



SOUTH FLORIDA VEGETABLE PEST AND DISEASE HOTLINE

December 27, 2019

A series of cold fronts brought frequent showers and rainy weather to most parts of South Florida over the past few weeks. East Coast growers reported the highest totals with 4 – 6 inches or more depending on location. Wet weather has made it difficult for growers to get crops out of the fields and has resulted in some post-harvest breakdown. Temperatures have been seasonally warm with days in the 70’s and 80’s and nights in the 50’s and 60’s. Windy conditions have resulted in some crop damage.

Growers harvested a wide variety of veggies for the Christmas market. Growers are terminating fall crops as they finish up and preparing land for Spring plantings. Prices have been mostly favorable.

FAWN Weather Summary

Date	Air Temp °F		Rainfall (Inches)	Ave Relative Humidity (Percent)	ET (Inches/Day) (Average)
	Min	Max			
Balm					
11/27 – 12/27/19	38.72	85.35	2.89	84	0.06
Belle Glade					
11/27 – 12/27/19	40.59	86.86	1.93	76	0.06
Clewiston					
11/27 – 12/27/19	41.87	87.51	1.03	78	0.06
Ft Lauderdale					
11/27 – 12/27/19	49.86	87.04	5.70	81	0.06
Homestead					
11/27 – 12/27/19	46.87	86.02	4.34	85	0.06
Immokalee					
11/27 – 12/27/19	39.86	89.74	3.19	85	0.06
Okeechobee					
11/27 – 12/27/19	35.58	87.85	3.87	87	0.06
Wellington					
11/27 – 12/27/19	43.56	87.08	2.11	84	0.06

“Remember, when in doubt - scout.”

The National Weather Service forecast indicates we will be going out with a bang weather wise for the last weekend of the decade. High rain chances continue throughout Saturday as a pool of moisture continues to move across the region from the western side of a high pressure system located in the western Atlantic. Moisture laden southeasterly flow will further enhance moisture across the region with highest precipitation amounts along the east coast and Atlantic waters.

The main concern for Saturday will be for the possibility of heavy rainfall and the potential for flooding along the east coast, including parts of Palm Beach, Broward, and Miami-Dade counties especially for areas with repeated shower activity.

Late Sunday into Monday, a cold front approaching from the northwest over the Gulf waters will bring isolated scattered showers on Tuesday. On Wednesday and Thursday much drier air filters into the region.

This next cold front is not expected to bring much in the way of cooler temperatures. High temperatures are in the upper 70s to low 80s throughout the forecast period. Low temperatures drop into the low to mid 60s Wednesday and Thursday mornings which are still running about 5 to 8 degrees above normal.

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

Insects

Aphids

Growers and scouts around South Florida are reporting an increase in aphid activity.

On the East Coast growers are finding some winged aphids showing up squash. In some cases, 100% of plants with 1 or more. Virus remains rare.

Around Immokalee, scouts report finding more aphids around but note that numbers remain fairly low.

The major damage caused by green peach aphid is through transmission of plant viruses. This aphid is considered by many to be the most important vector of plant viruses throughout the world. Nymphs and adults are equally capable of virus transmission but adults, by virtue of being so mobile, probably have greater opportunity for transmission. Both persistent viruses, which move through the feeding secretions of the aphid, and non-persistent viruses, which are only temporary contaminants of aphid mouthparts, are effectively transmitted. Over 100 viruses are transmitted by this species.

As aphid densities increase on host plants, winged forms are produced, which then disperse to new hosts. Winged green peach aphids attempt to colonize nearly all available host plants. They often deposit a few young and then again take flight. This highly dispersive nature contributes significantly to their effectiveness as vectors of plant viruses.

The offspring of the winged alates are wingless, and each produce 30 to 80 young. The rate of reproduction is positively correlated with temperature. As aphid densities increase or plant condition deteriorates, winged forms are again produced to aid dispersal. The dispersants typically produce about 20 offspring, which are always wingless. This cycle is repeated throughout the period of favorable weather. In south Florida, this cycle repeats continuously.

The life cycle varies considerably. Development can be rapid, often 10 to 12 days for a complete generation, and over 20 annual generations per year may occur in mild climates.

Parthenogenic reproduction is favored where continuous production of crops provides suitable host plants throughout the year, or where weather allows survival on natural (noncrop) hosts. The average temperature necessary for survival of active forms of green peach aphid is estimated at 4 to 10° C. Plants that readily support aphids through the winter months include beet, Brussels sprout, cabbage, kale, potato, and many winter weeds.

Broadleaf weeds can be very suitable host plants for green peach aphid, thereby creating pest problems in nearby crops. Common and widespread weeds such as field bindweed, lambsquarters, and redroot pigweed are often cited as important aphid hosts

Because some of the virus diseases transmitted by green peach aphid are persistent viruses, which require considerable time for acquisition and transmission, insecticides can be effective in preventing disease spread in some crops.

Transmission of nonpersistent viruses such as cucumber mosaic virus can sometimes be reduced by coating the foliage with vegetable or mineral oil. Oil is postulated to inhibit virus acquisition and transmission by preventing virus attachment to the aphid's mouthparts, or to reduce probing behavior. Oil seems to be most effective when the amount of disease in an area that is available to be transmitted to a crop is at a low level. When disease inoculum or aphid densities are at high levels, oils may provide inadequate protection.

Thrips

On the East Coast, thrips numbers are increasing. Growers and scouts report finding western flower thrips adults and some larvae developing in blooms and showing up under pepper stems in some locations. Numbers are highest in some older fields near greenhouses and nurseries.

Around Homestead common blossom thrips and western flower thrips numbers have spiked in a number of places. In some green beans, high incidence of red node disease has been reported.

Scouts are finding 4-6 thrips/flower. The adults cause damage by feeding and ovipositing on foliage. In addition to red node there are also some reports of viral infection on beans which is testing positive for tospovirus (TCSV).

Melon thrips populations remain high around Homestead in beans and squash. Growers are reporting difficulty in bring them under control. Reports indicate that Radiant is not working and growers are using anything they can to try and get control.

Cultural practices are effective in reducing thrips. Use reflective plastic mulch on field margins can help repel this virus carrying thrips. Some ornamental plants are hosts to flower thrips. If possible, growers should avoid planting tomato within 1,000 feet of a nursery. Planting non-host crop as a barrier can also help reduce flower thrips infestation on vegetable crops.

Reports from the EAA indicate that thrips are building up in green bean blossoms. Elsewhere thrips remain very low.

Whiteflies

In the Manatee/Hillsborough area whitefly and virus activity really picked up with warmer temps in cucurbits. With significant fall watermelon acreage, there is some concern about carryover issues into the spring crop.

On the East Coast, whitefly numbers are building in tomato and eggplant and reaching critical numbers with nymphs showing up in older tomato and eggplant.

Around SW Florida, whiteflies numbers were beginning to increase up in a number of locations, but recent rainfall seems to have slowed that. Scouts report finding 20-30 whiteflies per plant with some crawlers in some older tomatoes.

Growers are also battling whiteflies in cucumbers, eggplant and squash around SW Florida. In squash, the biggest issue is silverleaf and some cucurbit crinkle leaf virus.

Fall watermelons are largely done but growers reported some issues with whitefly vectored viruses.

Respondents in Homestead report that whitefly populations are building rapidly in a variety of crops.

With whitefly populations beginning to build and continued warm weather, growers are advised to take precautions to protect spring crops especially those like tomato and watermelon where whitefly vectored viruses are a threat.

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

Around Homestead, reports indicate that leafminers numbers are increasing. In some places, leafminer pressure is getting worse, most probably, due to the frequent use of pyrethroids. Growers should reduce use of pyrethroids which suppress natural enemies.

Reports from the EAA, indicate that leafminer are causing some problems in celery and leafy vegetables.

On the East Coast, respondents indicate that leafminer pressure is building in a number of crops.

Around Immokalee, growers and scouts report leafminer are becoming more active in tomato and eggplant and growers are spraying regularly for control.

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.

The adults are small yellow and black flies about the size of a gnat. The female punctures or "stipples" the leaves with her ovipositor to lay eggs in the leaf tissue or to feed on sap.

Leafminer damage is easily recognized by the irregular serpentine mines in leaves. The tunnel is clear with a trail of black fecal material left behind as the maggot feeds.

Leafminer damage to foliage can render plants more susceptible to fungal or bacterial diseases, which can cause further harm to plants. Bacterial spot, Alternaria, target spot and other diseases often become established in leaf mines.

Worms

Around SW Florida respondents report that worm pressure has slowed but growers continue to find the occasional southern army worms in tomato, pepper and eggplant. Growers continue to battle melon worms in squash and cukes. Fall melons are mostly done but some growers experienced rindworm damage in some locations.

Growers in the EAA report that fall armyworm pressure remains persistent with mostly beet armyworms in celery and leafy greens and a mixed bag of worms in corn. In a few isolated cases, pressure is high.

On the East Coast, respondents indicate that worms have been low but report a recent slight increase in beet armyworm in pepper and other crops.

Around Homestead, growers are battling a variety of leps including fall armyworm on corn, melonworms in cucurbits and southern and beet armyworms in tomato and peppers.

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

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

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

Silk fly

Respondents in the EAA indicate that silk fly pressure is persistent in corn.

Silk fly are also becoming more common around Homestead as the season progresses.

Reports indicate that silk fly numbers are increasing with the increase in alternate breeding hosts.

Routine use of pyrethroids may suppress corn silk flies in sweet corn. Cultural practices also play an important role in suppressing corn silk fly population. Growers should avoid dumping culls and destroy rotten fruits and vegetables as these sources are preferred substrates for egg laying.

Pepper weevils

Around SW Florida, pepper weevils are increasing in mature pepper fields and growers are battling them in some locations.

Around Homestead pepper weevils are a major problem in pepper. Serious infestations can be observed in all plantings irrespective of pepper varieties and planting location. Actara, Vydate, Diamides and pyrethroids can be used in a program to control this pest.

On the east coast pepper weevils are becoming more common in more locations in in Palm Beach and St Lucie Counties.

Pepper weevils cause damage in several ways. One important form of damage is destruction of blossom buds and immature fruit. Both adult and larval feeding causes bud drop. Larval feeding within the mature fruit is another important form of damage, causing the core to become brown, and often moldy.

Fruit drop is common and is the most obvious sign of infestation. The stem of fruits infested by larvae turn yellow, and the fruit colors prematurely.

In central and south Florida, adults are common from March until June, but a few can be found throughout the year.

Females deposit eggs at a rate of about five to seven eggs per day and can produce between 300 -600 eggs. There are three larval instars. The larvae are white to gray in color, with a yellowish-brown head. They lack thoracic legs and have few large hairs or bristles. Pupation occurs within the fruit.

The adult emerges from the pupal case three to four days after being formed. A clean, round hole marks the escape of the beetle from the bud or fruit.

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

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

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

Insecticides are commonly applied to the foliage at short intervals once buds begin to form. Insecticidal suppression is feasible, but insecticides vary considerably in effectiveness, and even in the presence of chemical insecticides some loss commonly occurs. Consult UF/IFAS recommendations for currently labeled insecticides for pepper weevil control in Florida.

Broad Mite

On the East Coast, respondents indicate that broad mites are common and widespread in pepper as well as in some basil and eggplants and are requiring repeated control measures.

Around SW Florida, broad mites are active in pepper and in some eggplant.

Reports from Homestead indicate that broad mites are widely present in a variety of crops.

Diamondback moth

Growers and scouts are beginning to report finding diamondback moth larvae and pupae in cabbage and other crucifers from central Florida down to Homestead.

This insect has become increasingly difficult to control and in recent years, resistance to insecticides has become widespread, and includes most classes of insecticides including some Bt (*Bacillus thuringiensis*) products.

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

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

Larvae and pupae are often killed by one of several wasp parasitoids. Reduction of insecticide use, in particular pyrethroids and use of soft pesticides can sometimes improve diamondback control by favoring survival of natural enemies.

For insecticide recommendations, check UF/IFAS recommendations for currently labeled insecticides for diamondback larvae control in Florida crucifers.

Dr. Hugh Smith Entomologist at UF/IFAS GCREC indicates that rotations of Coragen, Proclaim, Radiant, Avaunt, have been effective. Hugh indicates that the Bts also have a place especially if you can use them early and often for the small larvae.

Stinkbug

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

Diseases

Bacterial Spot

With recent rains bacterial spot has fired up in a number of tomato fields around SW Florida. Bacterial spot has also flared up in non-resistant pepper.

On the East Coast, bacterial spot remains active where it is present.

In the Manatee Ruskin area, bacterial spot remains present and active in remaining tomato fields.

Respondents in Homestead indicate that bacterial spot incidence and occurrence is increasing in tomato and pepper.

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

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

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

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

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

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

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

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

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

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

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

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

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

In the past few years, a few products have come on the market that have given good results in research trials when used in rotation or together with traditional controls such as copper. These include Tanos

(Dupont) as well as the SAR elicitor Actigard (Syngenta), Leap (Valent), Double Nickel 55 (Certis), Regalia (Maronne Bioinnovations) and Serenade and Sonata (AgraQuest). Leap is unique among the products mentioned above as it contains two active ingredients providing growers with disease management and caterpillar control.

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

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

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

Bacterial blight

Low levels of bacterial blight are present on green beans in Homestead and Belle Glade.

Target spot

Growers and scouts around Immokalee report that target spot increasing in mature tomato plantings.

Target spot is widely present in the Manatee Ruskin area and is present in most fields. Incidence and occurrence are worse in older fields.

Target spot is also present in some tomato on the East Coast and in Homestead as well.

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

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.

Target spot is also causing some scattered problems in cucumber.

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

Phytophthora

Reports from the east Coast indicate that phytophthora remains active and is increasing in squash and pepper where it was already present.

Around Immokalee, phytophthora is present at low levels in pepper and squash.

Phytophthora is causing problems in squash around Homestead in low lying areas.

***Phytophthora capsici* may survive in and on seed and host plant debris in the soil by means of thick-walled, sexually produced spores (oospores).** Both mating types of the pathogen necessary for oospore production are present in Florida. The pathogen produces spores of another type called zoospores that are contained within sac-like structures called sporangia.

Zoospores are motile and swim to invade host tissue. Plentiful surface moisture is required for this activity. The sporangia are spread by wind and water through the air and are carried with water movement in soil. Phytophthora is also moved as hyphae (microscopic fungal strands) in infected transplants and through contaminated soil and equipment.

Since water is integral to the dispersal and infection of *P. capsici*, maximum disease occurs during wet weather and in low or waterlogged parts of fields. Heavy rainfall coupled with standing water creates ideal conditions for epidemics caused by *P. capsici*. Growth of this pathogen can occur between 46 -99°F, but temperatures between 80-90°F are optimal for producing zoospores and infection. *P. capsici* can rapidly affect entire fields. Under ideal conditions, the disease can progress very rapidly, and symptoms can occur 3-4 days after infection.

Planting sites should be well drained and free of low-lying areas. Optimal water management is essential to prevent the occurrence of flooded field conditions that favor Phytophthora blight. The drainage area of the field should be kept free of weeds and volunteer crop plants, particularly those in the solanaceous and cucurbitaceous groups.

Preplant fumigant may help reduce the incidence of disease but is not particularly effective. Equipment should be decontaminated before moving between infested and noninfested fields.

Infected fruit should be culled to prevent spread in the packinghouse and during shipment.

Effective, labeled fungicides should be used preventively according to label instructions. It is essential that fungicides with different modes of action be rotated to prevent the buildup of fungicide resistance in *P. capsici*.

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

Fusarium

Around Immokalee, fusarium is affecting some tomatoes in wet areas.

Reports from East Coast growers indicate that fusarium is dropping some older pepper in a few fields.

Fusarium wilt fungus is able to survive in the soil for long periods of time by forming spores, thick walled reproductive structures. It also survives in infested plant debris and in the roots of weeds such as Malva and Amaranthus. It can be moved readily from field to field in infested soil that may adhere to cultivation or other equipment or in surface irrigation water runoff from infested fields.

The disease is more common on acidic, sandy soils.

Where fusarium is a concern, growers should use resistant tomato varieties. Resistant varieties are common for Race 1, and many are also resistant to Race 2. Fusarium wilt race 3 has a narrow host range. Therefore, genetic resistance can be very effective in controlling the disease, in many cases it is the only viable means of control. A few varieties are resistant to all three races.

Growers should attempt to limit the spread of infested soil by cleaning farm equipment. Avoid root knot nematode infestations because nematode feeding can overcome the plant resistance to Fusarium wilt. Long rotations out of tomatoes for several years will reduce inoculum level, although Fusarium is long-lived and even rotations of 7 years or more will not completely remove the fungus from the soil.

Other less effective means of control, that have been tried including soil pasteurization with steam or fumigants, raising low pH soils to 6.5 - 7.0, using nitrate nitrogen instead of ammoniacal nitrogen and even adding mycorrhiza and organic matter to the soil.

Anthracnose

Respondents report that anthracnose is showing up on pepper around South Florida

On the East Coast, anthracnose is increasing in areas where it was already present and new lesions are starting to be reported from additional locations.

Anthracnose is also showing up at low levels on pepper around SW Florida.

Infection typically occurs during warm, wet weather. Temperatures around 80° F are optimum for disease development, although infection occurs at both higher and lower temperatures. Severe losses occur during rainy weather because the spores are washed or splashed to other fruit resulting in more infections. The disease is more likely to develop on mature fruit that is present for a long period on the plant, although it can occur on both immature and mature fruit.

Control of this disease is best accomplished through integrated management techniques. Since the disease may be introduced on seed, only clean pathogen-free seed should be planted. Disinfection of seed with hot water treatment of seed is useful in reducing potential infections. Transplants should be kept clean by controlling weeds and Solanaceous volunteers around the transplant houses.

Fields should be well drained and be free from infected plant debris. If disease was previously present in a field, crops should be rotated away from Solanaceous plants for at least 2 years. Sanitation practices in the field include control of weeds and volunteer pepper plants.

Resistance is available in some varieties of chili peppers but not in bell peppers. For bell pepper production, choose cultivars that bear fruit with a shorter ripening period which may allow the fruit to escape infection by the fungus. Wounds in fruit from insects or other means should be reduced to the extent possible because wounds may provide entry points for *Colletotrichum* spp. and other pathogens like bacteria that cause soft rot.

For late-maturing peppers, when disease is present, apply a labeled fungicide several weeks before harvest. Products such as Chlorothaliniol (Bravo), various strobilurin fungicides (Amistar, Cabrio, Flint, Heritage, or Quadris) and Tanos will help control the disease. Anthracnose can be controlled under normal weather conditions with a reasonable spray program. At the end of the season, remove infected plant debris from the field or deep plow to completely cover crop residue.

Sclerotinia

Growers and scouts report that Sclerotinia (white mold) is showing up on pepper in a couple locations on the East Coast and its incidence is low but is fairly common in some places.

In the EAA, growers are reporting some problems with Sclerotinia drop in lettuce.

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.

Symptoms vary between crops. White mold in beans usually appears after flowering. The disease often appears in leaf axils and advances into the stem, producing water-soaked spots that increase in size, girdling the stem, and killing it above the point of infection. The disease can also enter the plant through leaves or pods that touch the soil where sclerotia or infected plant parts act as inoculum.

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.

Almost all Sclerotinia diseases are field diseases, but when they occur in post-harvest situations, they can be very damaging. In beans, the fungus may create a mass of diseased pods that is stuck together by fungal growth, resembling a nest (hence, the name "nesting").

Under cool moist conditions, the fungus can invade 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 support the spread and increase the severity of infections.

In beans, fungicides including Botran 75 W, Endura 70 WG, Iprodione 4 L Quadris F, Rovral 4 F and Switch applied at bloom stage have been effective in controlling white mold. Iprodione and Rovral 4 F have been used with good results in lettuce. For potato, Iprodione 4 L, Rovral 4 F and Topsin M WSB and 4.5 L are recommended for Sclerotinia control while in tomato Amistar 80 DF has given good results. Biologicals like Contans WG, Serenade Max and Sonata have also provided various degrees of control alone and in combination with other fungicides.

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

Powdery mildew

Powdery mildew is widely present and increasing in squash and beans in several locations around South Florida from Ruskin down to Homestead.

Symptoms of the disease typically appear on older leaves and stems. The yields of crop are reduced due to pre-mature foliage loss. In melons severe leaf infection can result in lower fruit sugar content and subsequent reduction of fruit quality. In addition to reducing plant vigor from leaf infection, mildew can attack the calyx and reduce the marketability of fruit.

The fungus first appears as subtle, small, round, yellowish or whitish spots on leaves and sometimes stems. These spots enlarge and coalesce rapidly. As the white, fluffy mycelium grows over plant surfaces and produces spores, it gives the lesions a powdery appearance resembling talcum powder, which is evident on the upper surface of older leaves or other plant parts. Young leaves are almost immune.

Heavily infected leaves appear dull and chlorotic and eventually become dry and brown. Extensive premature defoliation of the older leaves can occur if the disease is not controlled. Yield reduction from defoliation is proportional to the severity and length of time plants are infected.

Powdery mildew fungi can reproduce under relatively dry conditions. Increased humidity can increase the severity of the disease, and infection is enhanced during periods of heavy dew. Unlike downy mildew, powdery mildew can become severe during periods of low rainfall in the winter and spring months in Florida.

Crop rotation and many other cultural practices have little effect on the incidence and development of powdery mildew. It has been noted however, that healthy, vigorous leaves and stems are less prone to infection. Plants under nutritional stress in most cases will develop powdery mildew much sooner than plants the same age grown under a good nutritional program.

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

In addition to resistance, economic control can be achieved with chemicals. Under low disease pressure, some materials applied preventatively for downy mildew may provide satisfactory control of powdery mildew. However, under moderate to heavy mildew disease pressure, micronized sulfur (Thiolux) and the strobilurin fungicides such as Flint, Nova and Quadris are recommended. Newer materials such as Pristine and Quintec have also performed well in University trials.

Growers should be aware that sulfur could injure plants, especially at higher temperatures.

When using strobilurin fungicides growers should be sure to follow manufacturer's recommendations and practice resistance management by avoiding consecutive applications. Some of the bio-fungicides like Regalia, Rhapsody and Sonata may provide good rotation partners.

Options for organic growers include the use of resistant varieties, cultural practices that ensure proper plant nutrition and plant vigor in addition to sulfur and potassium bicarbonate sprays for disease control.

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

Downy Mildew

Reports from Hillsborough County indicate that downy mildew is widespread on cucurbits.

Around Southwest Florida, respondents indicate downy mildew pressure has been high in squash, melons and cukes.

Gummy stem blight

Around SW Florida, gummy stem blight has flared up in what few watermelons are left around.

Southern Corn Leaf Blight

Respondents indicate that the incidence of Southern corn leaf blight is present on sweet corn around South Florida.

Northern corn leaf blight

With cooler weather northern corn leaf blight is becoming more common sweet corn in the EAA. Northern corn leaf blight caused by the fungus *Exserohilum turcicum* was one of the most important sweet corn diseases in southern Florida causing significant losses some years. Resistant varieties have helped reduce the impact of northern corn leaf blight in recent 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.

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

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

Use EDBC fungicides such as mancozeb as a protectant before disease is present. Apply 4- 6 sprays on a 5 – 7-day basis. Use a surfactant/sticker as corn leavers are waxy and spray tends to run off. Rotate with a strobilurin 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.

Bean red node/Tobacco Streak Virus

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

In beans, red node infection causes a reddish discoloration of nodes at the point of attachment of leaf petioles to stems. In severe cases, infected plants will flex or break at a discolored node. The veins and veinlets of infected leaves exhibit a red to reddish-brown streaking. Red to reddish-brown concentric rings form on pods which become shriveled or puffy and do not produce seeds. Plants can be severely stunted and killed by the virus.

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

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

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

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

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

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

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

Tomato Yellow Leaf Curl Virus

Growers and scouts are reporting some increase in the incidence of TYLCV as the season progress. Disease incidence remains restricted mostly a few plants here and there in a couple of fields is present on tomato around South Florida.

Respondents in Homestead indicate TYLCV incidence is increasing in a number of fields.

Tomato Chlorotic Spot Virus

Reports from Homestead report that symptoms consistent with tospovirus (believed to be TCSV) are starting to appear in some tomato fields.

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

TCSV-infected tomatoes develop necrotic lesions of variable size, easily recognized necrotic and chlorotic spots, and ringspots on leaves, stems, petioles, flowers, and fruit. Symptoms are like those of GRSV and, to a lesser extent, some isolates of TSWV. Although apparently less common, chlorotic spots and ringspots may form prior to or at the same time as necrotic lesions. Following the onset of these symptoms, wilting and bronzing of the infected plant may occur. TCSV infections in young tomato plants may result in severe stunting and eventually death. Fruit from infected plants may show necrotic ringspots, necrotic spots, and distortion, rendering them unmarketable.

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

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

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

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

Cucurbit Crumple Leaf Virus

Cucurbit crumple leaf virus is present on squash and melons around South Florida. Incidence and occurrence remain mostly low.

Cucurbit yellow stunting disorder virus

Scouts around Immokalee report finding low levels of cucurbit yellow stunting disorder virus on watermelon around Immokalee. Cucurbit yellow stunting disorder virus has been detected in pigweed in Florida.

Squash Vein Yellowing Virus/Vine decline

Growers and scouts report finding mostly low level of vine decline affecting fall watermelon around SW Florida.

News You Can Use

Fall 2019 Weather Summary - Dry and Abnormally Warm

Record Warmest Fall in Miami and Naples

December 5th, 2019: A record-warm September and October at several South Florida reporting sites was enough to make Fall 2019 the warmest on record at both Miami and Naples, and the 3rd warmest on record at Fort Lauderdale and West Palm Beach. See the temperature summary and tables below for details.

Through the end of October, only one cold front completely moved through South Florida (September 20th), and it wasn't until November 9th that the second cold front moved through. Unusually strong and persistent high pressure in the middle and upper troposphere prevented cold fronts from penetrating into Florida, keeping a summer-like tropical airmass over the region for almost all of September and October, as well as much of the first half of November. It wasn't until the second half of November when the weather pattern shifted, allowing for cold fronts to make it through Florida and delivering an extended period of below-normal temperatures to South Florida.

The strong high pressure for most of the fall also made the atmosphere more stable, leading to drier-than-normal conditions across South Florida (more details in the precipitation section below).

South Florida received a big scare from Hurricane Dorian at the beginning of September, passing less than 100 miles east of the SE Florida coast. Impacts from Dorian in South Florida were limited to sustained tropical storm force winds along the Palm Beach County coast, as well as higher-than-normal tides which resulted in coastal flooding, and 2-3 inches of rainfall.

Fall 2019 Temperatures

- Miami International Airport had an average fall temperature of 81.6 degrees Fahrenheit. This is 2.4 degrees above the 30-year normal and is the warmest fall on record. The previous warmest fall on record was 81.0F in 2017. The average high temperature was 88F and the average low temperature was 75F. The warmest fall temperature was 96 degrees on September 6th, and the coolest was 57 degrees on November 17th.

- Palm Beach International Airport had an average fall temperature of 79.3 degrees Fahrenheit. This is 1.7 degrees above the 30-year normal and equals the 3rd warmest fall on record. The average high temperature was 85F and the average low temperature was 73F. The warmest fall temperature was 95 degrees on September 6th, and the coolest was 53 degrees on November 25th.

- Fort Lauderdale/Hollywood International Airport had an average fall temperature of 80.2 degrees Fahrenheit. This is 0.4 degrees above the 30-year normal and equals the 3rd warmest fall on record. The average high temperature was 86F and the average low temperature was 75F. The warmest fall temperature was 91 degrees on September 20th, and the coolest was 56 degrees on November 17th and 25th.

- Naples Municipal Airport had an average fall temperature of 80.8 degrees Fahrenheit. This is 3.1 degrees above the 30-year normal and is the warmest fall on record. The previous warmest fall on record was 80.5F in 2015. The average high temperature was 89F and the average low temperature was 73F. The warmest fall temperature was 97 degrees on September 10th, and the coolest was 56 degrees on November 18th, 20th, and 21st.

Fall Monthly Temperature Records:

Miami: 85.2F in September and 83.5F in October

Naples: 85.1F in September and 83.5F in October

West Palm Beach: 81.6F in October

Fall 2019 Precipitation

Rainfall totals ranged from as little as 5 to 8 inches west of Lake Okeechobee to northern Collier County, to 12 to 14 inches over portions of metro Broward and Palm Beach counties. All of South Florida received well-below-normal rainfall, especially in Miami-Dade County where rainfall was as much as 10 to 12 inches below normal. Several stations (included in the table below) ranked among the top 20 driest fall seasons on record, including Miami with its 2nd driest fall on record, and Naples with its 8th driest.

These low rainfall totals relative to normal has led to the development of moderate drought conditions over the southern Everglades, with abnormally dry conditions elsewhere except for portions of metro Broward and Palm Beach counties.

Below is a table of rainfall and departure from normal for official reporting sites across South Florida:

Location (Beginning of Records)	Fall 2019 Rainfall (inches)	Departure from Normal	Rank (top 20)
Canal Point (1941)	9.27	-4.07	19th driest
Devil's Garden (1956)	6.53	-6.04	5th driest
Fort Lauderdale/Hollywood Int'l Airport (1913)	10.57	-8.08	11th driest
Fort Lauderdale Dixie Water Plant	13.30	-6.45	
Fort Lauderdale Executive Airport	12.26	-5.02	
Hollywood Wastewater Plant	11.86	-7.03	
Juno Beach	16.97	-1.42	
Marco Island	7.91	-6.49	
Miami Beach (1927)	11.76	-3.33	
Miami International Airport (1911)	8.08	-11.38	2nd driest
Moore Haven (1918)	6.19	-4.12	12th driest
Muse	7.15		
Naples Municipal Airport (1942)	7.80	-6.12	8th driest
North Miami Beach	11.54	-7.80	
NWS Miami – University Park	11.16	-7.17	
Opa Locka Airport	14.28	-3.89	
Palm Beach Int'l Airport (1888)	12.50	-5.73	
Pompano Beach Airpark	11.02	-7.62	
The Redland - Miami-Dade County (1942)	8.89	-9.76	3rd driest
South Bay/Okeelanta	7.52		
West Kendall – Miami Executive Airport	9.75	-8.63	

Winter Outlook (December – February)

Latest outlooks by the NOAA Climate Prediction Center for December through February are for increased odds of above normal temperatures, and equal chances of precipitation above, near, or below normal. Due to the lack of a strong El Niño signal, confidence in this outlook is rather low.

For the latest south Florida weather information, including the latest watches, advisories and warnings, please visit the National Weather Service Miami Forecast Office's web site at weather.gov/southflorida.

Managing Diamide Resistance in Florida Tomato

Diamides belong to a recently developed class of insecticides that disrupt ryanodine receptors, intracellular calcium channels that play a central role in muscle and nerve function. Diamide insecticides are systemic—they can be taken up by the plant's vascular system either through the roots or foliage. There are presently three diamide insecticides available for use on tomatoes in Florida: chlorantraniliprole, cyantraniliprole, and flubendiamide. Chlorantraniliprole and cyantraniliprole are also referred to as rynaxypyr and cyazypyr, respectively. Chlorantraniliprole, the active ingredient in Coragen, became available in 2008, and flubendiamide, the active ingredient in Belt and Synapse, became available in 2009. Cyazypyr became available in 2013, sold as Verimark for soil application and Exirel for foliar application. Diamide insecticides have been assigned the mode of action classification number 28 by the Insecticide Resistance Action Committee (www.irac-online.org).

Flubendiamide is primarily active against caterpillar pests. Key caterpillar pests of Florida tomato that can be managed with flubendiamide include cutworms, tomato fruitworm (*Helicoverpa zea*), tomato pinworm (*Keiferia lycopersicella*), southern armyworm (*Spodoptera eridania*), beet armyworm (*Spodoptera exigua*), and yellowstriped armyworm (*Spodoptera ornithogalli*). Other caterpillar pests attacking tomato that can be managed with flubendiamide include tobacco hornworm (*Manduca sexta*), cabbage looper (*Trichoplusia ni*), and soybean looper (*Pseudopludia includens*).

Chlorantraniliprole is effective against the same complex of caterpillar pests of tomato as flubendiamide. In addition, chlorantraniliprole suppresses nymphs of the silverleaf whitefly, *Bemisia tabaci* biotype B, and can be used to manage the larvae of serpentine and vegetable leafminers (*Liriomyza sativae* and *L. trifolii*). Cyantraniliprole is effective against both adults and nymphs of the silverleaf whitefly, in addition to killing leafminer and caterpillar pests. The silverleaf whitefly vectors Tomato yellow leaf curl virus (TYLCV), which can cause devastating losses in tomato in Florida and other regions of the world.

As with any insecticide, repeated use of diamide insecticides on successive generations of the same pest may lead to the development of insecticide resistance. In order to avoid the development of resistance to diamides by targeted pests of tomato, group 28 insecticides must be rotated with insecticides possessing different modes of action.

In order to conserve the efficacy of diamide and other insecticides, a “treatment window” approach can be employed. A treatment window is a period of time that is defined by the crop stage, the biology of the pest complex attacking the crop, or a combination of both. Tomato crops are most vulnerable to TYLCV during the first five or six weeks after transplanting, which makes that period the treatment window: the most important time to treat to protect the plants. Planting resistant varieties, destroying crop residues that serve as a reservoir for TYLCV, and using reflective mulches are key strategies for reducing early infection of the tomato crop. At plant applications of neonicotinoid insecticides (Group 4A) or cyantraniliprole may also provide important early-season protection from viruliferous whiteflies. Because of the importance associated with insecticides that can help suppress transmission of TYLCV, the early season may be considered a priority “treatment window” for use of cyantraniliprole.

If a diamide is used during the first 35–42 days after transplanting, alternate modes of action should be used instead of diamides for a period of roughly thirty days following the final application of the diamide insecticide. Under this scenario, insecticides that do not include active ingredients with a group 28 mode of action would be used for suppression of whitefly, leafminers, and caterpillars during this second treatment window. For example,

group 6 and 17 materials could be used for leafminer, and group 11, 18, and 22 materials could be used for caterpillar management. “Softer” materials, including materials that have not been assigned an IRAC MOA number, can be included in these insecticide rotations when appropriate.

Spinosyns, group 5 insecticides, are effective against leafminers and caterpillars but should be reserved for thrips management whenever possible. This is because the spinosyns are among the most effective insecticides for managing thrips, and excessive use of spinosyns can lead to the development of resistance among thrips populations.)

Operation Clean Sweep

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

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

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

2019 - 2020 UF/IFAS Vegetable Production Handbooks

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

Up Coming Meetings

February 20, 2020

WPS – Train the Trainer

8:30AM – 3:30PM

UF/IFAS Everglades Research and Education Center
3200 Palm Beach Road
Belle Glade, FL 33430

The Worker Protection Standard (WPS) applies to farm, forest, nursery and greenhouse operations that produce agricultural plants. **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 and to meet the new mandatory trainer certification.

Cost: \$25.00 (includes lunch and handouts)

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

March 6, 2020 Bridging the Gaps: Approaches for Treating Irrigation Water On-Farm 8:30am - 4:00pm

UF/IFAS Everglades Research and Education Center
3200 Palm Beach Road
Belle Glade, FL 33430

Regional experts will discuss different approaches to treating water on-farm and how to implement pre-harvest water treatment systems, meet the water treatment requirements of the Produce Safety Rule, and how to verify that the system is operating as intended.

Cost to Attend: \$50. Seats are limited to 30. For questions, email Sarah McCoy at sarahmccoy@ufl.edu

Agenda

- 8:30 – Registration
- 9:00 – Welcome and introductions
- 9:15 – Agricultural Water Treatment and FSMA
- 10:15 – Agricultural Water Treatment Tools
- 12:00 – Lunch
- 12:45 – Developing On-farm Agricultural Water Treatment Programs
- 2:30 – Implementing Agricultural Water Treatment on the Farm
- 4:00 – Adjourn

Please register at: <https://bridgingthegaps030620.eventbrite.com>

March 14, 2020

Rare Fruit Council Plant Sale

9:00AM – 2:00PM

South Florida Fairgrounds

[9067 Southern Blvd, West Palm Beach, FL 33411](#)

Buildings 8-10 (Enter at Gate #8)

For more than 30 consecutive years Palm Beach RFC has been bringing 100's of varieties and 1000's of tropical fruit trees and plants to select from at their plant sales. Avocado, Bananas, Barbados Cherry, Black Sapote, Canistel, Carambola, Citrus, Dragon Fruit, Figs, Guava, Grumichama, Jackfruit, Jaboticaba, Longan, Lychee, Macadamia, Mamey Sapote, Mango, Mulberry, Papaya, Peach, Persimmon, Sugar Apple, Star Apple, Tamarind, Herbs & Spices, Specially formulated Fertilizer and much much more! <http://pbrarefruitcouncil.org/>

March 17, 2020

Produce Safety Alliance – Grower Training

8:00AM – 5:00PM

UF/IFAS Everglades Research and Education Center

3200 Palm Beach Road

Belle Glade, FL 33430

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

The trainers will spend approximately seven hours of instruction time covering:

- Introduction to Produce Safety
- Worker Health, Hygiene, and Training
- Soil Amendments
- Wildlife, Domesticated Animals, and Land Use
- Agricultural Water (Part I: Production Water; Part II: Postharvest Water)

Cost to Attend: \$25

Please register at: <https://psa031720.eventbrite.com>

For questions, email Sarah McCoy at sarahmccoy@ufl.edu

Websites

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

PERC - WPS Compliance Suite — Training Materials

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

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

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

Need CEU's?

Here are a couple of ways to earn CEU's

1. Earn CORE CEUs for pesticide license renewal in your office or at home

CEU: Continuing Education Units

<http://citrusindustry.net/ceu>

Earn CEU Credits NOW online through Southeast AgNet & Citrus Industry Magazine

The following series of articles and quizzes are available:

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

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

Go to: CEU Series-Growing Produce

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

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

2. To earn Ag Row Crop, Ag Tree Crop or Private CEUs for pesticide license renewal, attend seminars/workshops at the Immokalee IFAS Center.
3. To earn CEUs for pesticide license renewal in any category, go to: <https://pested.ifas.ufl.edu/ceu/> note there is a charge for these.

Worker Protection Standard Train the Trainer Classes Now On-Line

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

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

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

Cost is \$35

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

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

Check out Southwest Florida Vegetable Grower on Facebook

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

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

Wishing you all the Best for a Happy, Healthy and Prosperous New Year

Contributors include: Joel Allingham/AgriCare, Inc, Dr. Ozgur Batuman/ SWFREC, Gordon DeCou/Agri Tech Services of Bradenton, Dr Nick Dufault/ UF/IFAS, Jason Dyess/Agriquest, Inc., Rachel Giles, Carrie Harmon/UF/IFAS Plant Disease Clinic, Lisa Hickey/Manatee County Extension, Bruce Johnson/General Crop Management, Barry Kostyk/SWFREC, Leon Lucas/Glades Crop Care, Chris Miller/Palm Beach County Extension, Mark Mossler/UF/IFAS Pesticide Information Office, Gene McAvoy/Hendry County Extension, Alice McGhee/Thomas Produce, Dr. Gregg Nuessly/EREC, Chuck Obern/C&B Farms, Dr. Jawad Qureshi, SWFREC Dr. Rick Raid/ EREC, Dr Pam Roberts/SWFREC, Wes Roan/6 L's, Dr. Dak Seal/ TREC, Kevin Seitzinger/Gargiulo, Kevin Short/ICM, Dr Gary Vallad/GCREC , Mark Verbeck/GulfCoast Ag, Dr. Qingren Wang/Miami-Dade County Extension, Alicia Whidden/Hillsborough County Extension, Dr. Phillip Williams/SWFREC, Dr Henry Yonce/KAC Ag Research and Dr. Shouan Zhang/TREC.

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

Gene McAvoy

Gene McAvoy
Regional Vegetable Extension Agent IV Emeritus
Associate Director for Stakeholder Relations
University of Florida IFAS Southwest Florida Research and Education Center

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

239-658-3414
863-673-5939 cell
gmcavoy@ifas.ufl.edu

Chris Miller

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

Phone: 561-233-1718

Email: cfmiller@ufl.edu

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

Thomas Produce Company

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

Shawn Barley

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

Carol Howard

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

Ryan Richards

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

Gargiulo

Growers Shippers Importers Exporters
David Pensabene: Production Manager
Naples Operations
Phone 239-353-0300 Fax 239-353-3407

Nichino America

Makers of Courier, Portal & Vetica
Technical Sales Representatives
Todd Villars: West Florida - 863-532-0937
Sam Monroe: East Florida - 772-473-0873

Put Your Name Here

Ed Early

DuPont Crop Protection
Fort Myers, Florida 33911
Mobile 239-994-8594

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

Glades Crop Care, Inc.

**Leaders in Crop Health
Management**

Charlie Mellinger, Ph.D.
Phone 561-746-3740 Fax 561-746-3775

Stacey Howell

Bayer CropScience

3481 3rd Ave NW
Naples, FL 34120
Phone (239) 353-6491 Cell (239) 272-8575

Justin Powell

Southeast Business Leader

Adama

229 881 9757 cell
justin.powell@adama.com

Bart Hoopingarner

Gowan Company

3605 162nd Ave East
Parrish, FL 34219
Phone 941-776-1105 Cell 941-737-7444

Sponsored by Orondis® fungicide &
Syngenta Crop Protection

Morgan McKenna
Fort Myers, FL 33901
Cell 336-337-2085

OmniLytics - AgriPhage

Safe Natural Effective
Vegetable Bacteria Control
Matt Stephenson Smith – 239-572-3342
Ryan Benson – 801-300-3437

Dave Owens

Marrone Bio Innovations

Cell 239-233-9073 or
dowens@marronebio.com

Brent Beer

***Beer Leveling &
Land Development***

Office 863-675-1663 863-673-3173 cell
158*17*43857 Nextel

Certis USA

Bio-Pesticides for Crop Production

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

Scott Houk

Dow AgroSciences LLC

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

FMC

FMC Corporation

Eric Johnson
Cell 352-281-2325

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

Steve Mike Dave

Jamerson Farms

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

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

Sarah Hornsby, CCA
Agricultural Crop Consulting, Inc
Scouting: Manatee, Hillsborough, Collier
Office/Fax 941-776-1122
Cell 941-713-6116
Email: AgCropCon@aol.com

Donald Allen
AGLIME SALES INC
PO Box 60
Babson Park, Florida 33827-0060
Office 863-638-1481 Fax 863-638-2312
Mobil 863-287-2925

BioSafe Systems LLC



OxiDate® TerraClean® StorOx®	Jarod Huck 352-789-9363 Luis Hansen 305.793.9206
---	---

info@biosafesystems.com

PUT YOUR NAME HERE

BASF Corporation

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

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

Valent USA

"Products That Work
From People Who Care"

Sarah Markle 863-673-8699

ORO AGRI
Pesticides and Spreader Oils
OROCIT/ PREV-AM/WETCIT
Brent Sapp 229-392-2325
bsapp@oroagri.com
CPS/Howards/Triangle

Chuck Obern
C & B Farm
CR 835
Clewiston, FL 33440
Office 863-983-8269 Fax 863-983-8030
Cell 239-250-0551

Scott Allison
Diamond R Fertilizer
PO Box 1898
LaBelle, FL 33975
(863) 675-3700
sagator@aol.com

Arysta Life Science

Richard Royal 352 434-8774
Shaun Yule 386 561 0493

Richard Roles
Roles Marketing International
Distributors of Agrigro and Super
Cal 10% Calcium
richard@rmiint.com www.rmiint.com
Cell 561-644-3511

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

Dr. Henry Yonce
KAC Agricultural Research
Scouting, Consulting
Research
386-736-0098 work 386-527-1124 cell
HDYONCE@msn.com

Grower's Management, Inc
P.O. Box 130
Belle Glade, FL 33430
Phone: 561-996-6469
www.growersmanagement.com

PUT YOUR NAME HERE

PUT YOUR NAME HERE

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