



UNIVERSITY OF
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E X T E N S I O N

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SOUTH FLORIDA VEGETABLE PEST AND DISEASE HOTLINE

December 8, 2013

The coolest weather of the year moved through the area on Thanksgiving Day, when a cold front dropped temperatures into the 30's and 40's in many places. Some patchy frost was reported in interior sections of Manatee and Hillsborough Counties which combined with cold winds battered some fields.

West Coast and interior locations were relatively dry for the month but a series of weak and stalled fronts combined with a moist east wind off the Atlantic led to near-record November monthly rainfall across parts of southeast Florida with 6 to 12 inches reported in a rather narrow corridor from Fort Lauderdale south to Homestead. Most other areas recorded just over an inch or less.

FAWN Weather Summary

Date	Air Temp °F		Rainfall (Inches)	Ave Relative Humidity (Percent)	ET (Inches/Day) (Average)
	Min	Max			
Balm					
11/4 - 12/4/13	35.14	86.56	0.41	81	0.07
Belle Glade					
11/4 - 12/4/13	48.27	86.79	0.53	86	0.08
Clewiston					
11/4 - 12/4/13	41.28	90.01	0.32	84	0.08
Ft Lauderdale					
11/4 - 12/4/13	48.94	87.94	8.90	80	0.08
Fort Pierce					
11/4 - 12/4/13	NA	NA	NA	NA – station inactive	NA
Homestead					
11/4 - 12/4/13	52.02	87.51	5.02	86	0.08
Immokalee					
11/4 - 12/4/13	39.54	90.9	1.36	83	0.08

“Remember, when in doubt - scout.”

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Temperatures were warmer than normal due to the lack of strong cold fronts, with many days seeing highs in the upper 80's. Crops are looking good, while growers in the Manatee Ruskin area are nearing the end of the fall deal.

Growers ramped up harvest in advance of the Thanksgiving holiday. Crops coming to market included include boniato sweet potatoes, collards, cucumbers, eggplant, escarole, herbs, lettuce, kale, peppers, radishes, snap beans, squash, tomatoes, watermelons and a variety of specialty items. Volume of strawberries coming to market should increase over the next few weeks.

The National Weather Service indicates that other than a few showers across the Atlantic waters, South Florida can look to a mainly dry forecast with highs in the mid 80's through the early part of the week. By mid-week the cold front stalled to our north could finally start to drift south with showers possible across the region.

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

Insects

Whiteflies

Reports from the Manatee Ruskin area indicate that whitefly numbers are extremely high in some fields, with as many as a few hundred adults per plant along with some pupae depending on location. Virus has been low in most places but is increasing and has reached 40% in some hotspots which may result in problems for spring plantings if growers are not diligent in cleaning up fall crops.

Around Homestead, respondents indicate that that silver leaf whitefly numbers are high in all crops. High whitefly has led to an increase in tomato yellow leaf curl and bean golden mosaic viruses.

In Palm Beach County, whitefly pressure is low to moderate depending on location with growers having to treat for them in older tomato, eggplant and in some squash as well.

Respondents around Immokalee report that whitefly pressure remains variable but in general is still below normal for this time of the year. Nymphs are building in several older crops and growers are finding higher numbers in some older fields.

As fall crops come to an end, growers are reminded it is important to remember that prompt destruction of tomato fields once harvest is complete is the best way to reduce inoculum of tomato yellow leaf curl virus for the coming season.

Management of Whiteflies, Whitefly-Vectored Plant Virus, and Insecticide Resistance for Vegetable Production in Southern Florida

Recommendations:

A. Crop Hygiene

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

1. Establish a minimum 2 month crop free period during the summer, preferably from mid-June to mid-August.
2. Disrupt the virus-whitefly cycle in winter by creating a break in time and/or space between fall and spring crops, especially tomato.

B. Cultural Control Practices.

Reduce overall whitefly populations, regardless of biotype, and avoid introducing whiteflies and TYLCV into crops by strictly adhering to correct cultural practices.

1. Use proper pre-planting practices.
 - a. Plant whitefly and virus-free transplants.
 - b. Delay planting new fall crops as long as possible.
 - c. Use determinant varieties of grape tomatoes to avoid extended crop season.
 - d. Use TYLCV resistant tomato cultivars where possible and appropriate, especially during historically critical periods of virus pressure. Whitefly control must continue even with use of TYLCV resistant cultivars because these cultivars can carry the virus.
 - f. Use TYLCV resistant pepper cultivars when growing pepper and tomato in close proximity.
 - g. Use ultraviolet light reflective (aluminum) mulch on plantings that growers find are historically most commonly infested with whiteflies and infected with TYLCV.

2. Post-planting practices.

- a. Apply an effective insecticide to kill whitefly adults prior to cultural manipulations such as pruning, tying, etc.
- b. Rogue tomato plants with symptoms of TYLCV at least until second tie. Plants should be treated for whitefly adults prior to roguing and, if nymphs are present, should be removed from the field, preferably in plastic bags, and disposed of as far from production fields as possible.
- c. Manage weeds within crops to minimize interference with spraying and to eliminate alternative whitefly and virus host plants.

Insecticidal Control Practices for Whiteflies.

1. Delay resistance to neonicotinoid and other insecticides by using a proper whitefly insecticide program. Follow the label!
 - a. Use neonicotinoids in the field only during the first six weeks of the crop, thus leaving a neonicotinoid-free period at the end of the crop.
 - b. As control of whitefly nymphs diminishes following soil drenches of the neonicotinoid insecticide or after more than six weeks following transplanting, use rotations of insecticides of other chemical classes.
 - c. Use selective rather than broad-spectrum control products where possible to conserve natural enemies and enhance biological control.

2. Soil applications of neonicotinoid insecticides for whitefly control.
 - a. For best control, use a neonicotinoid as a soil drench at transplanting, preferably in the transplant water.
 - b. Soil applications of neonicotinoids through the drip irrigation system are inefficient and not recommended.
 - c. Do not use split applications of soil drenches of neonicotinoid insecticides (i.e. do not apply at transplanting and then again later).
3. Foliar applications of neonicotinoid insecticides for whitefly control.
 - a. Foliar applications, if used instead of or in addition to soil drenches at transplanting, should be restricted to the first 6 weeks after transplanting. Do not exceed the maximum active ingredient per season according to the label.
 - b. Follow scouting recommendations when using a foliar neonicotinoid insecticide program. Rotate to non-neonicotinoid insecticide classes after the first 6 weeks and do not use any neonicotinoid class insecticides for the remaining cropping period.

For more information on control see Management of Whiteflies, Whitefly-Vectored Plant Virus, and Insecticide Resistance for Vegetable Production in Southern Florida at <http://edis.ifas.ufl.edu/in695>

Leafminers

Around Immokalee, scouts report leafminers are increasing in a number of locations. Some growers indicate that pressure is as high as they have ever seen, with severe stippling covering just about every leaf. Growers are applying Coragen and AgriMek to keep plants clean, but report finding some mines after applications.

On the East Coast, leafminer pressure is high in many fields, mostly on tomato and eggplant.

Reports indicate leafminer pressure which was high in the Manatee/Ruskin area is beginning to decline but note that leafminers are still active.

Respondents in Homestead report that leafminer pressure is increasing on a variety of crops.

Around Belle Glade, leafminer numbers peaked behind the cold front and have dropped off a bit since but remain an active threat.

November is typically the time of year when leafminers populations increase rapidly in South Florida. The two major species of leafminer that cause problems in vegetables in Florida are the vegetable leafminer (*Liriomyza sativae*) and the American serpentine leafminer (*L. trifolii*). 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.

Leafminers have a relatively short life cycle. The time required for a complete life cycle in warm environments such as Florida is often 21 to 28 days, so numerous generations can occur annually.

Both leafminers a wide host range including bean, beet, carrot, celery, cucumber, eggplant, lettuce, melon, onion, pea, pepper, potato, squash, and tomato. There are many other hosts and numerous broad-leaved weed species can harbor leafminers in Florida.

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.

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

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

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

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.

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 Reliant (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 (Coragen, Verimark, Exirel and others) which have given excellent results and has virtually eliminated leaf miner pressure on many farms.

Dr. Dak Seal Entomologist at TREC notes that in his trials, Coragen, Verimark and Exirel provided good control of leafminers on bean. Soil application of Coragen and Verimark provided longer suppression on leafminers than their foliar application. One application at plant as a soil drench or drip provided suppression of leafminers for 5 weeks. For management of leafminers, Verimark can be applied at plant followed by Radiant at 35-45 DAP and other insecticides.

Worms

Around SW Florida, worm pressure has slowed down a bit but growers and scouts report that they are continuing to find plenty of eggs and new hatches of mostly southern armyworms but also some fruitworms, beet armyworms, fall armyworms, loopers and a few melonworms.

Around the Glades, worms remain active although it seems that fall armyworm pressure peaked just after the last full moon and populations are increasing but at a slower rate.

On the East Coast, worm pressure is relatively low with some exceptions. Some loopers have been active in eggplant and tomato. Melon and pickle worm pressure is lower in cucurbits.

In the Manatee Ruskin area, respondents indicate that worms still around with low to moderate worm pressure being reported.

Reports indicate that worms are also active in all Homestead crops. Respondents note that fall and beet armyworm population are increasing and melonworms are common on cucurbits. Diamondback moth pressure is high.

Dr Dak Seal advises that in his trials, Verimark applied at plant followed by Novaluron/Radiant (28 DAP), indoxicarb (42 DAP) will provide excellent control of DBM, FAW, BAW and melonworms. He notes that *Bacillus thuringiensis* based insecticides can be used in between applications of above treatments to provide excellent worm control.

Intrepid is also effective in controlling a variety of worm species. It is an insect growth regulator. Once young lepidopteron larvae come in contact with Intrepid, they stop feeding. Death may occur immediately or several hours later. After treatment, growers should not be dismayed to see worms still alive and moving around. They will cease feeding and are looking for a place to die. Intrepid is benign to beneficials and provides a good IPM and IRM tool. It has a long residual toxicity (about two weeks). It is most effective when applied against freshly emerged larvae.

Rimon is another effective growth regulator in controlling fall armyworm and other worm pests.

Thrips

Dr Dak Seal, Entomologist at the UF/IFAS TREC in Homestead reports that the melon thrips situation in Miami-Dade County is bad and will get worse if growers do not intelligently deal with this problem.

Numbers in beans are high enough to result in scarring of bean pods.

He writes that growers are complaining about melon thrips and are having trouble managing them on host vegetable crops. He advises that to avoid worsening this problem, growers should:

- 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 someone who can help identify them (extension agents, scouts, researchers, etc.). Some thrips can be harmless or even beneficial.
- b. Once the species is confirmed to be a harmful one, plan your IPM program.
- c. Scout fields to confirm the level of infestation - if populations are low, use environmentally compatible products, such as Trilogy, Neemix, Requiem, Grandevo. These products can be used alone or in combination (Trilogy + Requiem or Neemix + Grandevo).
- d. If thrips populations are high or increasing in numbers, use Radiant in combination with Movento followed by Closer/Exirel. Dak advises that these insecticides will provide suppression of thrips populations but none of them is a silver bullet.

Dak adds that Florida flower thrips population abundance is low around Miami Dade County but notes that growers are finding flower thrips transmitted virus on tomatoes in various plantings around the county. Recommendations for melon thrips are applicable for managing flower thrips.

Around Palm Beach, thrips are increasing in pepper blooms in some places. Low numbers of adults and lower numbers of larvae can be found in most blooms in some mature pepper. Many are western flower thrips. A little under the leaf etching is being reported in eggplant and thrips are common in blooms.

Dr Hugh Smith, Entomologist at the UF/IFAS GCREC writes that strawberry growers in Hillsborough County have observed high numbers of thrips in some fields. He notes thrips are not normally a problem in strawberries in the area till February, or January if the winter is mild. The predominant thrips species in strawberry in Hillsborough County is Florida flower thrips, which usually does not cause damage at low levels and which is often suppressed by naturally occurring predators.

Other thrips species, including chilli thrips and Western flower thrips can cause problems in strawberry.

Group 5 insecticides (Radiant and Entrust) have been effective on thrips, but overuse can lead to the development of resistance. Dow AgroSciences has requested that strawberry growers not use Radiant or Entrust on strawberry this year in Hillsborough County out of concern that resistant populations might be developing. Growers should contact their extension agent if they have questions regarding thrips or other pests in strawberry, and make arrangements for the species to be identified.

Silkflies

Around Belle Glade, silkfly maggots are averaging 2% in harvested corn though some growers have reported higher incidence.

Reports indicate that silkfly numbers are increasing around Homestead.

Dr Gregg Nuessly, Entomologist at UF/IFAS EREC notes silkworms are becoming even more resistant to pyrethroids and he encourages growers and scouts to consider non-pyrethroid options for fall armyworm control pre-tassel-push to preserve the pyrethroids for silking period and reduce selection pressure against flies that enter the field to feed on fall armyworm frass in whorls before ears are even present to infest.

Pepper Weevils

Pepper weevils are beginning to come on strong in some locations around SW Florida. Occurrence is patchy but scouts report finding adults and/or larvae in several locations over the past two weeks, mostly in older fields.

In Palm Beach County, reports indicate that weevils are present in multiple areas in older pepper fields. Numbers are mostly low but some higher populations are present in some places.

Pepper weevils are a major problem in Homestead. Dr. Dak Seal reminds growers that Actara, Vydate, Diamides and pyrethroids can be used in rotation to control weevils. He advises growers to use yellow sticky cards around pepper fields to monitor their movement and notes that proper spray nozzles selection is important in delivering insecticides in fine mist to cover canopy of pepper foliage.

Broad Mites

Dr Hugh Smith writes that broad mites continue to be a problem in pepper and a variety of specialty crops such as Swiss chard in Hillsborough and Manatee County, particularly in high tunnels and other protected structures.

He advises that growers who produce crops susceptible to broad mite damage should examine the uppermost fully expanded leaves at least once a week with a hand lens to scout for broad mites. Broad mites and their eggs are not easy to see even with a hand lens, but they can be detected once you become familiar with their appearance. Curling of the upper leaves is typical of broad mite infestation.

Infestations need to be detected early in order to be managed effectively. Aphids and broad mites can be found together, and some growers may think the problem is due to aphids since they are easier to detect.

There are a number of miticides registered for use on pepper that are effective against broad mites. Options are limited for some specialty crops, but certain softer options such as oils have proven effective in some circumstances.

Predatory mites are also commercially available for broad mite management.

Broadmite numbers are increasing in peppers and other crops with the advent of drier weather. Numbers remain low in most areas.

Around Palm Beach County, broad mites are still common in older pepper and eggplant.

Respondents report that broad mites remain active in Homestead.

Growers in SW Florida report that broadmites are flaring up in a some pepper and eggplant fields.

Aphids

Respondents report that aphids remain active in leafy greens. Scouts are finding potato aphids as well as green peach aphids and low levels of turnip aphids in radishes. The potato aphid is larger and more elongate than green peach aphid, 1/16 - 1/8 in., and may be green, pink, or yellowish, with red eyes.

In eastern Palm Beach County, low levels of aphids are showing up in cucurbits and growers are seeing some mosaic virus as a result.

Around SW Florida and in the Manatee Ruskin area, a few aphids are starting to show up and scouts are finding some winged aphids. Scouts report that colonies are building in a few locations.

Dr Gregg Nuessly, Entomologist at the UF/IFAS EREC reported that coriander aphid (*Hyadaphis coriandri*) was found in Immokalee, FL (Collier County) in mid-October 2013.

This pest of umbelliferous plants, including celery, parsley, coriander (cilantro), carrots, and dill has been found sporadically in low numbers in central Florida since the late 1990's.

He notes that he has not found it during routine scouting of potentially affected crops in Palm Beach County over the last several years. However, the recent discovery in Collier County should serve as a reminder to keep a look out for this aphid species in our carrot, celery, cilantro and parsley crops.

For more information of the coriander aphid on the University of Florida Featured Creatures website, go to http://entnemdept.ufl.edu/creatures/veg/aphid/coriander_aphid.htm

Coriander aphids are yellow-green in color, dusted with greyish wax. They have short, dusky, slightly swollen, siphunculi (or cornicles) that are about twice as long as wide. They form dense and often damaging colonies on leaves, heads, and stems of their host plants. In Florida, several other species colonize the common hosts of the coriander aphid. . . . like the green peach aphid (*Myzus persicae* (Sulzer)), and the rice root aphid (*Rhopalosiphum rufiabdominalis*(Sasaki)). Both green peach aphids and the *Myzus* spp. have siphunculi that are much longer than twice their diameter. Rice root aphids live underground.

Cornicles (mentioned above in the description) are the short tubes on the top surface toward the end of aphid abdomens through which they expel extra sugar water they ingest from the plant while trying to get enough protein to survive. They are diagnostic for this species compared with others normally found on these crops in our area.

Spider mites

Around Immokalee, growers and scouts are finding spidermites in a number of locations in a variety of crops including tomato, eggplant, watermelons, and some peppers. They report spidermite populations are present on weedy hosts such as nightshades around field edges and along roadways.

Red and two-spotted spider mites are being found on eggplant and beans in Palm Beach County.

Stinkbugs

A few stinkbugs are showing up in pepper and tomato fields around South Florida.

Diseases

Foggy mornings and overcast conditions over the past few days have increased disease potential, growers are advised to tighten up scouting and review their disease control program. Remember most fungicides are protectants and must be applied preventatively before infections occur for maximum benefit. In addition with many crops approaching maturity, coverage is important especially in those crops where dense canopies exist.

Target Spot

Around SW Florida, foggy mornings have helped to flare up target spot in many tomato fields. Some mature fields are starting to get defoliated from the inside out.

Around Palm Beach County, target spot is showing up on some conventional tomatoes; some organic tomato fields have been especially hard hit. Target spot is also present on cucumber where it ranges from none to low in younger plantings to high in older fields not being cared for anymore.

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.

The name derives from the bull's eye appearance that is often displayed in lesions caused by the disease. Since concentric rings are not always visible and not all lesions with concentric rings are target spot, it is recommended that a laboratory diagnosis be obtained to ensure that a correct diagnosis is made.

On tomato leaves and stems, foliar symptoms of target spot consist of brown-black lesions with subtle concentric rings giving them a target-like appearance. These can sometimes be confused with early blight. With early blight, the lesions are often associated with a general chlorosis of the leaf.

On tomato fruit, lesions are more distinct. Small, brown, slightly sunken flecks are seen initially and may resemble abiotic injury such as sandblasting. As fruits mature the lesions become larger and coalesce resulting in large pitted areas. Advanced symptoms include large deeply sunken lesions, often with visible dark gray to black fungal growth in the center. A zone of wrinkled looking tissue may surround the margins of lesions on mature fruit. Placing suspect fruit in a moist environment for 24 hours will often induce the growth of dark gray mycelia providing telltale diagnostic evidence of target spot infection.

In addition to tomato, this fungus has a wide host range and may attack such diverse crops as papaya, passion-vine, pepper, cowpea, cantaloupe, squash, and snap beans as well as a number of common ornamentals.

Optimum conditions for disease development include temperatures from 68° - 82°F and long periods of free moisture.

Strategies for the management of this disease require an integrated approach for best results. Growers should rotate fields to avoid carryover on crop residue and avoid rotations among solanaceous crops. Eliminate any volunteers and weed species that can act as a host.

Start with clean, healthy transplants and maintain proper fertility.

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

Downy Mildew

Around Immokalee, downy mildew pressure is high in some watermelons and is increasing in some squash and cucumber plantings as well.

Around Palm Beach County, downy mildew is beginning to show up in cucumber.

Downy mildew remains active in the Manatee area where squash has been hit hard.

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

In basil, symptoms of downy mildew initially appear as yellowing and cupping of the leaves and are typically concentrated around the mid-vein. Growers may not realize their basil is infected with downy mildew since the yellowing of the foliage is similar to a nutritional deficiency. The discolored area may cover most of the leaf surface.

On the underside of leaves, a gray, fuzzy growth may be apparent by visual inspection. Under high humidity, the chlorotic areas on the leaf turn to dark brown quickly. Sporangia, the reproductive structures of the pathogen, are easily detected under magnification and are diagnostic for this disease.

The dark sporulation of the lower leaf surface renders the product unacceptable for market and may result in severe losses. The disease symptoms can intensify in transit on harvested product and again result in unsalable product on arrival.

Disease development is favored by high humidity and leaf wetness. In field spread is through spores.

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 Quadris and Amistar (Azoxytrobin) and the phosphonic acids have shown efficacy in managing the disease. Recently Revus received a label for downy mildew and provides excellent control but should be used in rotation. These fungicides are most effective when applications are started before or just after initial symptoms are found.

Powdery Mildew

On the East Coast, powdery mildew is present in cucumber. Incidence ranges from none to high depending on location and age of the field.

In the Manatee/Hillsborough area respondents indicate that powdery mildew is starting to infect cucurbits that were not hit hard by downy mildew.

Powdery mildew is present on cukes and squash around SW Florida.

Growers in Homestead are reporting some problems with powdery mildew on beans.

Fusarium Crown Rot

Fusarium crown rot is showing up in a number of tomato fields around Immokalee where growers report they are seeing wilting plants about a week before first harvest. Incidence is mostly low and occurrence sporadic but incidence and occurrence is moderate to high in a few fields which were not fumigated.

Growers and scouts in the Palmetto/Ruskin area also report seeing more Fusarium crown rot and wilt starting to show up as well.

Phytophthora

Respondents in Palm Beach County report that phytophthora has reared its ugly head in some young pepper and in squash. Eggplant and cucumber are also being affected in some places.

Around Homestead phytophthora has jumped some squash after recent heavy rains. Growers also report problems with belly rot and Choanephora wet rot on fruit as well.

Sclerotinia

Around Belle Glade growers and scout are beginning to find some sclerotinia on leafy greens and beans.

Growers and scouts report that sclerotinia is jumping on a variety of crops across South Florida in recent weeks.

Recent rainfall, foggy morning and heavy dews have all been conducive to development.

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.

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

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

The use of plastic mulch may suppress Sclerotinia diseases, while high plant populations may increase the incidence.

In beans, fungicides including DCNA/dicloran (Botran 5F), PCNB (Blocker 4F), boscalid (Endura), Iprodione (Rovral 4F, Nevado 4F, Enclosure 4), fluazinam (Omega 500 F) cyprodinil/fludioxinil (Switch) and thiophanate methyl (Topsin) applied at bloom stage have been effective in controlling white mold.

Boscalid (Endura), DCNA/dicloran (Botran 5F), Iprodione (Rovral 4F, Nevado 4F, Enclosure 4), and cyprodinil/fludioxinil (Switch) have been used with good results in lettuce.

For potato, Boscalid (Endura), DCNA/dicloran (Botran 5F), PCNB (Terraclor F), Iprodione (Rovral 4F, Nevado 4F, Enclosure 4), fluazinam (Omega 500 F), and thiophanate methyl (Topsin M WSB) are recommended for Sclerotinia control.

In tomato, choices are limited to azoxystrobin (Heritage, Quadris) and pyraclostrobin (Cabrio) and Priaxor (a premix of Cabrio and fluxapyroxad) on tomato and pepper.

Biologicals like Contans WG, Regalia, Rhapsody, Serenade Max and Sonata have also provided various degrees of control alone and in combination with other fungicides. Contans WG must be applied to the soil prior to transplanting.

Bacterial Spot/Speck

On the east coast, bacteria spot is active in some pepper and tomato. In general, it is more of an issue in tomato where it flared behind recent rains while most peppers remain relatively clean.

Around Immokalee, bacterial spot has slowed way down on tomato and pepper. Incidence is low in most fields and many are relatively clean.

In Manatee/Ruskin area, bacterial spot is widely present n tomato and pepper. Severity varies depending on location from low to moderate.

Some bacterial speck has also been reported on tomatoes in the Manatee/Ruskin area following the last cold front in November.

Phomopsis

Phomopsis has been reported in eggplant in Palm Beach County where it is very active in a couple plantings.

Anthracnose

Anthracnose remains active in pepper fields around Manatee and Hillsborough Counties.

Anthracnose can occur on all parts of the pepper plant during any stage of plant growth. However, fruit lesions are the most economically important aspect of this disease. Fruit symptoms initially begin as water-soaked lesions that become soft, slightly sunken, and become tan. The lesions can cover most of the fruit surface and multiple lesions occur. The surface of the lesion becomes covered with the wet, gelatinous spores from salmon-colored fungal fruiting bodies (acervuli) with numerous black spines. Concentric rings of the acervuli are common within the fruit spots. In some cases, the lesions are brown, not orange, and then black from the formation of setae and sclerotia (a dark, fungal survival structure).

Infection usually occurs during warm, wet weather.

Fruit are infected when spores of the fungus or infested debris is rain splashed onto pepper plants. New spores are produced within the infected tissue and then are dispersed to other fruit. Workers may also move spores with equipment or during handling of infected plants.

Applications of fungicides may be needed to manage the disease. At the end of the season, the crop debris should be destroyed to reduce survival between crops.

Botrytis

Tomato producers in the Hillsborough County area are reporting some problems with botrytis. Incidence is mostly low.

Gummy Stem Blight

Gummy stem blight is increasing on watermelon around Southwest Florida.

Pythium

Around Homestead, pythium has been active in areas hard hit by recent rains and is taking down bean plants. Some has gone aerial and is contributing to the problem.

Southern Blight

Mostly low levels of southern blight continues to be reported around South Florida.

Tomato Yellow Leaf Curl

Reports from Homestead indicate that TYLCV is rather common in tomato.

Around Southwest Florida, TYLCV remains mostly low with a few hotspots around.

In the Manatee/Ruskin area, TYLCV incidence is mostly low but scout not that it is beginning to increase in a number of older fields and incidence has reached as high as 40% in some hot spots, leading to some concerns for the spring crop.

Groundnut ringspot virus

A few GRSV infected plants have been reported in Palm Beach and Miami Dade Counties. Growers should monitor thrips populations and rouge infected plants as they are detected.

News You Can Use

November 2013 Weather Summary - Wet East and Dry Interior/West

December 2, 2013: A series of weak and stalled fronts along with a moist northeast to east wind off the warm Atlantic led to near-record November monthly rainfall across parts of southeast Florida. Rainfall totals for the month ranged from 6 to 12 inches in a rather narrow corridor from Fort Lauderdale south to Homestead, with an unofficial measured value of 14.72 inches in the Biscayne Park area of NE Miami-Dade County! These values are more reminiscent of summer than fall.

Just to the north in metro Palm Beach County, lower rainfall amounts of 3 to 6 inches were measured. These rainfall values resulted in a few areas recording one of the wettest Novembers on record. Homestead General Airport recorded a record-wet November with 6.24", although records here only go back to 1990. Fort Lauderdale recorded its 4th wettest November going back to 1912 with 10.92" measured at Ft. Laud/Hollywood International Airport. Hialeah recorded its 3rd wettest November with 8.55" and The Redland had its 4th wettest November with a total of 6.76".

The period of wettest weather was from November 20th to 27th when most of the month's rain occurred as a result of a stubbornly-stalled front. During this 7-day period alone, 6 to 10 inches of rain fell over some areas from Kendall to Fort Lauderdale, with daily rainfall records set in Miami (1.01" on the 23rd) and Fort Lauderdale (5.02" on the 21st and 1.37" on the 27th).

Fortunately, the above-normal rain didn't lead to severe flooding, although several urban flood advisories were issued for relatively-minor street flooding in SE Florida.

Over the Everglades, Lake Okeechobee and Gulf coast areas, it was a totally different story. In these areas, rainfall was below average for November with most locations falling short of 2 inches for the entire month. Despite the presence of the weak and stalled fronts, the northeast and east winds which contributed to the heavy rainfall along the east coast mostly dried up after moving over and across the peninsula. To further illustrate the dichotomy between rainfall values east vs. west, while east coast locations recorded near-record wet Novembers, locations such as Ortona recorded its 4th driest November on record going back to 1940 with only 0.4" measured. Moore Haven and Naples failed to reach an inch of rain for the entire month, ranking 23rd and 27th driest on record for November, respectively.

November Temperatures across South Florida were mostly warmer than normal despite the increased cloud cover and rainfall. This was due to the lack of strong cold fronts moving through the area, with the only front

providing significantly cooler air arriving on November 27th dropping temperatures into the upper 30s and 40s over most of the area on Thanksgiving morning.

Miami International Airport recorded an average November temperature of 77.1 degrees Fahrenheit. This is 2.2 degrees above the 30-year normal for November and represents the 4th warmest November on record. The average high temperature was 83F, and average low temperature was 71F. The hottest reading of the month was a record-tying 89 degrees on the 2nd, followed by a record-breaking 88 degrees on the 7th. The coolest reading was 52 degrees on the 28th.

Fort Lauderdale/Hollywood International Airport recorded an average November temperature of 75.4 degrees Fahrenheit. This is 0.1 degrees below the 30-year normal for November. The average high temperature was 81F, and average low temperature was 70F. The hottest reading of the month was 88 degrees on the 2nd and the coolest was 48 degrees on the 28th.

Palm Beach International Airport recorded an average November temperature of 76.4 degrees Fahrenheit. This is 3.6 degrees above the 30-year normal for November and represents the 4th warmest November on record. The average high temperature was 83F, and average low temperature was 70F. The hottest reading of the month was 89 degrees on the 2nd and the coolest was 47 degrees on the 28th.

Naples Municipal Airport had an average November temperature of 74.6 degrees Fahrenheit. This is 2.5 degrees above the 30-year normal for November and represents the 11th warmest November on record. The average high temperature was 83F, and average low temperature was 66F. The hottest reading of the month was 89 degrees on the 6th and the coolest was 44 degrees on the 28th.

Winter Outlook (December-February)

The latest outlooks by NOAA's Climate Prediction Center (CPC) call for an increased chance of warmer and drier than normal conditions in December, with the dry trend possibly continuing through February. The temperature outlook for the December-February period is for equal chances of above, below or near-normal temperatures, reflecting a high level of uncertainty in temperature patterns this winter due in large part to the ENSO-neutral pattern in place.

A drier-than-normal winter could lead to developing drought conditions early in 2014 across parts of south Florida, especially in areas which haven't received much rain since September. The other potential threat is for freezing temperatures, particularly in the sensitive agricultural areas around Lake Okeechobee and interior sections of southern Florida. Regardless of the overall temperature outlook, most winters have at least one or two light to moderate freezes and interests should always closely monitor the temperature forecasts from the National Weather Service.

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.

See entire report with graphics at <http://www.srh.noaa.gov/images/mfl/news/November2013Summary.pdf>

University of Florida to Host "Starting a Successful Hydroponic Business" Short Course

Martin County, FL – The UF/IFAS Small Farms Academy will be holding a hydroponic short course on December 15 and 16, 2013. The short course "Starting a Successful Hydroponic Business" will feature hands-on activities at Vertical Horizon Farm located in Hobe Sound, Florida. Topics to be covered include: growing transplants, selecting hydroponic systems, soilless media choices, irrigation and fertilizer, managing pests, and the production of several crops from microgreens to herbs to cut flowers to tomatoes. This informative short course will also include sessions on planning for business success and developing a marketing strategy.

Registration link is here. <http://smallfarmsacademy.eventbrite.com/>

Up Coming Meetings

December 18-19, 2013 Core and Private Applicator Training and Exams

Core – December 18 - 10am-12pm
Private - December 19 - 10am-12pm

Manatee County Extension Service
Palmetto, Florida

Two separate exam prep classes will be held to help you prepare for the Core and Private Applicator RUP license exams. Exams will be offered immediately following the classes. However, you do not have to take the exams the same day. You may schedule a time to take the exams at your convenience. You may take one class without the other, if needed.

If you are already a license holder, 2 CEUs in Core and 2 in Private are offered for both classes, respectively. Light snacks will be offered. For details and registration visit:

Core Exam training and testing:

<http://www.eventbrite.com/e/core-pesticide-training-class-tickets-9324240053>

Private Applicator Exam training and testing:

<http://www.eventbrite.com/e/private-applicator-pesticide-training-class-tickets-9324456701>

January 9 - 12, 2014 2014 Southeast Regional Fruit and Vegetable Conference

Savannah International Trade & Convention Center
Savannah, Georgia

The Southeast Regional Fruit and Vegetable Conference is the largest educational conference and trade show in the southeastern United States that unites growers, vendors and suppliers. Anyone with an interest in specialty crop agriculture is invited to be a part of this event to address food safety, specific commodity sessions on production practices and increased yields, marketing strategies, and interact with key suppliers and growers.

For more information and to register, go to: <http://www.seregionalconference.com/>

Opportunities

Help Wanted

Florida Research Farm and Facility Assistant

Summary: Assist farm manager to accomplish all farming and facility related work on Florida research station.

Essential Duties and Responsibilities

- Know how to use different kind farming equipment to accomplish different types of farm tasks.

- Assist in monitoring insect population and disease pressure and have good knowledge how to use and apply the agriculture chemicals to control disease and insect.
- Assist in growing healthy crops and understand what is needed to conduct a good research trial.
- Repair and maintain farm equipment.
- Ensure record log of all repairs and maintenance of equipment and facility.
- Schedule daily, weekly and monthly equipment and facility maintenance as needed.
- Assist in staking, seed out, transplanting, harvesting and packing seeds.
- Assist in the purchase, use and disposal of hazardous materials for facility and job related events.
- Maintain all electrical and plumbing service.
- Assist in building improvement and facility expansion.
- Have good people skills to manage and oversee contract labor crew.

Minimum Qualifications:

1. Physically capable of handling necessary field and greenhouse work.
2. English and Spanish language skill required. Must have good verbal communication skill in English.
3. Advance mechanical skills pertaining to farming and facility equipment maintenance and repair.

Education/Experience:

1. 5 years' experience in farming.
2. Valid Florida Pesticide Applicator License
3. Computer literacy
4. Valid Florida Driver's License.

Applicants interested in this position should contact Gregory Jones at (863) 673-1948

Research Station Greenhouse Manager

The primary responsibilities for this position include, but are not limited to:

- Execute greenhouse crop programs to the expectations of the breeding and research staff.
- Develop crop specific fertilizer and irrigation protocols that maximize the potential of the breeding programs.
- Apply labeled pesticides to control insect and disease pests.
- Perform routine greenhouse repair and maintenance activities.
- Measure and monitor key performance metrics related to both the quality and productivity of crop programs.
- Assist in the development of annual operating budgets and capital investment plans.
- Assist in the design, specification, bidding and construction of future greenhouse facilities.
- Actively support the station Illness Prevention Plan – assist in periodic safety training.
- Promote a culture of continuous improvement.
- Work with others to provide training and development opportunities for all staff members.
- Work with the Station Manager to develop and implement station and regional improvement initiatives.
- Cross train with the Farm Manager and assist as needed.
- Supervise up to 20 contract laborers as needed.

Qualifications:

- Bachelor's degree in Horticulture, Agriculture or related field
- 1-4+ years' hands-on greenhouse growing with ornamental or agriculture crops, including labor planning, scheduling, irrigation, fertilization, pest management and general repair and maintenance.
- Experience with plugs or agricultural transplants as well as finished crops helpful.
- Prior experience configuring and operating greenhouse environmental controls – preferably Argus; experience with Priva and others considered.
- Pesticide Applicator's License, or the ability to obtain a license.

- Valid Driver's License required.
- Bilingual in English/Spanish desired.

Skills required:

- Strong problem solving and analytic skills coupled with the ability to deliver solutions for managing variances.
- Team player with a positive attitude, excellent communication and interpersonal skills, and possesses a high amount of integrity.
- Able to deal with frequent change and delays, while adapting plans quickly and effectively to meet demands.
- Must have a strong work ethic that ensures work is completed in a timely manner.
- Exercise sound and accurate judgment. Ability to perform essential duties without direct supervision.
- Strong experience in MS Word, Excel, and Outlook.
- Ability to frequently lift and/or move up to 50 pounds.
- Work in greenhouse and outdoor weather conditions including: hot, cold, or humid.

An excellent benefits package and salary commensurate with experience is offered. Send resume and salary history to:

Harris Moran Seed Company
P.O. Box 4938
Modesto, CA 95352
Attn: Human Resources
or to: hr@hmclause.com
www.harrismoran.com

Farm Land for Lease

Farm Land for lease in LaBelle area – contact Clyde Lavender at 863-673-2338

Farm Land for lease on Babcock Ranch, Hwy 31, Charlotte County. Rotational fields or permanent locations, phone 941-639-3958

Websites

Biopesticides - This three-page appendix to the Florida Vegetable Production Handbook is comprised of two tables:

- Table 13.1. Biopesticides and other alternative products labeled for plant pest management.
- Table 13.2. Biopesticides and other alternative products labeled for plant disease management.

It can be found at <http://edis.ifas.ufl.edu/pdf/cv/cv29500.pdf>

Use of Biopesticides for the Management of Vegetable Diseases – slide show by Dr. Gary E. Vallad, Asst. Prof. of Plant Pathology, UF/IFAS Gulf Coast REC discussing the use of bio-pesticides for vegetable disease control. http://ipm.ifas.ufl.edu/pdfs/Bio-Pesticides_Slides_IPM_site.pdf

2013 Tomato Institute Presentations and Proceedings -
http://www.imok.ufl.edu/vegetable_hort/tomato_institute/

2013 Vegetable Production Guide for Florida -
http://www.imok.ufl.edu/docs/pdf/vegetable_hort/2013-14VegProdGuide.pdf

Quotable Quotes

Everyone is entitled to their own opinions, but they are not entitled to their own facts. – Daniel Patrick Moynihan

We fear things in proportion to our ignorance of them. – Unknown

Modern science is a voyage into the unknown, with a lesson in humility at every stop. - Carl Sagan

It is not the function of our government to keep the citizen from falling into error; it is the function of the citizen to keep the government from falling into error. – Robert H Jackson

Death is very likely to be the single best invention of life because death is life's change agent. – Steve Jobs

There is no passion to be found playing small – in settling for a life that is less than the one you are capable of living. - Nelson Mandela

On the Lighter Side

Why some men have a dog and no wife

- The later you are, the more excited your dogs are to see you.
- Dogs don't notice if you call them by another dog's name.
- Dogs like it if you leave a lot of things on the floor.
- A dog's parents never visit.
- Dogs agree that you have to raise your voice to get your point across.
- Dogs find you amusing when you're drunk...
- Dogs like to go hunting and fishing.
- A dog will not wake you up at night to ask, "If I died, would you get another dog?"
- If a dog has babies, you can put an ad in the paper and give them away.
- A dog will let you put a studded collar on it without calling you a pervert.
- If a dog smells another dog on you, they don't get mad. they just think it's interesting.
- And last, but not least: If a dog leaves, it won't take half of your stuff.

To test this theory: lock your wife and your dog in the garage for an hour. Then open it and see who's happy to see you.

Near Death

A 54 year old woman had a heart attack and was taken to the hospital

While on the operating table she had a near death experience. Seeing God she asked "Is my time up?"

God said, "No, you have another 43 years, 2 months and 8 days to live."

Upon recovery, the woman decided to stay in the hospital and have a face-lift, liposuction, breast implants and a tummy tuck. She even had someone come in and change her hair color and brighten her teeth! Since she had so much more time to live, she figured she might as well make the most of it.

After her last operation, she was released from the hospital. While crossing the street on her way home, she was killed by an ambulance.

Arriving in front of God, she demanded, "I thought you said I had another 43 years? Why didn't you pull me from out of the path of the ambulance?"

God replied: "I didn't recognize you."

Wisdom

There was once a wise man. He said that the essence of all wisdom is what you have in your head! His name was Solomon.

Then came another wise man. He said that the essence of all is what you have in your heart!! His name was Jesus.

Then came a third wise man. He said that the essence of all is what you have in your stomach !!! His name was Marx.

After him, came a fourth wise man. He said that the essence of all is what you have between your legs!!!! His name was Freud.

Then came another wise man - wiser than all before – called Einstein. He said everything is relative!!!!

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.

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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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