



SOUTH FLORIDA VEGETABLE PEST AND DISEASE HOTLINE

February 12, 2018

After a cool January, it seems as if winter is over and February has been relatively warm with daytime highs mostly in the low to mid 80's and nighttime lows in the 60's. In fact, Naples set another new record high on Sunday, making it the third day in a row and the fourth day in the past week. Miami and West Palm Beach also set new warm low records.

Most areas reported less than an inch of rain for the period with some exceptions. Balm reported nearly 3 inches for the period and Sebring a whopping 4.10 inches of rain over the past few weeks.

FAWN Weather Summary

Date	Air Temp °F		Rainfall (Inches)	Ave Relative Humidity (Percent)	ET (Inches/Day) (Average)
	Min	Max			
Balm					
1/26 – 2/12/18	40.06	86.59	2.99	78	0.08
Belle Glade					
1/26 – 2/12/18	45.81	86.29	0.47	83	0.09
Clewiston					
1/26 – 2/12/18	47.21	86.40	0.60	83	0.09
Ft Lauderdale					
1/26 – 2/12/18	51.53	82.80	0.24	78	0.09
Homestead					
1/26 – 2/12/18	49.28	84.78	0.80	82	0.09
Immokalee					
1/26 – 2/12/18	42.88	87.69	0.64	82	0.09
Okeechobee					
1/26 – 2/12/18	44.15	87.10	0.83	81	0.09
Wellington					
1/26 – 2/12/18	49.05	87.37	0.05	80	0.09

When in doubt, scout!

Warmer weather has helped things bounce back from the cold and wind experienced in January.

Growers are busy terminating fall crops and planting spring crops including watermelons and an increasing volume of a wide range of produce including beets, broccoli, cabbage, cauliflower, collards, eggplant, escarole, green beans, herbs, kale, lettuce, peppers, potatoes, squash, sweet corn tomatoes and specialty items are coming to market.

The National Weather Service forecast indicates that a strong mid-level ridge will rebuild across the peninsula resulting in a very dry and subsident airmass, with prevailing east-southeast low level flow.

Occasional Atlantic/east coast showers are possible but the overall forecast remains dry.

High temperatures will remain above normal in the low-mid 80s. Overnight lows will remain mild for the first half of the week, in the mid-60s to around 70 along the east coast. Nighttime temperatures should trend a little cooler, in the low to mid 60s by mid-week as the easterly flow weakens.

For additional information, visit the National Weather Service in Miami website at

<http://www.srh.noaa.gov/mfl/newpage/index.html>

Insects

Warmer weather has seen insect levels beginning to increase over the past several days.

Whiteflies

Around SW Florida, whitefly populations remain low but scouts report they are higher than what they have been seeing in previous months.

Growers and scouts on the East Coast indicate that whiteflies remain low in most locations.

Reports indicate that whiteflies are building up around Homestead.

Respondents indicate that whitefly activity remain very low around Hillsborough County but speculate that will change with warmer weather and increased pace of planting spring crops.

Dr Phil Stansly, Entomologist at the UF/IFAS SWFREC cautions growers that this is high risk time for whiteflies as we transition to the spring crop. Effective early destruction of old crops accompanied by a broad spectrum insecticide (pyrethroid-OP combination is best) and adequate protection of young crops with systemic soil applied chemistry at planting are recommended practices to avoid an early train wreck.

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

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

Table 1; Systemic insecticides applied to soil for whitefly control

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

Efficacy Ratings for Insecticides and Miticides on Tomato

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		
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.

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>

Leafminer

Respondents on the East Coast indicate they are seeing low levels of leafminer activity in eggplant and leafy greens.

Around SW Florida, growers and scouts report that leafminers remain patchy but they have been persistent and just won't stop in some locations.

Leafminer is widely present in Homestead on a variety of crops.

Cyromazine (Trigard) alternated with abamectin (Agrimek) are effective against leafminer in tomato. Both of these products have limited crop registrations and must not be used on unregistered crops. Spintor (Spinosad) and Radiant (Spintoram) have also given good results and are labeled on a wide range of crops. Some other materials that may be used to conserve beneficials include azadirachtin (Neemix) and insecticidal oils. Both products are approved for use by organic growers as is Conserve (spinosad).

Newer chemistries which have added to the grower's arsenal of control include Coragen (rynaxpyr), Exirel and Verimark (cyazypyr) which have given good results and have greatly reduced leaf miner pressure on many farms.

Consult UF/IFAS recommendations for currently labeled insecticides for leafminer control in Florida.

Field sanitation is another important control tactic. Weeds and abandoned crops can serve as reservoirs for this pest. After harvest crops should be destroyed as soon as possible to avoid having them serve as reservoir for new infestations.

Aphids

Respondents on the East Coast indicate that aphid numbers are increasing and winged aphids can be found in most pepper fields.

Cabbage aphids are showing up in some crucifers around South Florida.

Around SW Florida, quite a few winged aphids are blowing around but little colony formation has been noted to date.

Aphids are widely present in susceptible crops in the Homestead area.

Worms

Around Immokalee, growers and scouts report a significant increase in worm pressure and note they are finding mostly southern armyworms but a few loopers and beet armyworms as well.

Producers on the East Coast are reporting mostly low worm pressure.

Diamondback moth do not seem to have been bothered by last month's cold weather and have been active in many locations on brassicas such as cabbage, cauliflower, collards, kale, arugula, and broccoli.

Melonworms remain active on cucurbits around Homestead.

Low numbers of fall armyworms are present in sweet corn in the Glades.

Lesser corn stalk borers number remain low around Belle Glade but are increasing around Clewiston.

Pepper Weevil

On the East Coast, weevil numbers remain very low in the Palm Beach area. Growers and scouts in St Lucie county are reporting a bit more weevil activity there.

Around SE Florida, weevil numbers are increasing slowly in most places with some fields reporting no detects to date.

Since adults will migrate readily from old fields to new plantings, populations generally build up during the season so that populations are greatest in later spring plantings.

Commercially available pheromone traps may aid in early detection. Fruit and flower buds should be examined for damage and fallen fruit and buds examined for presence of larvae.

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. Dow has announced the return of Vydate to the market which has been the standard control and has given pretty good results when sprayed weekly.

Other products that have performed well in trials include Capture (bifenthrin), Kryocide (cryolite) and Actara (thiomethoxam). Unfortunately, applications are limited to two per season and growers are still trying to work out the timing of applications to achieve the best results.

Many of the currently labeled materials are difficult to work into an IPM program once plantings begin to be harvested due to the 7-day PHI in force for all of them. This is particularly true for hot peppers which are often harvested multiple times during the course of a week. Consult UF/IFAS recommendations for currently labeled insecticides for pepper weevil control in Florida vegetables.

In addition to chemical controls, a complete IPM approach is recommended for pepper weevil management. Adjacent or nearby sequential plantings should be avoided. Sanitation is important. Crops should be deep plowed immediately following harvest and after treating with insecticide to reduce adult movement into nearby fields and to reduce survival over the summer. A crop free period is essential in helpful in reducing populations between crops. Crop destruction is probably the best option for older plantings where weevils become unmanageable.

Spider mites

Growers in Palm Beach County report seeing some spidermite activity in eggplant.

Growers and scouts report patchy low levels of spidermite activity around SW Florida.

Two-spotted spider mites are building up in strawberries in Plant city area especially in chemical control fields, where growers are using predator mites, crops remain mostly clean.

Broad Mite

Mostly low numbers of broad mites remain present in all areas of South Florida.

Thrips

Melon thrips are fairly common on susceptible crops around Homestead.

On the East Coast, respondents indicate that thrips slowly increasing and have reached relatively high numbers in some areas where there are multiple pepper plantings around. Reports indicate that thrips are also building in some eggplant and starting in some tomato in scattered locations.

Diseases

Late Blight

Late blight has been found around SW Florida and is now present on both tomato and potato. It was initially found in organic tomato but was detected a few days later in both conventional tomato and potato fields.

Sample from the organic field was genotype US-23. US-23 has been predominant for several years in SW Florida and has been characterized as sensitive to mefenoxam.

Growers would be well advised to scout susceptible crops carefully and evaluate their fungicide programs.

Late blight is caused by the fungus-like 'oomycete' *Phytophthora infestans*, which is a pathogen of potato and tomato. This disease can spread quickly and devastate a tomato or potato field within a few weeks if not properly controlled.

The disease thrives under cool and wet conditions. Temperatures between 50 and 80 F combined with moist conditions such as rain, fog, heavy dews, or relative humidity above 90 percent are conducive for disease development. Night temperatures in the mid-fifties with daytime temperatures from the mid-fifties to mid-seventies are ideal for this disease.

Since the disease can spread so rapidly, growers should scout their fields thoroughly each day, especially when cool and wet conditions conducive to disease development prevails.

Late blight symptoms on leaves appear as irregularly shaped brown to purplish lesions with indefinite border lesions that can span veins. The lesions may be seen any time of day, on any stage of plant growth and on leaves of any age. Velvety, white fungal growth may appear on the lower surface of affected leaflets early in the morning before leaves dry and/or in the lower canopy.

On stems, purplish lesions may be found any where on the stem. Cottony, white growth of fungus on stems with lesions can often be seen early in the morning and/or in the lower canopy. Stems with lesions are brittle

and break easily. Lesions are confined to epidermis and cortex. Leaf rolling and wilting is often associated with stem lesions and purpling of leaflets may occur in some varieties.

Begin a spray program with fungicides if late blight is in your area or weather conditions are suitable for late blight development. After harvest, kill infected foliage to minimize tuber infection.

Tomato growers should purchase disease-free transplants. Observe your fields thoroughly each day, especially when cool and wet weather prevails.

Currently, fungicides are the most effective means of controlling late blight and will remain the primary tool until cultivars with resistance to this disease become available. Fungicides slow the rate at which the disease develops in the field by creating a protective barrier on the foliage.

Just applying a chemical, however, does not necessarily equate with effective disease control. Relative effectiveness of a product, coverage, and timing must be factored into the equation for maximum benefit.

Numerous fungicide products are registered for late blight control. Protectants, as the name implies, protect foliage from infection by spores. Protectant chemicals must be well distributed over the leaf surface and must be applied before spores land on leaves. They are ineffective against established infections.

PROTECTIVE applications of chlorothalonil are your first line of defense for managing late blight... Timing is critical - applications must be made when conditions are conducive for disease development and before infection occurs!!!

Systemic products become distributed locally within plant tissues and protect foliage from infection by spores. They may kill some established infections and may suppress production of new spores. Even a short break in spray schedules, despite what is said regarding some of the newer fungicides, can result in a dramatic increase in blight under the proper conditions.

See table of labeled fungicides below.

Consult current UF/IFAS recommendations for all labeled fungicides for the control of late blight in Florida. Go to for the most recent update: <http://edis.ifas.ufl.edu/pdf/cv/cv13700.pdf>.

In Florida, it has been observed that seldom does a widespread late blight epidemic occur on tomatoes in the Manatee-Ruskin area unless the disease was present in the Immokalee area and/or Dade County. Since late blight has been confirmed on tomato in Immokalee growers in other areas are advised to adhere to a preventative spray program.

See USAblight for more info and photos - <http://usablight.org/lateblight>

Fungicides for Late Blight		
Product Name	Brand	FRAC Number
chlorothalonil	many brands	M5
maneb/mancozeb	many brands	M3
cyazofamid	Ranman	21
cymoxanil	Curzate	27
strobilurins	Quadris, Cabrio, Flint	11

fluopicolide	Presidio	43
famoxadone + cymoxanil	Tanos	11 + 27
mandipropamid	Revus (fruiting vegetables)	40
Mandipropamid + difenoconazole	Revus Top (potatoes & tomatoes)	40 + 3
Dimethomorph	Acrobat, Forum	40
mefenoxam**	Ridomil – Note Ridomil (mefenoxam alone) does not have a label claim for late blight control as either a soil or foliar applied product – these claims are only on the premix products – see below	4
Mefenoxam + Chlorothalonil	Ridomil Gold Bravo (potatoes & tomatoes)	4 & M5
Mefenoxam + Mancozeb	Ridomil Gold MZ (potatoes & tomatoes)	4 & M3
propamocarb	Previcur Flex	28
zoaxamide + mancozeb	Gavel	22 + M3
ametocradin + dimethomorph	Zampro	40 + 45
Oxathiapiprolin + Chlorothalonil	Orondis Opti (potatoes & tomatoes)	U15 & M5
Oxathiapriprolin + Mandipropamid	Orondis Ultra (potatoes & tomatoes)	U15 & 40
Consult current UF/IFAS recommendations for labeled fungicides for the control of late blight.		
** resistance documented in many races		

Lettuce downy mildew

Lettuce downy mildew, caused by *Bremia lactucae*, remains active in the Glades.

Growers are advised to be on a consistent preventative program using mancozeb and a phosphite.

Now that the disease is present, growers should also consider working in some of the more specific fungicides with translaminar or systemic activity such as Revus, Zampro, Orondis, Ranman, Reason, Forum, Presidio, Previcur flex, Aliette, etc. Growers should check with their suppliers and read the label carefully before using for plant back, use patterns, and rates.

Downy mildew of Crucifers

Downy mildew has been extremely active in cabbage and broccoli in a number of locations around South Florida starting at the 2 to 3 true leaf stage.

Downy Mildew of cruciferous crops is caused by the fungus *Peronospora parasitica*. All crucifers are susceptible.

Leaf symptoms usually appear on the underside of the leaf as black or dark specks on young leaves. These spots are often irregular in shape and may appear net-like. The upper side of the leaf will also develop dark spots similar in shape and may be accompanied by leaf yellowing.

On older leaves, these spots will often coalesce resulting in larger areas of the leaf blade having large, sunken, paper tan-colored spots. Leaf yellowing may accompany these symptoms. Early infection on young plants can cause stunting.

On the underside of the leaf spots, a white-grey, downy growth can often be observed with or without the aid of a hand lens, especially when leaves are wet. On mature cabbage, downy mildew can appear as dark sunken spots on the head or wrapper leaves.

Cauliflower curds and broccoli heads can become infected with blackened areas on the outside of the tissue. The infection can become systemic and turn inner curd and stem tissue dark.

Cool, wet conditions are conducive for the development of downy mildew. Moisture is required for disease development. If temperatures are suitable, the disease will be more severe under conditions of high rainfall or heavy dews and fog.

Downy mildew is controlled primarily by fungicides at the present time. Protectant fungicides should be applied at least weekly beginning when night time temperatures are conducive for sporulation and disease development and when rains, dews or irrigations are frequent or heavy.

Some of the newer fungicides are highly effective in controlling the disease but will typically have a limited number of applications and should be rotated between FRAC classes to reduce the possibility of the development of resistance and to help lengthen the effective lifespan of these fungicides. Consult UF/IFAS recommendations for currently labeled fungicides for downy mildew control in Florida.

Since favorable weather for disease development may occur at seeding or transplanting time growers should be prepared to spray at an early stage of crop development. Growers should strive to purchase disease-free transplants. Excess transplants should not be dumped in cull piles where they might continue to grow and serve as sources of inoculum.

Sclerotinia

Respondents on the East Coast report a significant increase in Sclerotinia activity in eggplant and pepper with the recent cold drizzly weather but still at fairly low levels overall.

Growers and scouts around Immokalee are also reporting low levels of sclerotinia in tomato, pepper and eggplant.

The fungus, *Sclerotinia sclerotiorum*, is responsible for a number of vegetable diseases attacking a wide range of crops.

In tomato, potato and pepper, infection typically starts at flowering. Water-soaked spots are usually the first symptom, which is followed by invasion of the stem, girdling, and death of the upper part of the stem that turns a light gray. The disease can also begin where the plant contacts the soil or infected plant debris. Large portions of the field may become diseased, producing large, circular, areas of dead plants. The black sclerotia formed by the fungus are often found inside infected stems.

A good indicator of Sclerotinia disease is the presence of small, black sclerotia (resting structures) of the fungus. Sclerotia can form on the surface of plant parts as well as inside the stems of pepper and tomato. The sclerotia enable the fungus to survive from season to season and are the source of inoculum to infect crops.

Another common indicator of Sclerotinia diseases is the presence of white, cottony-like mycelium of the fungus when weather conditions are cool and moist.

Under cool moist conditions, the fungus is capable of invading a host plant, colonizing nearly all of the plant's tissues with mycelium. Optimal temperatures for growth range from 15 to 21 degrees Celsius. Under wet conditions, *S. sclerotiorum* will produce an abundance of mycelium and sclerotia. The fungus can survive in the soil mainly on the previous year's plant debris.

High humidity and dewy conditions supports the spread and increases the severity of infections.

The fungus produces a survival structure called a sclerotium either on or inside the tissues of a host plant. When conditions are favorable, the dormant sclerotia will germinate to produce fruiting bodies. These produce ascospores, which then germinate on the host and begin to invade the host's tissues via mycelium, causing infection. *S. sclerotiorum* is capable of invading nearly all tissue types including stems, foliage, flowers, fruits, and roots. Once a plant is infected white mycelium will grow on the surface of the infected tissues. At the end of the season, sclerotia are produced. The sclerotia will then remain on the surface of the ground or in the soil, on either living or dead plant parts until the next season.

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

Botrytis

Growers and scouts on the East Coast report finding Botrytis in pepper in a couple locations and note that incidence has reached moderate to high levels in one location.

Botrytis is also causing problems in strawberries around Plant City.

Botrytis or gray mold can cause a variety of problems including damping-off and blights of flowers, fruits, stems, and foliage. Entry often occurs through damaged tissue. Stems can become infected through leaf scars, dead leaves, or other form of stem damage. Stem lesions appear as large elliptical, water-soaked lesions. These may partially girdle the stem, but sometimes the entire stem is affected and the plant is killed.

Leaf lesions develop into wedge-shaped grayish-brown lesions. During cool moist weather, a gray fungal growth may be evident on infected tissue.

Fruit are often infected at the stem end or shoulder where they contact other infected plant parts. Young fruit can also become infected directly by airborne. Water-soaked spots appear with a light brown to tan central region. Decay progresses rapidly. A soft rot may develop with the fruit skin remaining intact, while the inner tissue becomes mushy and watery. Sclerotia may form in infected tissues.

If there is a rapid weather change (not favorable to the fungus), fruit infections may abort. White circular (halo) spots appear on the fruit and are called "ghost spots." These spots persist on green, and mature fruit.

Tar Spot

Dr Shouan Zhang, pathologist at UF/IFAS TREC reports that tar spot caused by the fungus *Phyllachora maydis*, was detected last week in a sweet corn sample in Homestead.

Tar spot was first detected in Florida in June 2016, when Dr Richard Raid UF/IFAS TREC collected a sample with tar spot symptoms similar to those caused by *Phyllachora maydis*. from a South Florida corn field. The researcher's initial diagnosis was confirmed by the USDA Systematic Mycology and Microbiology Laboratory in Beltsville, Maryland. Prior to this, *P. maydis* was reported and confirmed in both Indiana and Illinois in September 2015.

Corn is the only known host of *P. maydis*.

Symptoms of tar spot include smooth and shiny oval to circular lesions, made of fungal tissue (stroma), surrounded by chlorotic borders. Infections of *P. maydis* first appear on the lower leaves, usually 10-18 days before silking.

***P. maydis* alone causes moderate symptoms on leaves, however a more severe form of tar spot complex occurs when there is a joint infection of *P. maydis* and *Monographella maydis*.** To date, *M. maydis* has not been reported in the United States.

Natural dispersal is by windborne ascospores which can move relatively long distances. Tar spot is not known to be seedborne, however it could be transported on fresh or dry maize leaves or husks, or products made from them.

Conditions conducive to disease development are high relative humidity, leaf wetness of at least seven hours at night, low light intensity, high levels of nitrogen fertilizer and two continuous crops of corn per year.

In Mexico, disease is most severe in the cooler months from November to April and rainfall does not appear to be a significant factor in disease progress and severity.

Lower leaves should be examined for small, raised, glossy, dark, circular, or oval to irregular, spots, or for brown lesions, often with a dark border, having a dark ascomata at the centers.

Where corn is grown continuously in the vicinity, efforts at sanitation are not likely to be effective.

There are currently no fungicides registered in the United States to prevent or manage tar spot.

Northern Corn Leaf Blight

Northern Corn Leaf Blight is present in the Glades and will probably remain so throughout the next several months. Northern corn leaf blight caused by the fungus *Exserohilum turcicum* is one of the most important sweet corn disease in southern Florida causing significant losses some years.

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.

Spores are spread by rain and wind and may be carried long distances by the wind. Lesions can produce spores in as little as one week, allowing NCLB to spread much faster than many other corn leaf diseases.

Disease development is favored by heavy dews, frequent showers, high humidity and moderate temperatures

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.

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.

Alternaria Leaf and Pod Spot

Alternaria leaf and pod spot is being reported on beans from several locations.

The most serious symptoms of this disease occur on bean pods, since damage to the marketable portion of the plant can render the produce unfit for sale. Lesions on pods usually appear as very small, dark-brown to black flecks. When examined with a hand lens, these flecks are somewhat raised and cone-like. Large numbers of unsightly flecks, however, can result in rejection of the entire lot, especially at lower market prices.

Leaf symptoms first appear as small, water-soaked flecks that rapidly develop into circular to irregular spots with pale-brown centers and reddish-brown borders.

Faint, concentric rings may occasionally be visible in older lesions. As the disease progresses, leaf lesions may merge together leading to large, blighted areas and premature leaf drop.

Ideal conditions for the development of Alternaria leaf spot include high relative humidity, rainfall, and cool temperatures. Outbreaks of the disease can be expected from January through March in Homestead, Belle Glade and Devil's Garden growing areas of southern Florida.

For scouts and others with access to a microscope, the multi-celled, pigmented spores that have both transverse and longitudinal septa (cell walls) and a short "tail" or "beak" are diagnostic of the disease.

Management of Alternaria leaf and pod spot consists of maintaining adequate crop nutrition and avoidance of close between-row and within-row plant spacing. Fungicides also play a major role in the integrated management of this disease.

It is particularly important that effective fungicides be applied when pods are small (pin pod stage) in order to avoid infections that will be evident later as pods mature.

Strobilurin fungicides have given good results but should be applied according to the label and rotated with materials with other modes of action to avoid potentials problems with resistance.

Target spot

Target spot remains active in tomato around South Florida.

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.

Bacterial spot

On the East Coast bacterial spot is increasing in some hot pepper and is present in varying amounts in tomato.

Around Southwest Florida, bacterial spot continues to move in tomato and susceptible pepper varieties.

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

It is important to apply sprays before and during wet weather. Spraying wet plants can actually assist in the spread of bacterial spot. If conditions are favorable, frequent spraying may not be sufficient to maintain bacterial spot below damaging levels.

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

Pythium

Growers and scouts report that Pythium continues to work on watermelon planted in cold wet soils.

Growers may consider applying a fungicide to help limit damage of damping off caused by Pythium spp.

Currently labeled fungicides for Pythium can be found in the Vegetable Production Handbook for Florida. As always, it is recommended that a disease diagnostic clinic assist with determining the pathogen associated with the problem in order to make an effective fungicide management recommendation.

Tomato Yellow Leaf Curl Virus

Mostly low levels of TYLCV are also being reported around SW Florida and is increasing in some fields.

Cucurbit Leaf Crumple Virus

Crumple leaf virus has been reported on squash in the Homestead area.

Tomato Chorotic spot virus.

There have been a few isolated reports of tomato and pepper plants showing TCSV symptoms in Palm Beach and Miami Dade County.

Dr Shoan Zhang, plant pathologist at TREC advises that TCSV was detected in green bean plants in a greenhouse in August-September 2017 where tomato plants were grown and infected with TCSV.

He notes that this poses a potential threat because of the large acreage of beans in South Florida.

Black rot

Respondents in Palm Beach County report find mostly low levels of black rot on cabbage and other crucifers.

Black rot is also widely present in varying levels in crucifers are SW Florida.

Black rot is caused by the bacterium, *Xanthomonas campestris* pv. *campestris*. Cabbage, broccoli, cauliflower, kale, collards, radish, and other members of the cabbage family are susceptible.

In the field, the disease is easily recognized by the presence of large yellow "V"-shaped areas extending inward from the margin of a leaf, and by black veins in the infected area. Usually only a few of the outer leaves are involved.

Diseased areas enlarge and progress toward the base of the leaf, turn yellow to brown, and dry out. The veins of infected leaves, stems, and roots turn black as the pathogen multiplies. On cauliflower, black rot commonly appears on the leaves as numerous, minute brown specks. The infected lower leaves of cabbage and cauliflower are usually stunted, turn yellow to brown, wilt, and drop prematurely. Occasionally, diseased plants have a long bare stalk topped with a small tuft of leaves. In extreme cases, heading may be prevented.

Although the distribution of diseased plants in the field may be uniform, symptoms are often more severe in wet or shaded areas. If infected seedlings were set in the field, scattered pockets of diseased plants often appear. Diseased plants may appear in rows as a result of spread during cultural operations.

Black rot can be controlled by utilizing an integrated control program. The control of this disease is based the use of clean seed, and sanitation. Spraying with copper fungicides may help limit spread.

Powdery mildew

Low levels are powdery mildew are starting to show up on cucurbits in all areas of south Florida.

Downy Mildew

Growers and scouts are also beginning to find low levels of downy mildew on cucurbits around south Florida.

News You Can Use

What Consumers Should Know - 2016 Pesticide Data Program Report

These Pesticide Data Program (PDP) results show that overall pesticide residues found on foods tested are at levels below the tolerances established by the U.S. Environmental Protection Agency (EPA). According to the USDA, the PDP results shows that the U.S. food supply is one of the safest in the world.

- The PDP data show, overall, that pesticide residues on foods tested are at levels below the tolerances established by the U.S. Environmental Protection Agency (EPA) and pose no safety concern.
- Each year, USDA and EPA work together to identify foods to be tested for pesticide residues on a rotating basis. In 2015, surveys were conducted on a variety of foods, including fresh and processed fruit and vegetables and peanut butter.
- PDP data reflect actual residues present in food grown in various regions of the United States and overseas.
- PDP data are essential in supporting efforts by the USDA and EPA to assess the American consumer's dietary exposure to pesticide residues.
- EPA makes a safety evaluation for pesticides considering all possible routes of exposure through food, water, and home environments when setting the maximum residue (tolerance) level of pesticide that can remain in or on foods.
- Before a pesticide is available for use in the United States, the EPA must determine that it will not pose unreasonable risks to human health or the environment.
- The PDP testing methods detect the lowest possible levels of pesticide residues, including levels below the EPA established tolerances.
- PDP informs the U.S. Food and Drug Administration (FDA) if residues detected exceed the EPA established tolerance or have no EPA tolerance established. The PDP residue results are reported to FDA and EPA through monthly reports. In instances where a PDP finding is extraordinary and may pose a safety risk, FDA and EPA are notified immediately.
- EPA is required to periodically re-evaluate pesticide registrations and tolerances to ensure that the scientific data remain up to date. The PDP provides data for the periodic re-evaluation of food tolerances.

See full report at <https://www.ams.usda.gov/sites/default/files/media/2016PDPAnnualSummary.pdf.pdf>

WPS - respiratory medical certification and fit testing.

This is required for handlers designated to wear respirators the fumigant regulations that took affect with the release of new fumigant labels by the EPA in late Dec 2010 as well as by the 2015 Revised Worker Protection Standard for any one required to wear a respirator on the pesticide label

If the certified applicator (fumigator) intends to cease operations and exit the field at the moment the respirator-triggering sensory irritation is experienced, then no fit testing, medical qualification, and OSHA-approved training is necessary for workers who will not perform tasks requiring respirators.

Note: individuals assigned to take air samples will have to use respiratory protection even in this case.

Applicators and other handlers working with chemical whose label call for a respirator must also be medically certified and fit tested.

Employers must document:

- Date of medical qualification for respirator(s) that each handler is designated to wear,
- Date of training for respirator(s) that each handler is designated to wear, and
- Date of fit-testing for respirator(s) that each handler is designated to wear."

According to the regulations, the employer is responsible for ensuring that the employees are medically certified and fit tested as according to the OSHA regulations. The regulations do not state that there is any required training that an employer is required to have prior to conducting the fit testing.

Fit testing is done in a manner as to comply with OSHA regulations.

The OSHA regulations are listed below. It will require the purchase of fit testing equipment, see the OSHA regulations for the types of equipment you need.

General respirator and PPE information:

<http://edis.ifas.ufl.edu/pdf/PI/PI11400.pdf>

<http://edis.ifas.ufl.edu/pi156>

OSHA Medical Questionnaire (must be viewed by a medical professional, can also use the online services, some are listed below)

<http://1.usa.gov/pWi11O>

OSHA Mandatory fit testing procedures

<http://1.usa.gov/2sQOpG>

OSHA daily Mandatory fit test (does not require chemicals and does not replace the qualitative fit test). This should be done on a daily basis by anyone wearing a respirator.

<http://1.usa.gov/pnXJTg>

Michigan State University Fit Testing - <http://bit.ly/Mqe5hK>

Online medical certification questionnaires:

<http://www.respexam.com/>

<https://www.respiratorcertification.com/public/>

<http://www.mchaney.com/RespiratorMedicalEvaluation.aspx>

http://www.bestfittest.com/medical_clearance

<http://www.sperian.com/americas/oshamedcert/>

There are many more sites like these, a quick search online will give you more options.

3M fit testing kit and instructions

<http://bit.ly/pcdGbt>

3M fit testing video – English (there is also a Spanish version)

<http://bit.ly/pcdGbt>

3M website on establishing a respirator protection program (contains the two links above)

<http://bit.ly/pcdGbt>

Any information on the 3M website is their property and is not guaranteed to comply with OSHA regulations.

The University of Florida does not endorse the use of the 3M program but I feel that it may provide the grower a good starting point in the development of their respirator protection program.

Kocide® 3000-O Copper Fungicide/Bactericide Approved for Use in Organic Agriculture

COLUMBIA, Maryland, FEBRUARY 7, 2018 — Kocide® 3000-O copper fungicide/bactericide receives approval by the U.S. EPA for use in the organic production of vegetables, small fruits, tree crops and vines. Available from Certis USA, Kocide 3000-O is NOP Approved and OMRI® Listed.

Jim Black, Certis USA Director of Business Development, said, “Our growers need the flexibility of producing their crops organically. We’re pleased to provide organic producers access to the copper fungicide they’ve relied upon for their commercially grown crops. Kocide 3000-O is an excellent addition to the Certis USA product line of more than 25 organically approved biopesticides.”

Kocide 3000-O is a technologically advanced copper fungicide that is formulated to deliver a maximum concentration of biologically active copper ions while providing outstanding plant safety. The advanced formulation allows for lower use rates than competitive copper fungicides and provides effective control of a broad range of bacterial and fungicidal diseases, including walnut blight, bacterial spec and spot, citrus canker, mildew, fireblight and bacterial blast.

Michael Harowitz, Kocide Business Manager at Certis USA, said, “Kocide copper fungicides have provided growers with reliable, proven performance for more than 50 years. We are excited to be offering Kocide 3000-O for organic as well as conventional production. Kocide 3000-O has the same label as Kocide 3000 and offers the same excellent disease control. Kocide 3000-O will be available in the market place in mid-February 2018.”

Headquartered in Columbia, Maryland, Certis USA is a leading manufacturer and distributor of a broad line of biopesticide products for specialty agricultural and horticultural markets and the home and garden market. Certis USA products provide valuable solutions by meeting the challenges faced by today’s growers who are seeking sustainable alternatives, resistant pest management and harvest solutions, and low pesticide residues for market flexibility and export accessibility. For more information about Certis USA or its products, please visit www.certisusa.com.

Management Tips for Florida Vegetable Growers from Dr. Phil Stansly, Entomologist at UF/IFAS SWFREC

Many of you noticed low populations of perennial pests on our late planted crops post Irma. They are coming back! It’s time to start thinking about them again if you haven’t already.

1. Whiteflies: Soil applied systemic insecticides still give the longest lasting control. Still, it is more important than ever to rotate modes of action. If you started out with a 4A neonicotinoid, available rotation options are Sivanto (4D) or Verimark (28). Both have their advantages (efficacy) and disadvantages (long PHI

and high cost respectively). Check the label on the first point. Of course, you will also rotate modes of action with your sprays. Once into the season, the main battle will probably be against the nymphs, so be sure to fully utilize products such as Movento and Knack that are especially good against those life stages.

2. Pepper weevil. Populations typically go way down in the summer and start slow in the fall. Don't be lulled into complacency; if you generally see them in the spring they are probably already in your crop. Use pheromone traps along field borders to provide the first heads up, and start spraying at the first sign. Don't hold crops any longer than you have to and turn them under as quickly as possible. Control nightshade both in and around your crop. Help may be coming in the form of a new attract and kill product that we hope to start testing this season. Meanwhile, don't slack up on all your chemical and cultural control options including reflective mulch for the spring crop when pressure is always worse.

3. Diamondback moth. If you grow any type of brassica crop, this is for you. DBM is the champion among all insect pests in its ability to develop insecticide resistance. The good news is that it will lose resistance quickly to most any insecticide except pyrethroids if not exposed for a good while. The best strategy is to rotate modes of action on a monthly basis. In this system, any insecticide with the same IRAC number can be used during a given month and then not again until a year has elapsed. This program has worked well in Hawaii and can work in Florida. Also, try and separate successive brassica crops as much as possible to reduce movement of moths from crop to crop. Feel free to consult with us and let us know of any apparent control failures. And remember, for all these pest footprints in your crop are key to success.

Up Coming Meetings

February 21 and/or 23, 2018 **WPS Train-The-Trainer Workshop** **9:00 – 2:00 PM.**

UF/IFAS Hendry County Extension Office
1085 Pratt Boulevard
LaBelle, Florida 33935

Cost is \$20.

To register – email dcabrera@ufl.edu or 863-674-4092

February 21, 2018 **WPS Train the Trainer** **8:30 AM - 3:30 PM**

Everglades Research and Education Center
Conference Center
3200 E. Palm Beach Road
(3200 E. Canal Street)
Belle Glade, FL

Cost = \$25. To register: call 561.233.1725 or email at EEScott@pbcgov.org

February 22, 2018 **Lettuce Advisory Committee Meeting**

Everglades Research & Education Center
3200 E Palm Beach Rd.
Belle Glade, FL 33430

Lunch is being sponsored by AgroLiquid & begins at 12:00PM

Special guest, University of California, Extension Plant Pathology Farm Advisor, Steve Koike will address Fusarium Wilt

February 28, 2018

New Technology for Horticulture Production (Webinar)

9:00AM – 4:00PM

Clayton Hutcheson Exhibit Halls

559 N Military Trail

WPB, FL 33415

Contact Chris Miller for additional details cfmiller@ufl.edu

November 4–6, 2018

The 24th International Pepper Conference

Sanibel Harbour Marriott

Fort Myers, Florida, USA

Learn more at <http://conference.ifas.ufl.edu/pepper2018/>

Websites

NRCS assistance can help producers integrate high tunnels into their operations and provide financial assistance through the Environmental Quality Incentives Program (EQIP). Learn more at

<https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/organic/?cid=nrcseprd1364702>

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.

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.

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

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

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

CEU Series: Mix and Load Pesticides Safely

CEU Series: Protect Crops and the Environment

CEU Series: Make Sure to Stow Your Pesticides Before You Go

CEU Series: Avoid Mishaps When Handling Pesticides

CEU Series: Be Aware of Bees When Applying Pesticides

CEU Series: Place Priority on Preventing Pesticide Poisoning

CEU Series: Learning About Pesticide Resistance Is Anything but Futile

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

Check out Southwest Florida Vegetable Grower on Facebook

<https://www.facebook.com/pages/South-Florida-Vegetable-Grower/149291468443385> or follow me on
Twitter @SWFLVegMan - <https://twitter.com/SWFLVegMan>

All best for a Happy Valentine's Day

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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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