



SOUTH FLORIDA VEGETABLE PEST AND DISEASE HOTLINE

March 1, 2015

A series of cold fronts dipped down across the peninsula in February resulting in over all cool night time temperatures for the month. A strong cold front on February 19 dropped temperatures to below freezing in many parts of interior South Florida with temperatures as low as 28 degrees reported on the morning of February 20 in a number of locations.

Growers report patchy freeze damage on a range of crops including tomatoes, peppers and watermelons from Hillsborough County to Naples. Over all damage was relatively light in most areas and consisted of frosted tops and some small fruit. Corn and bean growers on colder outside land around Belle Glade and in Hendry County reported significant damage on these crops. Heavy cold winds which accompanied the front

FAWN Weather Summary

Date	Air Temp °F		Rainfall (Inches)	Ave Relative Humidity (Percent)	ET (Inches/Day) (Average)
	Min	Max			
Balm					
1/19 – 3/1//15	28.61	80.76	6.08	79	0.08
Belle Glade					
1/19 – 3/1//15	32.82	85.71	2.03	80	0.09
Clewiston					
1/19 – 3/1//15	32.56	85.28	2.04	79	0.09
Ft Lauderdale					
1/19 – 3/1//15	38.62	85.01	2.42	73	0.09
Homestead					
1/19 – 3/1//15	35.96	86.76	1.33	80	0.09
Immokalee					
1/19 – 3/1//15	28.09	87.04	1.97	79	0.08
Okeechobee					
1/19 – 3/1//15	28.50	86.43	3.94	80	0.08

“Remember, when in doubt - scout.”

probably limited frost formation and crop damage but also caused widespread damage to crops tattering foliage and desiccating tender new growth.

Foggy conditions between fronts and scattered showers proceeding some cold fronts helped increase disease pressure in a number of crops.

Most areas received significant rainfall from just over an inch in Homestead to over 6 inches in Balm.

Heavy showers affected some east coast locations on February 28 with over 8 inches reported in parts of Miami-Dade and Broward Counties, parts of Palm Beach, Martin and St Lucie Counties were also pounded.

The National Weather Service forecasts that relatively drier air will arrive across much of the region today. A ridge of high pressure will continue shifting from the western Atlantic to the Yucatan peninsula and will be strong enough to keep a cold front well north of the area Monday night.

Temps are expected to be above normal through midweek, especially along the west coast, with the upper ridge moving little. Highs around 85 are possible on the west coast by Wednesday.

An upper trough stuck across the southwest much of this week, will finally exert enough influence on the upper ridge, causing it to shift east by late week. Some models are showing a front stalling over south Florida by next Friday and Saturday. However any widespread rainfall may be delayed until the trough itself, moves east of the Mississippi River valley, by late next weekend.

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

Insects

Leafminer

Growers and scouts in SW Florida report that leafminers are flaring in a number of places after cold with most pressure in tomatoes but some watermelon fields are also being treated.

Reports from Homestead indicate leafminer numbers are high in all crops. Growers are using Spintor, Radiant, Vydate, Coragen, Durivo, neonicotinoids, Agrimek for controlling other pests which also provides control of leafminers.

On the East Coast, leafminer pressure is mostly low.

Respondents in the EAA report an increase in leafminer pressure in leafy greens.

Sources in the Manatee Ruskin area report that leafminer pressure is beginning to increase in new plantings.

An integrated pest management program that stresses conservation of natural enemies is important for the successful control of leafminer. Chemical control can be difficult due to the feeding habits inside the leaf of the host plant. Insecticides that specifically target the leafminer are recommended as use of broad-spectrum materials 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.

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

The newest addition to the grower's arsenal of control are the diamide insecticides – Verimark, Exeril (cyazypyr) and Coragen (rynaxpyr) DuPont, which have given good results and have virtually eliminated leaf miner pressure on many farms. Since these materials are often used to target other pests growers should be careful to rotate modes of action and avoid back to back applications.

Field sanitation is another important control tactic. Weeds and abandoned crops can serve as reservoirs for this pest. After harvest crops should be destroyed as soon as possible to avoid having them serve as reservoir for new infestations. Growers often learn about the importance of sanitation the hard way!

Aphids

Reports from the EAA indicate that aphid numbers were heavy in the leaf crops prior to the cold spell. For a few days, post freeze they became scarce but by Monday they were back again, alate (winged) and apterous (wingless) alike and included cabbage aphid, green peach, melon aphid and potato aphid.

In Palm Beach County, aphids are building in pepper in some areas.

Around Southwest Florida, respondents note that aphids are on the move after recent cold with colonies forming in potato, peppers and cucurbits.

The cabbage aphid, *Brevicoryne brassicae* is found on cole crops worldwide. The cabbage aphid feeds only on plants in the cabbage family.

Cabbage aphids are grayish green with a white, waxy coating. They commonly occur in dense colonies, often covered with waxy droplets. Green peach aphids may also attack cabbage and other cole crops. These aphids are typically yellowish-green with long cornicles and may feed on over 300 species of plants.

Cabbage aphids prefer to feed on the youngest leaves and flowering parts and are often found deep within the heads of cabbages. Both winged and wingless adults occur; the winged cabbage aphid adults have a black thorax and lack the waxy coating.

Feeding damage from large numbers of aphids can kill seedlings and young transplants. On larger plants; feeding damage results in curling and yellowing leaves, stunted growth, and deformed heads.

Contamination by dead aphids in the head or wrapper leaves can also be a problem. Dead aphids do not wash off easily and will cause a head to be unsuitable for fresh market sales.

The green peach aphid, *Myzus persicae* (Sulzer), is found throughout the world and is viewed as a pest principally due to its ability to transmit plant viruses. The green peach aphid readily infests vegetables and can be transported long distances by wind and storms.

Green peach aphid feeds on hundreds of host plants in over 40 plant families. Vegetable hosts include artichoke, asparagus, bean, beets, broccoli, Brussels sprouts, cabbage, carrot, cauliflower, cantaloupe, celery, corn, cucumber, fennel, kale, kohlrabi, turnip, eggplant, lettuce, mustard, okra, parsley, parsnip, pea, pepper, potato, radish, spinach, squash, tomato, turnip, watercress, and watermelon.

In warmer climates such as Florida the aphids do not seek out overwintering hosts, but persist as active nymphs and adults on hardy crops and weeds throughout the winter months.

Nymphs initially are greenish, but soon turn yellowish, greatly resembling adults.

The wingless (apterous) aphids are yellowish or greenish in color. They measure about 1.7 to 2.0 mm in length. A medial and lateral green stripes may be present. The cornicles are moderately long, unevenly swollen along their length, and match the body in color. The appendages are pale. The nymphs that give rise to winged females (alates) may be pinkish.

Winged aphids have a black head and thorax, and a yellowish green abdomen with a large dark patch dorsally. They measure 1.8 to 2.1 mm in length.

Green peach aphids can attain very high densities on young plant tissue, causing water stress, wilting, and reduced growth rate of the plant. Prolonged aphid infestation can cause appreciable reduction in yield of root crops and foliage crops. Early season infestation is particularly damaging to potato, even if the aphids are subsequently removed.

Contamination of harvestable plant material with aphids, or with aphid honeydew, also causes loss. Blemishes to the plant tissue, usually in the form of yellow spots, may result from aphid feeding.

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. Over 100 viruses are transmitted by this species.

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 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 be inadequate protection.

The melon aphid or cotton aphid, *Aphis gossypii* Glover is a common pest in the southeast. Melon aphid has a very wide host range and at least 60 host plants are known in Florida, including cucurbit pepper, eggplant, and okra.

In the south, females produce offspring without mating so long as weather allows feeding and growth. Unlike many aphid species, melon aphid is not adversely affected by hot weather. Melon aphid can complete its development and reproduce in as little as a week, so numerous generations are possible under suitable environmental conditions.

Nymphs vary in color from tan to gray or green, and often are marked with dark head, thorax and wing pads, and with the distal portion of the abdomen dark green. The body is dull in color because it is dusted with wax secretions. The nymphal period averages about seven days.

Adult melon aphids are quite variable in color: light green mottled with dark green is most common, but also occurring are whitish, yellow, pale green, and dark green forms. The legs are pale with the tips of the tibiae and tarsi black. The cornicles also are black. Small yellow forms apparently are produced in response to crowding or plant stress. Winged (alate) parthenogenetic females have a black head and thorax and yellowish

green abdomen except for the tip of the abdomen, which is darker. The wing veins are brown. The egg-laying (oviparous) female is dark purplish green; the male is similar.

The potato aphid, *Macrosiphon euphorbiae* is larger and more elongate than green peach aphid. Color may vary from green, pink, to yellowish. The eyes are red.

Aphid feeding may cause significant foliar damage, leaf distortion and droop as well as overall stunted growth and dieback. Signs of aphid infestation may include: Premature blossom drop, deformed fruit, and decreased yields can result in very severe infestations.

See potato aphid ID card at <http://edis.ifas.ufl.edu/pdffiles/IN/IN105600.pdf>

Hundreds of natural enemies have been recorded attacking aphids. Various studies that selectively excluded or killed beneficial organisms have demonstrated the explosive reproductive potential of these aphids in the absence of biological control agents, thus demonstrating their value in reducing damage potential.

Infested crops should be destroyed immediately after harvest to prevent excessive dispersal, and it may be possible to destroy overwintering hosts if they are weeds.

Excessive and unnecessary use of insecticides should be avoided. Early in the season, aphid infestations are often spotty, and if such plants or areas are treated in a timely manner, great damage can be prevented later in the season. In some cases, use of insecticides for other, more damaging insects sometimes leads to outbreaks of green peach aphid. Inadvertent destruction of beneficial insects is purported to explain this phenomenon, but aphid resistance to some types of insecticide may also be involved.

Softer pesticides including insecticidal soaps such as M-Pede), nicotinoids like Admire, Provado, Assail and others including Beleaf, Movento and Fulfill will provide good control help reduce impact on beneficials. Dr. Dak Seal, Entomologist at TREC reports that a relatively new product Sulfoxflor (Closer – Dow Agrosiences) is the best insecticide to control green peach aphid.

Resistance to some insecticides has been reported in some aphid populations. Rotating pesticide materials may effectively help slow the development of resistance.

Thrips

Around Southwest Florida, thrips numbers are increasing and depending on the location, Florida flower thrips, western flower thrips and *Thrips palmi* can be found in blooms and on some apical meristems in young peppers and eggplants, and tomatoes to a lesser extent. *Thrips palmi* have reportedly caused significant foliar and fruit damage in several pepper fields throughout the area. In recent days, Florida flower thrips (*F. bispinosa*) are increasing significantly. These cause little damage and may be beneficial by out-competing harmful species in some situations.

Respondents report that thrips are ranging from low to high on the east coast. Low in St Lucie Co. and from moderate to high in Martin and Palm Beach. They appear to be mostly western flowers thrips with a few *Thrips palmi* mixed in.

Around Homestead, Dr Dak Seal reports that melon thrips are present on a variety of vegetable crops including tomato. He notes in the past he did not observe melon thrips to reproduce on tomato; whereas in this week's survey, he observed melon thrips larvae in 70% tomato flower samples. Eggplants are getting hammered by melon thrips as usual. Other crops are also receiving economic damage.

He advises growers:

- A. Do not use insecticides unless you are sure about pest status of the thrips on your crop. In order to be sure, get your thrips identified by the nearest available thrips authority (extension agents, scouts, researchers, etc.). Some thrips such as *F. bispinosa* can be relatively harmless or even beneficial.
- B. Once the species is confirmed to be a harmful one, plan immediately your IPM program.
- C. Scout fields to confirm the level of infestation - if population is below threshold level, use environmentally compatible products, such as Trilogy, Neemix, Requiem, Grandevo. These products can be used alone or in combination (Trilogy + Requiem or Neemix + Grandevo). I
- D. If thrips populations are increasing above threshold levels, (post-bloom >5/flower), use Radiant in combination with Movento followed by Closer/Exirel. All of these above mentioned insecticides will provide suppression of thrips populations but none of them is a silver bullet.

Dak reports that Western flower thrips populations also increased significantly in this week's tomato flower samples taken in Homestead. This week recorded 5-10 western flower thrips adults/10 flowers sample. Last week this number was 0-2 adults/10 flowers sample. On the other hand, we recorded 2-6 common blossom thrips adults/sample in our last week's sample and 0 -1 in this week's sample. However, incidence of tospovirus symptoms on tomato remained same.

Common blossom thrips (*Frankliniella schultzei*) and western flower thrips (*F. occidentalis*) are also causing serious damage to tomato around Homestead by transmitting tospovirus. Dak reports collecting common blossom thrips more than western flower thrips and are finding an average of one adult every two 10-flower sample. Malathion, Radiant, Requiem, Spintor, Agrimek in rotation or in combination are doing well in suppressing thrips numbers.

Silk fly

In the EAA, silk fly adults were lower after the freeze in sweet corn that was in silking stage. Higher numbers of adults are being reported in young corn, (2 to 3 ft. tall) closer to the lake in the EAA.

In the Homestead area, corn silkfly remains active. Dr Dak Seal reports tomato fields provide good breeding grounds for corn silk fly. He notes that the silk fly populations are increasing with increasing decomposed tomatoes in harvested fields. Other fruiting vegetables may also serve as breeding grounds of corn silk fly. As a management tool, vegetable and fruit growers should clean their fields immediately after harvest. Certis Bait pellets show significant reduction of corn silk fly adults and corn silk fly damage on corn ears. In addition, pyrethroids can be used to reduce silk fly adults.

Whiteflies

Around Palm Beach County, whiteflies pressure is persistent on some pepper and in tomato and eggplant and have reached high levels in some old eggplant. Nymphs are also widely present. High numbers of whiteflies are also causing "silverleaf" in some squash plantings.

Numbers remain mostly low in Martin and St Lucie Counties.

In the Naples area, whitefly and virus remains low.

Growers and scouts in Southwest Florida report that whitefly numbers fell off following recent cold weather but expect they will be back as conditions warm this week.

In the Manatee Ruskin area respondents note that whitefly is coming back strong with some counts around 4/plant around some borders at the beginning of week. Growers are also report seeing some infield TYLCV movement and are getting a little nervous about that.

Whitefly numbers remain high in Homestead and reports indicate that in the second planting of bean and some of the first planting of tomato, silverleaf whitefly transmitted viral diseases like Tomato Yellow Leaf Curl virus and Bean Golden Mosaic virus are increasing.

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

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>

See Management of Whiteflies, Whitefly-Vectored Plant Virus, and Insecticide Resistance for Vegetable Production in Southern Florida - http://indian.ifas.ufl.edu/hort/Whitefly_Management_Vegetable_Production-ENY-735.pdf

Pepper Weevil

Around Southwest Florida, pepper weevils are going strong in some fields with adults starting to find younger fields as well.

On the East Coast, pepper weevils are common in older pepper but about normal for the time of year.

In the Homestead area pepper weevil remains a major threat to pepper and in the past week or so reports of pepper weevils in a number of eggplant fields as well. Growers should avoid planting pepper near infested eggplant fields.

Growers should routinely scout fields to detect the beginnings of an infestation. This can be done by visually inspecting the field and also by using yellow sticky traps. Once infestation is detected, growers should start applying chemical insecticides such as Actara, Vydate, the diamides and pyrethroids in a program to control pepper weevil.

Sweetpotato Weevil

Dr Dak Seal reports that sweetpotato weevils are abundant on boniato sweetpotato around Homestead. Lannate, pyrethroids and Sulfoxaflor (Closer) provided significant reduction of sweetpotato weevil in his laboratory and field studies.

Spider Mites

Spider mites have been reported on some melons in Manatee County.

Low levels of spider mite are also present around Southwest Florida.

Two-spotted spider mites continue to cause problems on beans and squash around Homestead.

Worms

Worm activity remains mostly low around South Florida.

Around Belle Glade, worms are mostly low but growers report a slight increase in fall army worm activity in sweet corn over the past few days, and oviposition as high as 15% has been reported in some young sweet corn.

Around Homestead, worms remain active on a variety of crops.

Stinkbug

Growers and scouts report a slight uptick in stink bug adult numbers and some oviposition around Immokalee.

Wireworms

Dak Seal reports that in last week's black light trap sample in Homestead, high numbers of click beetles were captured indicating higher population of wireworms in crop fields. They are significant pest of germinating seeds and can cause 10-20% stand reduction. Cultural practices, such as, crop rotation, thorough ploughing, temporary flooding and weed free ground along with soil applied insecticides are effective method for reducing wireworm.

Diseases

Disease activity has been relatively quiet over the past few weeks.

Late Blight

Late blight remains a concern across Southwest and West Central Florida and reports indicate that in some locations incidence has reached moderate levels in tomatoes however overall at this time occurrence appears to be lower than last season. In potatoes it has been much lower.

Growers and scouts report seeing some new lesions in some fields following recent fogs and wet humid conditions.

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

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

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

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

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

Fungicides for Late Blight

Product	Brand Name	FRAC Number
chlorothalonil	many brands	M5

maneb/mancozeb	many brands	M3
cyazofamid	Ranman	21
cymoxanil	Curzate	27
strobilurins	Quadris, Cabrio, Flint	11
fluopicolide	Presidio	43
famoxadone + cymoxanil	Tanos	11 + 27
mandipropamid	Revus	40
Dimethomorph	Acrobat, Forum	40
mefenoxam**	Ridomil	4
propamocarb	Previcur Flex	28
zoaxamide + mancozeb	Gavel	22 + M3
ametoctradin + dimethomorph	Zampro.	40 + 45

** resistance documented in many races

Consult current UF/IFAS recommendations for labeled fungicides for the control of late blight.

Mid-season update from Dr. Pam Roberts, Pathologist at UF/IFAS SWFREC, late blight (*Phytophthora infestans*) continues to occur in south Florida. Only a single genotype, US23, has been confirmed this season. The US-23 genotype is reported as sensitive to intermediate to mefenoxam (metaxyl).

From this season, 20 isolates of the pathogen collected from tomato and potato fields were tested for mefenoxam sensitivity in our lab at SWFREC and all of them were confirmed to be very sensitive.

Field evaluation of the USAblight Decision Support System (formerly Cornell Decision Support System) is underway for the second season at SWFREC. Last season, we decreased the number of fungicide applications while maintaining the same level of late blight control using this weather-based forecasting system.

For additional information on late blight please visit: <http://usablight.org/>

Target spot

Around Immokalee, target spot is increasing on tomato in a number of locations. It is especially problematic in older tomato where it is working inside the canopy of mature plants.

In East Coast production areas, respondents indicate that target spot pressure is lower than it has been in tomato and scouts note seeing a little target spot in some young cukes.

Target spot is frequently misdiagnosed as in its early stages as symptoms are difficult to recognize and can be confused with bacterial spot and early blight.

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.

In recent trials, at the University of Florida fungicides were rated for efficacy as follows:

- 1) Switch, Inspire Super**
- 2) Revus Top, Scala**
- 3) Tanos, Endura, Quadris (and other strobilurins), Reason**
- 4) Bravo (chlorothalonil)**
- 5) Mancozeb, Copper**

Sclerotinia

Respondents in Palm Beach report that sclerotinia had slowed down but picked back up recently in pepper and eggplant. Growers are also finding a little in tomato.

Around Immokalee, growers continue to report some scattered sclerotinia in tomato and pepper fields at mostly low levels.

In the EAA, sclerotinia is present in lettuce and beans and is causing some losses.

The fungus, *Sclerotinia sclerotiorum*, is responsible for a number of vegetable diseases attacking a wide range of crops. Common names for Sclerotinia diseases in Florida are white mold (beans), drop (lettuce), stem rot (pepper, potato and tomato), and nesting (post-harvest disease of bean).

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.

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. 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.

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

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

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, Priaxor and various strobilurins have 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.

Bacterial Spot

Around SW Florida, bacterial spot is present at mostly low levels in pepper and tomato and some increases are being reported following wet periods. Incidence is mostly sporadic but is reaching higher levels in some pepper fields where some defoliation has been reported. Despite this many fields remain clean.

On the East Coast, respondents note that bacterial spot has been creeping up in some older pepper and tomato fields but for the most part has not reached very significant levels.

Bacterial spot is present on pepper and tomato around Homestead.

Early Blight

Early blight has been reported on some tomatoes around South Florida. Some fruit infections have been noted.

Alternaria Black rot

Alternaria is common in some older tomato following last week's freeze where it is moving in on fruit shoulders in the form of black mold on frost damaged fruit. This pathogen initially infects green fruit through cuticle cracks on the fruit surface, but symptoms do not develop until the fruit begin to ripen.

Growers should apply to weekly applications of Bravo to affected crops. Additional fungicides that limit foliar disease development should also help reduce secondary infection of fruit. Endura, Fontelis, Inspire Super, Priaxor fungicides are effective against Black mold in tomato. Be aware that Inspire Super has plant back restrictions for potato, sweet corn and a number of other vegetables. (No plant back restriction with cucurbits, leafy brassicas and fruiting vegetables)

Alternaria Leaf and Pod Spot of Snap Bean

Alternaria leaf and pod spot (*Alternaria* sp) is present on green beans in the EAA. Large numbers of unsightly flecks, however, can result in rejection of the entire lot, especially at lower market prices.

Leaf symptoms first appear as small, water-soaked flecks that rapidly develop into circular to irregular spots with pale-brown centers and reddish-brown borders. Faint, concentric rings may occasionally be visible in older lesions. As the disease progresses, leaf lesions may merge together leading to large, blighted areas and premature leaf drop.

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

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

Beans that are nutritionally deficient in nitrogen and/or potassium are most susceptible as are those planted at high densities with can result in more frequent disease incidence and greater disease severity.

It is particularly important that effective fungicides be applied when pods are small (pin pod stage) in order to avoid infections that will be evident later as pods mature. Strobilurin fungicides have given good results but should be applied according to the label and rotated with materials with other modes of action to avoid potential problems with resistance.

Botrytis

Around Southwest Florida, growers and scouts report some problems with botrytis causing abortion of tomato flowers and note that it has increased with the foggy mornings.

Botrytis is also a problem in strawberries.

Gummy stem Blight

Mostly low levels of gummy stem present in watermelons around southwest and west central Florida.

Downy Mildew

Around Southwest Florida, downy mildew remains widespread on squash and cucumber.

In the Homestead area, respondents indicate downy mildew is moderate to severe on some squash and other cucurbits.

On cucurbits, downy mildew lesions start out as yellow angular leaf spots typically located away from leaf margins that will later turn brown to black in color. Often leaf curling and water soaking are associated with downy mildew. A white to grayish fungal growth will appear in the undersides of these lesions when the leaves are wet from heavy dews, rainfall and high humidity (> 90%).

Protectant fungicides (chlorothalonil and mancozeb) provide excellent control early in the season, but their effectiveness is limited once the disease becomes established.

Downy mildew has been reported to have resistance to Ridomil Gold and FRAC group 11 (e.g., Cabrio, Quadris) fungicides.

Revus, Ranman, Presidio and Previcur Flex are the recommended fungicides for downy mildew control once it is present. These fungicides should be mixed with a protectant fungicide to provide optimal control of downy mildew.

Downy mildew has also been reported in leafy brassicas and will jump on kale and other leafy brassicas if left unprotected.

Lettuce Downy Mildew

Low levels of lettuce downy mildew continues to plague growers in the EAA.

Lettuce growers are urged to be on a preventative program with mancozeb and phosphite tank-mixtures and these should be alternated with a good translaminar or systemic fungicide more specific to downy mildew. There is a large selection to choose from and growers should rotate among dissimilar chemistries for management of fungicide resistance.

Downy mildew is a serious foliar disease of lettuce which has a direct effect on yield and quality, as it affects the marketable portion of the crop. In addition to losses in the field, downy mildew's impact is

accompanied by significant postharvest losses. In Florida, yield losses of up to 100 percent have been reported for individual fields.

Symptoms of downy mildew appear initially as chlorotic yellow spots on the upper leaf surface. Under favorable conditions, a white cottony-like fungal growth indicative of sporulation may be seen on the lower leaf surface.

During the early stages, leaf spots are often delineated by the veins of the leaf, giving an angular appearance. Lesions become increasingly chlorotic and eventually turn brown. Although downy mildew is most severe on the older outer leaves, the disease may become systemic over time, infecting heads internally. Lesions may also provide entry for secondary fungi such as Botrytis.

Due to downy mildew demonstrated ability to develop resistance, growers are advised to rotate chemistries to avoid problems - FRAC numbers on labels will help avoid using similar active ingredients repeatedly.

The list of fungicides currently labeled for lettuce downy mildew control includes maneb, fosetyl Al, metalaxyl, and several copper compounds. Recently some newer compounds including Presidio, Previcur Flex, Reason, Revus, and Tanos have been added to growers control options. Resistance in *B. lactucae* to the fungicide metalaxyl was reported in Florida during 1989, and therefore its efficacy may be somewhat reduced.

Applications must be made prior to infection if adequate control is to be maintained. If downy mildew is known to be present in the area, growers should launch a fungicide program immediately.

Several cultural practices, such as the establishment of a lettuce-free period, crop rotation, and the destruction of possible weed hosts, are also recommended control measures.

Downy mildew is also present at mostly low levels on crucifers especially kale around South Florida.

Basil Downy Mildew

Downy mildew pressure in basil has been relentless and growers have to work hard to keep it in check.

Dr Rick Raid, pathologist at UF/IFAS EREC notes that recent weather with cool nights has been extremely favorable for development and will continue to ideal for disease development over the next few months.

Although few fungicides are specifically labeled for this disease, some broadly labeled fungicides which are labeled under the herb crop grouping on current labels, such as Revus, Ranman, Quadris and Amistar (Azoxystrobin) and the phosphonic acids have shown efficacy in managing the disease.

These fungicides are most effective when applications are started before or just after initial symptoms start.

Powdery Mildew

Growers and scouts around Southwest Florida report that powdery mildew continues to cause problems in cucurbits, especially in squash.

On the East Coast and in Homestead, powdery mildew is widely present on squash.

Powdery mildew has also been reported on some pepper in some East Coast locations. Powdery mildew is also present in some strawberries.

Northern Corn Leaf Blight

The EAA reports an up-tick in northern corn leaf blight in some fields around Belle Glade.

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 NCLB.

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

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

Fungicides should be applied when lesions first become visible on the lower leaves or when disease is reported to be in the area.

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

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

Fusarium

Growers and scouts are reporting an increase in Fusarium wilt in some tomato fields where water was held up for freeze protection.

Tomato Yellow Leaf Curl Virus

Growers and scouts around Immokalee indicate that there is plenty of TYLCV around and symptoms have really flared in some spring plantings, especially around field margins (location pointing to direction where the hot whiteflies came from).

In Palm Beach County, TYLCV is mostly low but increasing in incidence in older and younger tomato due to higher background whitefly numbers and control measures seeming to be less effective.

Around Manatee County some in-field transmission of TYLCV has been reported in young tomato and is making growers nervous.

Around Homestead, TYLCV can be found in most tomato fields.

Groundnut Ring Spot Virus and Tomato Chlorotic Spot Virus

Around Homestead, symptoms of the Tospoviruses, Groundnut Ring Spot Virus (GRSV) and Tomato Chlorotic Spot Virus (TCSV) are increasing in a number of tomato fields. In some fields around Homestead, up to 30% infection rate has been reported.

Scattered symptomatic plants have also been reported around SW Florida and in Palm Beach County.

Tomatoes infected with TCSV display necrotic lesions and chlorotic spots, and ring spots on leaves, stems, petioles, and fruit. Following the initial symptoms, wilting and bronzing of the infected plants may occur. Infection of TCSV in young tomato plants may result in severe stunting and eventually death of the plant. Symptoms of Groundnut Ring Spot Virus and Tomato Chlorotic Spot Virus are similar and require lab diagnosis to distinguish the two.

TCSV was first reported in tomato plants from South Florida in 2012. Like Tomato spotted wilt virus (TSWV), TCSV is transmitted by thrips. Western flower thrips (*Frankliniella occidentalis*), common blossom thrips (*F. schultzei*) and possibly other thrips species are vectors of this new tospovirus. The fact that the disease is beginning to show up more widely with greater frequency across South Florida is a cause for concern.

The close relationship between TCSV and TSWV indicates that integrated management strategies directed against TSWV may also be effective for control of these new tospoviruses. Research in North Florida has demonstrated that a combination of UV reflective mulches, acibenzolar-S-methyl (Actigard), and insecticides has provided excellent management of TSWV in commercial tomato fields.

A number of varieties of tomato that are resistant or tolerant to TSWV are commercially available. The source of resistance in all of the resistant cultivars is reported to be the Sw5 gene. It is thought that cultivars containing the Sw5 gene may also confer resistance to other tospoviruses such as TCSV. Trials are being planned to evaluate these resistant varieties in Homestead in spring of 2015.

Insecticides Radiant (spinetoram), Spintor and Entrust (spinosad) are efficacious against thrips while sparing predator populations. Field trials were conducted in Homestead with various insecticides such as Entrust, Closer, Verimark, Exirel, Belay, Movento, Requiem, Lannate, and pyrethroids for melon thrips control. The insecticides were applied four times weekly with the exception of Verimark, which was applied only once at planting. All products showed a reduction on melon thrips populations. The best control was achieved by combining Radiant with Requiem and alternating this combination with other above mentioned insecticides.

North Florida research with TSWV indicates that insecticides alone may not be adequate to control the virus.

For more info, see ENY859- Managing Thrips and Tospoviruses in Tomato at <http://edis.ifas.ufl.edu/in895>.

News You Can Use

Clinic Helping Growers Detect Diseases - It serves commercial, home growers for all Florida crops

By Kevin Bouffard

THE LEDGER

February 17, 2015

IMMOKALEE | You go to a clinic when you're ill; so should your plants.

That's because an early and accurate diagnosis of a plant disease often makes the difference between successful treatment and replanting, said Pam Roberts, director of the Florida Extension Plant Diagnostic Clinic at the Southwest Florida Research and Education Center in Immokalee.

The clinic re-opened in October after shutting down for four years because of budget problems, she said. It serves both commercial and home growers of all crops grown in Florida.

"The vegetable industry in particular thought it was one of the most important services we could provide," Roberts said. "It's great to have the resources to be able to provide this service again."

The clinic accepts plant samples, including roots, leaves and stems, from all over the state for testing and can have a diagnosis for most samples within days, she said. It charges \$40 for each sample.

In most cases, a look under the microscope will confirm most diseases, said Roberts, a professor of plant pathology at the University of Florida, which operates the Immokalee center. If that's not conclusive, the clinic can conduct various lab tests in house to obtain the proper diagnosis.

Roberts cited a common watermelon fungal disease, Downy mildew, also called "wild fire" because it spreads so quickly through a field.

"When it first gets started in the field, it can be confused with other disorders," Roberts said.

Early detection means the disease can be controlled with fungicides, she added.

"Certain diseases, such as late blight (affecting tomatoes and potatoes) you have only a couple days to act," said Gene McAvoy, a vegetable and horticulture extension agent in Southwest Florida, a major growing area for the state's vegetable crops. "These diseases, many of them look similar to the untrained eye, and you really need a microscopic diagnosis."

Speed is especially important for Florida vegetable growers because most plants are in the ground only about three months, McAvoy said.

The clinic tests for disease affecting crops such as tomatoes, watermelon, bell pepper, squash and turf grass, Roberts said.

The clinic also will test for various citrus diseases, such as canker and post-bloom fruit drop, she added. Testing for citrus greening is done in a separate diagnostic lab also at the Immokalee center.

"When I visit with citrus growers and production managers, I sometimes advise them to pull samples and take them to the clinic for analysis to confirm the visual assessment or diagnostic," said Mongi Zekri, a regional citrus agent based in LaBelle. "The clinic is of critical importance not only to citrus growers, but also to vegetable farmers."

The clinic has been particularly helpful in diagnosing citrus black spot, a fungal disease centered in Hendry and Collier counties, he added.

"Other exotic diseases are knocking on our doors. The sooner we detect them, the easier we can eradicate or control them," Zekri said.

Homeowners or commercial growers can send samples to the clinic through their local extension agents, Roberts said.

For more information, call the Immokalee center at 239-658-3400 or visit the website, www.swfrec.ifas.ufl.edu/programs/plant-path.

<http://www.theledger.com/article/20150217/NEWS/150219369/1178?p=1&tc=pg>

UF/IFAS SWFREC Plant Disease Clinic

The plant pathology program at SWFREC has expanded its plant disease diagnostic services through the newly re-opened Florida Extension Plant Diagnostic Clinic. The clinic is intended to serve all clients in the region and state experiencing plant disease problems. The clinic in Immokalee joins the network of the Florida Plant

Diagnostic Network and of plant diagnostic clinics located in Gainesville and at research and educational centers. The Plant Disease Clinic at SWFREC has been updated with key equipment and diagnostic personnel.

Plant disease samples are accepted during regular operational hours of 8 am to 5 pm or may be submitted by mailing to SWFREC-Plant Disease Clinic.

SWFREC Plant Disease Clinic
University of Florida-IFAS-SWFREC
2685 S.R. 29 N
Immokalee, FL 34142-9515

There is a \$40.00 charge per sample. The clinic number is 239-658-3432.

Chlorothalonil in Short Supply

Multiple sources are reporting shortages of the fungicide chlorothalonil, which is widely used in vegetable crops, and marketed under numerous trade names such as but not limited to Bravo WeatherStik, Bravo Ultrex, Echo 720, Equus 720, Chloronil, Chlorothalonil 720, etc. Issues with product formulation are the likely cause of chlorothalonil shortage.

There are also chlorothalonil combination and supplies of these products are also likely to be limited. In many crops, chlorothalonil is a critical broad-spectrum anchor in nearly all fungicide programs due its good activity at relatively low cost against many foliar diseases as well as its value as a resistance management tool with other fungicides.

Some options for stretching chlorothalonil supplies may include:

- Reducing chlorothalonil application rates where feasible
- Combining a reduced rate of chlorothalonil with another fungicide in a tank mix
- Replace one or two early season chlorothalonil applications with alternative fungicides
- Consider using copper fungicides for some applications.

Due to the potential risk of resistance-related control failures for triazole fungicides and the strobilurin fungicides limit the total application numbers of these fungicides to half or less of the total number of fungicide applications in control program.

With the limitations to the use of above systemic, single site fungicides, there are not a lot of broad-spectrum alternatives to chlorothalonil with a similarly high efficacy level.

Vydate Shortage

On November 15, 2014, a tragic accident occurred at the DuPont La Porte plant in Texas, resulting in four fatalities. As a result, supply of Vydate® L and Vydate® C-LV, has been suspended. Production will not resume until government agencies and DuPont complete investigations into the incident, release the process unit and DuPont completes any activities necessary to safely restart the process.

Supply of Vydate® will be interrupted and there will be a significant shortfall in 2015. At this time, DuPont does not anticipate any interruption of Lannate® supply.

Nematodes and pepper weevil are some of the biggest pests that Vydate is used for in Florida. Producers might want to take a look at Exirel which has been shown to be an excellent rotational partner in a pepper weevil program. Unfortunately, no other nematicides are currently available that can be used within the cropping season through the drip like Vydate.

- Source: DuPont Press Release

Ag Thefts continue around South Florida

It recent thefts around SW Florida, thieves appear to be targeting chemicals in short supply such as Vydate and chlorothalonil.

It is imperative that farmers and ranchers work together to deter crime by reporting all suspicious incidents and individuals: like suspicious buyers, people selling chemicals, or other equipment.

Here is the contact information for the Agricultural Deputies in SW Florida.

Palm Beach – Office: 561-992-1270 (Detective Ryan Reeder)

Charlotte - Office: 941-505-4638 (Deputy Justin Treworgy)

Collier - Office: 239-252-0321 (Sergeant David Estes)

Glades - Office: 863-946-1600 (Sergeant David Hardin)

Hendry – Office: 863-674-4092 (Charles White)

Lee - Office: 239-691-9062 (Sergeant Randy Hodges)

You can remain anonymous and be paid a reward if your information leads to an arrest by calling Crimestoppers at: 1-800-780-TIPS

The Future of Agriculture? Smart Farming

The agricultural sector is going to face enormous challenges in order to feed the 9.6 billion people that the FAO predicts are going to inhabit the planet by 2050: food production must increase by 70% by 2050, and this has to be achieved in spite of the limited availability of arable lands, the increasing need for fresh water (agriculture consumes 70 per cent of the world's fresh water supply) and other less predictable factors, such as the impact of climate change, which, according a recent report by the UN could lead, among other things, to changes to seasonal events in the life cycle of plant and animals.

One way to address these issues and increase the quality and quantity of agricultural production is using sensing technology to make farms more “intelligent” and more connected through the so-called “precision agriculture” also known as ‘smart farming’.

It's something that's already happening, as corporations and farm offices collect vast amounts of information from crop yields, soil-mapping, fertilizer applications, weather data, machinery, and animal health. In a subset of smart farming, Precision Livestock Farming (PLF), sensors are used for monitoring and early detection of reproduction events and health disorders in animals.

Typical monitored data are the body temperature, the animal activity, tissues resistivity, pulse and the GPS position. SMS alerts can be sent to the breeder based on predefined events, say, if a cow is ready for reproduction.

“Precision agriculture is not new. The agricultural vehicle manufacturers (John Deere, CNH Global, Case and others) have been involved in this segment for some time. Initially, it was about position technologies (GNSS)

mainly, but it is becoming more complex moving towards the idea of a connected harvester,” Beecham Research’s principal analyst, Saverio Romeo tells me.”

Romeo is the co-author of a report called “Towards smart farming – Agriculture embracing the IoT vision” published in January by Beecham and focused – you guessed – on exploring how agricultural operations are changing through the Internet of Things.

The aim of the agriculture sector is to optimize processes and uses of resources and efficient use of existing arable land. The Internet of Things can enable all that. It can increase production, but it can also increase the level of quality of agriculture.

“I would like to highlight the fact,” Romeo says, “that the aim should not be ‘industrializing’ agriculture, but make agriculture more efficient, sustainable and of high quality. We should not look for revolutions. We should look for re-interpretation of the farming practices through use of data-centric technologies. And this re-interpretation should be placed also within a new vision of rural areas.”

That is to say that smart rural areas should not come out of the blue and live in a void, but be connected with smart agri-food industry, smart tourism and other activities that move in rural areas and around agriculture.

Although the cost of smart farming is still high for any but the largest farms (this, by the way, helps explain why the USA, with its vast territories, is at the forefront of this new paradigm), this doesn’t mean precision agriculture can’t be done in small places. Actually, there are quite a few applications in small-field farming too. In vineyards for instance. “Sensors are installed in various locations in the fields in order to have data about the soil and the plants and then this data are used to prevent diseases such as Peronospora,” Romeo says.

Helpful and sought after as it might be, smart farming has still to overcome many hurdles before it becomes more widespread. “One is that the agricultural sector is extremely low margin. Therefore, investments in innovation are difficult,” the researchers says. Then there’s also what we might call an ‘image problem’ that is causing a hemorrhage of labor. “Being a farmer is not cool because agriculture is perceived as something that belongs to history, to the grandfathers,” Romeo tells me.

There are also a number of concerns about the role of giant companies such as DuPont, John Deere and Monsanto that raise questions: for example, data ownership. Who is the owner of soil sensing data? Monsanto or the farmer? And if it is Monsanto (or another company), what does it do with that? One answer could be price discrimination: data on the soil or on the water could be used by biotech giants to charge farmers a different amount for the same product or service.

Access to real time information about harvesting, planting and yields could also help corporations predict the property value of farms better than anyone else and have unparalleled insight into the commodities market.

Another problem that could slow down IoT in agriculture, is the issue of communicating with farmers, who could often not understand the technicalities. “If we tell them that you can do this and that with IoT, they will not understand. The language of the IoT industry has to change dramatically,” Romeo says, “here, we need a revolution.”

Analysts, however, are positive that in the end this and other barriers will be cancelled.

“It will require some time, also, because the agriculture does not have the same pace of other sectors because of its nature. But, we will be there because we need it. And allow me this, because agriculture will return to be cool.”

See: <http://www.forbes.com/sites/federicoguerrini/2015/02/18/the-future-of-agriculture-smart-farming/>

Sivanto™ insecticide registered in Florida

Following the successful federal registration for Bayer CropScience's new insecticide Sivanto™ from the U.S. Environmental Protection Agency in January, Sivanto™, is now available to Florida growers for the 2015 growing season.

Sivanto™ was developed to control devastating sucking pests on fruits and vegetables as well as most broadacre crops. Sivanto™ is a novel systemic insecticide for the control of major sucking pests such as aphids, whiteflies, hoppers, psyllids, and other key insects, and acts effectively on all mobile stages including larvae and adults. It can be used on pome fruits, citrus, potatoes, tomatoes, melons and cotton. Sivanto™ is based on the active ingredient flupyradifurone, which belongs to the new chemical class of butenolides.

Learn about Sivanto™ here. <http://ffva.informz.net/ffva/data/images/2-6-15-SivantoFAQ.pdf>

Access the label here. <http://ffva.informz.net/ffva/data/images/2-6-15-Sivanto-Label.pdf>

Growers indicate that stock have sold out and supplies are extremely limited.

Workshops topic: Storage tank rules

Two workshops have been scheduled that will cover changes in underground and above ground storage tank management rules.

The National Institute for Storage Tank Management will hold a conference March 5 in Jacksonville and May 14 in West Palm Beach to address DEP and EPA rule revisions. Learn more and access a registration form here. <http://ffva.informz.net/ffva/data/images/2-27-15-tanks.pdf>

Up Coming Meetings

March 3, 2015	Pesticide Applicators Core Examination Prep Class.	7:45 am
	Private Agricultural Pest Control Category Prep Class	1:00 pm

Henry County Extension Office
Dallas B. Townsend Agricultural Center
1085 Pratt Boulevard
LaBelle, Florida

Cost is \$10 per class. Exams will be offered immediately after each class. For more information, call Debra at 863-674-4092

March 11, 2015	Lettuce Advisory Committee Meeting	12:00 pm
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Everglades Research and Education Center Conference Center
3200 East Palm Beach Road
Belle Glade, FL 33430-4702

March 24, 2015	Final PBC BOCC Agriculture Reserve Workshop	9:30 am
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Government Center
Jane M. Thompson Memorial Chambers
301 N Olive Ave 6th Fl
West Palm Beach FL

Meeting will be Broadcast Live on Channel 20, Palm Beach County's Education and Govt. Station

March 28, 2015 Palm Beach County Rare Fruit Council Plant Sale 9:00 am – 2:00 pm

South Florida Fairgrounds' Agri-plex building
9067 Southern Blvd.
West Palm Beach, Florida 33411

There will be 100's of varieties and 1000's of plants to choose from: Avocados, 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 more! Parking and entry is free. For more information please visit the NEW Palm Beach Rare Fruit Council website:

<http://www.pbrarefruitcouncil.org/>

Websites

Florida Tomato Scouting Guide - Action thresholds utilized for management of insect pests on Florida fresh market tomatoes. Go to <http://erec.ifas.ufl.edu/tomato-scouting-guide/general/action-thresholds.shtml>

Note: State and local budgets cuts are threatening to further reduce our funding – if you are receiving currently receiving the hotline by mail and would like to switch over to electronic delivery – just drop me an email. It is much quicker and you will get the hotline within minutes of my completing it and help conserve dwindling resources at the same time.

Thanks to those that have already made the switch and many thanks to all our sponsors who support the hotline and make it possible.

Check out UF/IFAS – Palm Beach County Agriculture on Facebook at
<https://www.facebook.com/vegetableandtropicalfruituf.ifas.extpbcc>

Find more information at Southwest Florida Vegetable Grower on Facebook
<https://www.facebook.com/pages/South-Florida-Vegetable-Grower/149291468443385> or follow **Gene McAvoy on Twitter @SWFLVegMan**

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

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