecticide labels for specific rates and instructions and remember applications of diamides should be confined to a 30-day interval, after which distinct modes of action should be used.

**Note: recent sampling data from one population in SW Florida showed very high levels of resistance to a range of diamide products.**

**Bts remain useful tools for controlling young diamondback moth larvae.** It is advised that application of products with the *aizawi* strain of Bt (i.e. Agree WG, Xentari DF) be alternated with products formulated with the *kurstaki* strain of Bt (i.e. Biobit HP, Crymax WDG, Dipel DF, Javelin WG).

**Other insecticides that have proven effective against diamondback moth larvae in Florida include Radiant (spinetoram, mode of action group 5), Proclaim (emamectin benzoate, mode of action group 6, a restricted use insecticide), Torac (tolfenpyrad, mode of action group 21A) and Avaunt (indoxacarb, mode of action group 22A).**

**Spear Lep from Vestaron has performed well in trials conducted by Dak Seal in Homestead and provides another rotation partner in the grower's toolkit.** It has been designated a new IRAC Group 32.

**Dak also notes that Knack in rotation with Xentari provided significant control of DBM and other worm pests in trials).**

**Florida diamondback moth populations tested in 2019 were not very susceptible to pyrethroids (mode of action group 3A), or Lannate (methomyl, mode of action group 1A).** For a full listing of insecticides registered for management of caterpillars in brassicas, please consult the 2019-2020 Vegetable Production Handbook of Florida.

**For additional information on diamondback moth, including images and links to help distinguish it from imported cabbage worm and cabbage looper, visit**

**[http://entnemdept.ufl.edu/creatures/veg/leaf/diamondback\\_moth.htm](http://entnemdept.ufl.edu/creatures/veg/leaf/diamondback_moth.htm).**

<b>Some insecticides that have demonstrated efficacy against diamondback moth in Florida in 2019</b>				
<b>Insecticide</b>	<b>Active ingredient</b>	<b>Mode of Action Group</b>	<b>Application options</b>	<b>PHI</b>
<b>Verimark</b>	<b>cyantraniliprole</b>	<b>28</b>	<b>Transplant tray drench Transplant water Drip</b>	<b>N/A</b>
<b>Coragen</b>	<b>chlorantraniliprole</b>	<b>28</b>	<b>Transplant water Drip Foliar</b>	<b>3</b>
<b>Exirel</b>	<b>cyantraniliprole</b>	<b>28</b>	<b>Foliar</b>	<b>1</b>
<b>Harvanta 50SL</b>	<b>cyclaniliprole</b>	<b>28</b>	<b>Foliar</b>	<b>1</b>
<b>Radiant</b>	<b>spinetoram</b>	<b>5</b>	<b>Foliar</b>	<b>1</b>
<b>Proclaim (restricted)</b>	<b>Emamectin benzoate</b>	<b>6</b>	<b>Foliar</b>	<b>7</b>
<b>Agree WG, Xentari DF, others</b>	<i>Bacillus thuringiensis</i> subspecies <i>aizawai</i>	<b>11A</b>	<b>Foliar</b>	<b>0</b>
<b>Dipel DF, Javelin WG, others</b>	<i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i>	<b>11A</b>	<b>Foliar</b>	<b>0</b>
<b>Torac</b>	<b>tolfenpyrad</b>	<b>21A</b>	<b>Foliar</b>	<b>1</b>
<b>Avaunt 30 WG, Avaunt eVo</b>	<b>indoxacarb</b>	<b>22A</b>	<b>Foliar</b>	<b>3</b>
<b>Spear Lep</b>	<b>GS-omega/kappa- Hxtx-Hv1a</b>	<b>32</b>	<b>Foliar</b>	<b>0</b>

Thanks to Dr Hugh Smith, Entomologist at UF/IFAS GCREC

### Thrips

**On the East Coast, respondents report thrips are very high in areas down south, Broward and PB, and relatively low in northern growing areas like Martin and St. Lucie County.**

**Around Miami Dade County, melon thrips populations remain high around Homestead and are increasing in beans and squash.** Growers are reporting difficulty in bring them under control. Reports indicate that Radiant is not working and growers are using anything and everything they can to try and get control.

**Common blossom thrips are widespread in most bean fields with high numbers (4-6 thrips /flower) present.** The adults cause damage by feeding and ovipositing on foliage. In addition to widespread reports of bean red node caused by tobacco streak virus, growers are also seeing some virus in beans which tested positive for tospovirus (TCSV). Common blossom thrips and western flower thrips are also present in beans as are low numbers of bean thrips *Caliothrips fasciatus*.

**Reports from the EAA indicate that thrips has been intense in a number of bean fields but not beans are finishing up rapidly with a decline in markets.**

**Around SW Florida, thrips have really increased in many places but it appears most are flower thrips and not causing a big problem.** Scouts note that in many cases, pirate bugs are following them into fields and providing control.

## **Spider Mite**

**On the East Coast, spider mites are high in some eggs and starting to build up in cucumber and pepper.**

**Around Belle Glade, spider mites are developing on flags and ear husks in a number of areas.**

**Reports from SW Florida, indicate spider mites are starting to pop up all around in many crops.**

**Under optimum conditions (approximately 80°F), spider mites complete their development in five to twenty days.** There are many overlapping generations per year. The adult female lives two to four weeks and can lay several hundred eggs during her life.

**Spider mite prefers the hot, dry weather of the spring months, but may occur throughout the year.**

### **Management Methods**

**A number of effective products including insecticidal soaps and oils are available for control depending on the crop.** The twospotted spider mite has been known to develop resistance to many chemicals after prolonged use so resistance management is essential.

**Most miticides are not effective on eggs.** Therefore, two or more applications at five-day intervals during the summer or seven-day intervals are advised to break the life cycle.

**Consult UF/IFAS recommendations for currently labeled insecticides for twospotted spider mite control in Florida vegetables.**

**Insect predators are very important in regulating spider mite populations.** Several predator mites commonly attack spider mites. Commercially available species include *Phytoseiulus persimilis*, *Neoseiulus californicus*, *Galendromus occidentalis* and *Amblyseius fallicus*.

## **Broad Mite**

**Broad mites have flared in several older pepper fields around Immokalee.**

## **Stinkbug**

**Growers and scouts are reporting increasing problems with stinkbugs in tomato around Immokalee and in the Manatee Ruskin area.** In the past, stinkbugs have primarily been a problem in organic tomato and were rarely seen in conventional tomato crops, but this situation appears to be changing and some growers have reported increasing difficulty in controlling stinkbug when they show up.

## **Leafminer**

**Around SW Florida and in the Manatee Ruskin area, leafminer pressure is variable, high in places and low in others.**

**Around Homestead, reports indicate that leafminers continue to cause problems in beans and other crops.**

**Reports from the EAA, indicate that leafminer are causing some problems in celery.**

**On the East Coast, respondents indicate that leafminer pressure is low to moderate depending on the location.**

## **Aphids**

**On the East Coast growers and scouts report that aphid numbers are increasing.** Scouts are beginning to find some aphid colonies in pepper and note virus incidence is increasing rapidly in squash.

**Around SW Florida, aphids are active and have started building up in some older pepper, squash, cucumbers and watermelons.** Scouts note that in many places, whitefly sprays have pretty much kept them under control.

**In the EEA, respondents report that aphids are developing on sweet corn flag leaves and ear husks in most areas.**

## **Silk fly**

**Around the EAA, silk flies remain much lower than they have been for the past two years.** Scouts some pressure but overall, it remains low.

## **Diseases**

**Overall dry weather has reduced disease issues in most places.**

## **Cucurbit Downy Mildew**

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

**Growers and scouts report that downy mildew is also showing up in some watermelon and note they have been seeing new infections with recent foggy mornings.**

**Downy mildew is also active on cucumber and some squash on the East Coast.**

**Leaf symptoms can be used to diagnose downy mildew in the field in some cases.** On cucurbits other than watermelon, small yellowish spots occur on the upper leaf surface initially away from the leaf margin. Later, a more brilliant yellow coloration occurs with the internal part of the lesion turning brown. Lesions are usually angular as leaf veins restrict their expansion. When the leaves are moist, a downy grayish fungal growth may be seen on the underside of lesions.

**On watermelons, yellow leaf spots may or may not be angular and later turn brown to black in color.** On watermelons an exaggerated upward leaf curling occurs that growers sometimes liken to a dead man's hand.

**Spores are easily dispersed by wind from one leaf spot to another leaf in a field or to another nearby planting.** Under ideal conditions spores may be transported for many miles (sometimes hundreds of miles) from one field to another.

**Since nighttime temperatures between 55° and 75°F and relative humidity above 90%, provide ideal conditions for infection, cucurbits planted in South Florida are always at risk from downy mildew.**

**Control of downy mildew on cucurbits is achieved primarily by the use of resistant varieties and/ or fungicide spray programs.** Fungicide sprays are recommended for all cucurbits. Resistant varieties are currently available for some cucurbits and can help reduce fungicide applications.

**Spray programs for downy mildew are most effective when initiated prior to the first sign of disease since once a planting becomes infected; it becomes more and more difficult for fungicides to control downy mildew.**

**A range of fungicides is available for the control of downy mildew depending on the crop.** Consult UF/IFAS recommendations for currently labeled fungicides for downy mildew control in Florida.

### **Powdery mildew**

**Powdery mildew is widely present on older squash in a number of locations around South Florida.**

**Growers and scouts report that powdery mildew has recently started to show up on watermelon around Immokalee.**

**Powdery mildew can develop rapidly under favorable conditions.** Symptoms of powdery mildew of watermelon appear as yellow blotches on the oldest leaves first. If untreated the fungus quickly spreads to completely affect the entire leaf. As the disease progresses these blotches become bronzed and turn dark brown or purplish. Eventually the leaf dies and has a crisp texture.

**White masses of sporulation that are frequently seen with other powdery mildews are not commonly seen with the powdery mildew of watermelon.** In some cases, affected leaves may display the typical yellowing, bronzing, and a fair amount of white powdery fungal growth. Often little or no white powdery mycelia are present, and, in these cases, microscopy may be necessary to find a limited amount of the powdery mildew fungus in the yellowed areas. In some instances, powdery mycelia may be absent on the leaves but present on the fruit

**Growers who wish to minimize the risk of yield loss to powdery mildew should make preventative fungicide applications and scout fields regularly.**

**Tolerance or resistance to powdery mildew is available in some vegetable crops.** Most commercial cucumber varieties grown in Florida have acceptable levels of resistance.

**In addition to resistance, economic control can be achieved with chemicals.** Under low disease pressure, some materials applied preventatively for downy mildew may provide satisfactory control of powdery mildew.

**Consult UF/IFAS recommendations for currently labeled insecticides for powdery mildew control on cucurbits in Florida.**

### **Gummy Stem Blight**

**Around SW Florida, gummy stem blight is mostly low but has flared up in some watermelons in recent week.**

**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 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.

**Consult UF/IFAS recommendations for currently labeled fungicides for gummy stem blight control in Florida.**

### **Late Blight**

**Some late blight has been reported on some organic tomato around Manatee County.**

**Late blight is also present on potatoes around Hastings.**

### **Northern corn leaf blight**

**In the EAA, northern corn leaf blight seems to have slowed somewhat due to warmer temperatures although some growers continue to battle it in a few places.**

### **Southern Corn Leaf Blight**

**Respondents in the EAA and around Homestead indicate continued unseasonably warm weather has kept Southern corn leaf blight active on sweet corn around South Florida.** In the EAA, it is most prevalent in corn planted behind fall/winter corn.

**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*. A greenish growth near the center of the lesion may be evident if spores are present.

**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.**

**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.

**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 northern and southern corn leaf blight control in Florida.**

### **Bean red node/Tobacco Streak Virus**

**Bean growers in Homestead are reporting severe issues with red node - caused by the thrips vectored tobacco streak virus.** Bean red node is caused by a member of the genus *Iarvirus* and is also known as Tobacco Streak Virus.

**Low levels of red node have also been reported in beans around Belle Glade.**

**In beans, red node infection causes a reddish discoloration of nodes at the point of attachment of leaf petioles to stems.** In severe cases, infected plants will flex or break at a discolored node. The veins and veinlets of infected leaves exhibit a red to reddish-brown streaking. Red to reddish-brown concentric rings form on pods

which become shriveled or puffy and do not produce seeds. Plants can be severely stunted and killed by the virus.

**In tomato, downward curling of leaf blades of tomato infected with tobacco streak is common.** Leaf veins become necrotic which can lead to necrotic blotches, especially on young leaves. Fruit may develop necrotic ringspots. Necrotic streaks on young stems extend to flowers and leads to flower drop.

**In escarole, tobacco streak virus causes escarole necrosis.**

**Tobacco streak virus has wide host range infecting more than 200 plant species.** In addition to beans, other known hosts of the virus include cowpea, cucurbits, sweet clover, tomato and a number of weeds such as wild mustard and thistle.

**Tobacco streak virus (TSV) or red node is efficiently transmitted vectored in the field by several species of thrips including western flower thrips, *Frankliniella occidentalis*, and onion thrips, *Thrips tabaci*.**

**Control of TSV is difficult.** Chemical controls have not been developed for red node. Thrips control is ineffective but maintaining insect control programs is advised even though controlling insect vectors alone will probably not provide sufficient control of TSV.

**The primary controls for this disease are mostly cultural. *It is always wise to use virus-free seed and to control weed hosts. No biological control strategies have been developed for the management of red node.***

**Good ditch bank weed management and growing beans in large tracts to minimize border to field area ratio are the most effective means of controlling this disease.** Typically, this requires advanced planning. Once beans are in the ground, there is little that can be done, so keep this in mind for next season.

**Consult UF/IFAS recommendations for currently labeled insecticides for thrips control in Florida vegetables.**

### **Tomato Yellow Leaf Curl Virus**

**Around SW Florida TYLCV is increasing dramatically with the recent spike in whiteflies.** Incidence has reached 50 - 80% in some hard-hit fields. Some of these fields will not be harvested.

**Some growers in the Manatee Ruskin report terminating some early planting of tomato due to very high levels of TYLCV.**

**Reports from the East Coast indicate some young tomato is showing high incidence of TYLCV.**

**Growers are advised to plant resistant tomato varieties for the spring crop.**

### **Tomato Chlorotic Spot Virus**

**Reports from Homestead report TCSV remains low in most tomato fields.** TCSV is also showing up in some beans.

**Growers and scouts in Palm Beach County report that TCSV is showing up couple pepper farms where incidence remains mostly low.**

**TCSV-infected tomatoes develop necrotic lesions of variable size, easily recognized necrotic and chlorotic spots, and ringspots on leaves, stems, petioles, flowers, and fruit.**

**Symptoms in pepper plants include severe stunting, necrotic spots, necrotic ringspots, and severe leaf deformation.** Fruit from infected pepper plants can be deformed and present ringspots and irregular coloring.

**TCSV, like other members of the Tospovirus genus, is vectored by certain thrips species.** As with other tospoviruses, TCSV is only acquired by the larval (1st and 2nd instar) stages of the thrips vector as they feed on infected plants.

**TCSV is known to be transmitted by three species of thrips: common blossom thrips (*Frankliniella schultzei*), western flower thrips (*F. occidentalis*), and flower thrips (*F. intonsa*)**

**Surveys by Dr Scott Adkins et al have found TCSV on weeds such as purslane in production fields.**

### **Cucurbit Crumple Leaf Virus and Cucurbit Yellow Stunting Disorder Virus**

**Growers and scouts report that cucurbit crumple leaf virus and cucurbit yellow stunting disorder virus is becoming more common in watermelon around SW Florida.**

### **News You Can Use**

#### **National Weather Service - very warm and very dry March**

**Naples:** Avg Temp 75.6F breaks the previous warmest March record of 75.5F set back in 2003. Precipitation was a TRACE which ends up only being the 3rd driest March (0 rain recorded in 1945 and 1974).

**Fort Lauderdale:** Avg Temp 76.2F which is the 3rd warmest March on record (record 77.5F in 2003). Precipitation 0.2" which is 6th driest (record TRACE in 2006).

**Miami:** Avg Temp 77.2F which is the 2nd warmest March on record (record 78.6F in 2003). Precipitation 0.10" which is 4th driest on record (record 0 in 1902). Driest March in 64 years.

**West Palm Beach:** Avg Temp 76.9F which is 2nd warmest on record (record 77.0F in 2003). Precipitation 0.17" which is the 4th driest March on record (record 0 in 1907 and 1922). Driest March in 82 years.

#### **Operation Clean Sweep**

The Florida Department of Environmental Protection and the Florida Department of Agriculture and Consumer Services announces the 2019-2020 Operation Clean Sweep program, a mobile pesticide collection effort that provides a safe way to dispose of cancelled, suspended, and unusable pesticides. The free service is available to farms/groves, greenhouses, nurseries, golf courses, and pest control entities.

For more information, including how to sign up, click here:

<https://floridadep.gov/waste/permitting-compliance-assistance/content/operation-cleansweep-pesticides>.

#### **2019 - 2020 UF/IFAS Vegetable Production Handbooks**

Copies are available at the Hendry County Extension Office in LaBelle, the Miami Dade County Extension Office, the Palm Beach County Extension office in West Palm Beach, the UF/IFAS Everglades Research and Education Center in Belle Glade and the UF/IFAS SW Florida Research and Education Center in Immokalee.

Electronic copies can be found <https://edis.ifas.ufl.edu/cv292>

## Up Coming Meetings

Due to the evolving corona virus situation, UF/IFAS Administration has mandated that ALL in-person group research and extension meetings through the end of April have been postponed (no exceptions).

### **April 23, 2020      Vegetable Growers Meeting – Focus on Weed Management - On-line Only**

Join Zoom Meeting

<https://ufl.zoom.us/j/831234086>

Meeting ID: 831 234 086

One tap mobile

+16465588656,,831234086# US (New York)

+16699006833,,831234086# US (San Jose)

Agenda

10:00 AM – Welcome

10:00 AM - Weed management in vegetable production - Efficacy & longevity” – Dr Ramdas Kanissery, Weed Scientist UF/IFAS SWFREC

Description: The presentation will discuss the aspects of effective, long-term and crop-safe weed suppression in vegetable production mostly focusing on tomatoes and peppers. Adopting the right pre-emergent herbicide program would help prolong the weed suppression in row-middle areas. Initial results from an ongoing experiment for nutsedge suppression in vegetable plasticulture beds will be discussed as well.

10:30 AM - Weed Management with Soil Fumigants – Dr Nathan Boyd, Weed Scientist UF/IFAS GCREC

Dr Boyd will discuss the following:

1. Efficacy of different fumigants on weeds
2. The effects of fumigant ratios on weed management
3. Fumigant movement in the soil
4. Broadleaf and grass management with fumigants
5. Techniques to enhance fumigant efficacy, and
6. Integration of fumigants and fallow programs

11:00 AM – Fallow weed management selection to improve nutsedge control in vegetable crops. - Dr Peter Dittmar, Weed Scientist, UF/IFAS Horticulture Department

Description: Nutsedge is the most problematic weed in vegetable crop production. The summer months provide an opportunity to use intense types of weed control such as broad-spectrum herbicides, mechanical methods, and cover crops. Reducing underground tubers is the key for better weed control; glyphosate can translocate to the tubers, cultivation can reduce the tuber's carbohydrates, and cover crops prevent the production of daughter tubers. A single year of repeat applications of glyphosate or cultivation can reduce nutsedge populations. But applying the treatments for two years requires fewer applications. These fallow management practices are most important during the summer fallow when nutsedge is actively growing. Waiting until the fall is not as effective for nutsedge control. Cover crop canopy structure varies by species, the use of preemergence herbicides can change the amount of control achieved by the system. Fallow weed management is integral in nutsedge control, but the combination of methods can provide greater control.

11:30 AM – Noon - Questions and Answers with the presenters.

RUP CEU and CCA credit will be provided

## 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 CEU's?

Here are a couple of ways to earn CEU's

UF/IFAS offers a number of excellent videos and online modules, that will allow you to earn CEUS.

Go to <https://ifas-pest.catalog.instructure.com> where you will find a number of training modules for a variety of license categories which will allow you to earn CEU's online. Note: there is a charge for these.

Be sure to read the class description to make sure it offers CEU's in the category that you need.

Other options to earn CEU's include.

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.

Go to: CEU Series-Growing Produce

<https://www.growingproduce.com/crop-protection/ceu-series/>

- 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

Need more CORE CEUs –Earn CEU Credits NOW online through Southeast AgNet & Citrus Industry Magazine

The following series of articles and quizzes are available:

- 2019 #4: The fate of pesticides (10/31/2020)
- 2019 #3: Protecting soil and water while using pesticides (7/31/20)
- 2019 #2: At-a-glance safety information (4/30/20)
- 2019 #1: What is a pesticide, really? (1/31/2020)

Go to <http://citrusindustry.net/ceu/>

### **Worker Protection Standard Train the Trainer Classes Now On-Line**

Exam Administrators - Cesar Asuaje, UF/IFAS Palm Beach County has developed and made available a new EPA-approved WPS Train the Trainer online option. See the following:

The Environmental Protection Agency (EPA) approved this online Worker Protection Standard Train the Trainer (WPS TTT) course, and upon successful completion, the Florida Department of Agriculture and Consumer Service (FDACS) will issue a WPS TTT certificate.

This certificate provides the qualification to train agricultural workers and pesticide handlers under the Worker Protection Standard requirements. The course was developed in collaboration with Ricardo Davalos, Florida WPS coordinator from FDACS.

Cost is \$35

The course is available in the IFAS Catalog at the following link: Certificate version: <https://ifas-farmlabor.catalog.instructure.com/courses/wps-ttt>

**EPA-approved Fumigant training program** for certified applicators using methyl bromide, chloropicrin, chloropicrin and 1,3-dichloropropene, dazomet and metam sodium and potassium. Applicators must retrain every 3 years. - <http://www.fumiganttraining.com/>

### **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>

**Visit UF/IFAS Palm Beach County Extension** <http://sfyl.ifas.ufl.edu/palm-beach/>

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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.

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