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SOUTH FLORIDA VEGETABLE PEST AND DISEASE HOTLINE

January 20, 2017

With the exception of a few cool days/night which accompanied the passage of cold front in early January, weather conditions have been unseasonably warm with temperatures in the low-mid 80's and nights mainly in the 50's and 60's. Immokalee saw several days in the low 90's just before Christmas.

Dry conditions continue over most of South Florida with many interior and west coast areas reporting less than an inch of rain since mid-October. East coast locations have seen slight higher rainfall totals primarily due to occasional showers blowing in off the Atlantic. Heavy dews and morning fog over the past few weeks have helped keep some diseases active.

FAWN Weather Summary

Date	Air Temp °F		Rainfall	Ave Relative Humidity	ET (Inches/Day)
	Min	Max	(Inches)	(Percent)	(Average)
Balm					
12/13/16 - 1/20/17	32.08	86.92	0.32	81	0.06
Belle Glade					
12/13/16 - 1/20/17	44.24	87.82	0.17	86	0.06
Clewiston					
12/13/16 - 1/20/17	41.99	87.39	0.07	83	0.07
Ft Lauderdale					
12/13/16 - 1/20/17	46.49	85.84	1.70	79	0.07
Homestead					
12/13/16 - 1/20/17	45.79	86.02	0.68	83	0.07
Immokalee					
12/13/16 - 1/20/17	38.17	91.44	0.65	83	0.07
Okeechobee					
12/13/16 - 1/20/17	37.73	89.85	0.07	85	0.06

When in Doubt – Scout!

Pest and disease pressure has been relatively light this season. This plus a favorable growing season has led to bumper crops resulting in growers suffering extremely low prices for a variety of items of an extended period. A number of fields have been abandoned as growers could not afford to harvest them. Unseasonably warm conditions have caused lettuce and other crops to bolt prematurely. A variety of crops are coming to market including collards, cucumber, eggplant, escarole, green beans, herbs, kale, lettuce, mustard, peppers, radishes, squash, sweet corn, and a variety of specialty items.

The National Weather Service forecast advises that after a stretch of quiet weather, the pattern will become more active this weekend and beginning of next week. On Sunday, vigorous upper-level energy will eject out of the lower Rockies and into the Gulf states to help form a potent, and deep closed off upper-level trough.

Ahead of this upper-level trough, a strong cold front will push across South Florida, sometime Sunday night into early Monday morning. This front will be the strongest of the season thus far, likely bringing a period of gusty widespread showers and thunderstorms. Strong thunderstorms cannot be ruled out with the frontal passage, with the threat of severe storms possible. In addition to any gusty winds associated with the showers/storms, the gradient will be quite strong, with winds approaching advisory levels over the mainland.

Behind the frontal passage, high pressure will build across the region bringing a return to pleasant and dry weather. Temperatures will be near to slightly below normal, with highs in the mid and upper 70s and lows in the mid-50s to mid-60s.

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

Insects

Whiteflies

Around Southwest Florida, **whitefly pressure is high to very high in many places and extreme in some locations.** High whitefly numbers have been reported in some eggplant as well as silverleaf in some zucchini.

Reports from in Miami Dade County indicate that whitefly pressure is high in all crops. TYLCV is common in many tomato fields. Cucurbit crops at various locations around Miami-Dade are also showing high number of silverleaf whitefly infestation.

In the Manatee Ruskin area, falls crops are finished and spring planting has not yet started.

On the East Coast whiteflies are common and counts are increasing in many fields.

The whitefly situation has been exacerbated by the fact that many tomato fields around South Florida have been abandoned after one pick due to low prices. In addition, due to low prices growers have been reluctant to spray. Even though most of the abandoned acreage has been sprayed with an herbicide, in many cases, there is still plenty of green living tissue to support whiteflies as well as other pests and diseases. Some fields, I have visited literally have clouds of whiteflies streaming out of them and settling on nearby spring plantings. This situation does not bode well for spring crops.

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

Where possible growers should strive to establish a minimum 2-month crop free period during the summer, preferably from mid-June to mid-August in south and south central Florida.

Disrupt the virus-whitefly cycle in winter by creating as long a break in time and/or space as possible between fall and spring crops, especially tomato, cucurbits and other crops where whitefly vectored viruses are an issue.

Destroy crops quickly and thoroughly after harvest, killing whiteflies and prevent re-growth.

Promptly and efficiently *destroy all vegetable crops* within 5 days of final harvest to decrease whitefly numbers and sources of plant viruses like TYLCV.

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. Addition of an insecticide may also be a good idea.

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

<u>Leafminer</u>

Reports from East Coast growing areas in Palm Beach and Martin Counties indicate that leafminer pressure is currently pretty high in most places.

Around Immokalee, leafminers remain an on-going battle in many places.

Growers report good results with Verimark.

Respondents indicate that leafminers continue to cause problems in many EAA crops.

Respondents indicate that leafminer pressure is mostly low around Homestead.

Leafminers are particularly damaging on celery, crucifers, cucurbits, okra, potato and tomato. In south Florida, populations peak between October and March while in central Florida they are a problem in both spring and fall.

Certain insecticides may decimate beneficial insects including those that attack leafminer. This often results in a larger leafminer problem if the pesticide reduces numbers of leafminer parasites.

Several parasites for this insect have been recorded in Florida, but parasitic wasps are most common. Up to 90% parasitism in non-sprayed tomatoes has been observed in Florida.

To determine whether leafminer larvae are dead or alive, leaflets can be held up to the sun and examined with a hand lens. Living larvae are a pale yellow and flush with the end of the mine. The back and forth feeding movements are readily visible, although movement may cease when larvae are disturbed or molting. Dead larvae do not show movement and are usually discolored and removed from the ends of mines.

It is important that the scouting program include not only an assessment of the number of leafminers present but also the natural enemies.

Growers can use Entrust, Radiant, Coragen, Verimark, Exirel, Durivo, Agrimek, Tigard, and Neemix for leafminers depending on the crop and label.

Pepper Weevil

Pepper weevils are established in a number of pepper fields around Southwest Florida and are steadily increasing as the season progresses

Reports indicate that pepper weevil numbers are also on the increase on the east Coast.

Scouting is importance as with other pests to detect infestations at an early stage. In the absence of Vydate, growers may want to look at Exirel, Actara, Rimon, Dimilin and the pyrethroids to knock down adults.

Worms

Around Southwest Florida, growers and scouts report a little spike in worm activity around the full moon. Pressure ranges from low – moderate in most locations to high a few places.

On the East Coast, worm pressure remains mostly low.

Around Homestead, worms are active in corn and squash.

Respondents in the Glades indicate that worm pressure is down a little but not they are still getting into young corn, but in lower numbers and a more compact time frame. Pressure has been above normal for this time of year though and hopefully cooler temperatures will slow them further.

Lesser cornstalk borer

Around the Glades, lesser cornstalk borer trap counts remain extremely high on the sand lands around Clewiston due to the dry weather. Pressure is headed downward in areas with better moisture. Counts on muck soils remain steady at much lower populations. Scouts report that some young corn has been under heavy but spotty, lesser cornstalk borer pressure.

Thrips

Thrips have been mostly low in South Florida but scouts continue to report finding a few thrips vectored Groundnut Ringspot Virus and Tomato Chlorotic Spot Virus infected plants here and there.

Around Southwest Florida, melon thrips activity increasing in some locations.

On the East Coast, western flower thrips are increasing in several places. Reports indicate there has been an outbreak of thrips vectored tomato chlorotic spot virus (TCSV) on pepper and tomato in Palm Beach County. There has been talk from growers about seeing "black' thrips in their fields. This may be **Frankliniella schultzei** which is fairly dark colored thrips and a known vector of TCSV.

Around Homestead, common blossom thrips and western flower thrips, vector of TCSV and other tospoviruses continue to be a threat. Growers should scout fields carefully to detect their presence in tomato as well as weedy hosts near the fields and in the surrounding area. These thrips are already transmitting tospoviruses in tomatoes around Miami Dade County. Reflective plastic mulch may be useful to repel thrips early in the cropping cycle.

Melon thrips are also causing problems around Miami Dade County. Reports indicate numbers are high in eggplants and adults are being found in squash, cucumber, beans and okra as well.

Growers should learn to identify thrips species and take a soft IPM approach to reduce numbers and favor beneficials which have been shown to help control populations.

Radiant, Movento, Torac, Exirel and Requiem in rotation can be used to manage thrips. Addition of non-ionic surfactant in tank mix to will increase effectiveness on insecticides.

Broad Mites

Around South Florida, broad mites are widely present at mostly low levels in pepper and eggplant.

Spider mites

Spidermites are also starting to show up in a number of locations on cucurbits, eggplant and tomatoes.

There are reports of an outbreak of two spotted spider mites in strawberries around Plant City.

Aphids

In the Glades, aphids have been active in some greens and brassicas.

Winged aphids have been showing up on a variety of susceptible crops around Palm Beach County.

Growers and scouts are reporting surges of winged aphids moving into crops around Southwest Florida and have seen some colony formation.

Low numbers of aphids are present around Miami Dade County.

Silkfly

In the EAA, silk flies are present in typical numbers for this time of year with the pressure varying by location. In general, the closer to the lake, the higher the pressure.

Around Homestead, corn silk fly number are increasing and will most likely grow worse with the progression of season.

Growers should scout corn fields carefully for silk fly infestation. Certis Bait pellets have shown significant reduction of adults and silkfly damage on corn ears. Pyrethroids can also be used to reduce silk fly adults.

Stinkbugs

Respondents note there are plenty of stinkbugs in older plantings and growers have had to apply pyrethroids. Several scouts have noted an increase in stinkbugs especially where more selective insecticide are being applied.

Diseases

Late Blight

Late blight has been confirmed on tomato on a farm in the Immokalee area.

Given the foggy conditions over the past few weeks, it is no surprise and many of us were wondering when it would appear.

Even the forecast for unsettled weather for the next few days is conducive for disease development.

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

Late blight is caused by the fungus 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 anywhere 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 potato harvest, kill infected foliage to minimize tuber infection.

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!!!

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.

Consult current UF/IFAS recommendations for all labeled fungicides for the control of late blight on tomato in Florida.

Go to for the most recent update: http://edis.ifas.ufl.edu/pdffiles/cv/cv13700.pdf.

Due to low prevailing prices, many tomato fields have been picked once or twice and abandoned, even though most have been sprayed with a burn down herbicide, coverage in many fields has been so-so and I am seeing a lot of green amongst the dead foliage which could provide an ideal breeding ground and source of inoculum for nearby by fields. Abandoned fields should be sprayed and then disked under.

In addition, low prices have caused some growers to be hesitant to spend money on crop protectant materials and unfortunately the more efficacious materials tend to be pricey. Should markets rebound this may prove to be a false economy as it could negatively impact successive plantings.

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

<u>Target Spot</u>

Around Immokalee, target spot is mostly low in tomato.

Respondents on the East Coast indicate that target spot has been pretty aggressive in some older tomato.

Growers and scouts should be alert for the presence of target spot as canopies begin to close in tomato plantings.

Foliar symptoms of target spot caused by *Corynespora cassiicola* consist of brown black lesions with subtle concentric rings giving them a target-like appearance. Lesions can be confused with early blight. Foliar symptoms of early blight caused by *Alternaria solani* also consist of brown black lesions with conspicuous concentric rings and but are often associated with a general chlorosis (yellowing) of the leaf.

Disease development is favored by periods of high humidity and free moisture (rain or dew) and temperatures between 70 - 94°F. *Corynespora cassiicola* has a broad host range, while *Alternaria solani* is limited to specific solanaceous hosts (tomato, potato, eggplant, and nightshade).

Disease Management: Strategies for early blight and target spot are very similar, and require an integrated approach for best results.

1. Rotate tomato fields to avoid carryover on crop residue. Avoid rotations among solanaceous crops.
2. Eliminate any volunteers and weed species (especially solanaceous weeds) that can act as a reservoir.
3. Start with clean, healthy transplants preferably produced in facilities removed from tomato production.
4. Maintain proper fertility, nitrogen deficiencies favor the development of early blight.
5. Apply fungicides in a preventive manner when conditions favor disease development

Dr Gary Vallad, Plant Pathologist at GCREC has documented extensive resistance to strobulurin fungicides

Target spot has become one of the hardest to control pathogens in tomato. Good rotations and tank mixes are the best option.

Newer fungicides such as Endura, Scala, Inspire Super, Reason, Luna, Tanos and Fontelis have provided growers with new tools to manage this disease. Consult UF/IFAS recommendations for currently labeled fungicides for target spot control in Florida tomatoes. http://edis.ifas.ufl.edu/pdffiles/cv/cv13700.pdf

Bacterial Spot

Around Southwest Florida, bacterial spot is present at low levels but is still creeping around is some fields.

On the East Coast, bacterial spot is present on some pepper and tomato. Incidence is low.

Bacterial leaf spot is remains active in a number in tomato fields around Homestead.

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

In the past few years, a number products have come on the market that have given good results in research trials when used in rotation or together with traditional controls such as copper. These include Tanos (DuPont) as well as the SAR elicitor Actigard (Syngenta), Double Nickel 55 (Certis), Regalia (Maronne Bioinnovations) and Serenade and Sonata (AgraQuest). Note Actigard applications should start at transplant and continue weekly

Growers should also avoid working in wet plants (staking, tying, harvesting). Spraying wet plants can also spread bacteria if the disease is present.

Early Blight

A few reports of Alternaria on tomato are starting to come in from several locations around south Florida. Some of this is associated with leafminer damage.

Powdery Mildew

Growers and scouts report that powdery mildew is active and increasing in cucurbits around SW Florida, mostly squash but also a few watermelons.

Powdery mildew is present in cucumber around Palm Beach County and is also starting to show up on some Cubanelle pepper as well.

Growers and scouts indicate that powdery mildew is widespread in cucurbits around Homestead including squash and bitter melon.

Growers are getting good control with products like Fontelis, Quintec, Torino, and Rally.

Downy Mildew

On the East Coast, downy mildew has jumped on mature squash in recent days.

Around Immokalee, downy mildew continues to cause some problems in cucurbits.

Downy mildew is also present on squash in Homestead.

In the EAA, downy mildew is causing some issues in cole crops.

Downy mildew continues to plague basil producers and is increasing with cooler humid nights and foggy conditions.

Stemphylium leaf spot

Respondents in the Glades have reported some issues with Stemphylium leaf spot on spinach.

Initial symptoms of Stemphylium leaf spot on leaves consist of small (0.13 to 0.25-inch diameter), circular to oval, gray‑green leaf spots. As the disease progresses, leaf spots enlarge, remain circular to oval in shape, and turn tan in color.

Older spots coalesce, dry up, and become papery in texture. Visual signs of fungal growth are generally absent from the spots; hence this problem is readily differentiated from foliar diseases in which purple growth (downy mildew), green spores (Cladosporium leaf spot), or acervuli (anthracnose) develop within circular lesions.

Overall, symptoms resemble the tan, circular spots caused by pesticide or fertilizer damage.

Weeds or other reservoir hosts have not been identified. This pathogen is seed-borne. Hot water or chlorine treatment of seed may help reduce chances of seed-borne transmission.

Dr Richard Raid Pathologist at UF/IFAS EREC reports that strobilurin fungicides have been effective in the past trials but is conducting additional trials to look at other compounds.

Dr Raid invites growers who wish to discuss control options to contact him at rnraid@ufl.edu.

Tomato Chlorotic Spot Virus

Around Southwest Florida, scouts have found a few scattered single TCSV infected plants here and there in a few tomato fields.

Growers and scouts report an "outbreak" of TCSV on tomato and pepper in a fairly localized area in Palm Beach County. Incidence in pepper has reached 30% in some fields.

In the Homestead area, respondents indicate that almost all tomato fields have low levels of TCSV.

The virus is spread by thrips. 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*) (Wijkamp et al. 1995). The first two are the likely culprits in Florida.

Interestingly, TCSV and TSWV are not transmitted at similar efficiencies by the same thrips. In studies, the most efficient TCSV vectors appears to be the dark form of *F. schultzei* followed by *F. occidentalis.* There has been talk by growers in the affected area of Palm Beach County of seeing "black" thrips in their fields, possibly *F. schultzei.*

Growers should scout fields and target thrips more aggressively if they are seeing viral plants becoming common in their fields.

In young fields, where growers are seeing a few scattered infected plants, growers would be advised to remove infected plants to limit secondary spread.

Early symptoms of infection are difficult to diagnose. In young infected plants the characteristic symptoms consist of inward cupping of leaves and leaves that develop a bronze cast followed by dark necrotic spots.

Tomato chlorotic spot virus causes necrosis in tomato leaves and stems, and causes ringspots and other deformations of the fruit. The symptoms are nearly identical to those of groundnut ringspot virus and laboratory diagnosis is necessary to distinguish on from the other.

The use of virus-free transplants, insecticides to control thrips, rouging infected plants, SAR elicitors such as Actigard, and UV-reflective mulch will likely be effective managing TCSV.

Tomato Yellow Leaf Curl

A few scattered TYLCV infected plants have been reported in tomatoes in all production areas around South Florida.

TYLCV remains low in East Coast.

TYLCV is increasing around SW Florida and has reached 3% incidence in some older fields and isolated plants are showing up in new plantings in some younger fields.

With the huge number of whitefly moving off abandoned fields, lack of cold weather and very high whitefly counts being reported in a number of new planting, the situation is ripe for virus to explode in the spring crop. Growers would be advised to rapidly and efficiently destroy abandoned fields and aggressively target whiteflies in younger plantings.

Rouging infected plants in younger fields is advised.

Watermelon mosaic virus

Growers in few locations around Southwest Florida are experiencing problems with mosaic in melons and squash.

Growers and scouts in Homestead report mosaic virus is common in squash.

Cucurbit leaf crumple virus

Around Homestead, cucurbit leaf crumple virus is widely present in squash.

In Southwest Florida, cucurbit crumple leaf virus is present in some watermelons.

Cucurbit Virus Advisory

Cucurbit crumple leaf virus (CuLCrV) along with squash vein yellowing virus (SqVYV) (aka vine decline) and Cucurbit yellow stunting disorder virus (CYSDV) are all whitefly transmitted viruses which have appeared relatively recently in Florida.

The fact that watermelon growers around SW Florida saw major issues with CYSDV last spring and a re-emergence of vine decline (SqVYV) after several relatively quiet years, coupled with the fact that CuLCrV is widely present at low levels in squash and water melons this past fall suggests growers should be alert this spring and practice aggressive scouting and whitefly management in these crops.

We have had another relatively mild winter to date without any cold weather to take out the wild cucurbit hosts (balsam apple, bur cucumber etc.) of these viruses so there is high probability that these viruses could over winter and be ready to jump into spring plantings.

In addition, we are seeing very high whitefly numbers around SW Florida. Even though these are primarily moving out of tomato (a non-host), they are hunger and could acquire one or more of these viruses while moving around before settling down in a squash or melon field.

As you may know Georgia watermelon producers experienced major issues with cucurbit crumple leaf virus this fall. Crumple leaf also infects beans and caused major issues in beans as well.

In short, the stage is being for these whitefly vectored viruses to be an issue in spring watermelon production (and other cucurbits) in South Florida.

While there is no way to know if the will be a problem, growers are advised to scout fields for whiteflies and virus.

Management practices:

Be alert for and eliminate cucurbit weeds around melon fields.

Use a soil-applied neonicotinoid insecticide such as imidacloprid (Admire®), thiamethoxam (Platinum®), or dinotefuran (Venom®) should be used at planting for longer season cucurbits, such as watermelon and calabaza, and possibly for green beans (imidacloprid only).

If a foliar application of a neonicotinoid insecticide such as acetamiprid (Assail®), dinotefuran, or thiamethoxam (Actara®), is used instead of a soil application, it is best to apply it in the first 30 days of the crop, before flowering (pollinator protection).

Switch to non-neonicotinoid insecticide classes after flowering, and do not use any neonicotinoid class insecticides for the remaining cropping period.

Spiromesifen (Oberon®) is effective against immature stages of the whitefly.

IGRs - (buprofezin (Courier ®), pyriproxyfen (Knack®) to control nymphs may be effective.
See Recommendations for Management of Whiteflies, Whitefly-Transmitted Viruses, and Insecticide Resistance for Production of Cucurbit Crops in Florida - http://edis.ifas.ufl.edu/in871

Halo blight

Growers indicate that halo blight remains an issue on some beans around Homestead.

Northern corn leaf blight

Growers and scouts in the EAA report finding low levels of NCLB in sweet corn around the area and also note that there is carry over of southern corn leaf blight from fall plantings as well.

Incidence of NCLB is mainly showing up in plantings near fields that were recently harvested after spores drifted into the younger fields.

Northern corn leaf blight caused by the fungus *Exserohilum turcicum.*

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.

Southern rust

Respondents also report finding low levels of southern rust in sweet corn as well.

Growers should begin spraying at the first sign of rust.

News You Can Use

40th Anniversary of Snow in South Florida

On January 19th, 1977, snow fell in South Florida for the first time in recorded history. Residents and visitors were both surprised and thrilled at the rare phenomena, and local newspapers ran headlines which were nearly as big as it would be for major national or world events. News of President Jimmy Carter's inauguration was pushed out of the headlines. Snow was seen across all of Southeast Florida as far south as Homestead and even on Miami Beach. Snow was officially reported by weather observers in West Palm Beach, LaBelle, Hollywood, and Royal Palm Ranger Station in deep South Miami-Dade County. Reports of snow mixed with rain were even received from the Bahamas in Freeport on the other side of the Gulf Stream from Southeast Florida.

Although snow in Florida is not as rare as it is believed to be, the farthest south snow had been previously observed was along a Fort Myers to Fort Pierce line in February 1899.

The snow came on the heels of a strong Arctic cold front which moved rapidly down the Florida peninsula from late on January 18th through the pre-dawn hours of January 19th. A strong arctic high pressure area settled over the lower Mississippi Valley and pumped very cold air into Florida. At the same time, a band of clouds and of precipitation associated with an upper level trough followed the passage of the arctic front, and every reporting station in north and central Florida recorded at least a trace of snow. Tampa measured .20 inches and Plant City, east of Tampa, measured up to 2 inches of the white stuff. West Palm Beach reported its first snowfall on record at 6:10 AM and continued to report light snow through 8 AM. LaBelle also reported snow in their cooperative observation report submitted the morning of January 19th.

Rain began to mix with snow over areas farther south, and eventually fell as snow flurries across Broward and Miami-Dade counties between 8 and 9:30 AM. Miami International Airport, the official weather reporting site for Miami, did not observe the snowfall. However, cooperative stations in Hollywood and Royal Palm Ranger Station in far southern Miami-Dade County reported a trace of snow. As a result of this and the widespread eyewitness reports of snowfall, an asterisk is included in the official precipitation records for Miami to indicate the widespread reports of snow on the morning of January 19th.

It is interesting to note that although air temperatures were slightly above freezing when the snow fell, the freezing level on the morning of the 19th was at only 1,500 feet above sea level which is at a very low altitude for South Florida. This prevented the precipitation from completely melting before reaching the ground.
The snow occurred during a prolonged period of very cold temperatures in South Florida. The first arctic front moved through the region late on the afternoon of January 16th with temperatures failing to reach the 60-degree mark in Miami for four consecutive days from January 17th to the 20th. The coldest air and snow arrived with the second arctic front on the 19th, with the afternoon high only reaching the mid to upper 40s. Miami's afternoon high of 47 degrees that day stands as the 2nd coldest afternoon high on record.

The most significant impact of the frigid air was felt on the night of the 19th and morning of the 20th when winds decreased, causing temperatures to plummet to at or below freezing virtually everywhere in South Florida, including 27 degrees at the southern tip of the Florida peninsula in Flamingo. hours. The extended duration of freezing temperatures devastated the agricultural community in South Florida with estimated losses of $350 million statewide and over $100 million in Dade County alone. Skinned fruit such as tangerines, tangelos and temple oranges were almost totally destroyed, as were tender vegetables such as beans, corn, tomatoes and squash. A total of 35 counties in Florida were declared disaster areas.

Sprinkles ran all night at most farms and nurseries, and some of the water also got on to some roadways, causing ice to form on some western Miami-Dade County roads and causing the Florida Highway Patrol to issue travelers advisories for ice-covered roads.

Could snow fall again in South Florida? History has already shown us that it can, and if it's happened once, it can definitely happen again someday. In fact, there were unconfirmed reports of snow mixing with rain in South Florida on January 9th, 2010 from a very similar weather pattern as the one that occurred 40 years ago.

This article includes information from the original report written by Glenn E. Schwartz who worked at the National Hurricane Center in 1977.

Four locations in South Florida tied or set their all-time recorded low temperature, records which stand to this day.

Low temperatures recorded across South Florida on the morning of January 20th, 1977	
LOCATION	
LABELLE	**21**
DEVILS GARDEN	**23**
HOMESTEAD AGR. CENTER	**23**
IMMOKALEE	**24**
BELLE GLADE	**24**
ROYAL PALM RANGER STN	**24 ***
MOORE HAVEN	**25**
NORTH MIAMI BEACH	**25**
NAPLES	**26 ***
PALM BEACH INT'L AIRPORT	**27**
CLEWISTON	**27**
FLAMINGO	**27**
FORT LAUDERDALE	**28 ***
HOLLYWOOD	**28**
MIAMI INT'L AIRPORT	**31**
MIAMI BEACH	**32 ***

Note: there were several major freezes from the late 70's through December 1989 that shifted the center of the citrus industry south and greatly impacted vegetable deal in south Florida. – GM

Opportunities to Get Core CEU's Online

The CEU Series is published in Growing Produce on-line and is approved by FDACS and provides a convenient way to earn CORE CEU's. Simply read an article and answer the questions at the end of the article. A passing score of 75% or greater will earn you one CORE CEU.

There are currently several articles available and a new one will be published bi-monthly.

CEU Series: Learning About Pesticide Resistance is Anything but Futile
CEU Series: Improve Your Integrated Pest Management Program
CEU Series: Key in On the Contents of Pesticide Labels
CEU Series: Precaution Needed When Working with Pesticides
CEU Series: Get The Lowdown on Federal Pesticide Laws
CEU Series: Take into Account the Toxicity when Handling Pesticides

Here is a link to the latest article, CEU Series: Learning About Pesticide Resistance is Anything but Futile where you will find links to all the previous articles. http://tinyurl.com/gwwrcs8

EPA Worker Protection Standard (WPS) Revision

As you may know the EPA Worker Protection Standard (WPS) was revised in 2015 and it became effective on Jan 2, 2016.

There are a number of changes and the majority of the rule revisions will be effective on January 2, 2017.

Here are some references to help.
Quick Reference Guide to The Worker Protection Standard (WPS) Revised in 2015
http://pesticideresources.org/wps/hosted/quickrefguide.pdf

AGRICULTURAL WORKER PROTECTION STANDARD (WPS) - COMPARISON OF THE NEW PROTECTIONS TO THE EXISTING PROTECTIONS – October 2015

This table summarizes key provisions in the EPA's current WPS regulation and the 2015 revisions. It does not cover all of the details in the rule nor does it include all of the information needed to comply with the regulation.
https://www.epa.gov/sites/production/files/2015-09/documents/comparison-chart-wps.pdf

Pesticides; Agricultural Worker Protection Standard Revisions - A Rule by the Environmental Protection Agency on 11/02/2015

The text of the revised WPS
https://www.federalregister.gov/documents/2015/11/02/2015-25970/pesticides-agricultural-worker-protection-standard-revisions

EPA Pesticide Safety website
https://www.epa.gov/pesticide-worker-safety/revisions-worker-protection-standard#when

All workers will have to be trained annually beginning in 2017 and all persons holding a Train the Trainer Certificate will have to be retrained.

According to the newly revised WPS regulations, another major change is that beginning in 2017 employers must provide respirator as well as fit testing, training and medical evaluation that conforms to OSHA standards for any handler required to wear a respirator by the labeling as part of the PPE requirement.

Under the new rules PS also requires recordkeeping of completion of the fit test, training and medical evaluation.

Here are some resources that may be of assistance in meeting these requirements.

The regulations do not state that there is any required training that an employer is required to have prior to conducting the fit testing.

Some folks have received a fit testing training from 3M, but it is not required as long as the 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/pdffiles/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/pWiI1O

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

Online medical certification questionnaires -

http://www.respexam.com/

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

http://www.mchaneysafety.com/RespiratorMedicalEvaluation.aspx

http://www.honeywellsafety.com/USA/oshamedcert/?LangType=1033

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.

We, at the University of Florida, do not endorse the use of the 3M program as a replacement for OSHA regulations but feel that it may provide a starting point in the development of a respirator protection program.

Pesticide Potpouri

Torac

EPA Has granted renewal of the Section 18 for Torac on fruiting vegetables for thrips control through March 1, 2018.

Please remember that applicators must have a copy of the Section 18 label in their possession when making applications.

Trigard

There have been changes to the Trigard insecticide as follows:

- Addition of pollinator precaution language on page 3
- Change of PHI on potatoes from 7 days to 17 days

The new label has been approved by the State of FL and is in effect. Existing product inventories with the old label may be used under the guidelines on the container label.

Efficacy Ratings for Insecticides and Miticides on Tomato								
E = Excellent, G = Good, F = Fair								
MOA	**Active Ingredient**	**Aphids**	**Southern Armyworm**	**Spider mites**	**Stinkbugs**	**Thrips**	**Leafminer**	**Whiteflies**
1A	methomyl		G		G			
1A	oxamyl	E						
1B	dimethoate	E			G			
1B	malathion							G*
3A	beta-cyfluthrin		F		G			G*
3A	bifenthrin				G			G*
3A	esfenvalerate		G					G*
3A	fenpropathrin		F		F			G*
3A	lambda cyhalothrin		F					G*
3A	permethrin		G					G*
3A	zeta-cypermethrin		G		F			G*
4A	acetamiprid	E						G
4A	imidacloprid	E						E**
4A	thiamethoxam	E			G			E**
4A	clothianidin	E						G**
4A	dinotefuran	E			G			E**
4C	sulfoxaflor	E						F
4D	flupyradifurone	E						E**
5	spinetoram		E			E	G	
5	spinosad		E			G	G	
6	abamectin			E			E	
6	emamectin benzoate		E					
7C	pyriproxyfen							E
9	flonicamid	E						
9	pymetrozine	E						G
10	etoxazole			G				
11	*Bt kurstaki*		F					
11	*Bt aizawai*		G					
15	novaluron		E					
16	buprofezin							G
17	cyromazine						E	
18	methoxyfenozide		E					
20B	acequinocyl			E				
21 A	fenpyroxiamate			G				
22	Indoxycarb		E					
23	spiromesifen			E				E
23	spirotetramat			G				E
28	cyantraniliprole	G	E				E	E**
28	flubendiamide		E					

MOA	Active Ingredient	Aphids	Southern Armyworm	Spider mites	Stinkbugs	Thrips	Leafminer	Whiteflies
Un	Azadiractin							F
Un	bifenazate			E				
Un	sulfur			G				
unk	horticultural oil	G		G				G
unk.	Soap, insecticidal	G						G
* OP+Pyrethroids tank mix. ** Most Effective as a drench. Check labels before using any pesticide.								
Compiled by Dr. Phil Stansly, UF-IFAS-Immokalee								

Meetings

Restricted Use Pesticide License Classes

February 2, 2017 **CORE Prep Class and Exam** **8:00 AM – Noon**

Hendry County Extension Office
1085 Pratt Boulevard
LaBelle, FL 33935

February 2, 2017 **Private Applicator Prep Class and Exam** **1:00 PM – 5:00 PM**

Hendry County Extension Office
1085 Pratt Boulevard
LaBelle, FL 33935

February 6, 2017 **Row Crop Prep Class and Exam** **8:00 AM – Noon**

Hendry County Extension Office
1085 Pratt Boulevard
LaBelle, FL 33935

February 2, 2017 **Tree Crop Prep Class and Exam** **8:00 AM – Noon**

Hendry County Extension Office
1085 Pratt Boulevard
LaBelle, FL 33935

Classes are $10 each

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

WPS Train the Trainer Classes

January 24, 2017 UF/IFAS Everglades REC Auditorium 8:30 AM - 2:30 PM
3200 E. Palm Beach Road Belle Glade, FL

Cost - $25

Call for details or any questions you may have at 561.233.1725 or email at EEScott@pbcgov.org

February 13, 2017 Hendry County Extension Office 9:00 AM – 3:00 PM
1085 Pratt Boulevard
LaBelle, FL 33935

Cost - $10

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

February 16, 2017 Clayton Hutcheson Ag. Center 8:30 AM - 2:30 PM
Exhibit Hall A
Palm Beach County Cooperative Extension Service
559 N. Military Trail West Palm Beach, FL 33415

Cost - $25

Call for details or any questions you may have at 561.233.1725 or email at EEScott@pbcgov.org

February 21, 2017 Hendry County Extension Office 9:00 AM – 3:00 PM
1085 Pratt Boulevard
LaBelle, FL 33935

Cost - $10

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

The Worker Protection Standard (WPS) applies to farm, forest, nursery and greenhouse operations that produce agricultural plants.

Affected operations must comply with most of the NEW revisions beginning January 2, 2017. This workshop is approved to meet the new mandatory trainer requirements. The training is organized as an interactive presentation to update you on the new requirements, to refresh your overall understanding of WPS, and to meet the new mandatory trainer certification requirements.

NOTE: all persons with a Train the Trainer certificate are required to be retrained under the revised Worker Protection Standard and employees covered by the WPS will have to be trained annually beginning in 2017.

In addition: there are a number of new changes under the revised Worker Protection Standard and many of these changes take effect on January 2, 2017. These classes will bring you up to speed on those changes.

FSMA Produce Safety Alliance Classes – mark your calendar, more information to follow as registration goes on-line

February 7 – Live Oak, FL
February 13 – Marianna, FL
March 13 – Arcadia, FL
April 20 – Tavares, FL
May 17 – Palmetto, FL

February 8-10, 2017 **FSMA Preventive Controls for Human Food Rule classes**
April 24-26, 2017
For more information and to register, use the links below:
Lake Alfred, February 8-10 https://www.eventbrite.com/e/fspca-training-lake-alfred-registration-28581155004

Gainesville, April 24-26 https://www.eventbrite.com/e/fspca-training-gainesville-registration-29441832313

Websites

EDIS is the Electronic Data Information Source of UF/IFAS Extension, a repository of all IFAS Extension publications - http://edis.ifas.ufl.edu/

Frequently Asked Questions on FSMA - Questions & Answers on the Food Safety Modernization Act - http://www.fda.gov/Food/GuidanceRegulation/FSMA/ucm247559.htm

2016-2017 UF/IFAS Vegetable Production Handbook of Florida - This handbook is designed to provide Florida growers with the latest information on crop cultivars, cultural practices, and pest management. Free hard copies of the handbook are available at UF/IFAS research and education centers and county extension offices. It can be viewed or downloaded at http://edis.ifas.ufl.edu/topic_vph

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

Quotable Quotes

An investment in knowledge pays the best interest. - Benjamin Franklin

Behold the turtle. He makes progress only when he sticks his neck out. – James Bryant Conant

Be so good they can't ignore you. – Steve Martin

Good judgment comes from experience, and a lotta that comes from bad judgment. – Anon

If you get to thinkin' you're a person of some influence, try orderin' somebody else's dog around. – Anon

Life is simpler when you plow around the stump. – Anon

On the Lighter Side

A Dog's Purpose? - (from a 6-year-old).

A veterinarian, had been called to examine a ten-year-old Irish Wolfhound named Belker. The dog's owners, Ron, his wife Lisa, and their little boy Shane, were all very attached to Belker, and they were hoping for a miracle.

He examined Belker and found he was dying of cancer. The vet told the family we couldn't do anything for Belker, and offered to perform the euthanasia procedure for the old dog in their home.

As the vet made arrangements, Ron and Lisa told me they thought it would be good for six-year-old Shane to observe the procedure. They felt as though Shane might learn something from the experience.

The next day, the vet felt the familiar catch in my throat as Belker 's family surrounded him. Shane seemed so calm, petting the old dog for the last time, that he wondered if he understood what was going on. Within a few minutes, Belker slipped peacefully away.

The little boy seemed to accept Belker's transition without any difficulty or confusion. They sat together for a while after Belker's Death, wondering aloud about the sad fact that animal lives are shorter than human lives.

Shane, who had been listening quietly, piped up, "I know why."

Startled, they all turned to him. What came out of his mouth next stunned them. They had never heard a more comforting explanation.

He said, "People are born so that they can learn how to live a good life -- like loving everybody all the time and being nice, right?" The Six-year-old continued,

"Well, dogs already know how to do that, so they don't have to stay as long."

Hopefully it will change the way we all try and live.

Live simply.

Love generously.

Care deeply.

Speak kindly.

Remember, if a dog was the teacher you would learn things like:

When loved ones come home, always run to greet them.

Never pass up the opportunity to go for a joyride.

Allow the experience of fresh air and the wind in your face to be pure Ecstasy.

Take naps.

Stretch before rising.

Run, romp, and play daily.

Thrive on attention and let people touch you.

Avoid biting when a simple growl will do.

On warm days, stop to lie on your back on the grass.

On hot days, drink lots of water and lie under a shady tree.

When you're happy, dance around and wag your entire body.

Delight in the simple joy of a long walk.

Be loyal.

Never pretend to be something you're not.

If what you want lies buried, dig until you find it.

When someone is having a bad day, be silent, sit close by, and nuzzle them gently.

There comes a time in life, when you walk away from all the drama and people who create it.

Surround yourself with people who make you laugh, forget the bad, and focus on the good.

Love the people who treat you right.

Think good thoughts for the ones who don't.

Life is too short to be anything but happy.

Falling down is part of LIFE...Getting back up is LIVING...

Have a great life.

Contributors include**:** Joel Allingham/AgriCare, Inc, Javier Soto/West Coast Tomato Growers, Gordon DeCou/Agri Tech Services of Bradenton, Dr Nick Dufault/ UF/IFAS, Carrie Harmon/UF/IFAS Plant Disease Clinic, Sarah Hornsby/AgCropCon, , Bruce Johnson/General Crop Management, Barry Kostyk/SWFREC, Leon Lucas/Glades Crop Care, Chris Miller/Palm Beach County Extension, Gene McAvoy/Hendry County Extension, Alice McGhee/Thomas Produce, Dr.Gregg Nuessly/EREC Chuck Obern/C&B Farm, Dr. Monica Ozores-Hampton/SWFREC, Dr. Rick Raid/ EREC, Ryan Richards/The Andersons, Dr Pam Roberts/SWFREC, Dr. Nancy Roe/Farming Systems Research, Wes Roan/6 L's, Dr. Dak Seal/ TREC, Kevin Seitzinger/Gargiulo, Crystal Snodgrass/Manatee County Extension, Dr. Phil Stansly/SWFREC, Dr. Josh Temple, DuPont Crop Protection, Dr Gary Vallad/GCREC , Mark Verbeck/GulfCoast Ag, Dr. Qingren Wang/Miami-Dade County Extension, Alicia Whidden/Hillsborough County Extension, Dr Henry Yonce/KAC Ag Research and Dr. Shouan Zhang/TREC.

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

Gene McAvoy

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