



Palm Beach County Extension 559 N. Military Trail WPB, Florida 3315 Phone (561) 233-1700

# SOUTH FLORIDA VEGETABLE PEST AND DISEASE HOTLINE

April 21, 2015

**April has been an unseasonably warm month with high temperatures most days reaching the upper 80's and low 90's in most locations.** ET has surged with high temps and growers are irrigating as necessary.

**Unsettled weather over the past few weeks has bought much needed rain to a number of areas with a number of places reporting from 2 – 4 inches of more.** Some places around Palmdale in Glades County and eastern Charlotte County have tallied 6 inches or more over the past ten days. The East Coast and Everglades agricultural areas remain abnormally dry with much less than an inch of rain recorded over the past month.

**FAWN Weather Summary**

Date	Air Temp °F		Rainfall (Inches)	Ave Relative Humidity (Percent)	ET (Inches/Day) (Average)
	Min	Max			
<b>Balm</b>					
3/30 – 4/20/15	42.35	89.65	2.20	79	0.15
<b>Belle Glade</b>					
3/30 – 4/20/15	48.65	92.62	0.34	81	0.17
<b>Clewiston</b>					
3/30 – 4/20/15	49.12	92.75	4.63	73	0.16
<b>Ft Lauderdale</b>					
3/30 – 4/20/15	56.37	92.05	0.30	77	0.18
<b>Homestead</b>					
3/30 – 4/20/15	51.51	92.46	0.02	77	0.17
<b>Immokalee</b>					
3/30 – 4/20/15	44.91	96.08	1.04	77	0.16
<b>Okeechobee</b>					
3/30 – 4/20/15	40.68	92.64	3.08	80	0.15

**“Remember, when in doubt - scout.”**

**Watermelon harvest is shifting into high gear and many south Florida crops will be winding down over the next few weeks as the focus shifts north to the Manatee Ruskin area.** Hot and dry conditions are resulting in a quick wind down of the leafy green season and dry conditions have resulted in tip burn. High temps and wet weather over the past few weeks has caused a spike in insect and disease issues in some locations. High winds in some areas have blown over pepper increasing the risk of sunscald.

**The National Weather Service forecast indicates a moist summer-like pattern will prevail across South Florida through much of the week.** A cold front is still expected to push into the Lake Okeechobee region Tuesday afternoon and evening before stalling. This will keep fairly uniform chances for showers and thunderstorms Tuesday afternoon and evening.

**The front is then expected to push back to the north as a warm front on Wednesday as surface high pressure behind the front slides to the east and into the western Atlantic.** As it does, a reinforcing shot of deep moisture will push into south Florida. Point soundings across the area depict a nearly saturated profile Wednesday afternoon and evening with precipitable water (PWATS) surging to near 2 inches which is over +2 standard deviations above normal. This will result in extensive coverage of showers and thunderstorms Wednesday afternoon and early evening.

**Thursday through Saturday, mid-level ridging across the Yucatan Peninsula is expected to build northward and into the western Gulf of Mexico and the Florida peninsula.** This will decrease afternoon convective coverage each day. Ridging should then become firmly entrenched by Saturday translating into hot and nearly rain free conditions for Saturday.

**Models also hint at another weak cold front approaching South Florida on Sunday night with rain chances returning next week.**

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

## **Insects**

### **Thrips**

**Thrips pressure remains high in pepper around Palm Beach and Martin Counties but reports indicate it is much lower in St Lucie.** Respondents note that thrips are also present in high numbers in some tomato and eggplant in Palm Beach as well.

**Thrips continue to be a major problem in some pepper and eggplant fields around SW Florida while other places haven't had any issues.** Around Immokalee, East Naples and Bonita, some growers are reporting problems with *Thrips palmi* although there are a few western flower thrips showing up in some places. *T. palmi* is causing severe leaf distortion in younger fields and lots of fruit scaring in older fields. Pirate bugs are starting to move into a number of locations and provide some natural pest control especially where growers have avoided broad spectrum pesticides. Pirate bugs remain rare in other areas where pesticide use has affected their populations.

**Reports from the Manatee Ruskin area indicate that thrips populations have declined in recent days.**

**Around Homestead, Dr Dak Seal reports that melon thrips are present on a variety of vegetable crops including tomato.** Eggplants are getting hammered by melon thrips as well and growers report economic damage on other crops as well. To avoid melon thrips problem growers need to follow the following instructions:

**Dak reports that western flower thrips population increased significantly in the past weeks tomato flower samples while common blossom thrips showed a decreasing trend.** Incidence of tospovirus symptoms on tomato remains high with younger tomato plants more commonly infected more than older plants.

**Scouting is critical because the native flower thrips occur in large numbers in the flowers of fruiting vegetables where they out-compete the damaging invasive species, so it is necessary to accurately identify the species in order to make management decisions.**

**Most broad-spectrum insecticides, including pyrethroids, organophosphates, and carbamates, kill the native species of thrips that outcompete western flower thrips.** Moreover, application of broad-spectrum insecticides may also reduce populations of important natural enemies that effectively suppress spider mites, whiteflies, leafminers, and other pests.

**The most efficacious insecticides for western flower thrips in tomato and other crops are the spinosyns.** However, some level of resistance to spinosyns has been documented in pockets in Florida. The label for spinosyns has a limit on the number of applications per season and growers should always follow the label and should not exceed the maximum number of sprays per crop.

**Cyantraniliprole and acetamiprid have performed best after the spinosyns in trials.** Other insecticides that have shown significant suppression against the adults and larvae of western flower thrips include flonicamid, spirotetramat, and Requiem.

**For more information on “Managing Thrips and Tospo Viruses in Tomato”, see <http://edis.ifas.ufl.edu/in895>**

### **Whiteflies**

**Whitefly numbers are increasing in vegetable crops around Homestead and reports indicate that silverleaf whitefly transmitted viral diseases like Tomato Yellow Leaf Curl virus and Bean Golden Mosaic virus are increasing.**

**In the Manatee Ruskin area, whitefly numbers are increasing but numbers remain mostly low.**

**Whiteflies pressure is increasing around Palm Beach County but remains relatively low depending on location.** Despite low numbers, some growers report a relatively high incidence of TYLCV transmission.

**Growers and scouts in Southwest Florida report that whitefly numbers have taken off in the past few weeks with an accompanying surge in virus transmission as well.** Some irregular ripening has been reported in harvested fruit.

**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> - newly revised in March 2015.**

**See Management of Whiteflies, Whitefly-Vectored Plant Virus, and Insecticide Resistance for Vegetable Production in Southern Florida1 - <http://edis.ifas.ufl.edu/in695>**

## Worms

**Worm pressure is increasing around South Florida.**

**Respondents in Palm Beach County, worm pressure is high in some pepper, primarily loopers but scouts are finding some armyworms as well.**

**In the EAA, fall armyworm populations seem to be a little more widespread and in higher numbers in than in the past few years.** Some scouts report that they seem to be worse in fields that took a beating from lesser cornstalk borers.

**Around SW Florida, worm pressure continues to increase in all crops with loopers being the main pest.** Scouts also report finding armyworm eggs – mostly southern and beet. Pickleworms, melonworms and diamondback moths are also around.

**In the Manatee Ruskin area, worms are increasing but remain mostly light with beet armyworms, southern armyworms and an occasional pinworm showing up in fields.**

**Around Homestead, worms, including fall armyworm, beet armyworm and diamondback moth are active on a variety of crops and diamondback moth has reached high numbers in some fields.**

## Lesser Cornstalk Borer

**Growers and scouts in the EAA report that they are still seeing lesser cornstalk borers in fully mature corn where the fields remained dry on the surface all season long.** In some places, they have girdled the stalks making plants prone to snapping off at the ground during wind events.

## Pepper Weevil

**Around Southwest Florida, pepper weevil numbers have risen rapidly in both pepper and eggplant and are causing considerable damage to buds/blooms and newly set fruit in many pepper fields.**

**On the East Coast, growers and scouts report pepper weevil pressure is high everywhere.**

**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.

**Weevil pressure remains low around Hillsborough County.**

**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, in the absence of Vydate on the market, growers should start applying chemical insecticides such as Actara, the diamides and pyrethroids in a program to control pepper weevil.

## Aphids

**Reports from the EAA indicate that aphid numbers are beginning to decline.**

**In Palm Beach County, aphids are present in pepper in some places and growers report battling aphids in oriental vegetables.**

**Around Southwest Florida, respondents report that aphids are still around in a variety of crops and note that they really seem to like watermelons this season.** Growers note that it has been a consistent battle in some fields to keep them under control.

**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 dispersal, and it may be possible to destroy overwintering weedy hosts in some cases.**

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

### **Spider Mites**

**Spider mites are common in some eggplant and organic tomatoes around Palm Beach County.** Scouts report seeing spider mites building in weedy areas adjacent to fields and note that potential problems may often be detected by examining weeds, especially nightshade around field margins.

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

**Spider mites are increasing rapidly around Southwest Florida on eggplant, tomato, watermelon and cucumbers.**

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

### **Broadmites**

**With the return of warm weather, broad mites are flaring up on pepper and other crops in a number of locations around South Florida.**

### **Russet mites**

**Russet mites common in many organic tomato operations on the East Coast.**

**Russet mites may be present year round, but are most abundant during hot, dry weather.** Host weeds such as nightshade and field bindweed may be a source of infestations.

**Adults are extremely small requiring a 15x hand lens to be observed.** The mite is tapered and wedge-shaped with two pairs of legs at the broader head end and long hairs on the posterior end. They are translucent and yellowish, tan or pink in color.

**Adults and nymphs have piercing-sucking mouthparts and feed on the undersides of lower leaves and on petioles and stems producing a greasy appearance, which becomes bronzed.** Leaves become yellow, curl upwards, dry out and drop. Damage starts at the bottom of plants and moves upward and may be confused with nutritional deficiencies, plant disease or water stress.

**Sulfur may provide control in organic systems.**

### **Leafminer**

**Growers and scouts report that leafminer pressure is beginning to decline in most areas.**

### **Silk fly**

**In the EAA, silk flies are increasing and beginning to be a problem primarily in areas where they always seem to be an issue.**

**In the Homestead area, corn silk fly 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.

**To preserve the effectiveness of pyrethroids growers are advised when using a pyrethroid during ear stage sweet corn, to always use the maximum labeled rate.** Never use below label rates for pyrethroids at any time in sweet corn. Do not add pyrethroids to another chemical unless it is directly needed for control of something that the other product does not control. If growers need to control armyworm or earworm, but no cornsilk flies are present, then they should not use pyrethroids to control these Lepidoptera, because there are many alternative choices.

**Growers should eliminate the use of "insurance sprays" of pyrethroids, because the continuous low residual levels of pyrethroids on corn are leading to resistance development in cornsilk flies to pyrethroids.** If there were many other products for control of these flies, then this would not be as critical.

**However, there is only one other material that provides good control of the flies and that is the organophosphate, chlorpyrifos.** While some contact control is provided by methomyl, this product has no residual control of the cornsilk flies. To conserve the remaining effectiveness and to try to regain previous levels of effectiveness of pyrethroids, growers must eliminate unnecessary pyrethroid treatments.

### **Sweet potato weevil.**

**Around Homestead, sweet potato weevil numbers are increasing with increased maturity of sweet potato crops.** Dak Seal notes that currently nothing is registered to control sweet potato weevil in sweet potatoes.

## **Diseases**

### **Downy Mildew**

**Downy mildew is common in cucumber and squash on the East Coast and growers report treating weekly for control.**

**Around Southwest Florida, downy mildew has been low in watermelons but is a serious problem in cucumbers and cantaloupe and some squash.**

**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.**

### **Downy Mildew on Crucifers**

**Downy mildew is widely 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 are found.**

### **Powdery Mildew**

**Growers and scouts around Southwest Florida report that powdery mildew remains a major problem in squash and note that it is beginning to appear on older, lower leaves in some watermelon.**

**On the East Coast and in Homestead, powdery mildew pressure is high in cucurbits especially squash and cucumber.**

**Powdery mildew is present on some beans in the EAA**

**Powdery mildew is also common on some older pepper in some East Coast locations.**

## **Gummy stem Blight**

**With recent rains, gummy stem is on the move in some watermelons around southwest and west central Florida.**

**Symptoms appear as light to dark brown circular spots on leaves or as brown to black, lesions on stems.** Wilting, followed by death of young plants may occur. Stem lesions enlarge and slowly girdle the main stem resulting in a red-brown-black canker that cracks and may exude a red to amber gummy substance. Vine wilting is usually a late symptom.

**Because other plant disorders can cause exudation of a gummy substance, “gummy-ness” should not be relied upon for diagnosis of gummy stem blight.** Anthracnose and inadequate liming can both cause stem lesions and gumming.

**Gummy stem blight typically progresses from the central stem of the plant to growing tips. Leaf spots are variable in shape, red-brown in color and initial infections are generally seen on leaf margins and veinal areas.**

**Fruit rot in is usually not a problem if vines are kept free of the disease.** Lesions in fruit of watermelon, cucumber and muskmelon are first oval to circular and greasy-green in color and later coalesce and become dark brown-black. Older lesions will appear depressed in the center.

**The fungus (*Didymella bryoniae*) produces two spore stages, a sexually produced spore (ascospore) and an asexually produced spore (pycnidiospore).** The ascospore is windborne and serves as a primary source of inoculum. The pycnidiospore functions in secondary spread of the disease. Pycnidiospores are released in a gummy substance that makes them adaptable for spread by splashing water.

**Growers often comment on this disease occurring “overnight.”** What they are actually seeing are the results of secondary spread, which is more difficult to control than primary spread simply because of increased spore numbers with increased diseased tissue.

**Temperatures and moisture conditions are often ideal for development during watermelon season in Florida.** Gummy stem blight is most severe in wet years since moisture is necessary for spore germination. After a spore germinates on a susceptible host, the fungus penetrates the plant tissue and symptoms can appear in 7 to 12 days.

## **Late Blight**

**Around SW Florida, late blight is still around and moving but has slowed compared to a few weeks ago.**

**Growers and scouts in central Florida report that they are still battling late blight in some areas.**

**Late Blight is common in some organic and conventional tomato around Palm Beach County but appears to have slowed with recent hot weather.**

**Respondents in the Hasting area note that late blight has been found on potato in the past two weeks.**

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

## **Target spot**

**Around Southwest Florida, target spot continues to work on inner foliage and maturing tomatoes**

**In East Coast production areas, target spot is common in cukes but appears to be have slowed somewhat in tomato.**

**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**

### **Bacterial Spot**

**Bacterial spot is still active in a number of areas around south Florida and may take off in areas pounded by recent rains.**

**Bacterial spot is widely 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.**

**Foliar symptoms generally occur on the oldest leaves and start as small, pencil-point-size, brownish to black lesions. These leaf spots enlarge up to ½ inch (1.3 cm) in and usually have readily visible, concentric rings that look somewhat like a bull's-eye. These concentric leaf spots are distinctive enough to make early blight one of the easier tomato diseases to diagnose.**

**Green or red fruit may be infected by the fungus which invades at the point of attachment between the stem and fruit, and through growth cracks and wounds made by insects. Dark lesions enlarge in a concentric fashion and may affect large areas of the fruit. Mature lesions in fruit are typically covered by a black velvety mass of fungal spores.**

**Control of early blight is best achieved by a combination of control strategies. Cultural controls will allow the fungicide to do a better job as cultural controls reduce the amount of initial inoculum.**

**Maintenance of plant vigor through adequate irrigation and fertilization will help increase disease resistance.**

**Look for and destroy volunteer tomato and potato plants and eliminate solanaceous weed hosts in and around the field and burn down or plow down adjacent fields planted to potatoes or tomatoes immediately after harvest.**

**Begin a fungicide spray program at first sign of disease or before.** Contact fungicides such as chlorothalonil and mancozeb provide moderate levels of control when applied preventively.

**Maintain spray applications on a 5 to 14 day interval throughout the growing season.** Use the shorter intervals if rainfall is frequent or where history of early blight has been severe or when temperatures from 75-85°F prevail.

**The strobilurin fungicides (azoxystrobin, pyraclostrobin, etc.) provide excellent control in trials. Consult UF/IFAS recommendations for currently labeled fungicides for early blight control in Florida.**

**Many of the newer fungicide chemistries including the strobilurins have a narrow mode of action and are prone to the development of resistance by fungi; be sure to rotate these with fungicides from different groups and include cultural methods in your disease management strategy to avoid the development of disease resistance.**

### **Northern Corn Leaf Blight**

**Growers and scouts in the EAA report a spike in northern corn leaf blight in recent weeks.**

**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 strobilurin such as Headline etc. As corn matures or disease becomes present, rotate between triazoles such as Folicur, Monsoon, Propimax etc and strobilurins or premixes of the two.

### **Corn Rust**

**Common rust is a cool weather disease.** In south Florida, common rust normally occurs in the spring, while southern corn rust occurs in the fall.

**Both common rust and southern corn rust produce similar symptoms with the formation of spore-bearing, reddish-orange to brown pustules (uredia) on leaves or husks.**

**Common rust typically produces pustules without a peridium or covering over the pustule.** The pustule of southern corn rust is normally persistent. The color of the spore mass of common rust tends to be chocolate brown while that of southern corn rust tends to be orange.

**The shape of the pustule also varies between the two diseases.** Common rust tends to have elongated pustules and southern corn rust has somewhat rounded pustules.

**Another distinguishing characteristic is the fact that the formation of pustules on the lower surface of the leaf is delayed and often absent with southern corn rust.**

**Identification of which rust is present can be done quickly with a microscope.** The rounded urediospores of common rust tend to be uniform in diameter whereas those of southern corn rust are oblong in shape.

**Control is similar to northern/southern corn leaf blight.**

### **Bean Rust**

**Some rust has been reported on snap beans in the EAA. The disease is more common during the cooler months and in South Florida, the disease generally appears first in January and continues to increase in severity until into the spring.** Heavy dews during cool months provide sufficient moisture for spores to germinate and penetrate host plants. The bean rust fungus differs from other rust fungi in not requiring an alternate host to complete its life cycle.

**The first symptom of bean rust is the appearance of pale yellow spots on lower leaf surfaces.** One or two days later, the round spots become raised and the leaf surface breaks, exposing pustules of red spores. These characteristic, spore-producing pustules are primarily found on the lower leaf surface and occasionally on pods.

**If the disease is severe and pustules cover much of the leaf surface, premature leaf drop may occur.** When leaves are severely affected before blossoming, yield losses may be much greater than when the disease occurs after the formation of blossoms. On susceptible bean varieties, pustules may be surrounded by yellow halos, while on resistant varieties only very small spots may appear.

Resistant varieties and fungicides are used to manage this disease.

### **Tomato Yellow Leaf Curl Virus**

**Growers and scouts around Immokalee indicate that TYLCV is patchy and pressure is pretty high, with some locations at 100% infection rate while other fields still remain below 1%.**

**In Palm Beach County, TYLCV remains mostly low but increasing in incidence in older and younger tomato due to higher background whitefly numbers.**

**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 Tosspoviruses, 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.

**In Palm Beach County, GRSV and/or TCSV is increasing in areas of pepper and tomato where there are a lot of thrips. Incidence has reached 15% in some younger tomato.**

**Scattered symptomatic plants have also been reported around SW Florida.**

**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 currently being conducted in Homestead using TSWV resistant varieties appears to bear this out.

**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.

**Research in North Florida with TSWV has indicated that insecticides alone may not be adequate to control the virus.**

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

See also – report of new ilarvirus in south Florida tomatoes below.

## **News You Can Use**

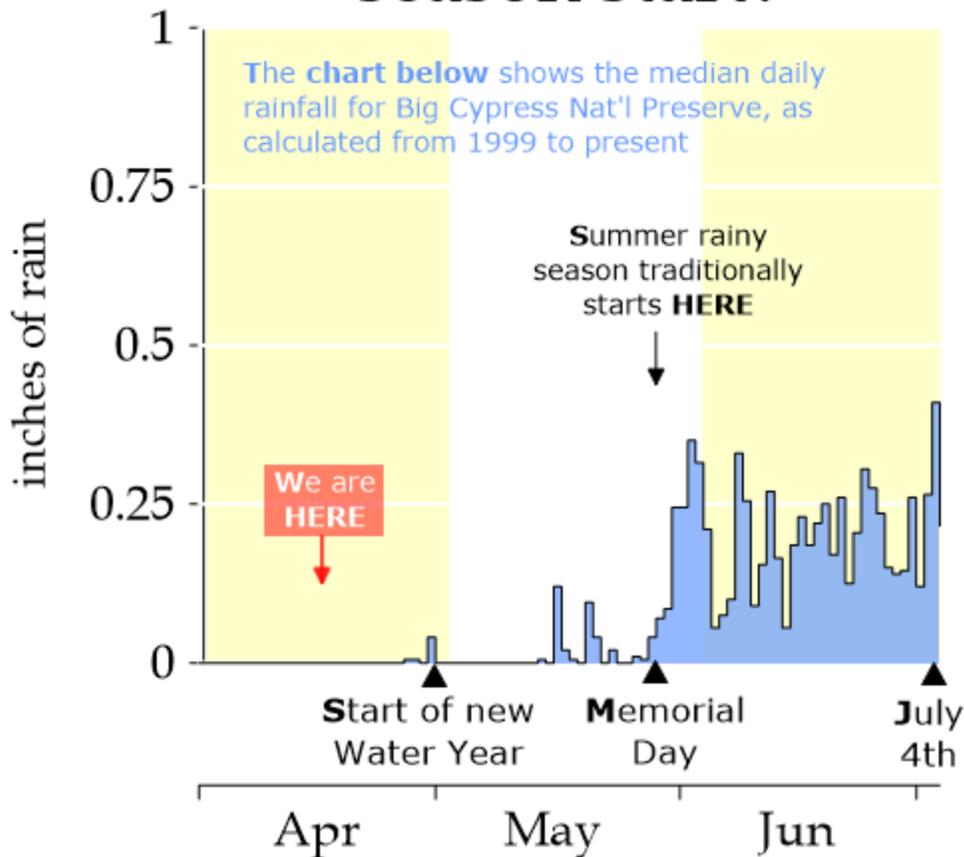
### **A Meteorologic false start?**

The chart below confirms that the start of the traditional summer rainy season still has a ways to go. That doesn't mean we won't take any April and May rain we can get!

By that I mean regular afternoon clouds begin to appear.

But it isn't usually until mid to late May, around Memorial Day, that giant clouds become a mainstay of the afternoon sky. Despite recent rains, we may have a way to go.

# When does the rainy season start?



## Summer Rainy Season

Southeast Florida is characterized by two predominant seasons-- summer and winter. The summer season is characterized by warm, humid conditions with frequent showers and thunderstorms. The winter season has cooler temperatures, lower humidity and less frequent precipitation. The two missing seasons-- autumn and spring-- are included in the winter season because these two transition periods are drier and cooler than the summer season.

The starting and ending of the summer season is a topic of interest in southeast Florida. The rains which help to signal the beginning of the summer season and put an end to the late winter dryness, and the all-too-frequent water-use restrictions, are always welcomed. Then when the day-after-day high temperatures and humidity of the summer have lasted for what seems to be an eternity, the first period of lower humidity and slightly cooler temperatures are greatly anticipated by all.

## Definition of Summer Season

As stated above, the summer season is characterized by warm temperatures. Daily Maxima average in the upper 80's, but more significantly, the daily minima average in the middle 70s. Low temperatures rarely lower below the 70 degree level during the summer months. In addition to warm temperatures, high humidity prevails throughout the summer.

The dew-point temperature is the best measure of moisture levels in Florida. During the summer period, the dew-point temperature remains in the lower to middle 70's. In addition, convection in the form of showers and thunderstorms is almost a daily occurrence during the summer. In an easterly wind regime, the precipitation occurs as late night and morning showers or thunderstorms over the coastal areas, and afternoon thunderstorms over the interior sections.

In a westerly wind regime, afternoon thunderstorms affect interior and coastal areas alike. In light wind conditions, afternoon thunderstorms again develop over southeast Florida and affect most areas. Overall, the best indicators of summer season in southeast Florida are dew-point temperatures and minimum temperatures remaining in the 70's, and frequent daily rainfall.

#### Facts Revealed

During the past 42 complete years of weather data, the earliest date for the beginning of the summer season was April 16 and the latest was June 3. This is a variation of 49 days. The median date for the onset of the summer season during these 42 years was May 21st.

The earliest date that the summer season ended was September 24, and the latest was November 1. This is a range of 39 days. The median date for the end of the summer season was October 17.

Based on these dates the average duration of the summer season was 152 days, or just less than 5 months. The shortest summer season was only 118 days in 1983 which was the year that had the earliest ending date. The longest summer season was 195 days which occurred in 1995.

Precipitation totals during these established summer seasons ranged from the least amount of 24.75 inches in 1987 to the greatest amount of 74.85 inches in 1968. The average amount was 40.86 inches.

These summer season precipitation totals were compared to the annual rain amounts each year to arrive at the percentage of the annual precipitation total that occurred during the summer season. On the average, 69% of the annual precipitation totals occurred during the summer season which average slightly less than 5 months.

#### **New ilarvirus species identified in south Florida tomatoes**

Solanaceous crops in the southern half of the Florida peninsula have been extensively surveyed for the emerging thrips-transmitted tospoviruses, Tomato chlorotic spot virus (TCSV) and Groundnut ringspot virus (GRSV), over the past four years as part of several research projects. Field collection of symptomatic tomato samples has been coordinated and implemented by Glades Crop Care, Inc., with the cooperation of many growers, other scouting organizations, University of Florida/IFAS Extension and researchers, and USDA-ARS scientists in Fort Pierce. Results of sample testing by USDA-ARS scientists have shown that TCSV and GRSV are both currently present in south Florida, along with the well-known Tomato spotted wilt virus (TSWV). An outbreak of TCSV has been plaguing Miami-Dade County tomato production in this spring season.

During these surveys for TCSV, GRSV and TSWV in the fall season of 2013, symptomatic tomato plant and fruit samples were collected in Miami-Dade County by Glades Crop Care, Inc. and in Palm Beach County by growers and USDA-ARS scientists that did not test positive for any of these emerging tospoviruses. This was surprising because the symptoms of virus-like necrosis on leaves, petioles and stems, and necrotic rings or spots on fruits were similar to those induced by TCSV and GRSV. Further testing by scientists at FDACS-DPI and USDA-ARS eliminated all of the usual tomato virus suspects known in Florida. Eventually, a new ilarvirus species was identified for which the name Tomato necrotic streak virus (TomNSV) is proposed. Symptoms of TomNSV in the field have been reproduced by inoculation of greenhouse tomato plants with symptomatic field samples. TomNSV is a distant relative of Tobacco streak virus (TSV), which is the cause of bean red node

disease in south Florida. TSV and other ilarviruses are reported to be transmitted by thrips but in a manner quite different from the tospoviruses like TCSV, GRSV and TSWV.

Now that TomNSV has been identified, scientists have been able to test other previously collected samples for this new virus. TomNSV has subsequently been detected in similarly symptomatic tomato samples collected from the spring and fall seasons of 2014 in Palm Beach County. No detections have been made in 2015. During the initial TomNSV findings in fall 2013, incidence of symptoms was generally low (<3%), although >1000 plants were rogued from a single Miami-Dade County farm. The lack of TomNSV detection so far in 2015 may be due to TCSV or Tomato yellow leaf curl virus (TYLCV) outbreaks in Miami-Dade and Palm Beach County locations (from where TomNSV was originally detected) that are obscuring symptoms. No natural hosts for TomNSV other than tomato have been identified to date. An FDACS-DPI Specialty Crop Block Grant is funding current studies to examine other hosts for both TomNSV and TSV, and to determine the mode of transmission of these viruses in Florida. No matter what the ultimate economic cost of TomNSV to the Florida tomato industry, its detection through pest surveys and definitive identification as a new virus highlights the importance of vigilant crop scouting.

### **EPA Not Likely to Approve New Uses for Neonicotinoids**

EPA has sent letters to registrants of neonicotinoid pesticides with outdoor uses informing them that the agency will likely not be in a position to approve most applications for new uses of these chemicals until new bee data have been submitted and pollinator risk assessments are complete.

The letters reiterate that EPA has required new bee safety studies for its ongoing registration review process for the neonicotinoid pesticides, and that the agency must complete its new pollinator risk assessments, which are based, in part, on the new data, before it will likely be able to make regulatory decisions on imidacloprid, clothianidin, thiamethoxam and dinotefuran that would expand the current uses of these pesticides.

See letter here:

<http://www2.epa.gov/sites/production/files/2015-04/documents/neonicotinoid-new-use.pdf>

### **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.

## Up Coming Functions

**April 26, 2015**      **15th annual Sweet Corn Fiesta**      **11:00 – 6:00 PM**

South Florida Fairgrounds Yesteryear Village  
9067 Southern Blvd  
West Palm Beach, FL

**April 28, 2015**      **Cucurbit Scouting Workshop (webcast)**      **9:00 – 11:00 AM**

Clayton Hutcheson Agricultural Center (Conference Room)  
559 N. Military Trail  
West Palm Beach, FL

To RSVP please call Ethel at 561-233-1725 or email [eescott@pbcgov.org](mailto:eescott@pbcgov.org)

**May 1, 2015**      **EREC Friday Seminar**      **10:45 – 12:00 PM**

Dr Monica Ozores-Hampton - Controlled Release Fertilizer as a BMP on Vegetable Production in south Florida

Everglades Research and Education Center  
3200 East Palm Beach Road  
Belle Glade, FL

**May 31 – June2**      **Florida State Horticultural Society Annual Meeting**      <http://fshs.org/meetings/>

Renaissance World Golf Village Resort  
500 South Legacy Trail  
St. Augustine, FL 32092

Current abstracts and presentations: [http://fshs.org/wp-content/uploads/2015/04/2015\\_Abstracts.pdf](http://fshs.org/wp-content/uploads/2015/04/2015_Abstracts.pdf)

### Websites

**Difficulties in Sending the Water South.** This informative slideshow by the Palm Beach Post identifies the constraints to sending Lake Okeechobee water south. <http://www.mypalmbeachpost.com/gallery/news/state-regional/slideshow-difficulties-sending-lake-o-water-south/gCQ2Y/#6780020>

**Need as CEU Class?** This search tool will allow you to search for available CEU classes by date, by location and by subject. <http://ceupublicsearch.freshfromflorida.com/AvailableClassSearch.asp>

**ATTRA Sustainable Agriculture – Master Publication list.** The list contains more than 300 easy-to-read titles covering organic production, livestock, horticultural crops, business and marketing, farm energy, water and pest management and more. <https://attra.ncat.org/publication.html#horticultural>

**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 Southwest Florida Vegetable Grower on Facebook**

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**Contributors** include: Joel Allingham/AgriCare, Inc, Meghan Barnett/Glades Crop Care, Jeff Bechtel/Syngenta Flowers, Bruce Corbitt/West Coast Tomato Growers, Gordon DeCou/Agri Tech Services of Bradenton, Dr Nick Dufault/ UF/IFAS, Dr. Sam Glucksman/Glades Crop Care, Carrie Harmon/UF/IFAS Plant Disease Clinic, Fred Heald/The Andersons, Sarah Hornsby/AgCropCon, Cecil Howell/H & R Farms, Bruce Johnson/General Crop Management, Barry Kostyk/SWFREC, Leon Lucas/Glades Crop Care, Dr. Christian Miller/Palm Beach County Extension, Dr. Mark Mossler/UF/IFAS Pesticide Information Office, Gene McAvoy/Hendry County Extension, Alice McGhee/Thomas Produce, Dr. Gregg Nuessly/EREC, Chuck Obern/C&B Farm, Dr. Monica Ozores-Hampton/SWFREC, Dr. Rick Raid/ EREC, Dr. Ron Rice/Palm Beach County Extension, Dr. Pam Roberts/SWFREC, Dr. Nancy Roe/Farming Systems Research, Wes Roan/6 L's, Dr. Dak Seal/ TREC, Kevin Seitzinger/Gargiulo, Ken Shuler/Stephen's Produce, Crystal Snodgrass/Manatee County Extension, Dr. Phil Stansly/SWFREC, Dr. Gary Vallad/GCREC , Mark Verbeck/GulfCoast Ag, Alicia Whidden/Hillsborough County Extension, Dr. Qingren Wang/Miami-Dade County Extension, Dr. Henry Yonce/KAC Ag Research and Dr. Shouan Zhang/TREC.

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

*Gene McAvoy*

Gene McAvoy  
County Extension Director / Extension Agent IV  
Regional Specialized Agent - Vegetables/Ornamental Horticulture

Hendry County Extension Office  
PO Box 68  
LaBelle, Florida 33975  
Web: <http://hendry.ifas.ufl.edu/>

863-674-4092 phone  
863-673-5939 mobile  
863-674-4637 fax  
[GMcAvoy@ifas.ufl.edu](mailto:GMcAvoy@ifas.ufl.edu)

*Chris Miller*

Christian Miller  
Extension Agent II – Vegetable Production & Tropical Fruits  
Palm Beach County Extension  
559 North Military Trail, West Palm Beach, FL 33415  
Web: [www.pbcgov.org](http://www.pbcgov.org)

561-233-1718 phone  
561-233-1768 fax  
[cfmiller@ufl.edu](mailto:cfmiller@ufl.edu)

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Carol Howard

***Mobley Plant World***

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

Fred Heald

***The Andersons***

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Immokalee, FL 34142  
Phone 239-657-8254 Fax 239-657-2005

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Naples Operations  
Phone 239-353-0300 Fax 239-353-3407

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Sam Monroe: East Florida - 772-473-0873

Dr. Nancy Roe

***Farming Systems Research***

5609 Lakeview Mews Drive  
Boynton Beach, Florida 33437  
Phone 561-638-2755

Ed Early

***DuPont Crop Protection***

PO Box 7768  
Fort Myers, Florida 33911  
Mobile 239-994-8594

***Glades Crop Care, Inc.***

**Leaders in Crop Health  
Management**

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

Stacey Howell

***Bayer CropScience***

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

Justin Powell

Southeast Business Leader

***MANA***

229 881 9757 cell  
jpowell@manainc.com

Bart Hoopingarner

***Gowan Company***

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

Cody Hoffman

***Syngenta Crop Protection***

1505 Paloma Dr.  
Fort Myers, FL 33901  
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Chuck Goodowns - 352-538-4471

Scott Houk  
**Dow AgroSciences LLC**  
Phone 239-948-3999  
Email [sehok@dow.com](mailto:sehok@dow.com)

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Florida's Finest Vegetables  
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Sarah Hornsby, CCA  
**Agricultural Crop Consulting, Inc**  
Scouting: Manatee, Hillsborough, Collier  
Office/Fax 941-776-1122  
Cell 941-713-6116  
Email: [AgCropCon@aol.com](mailto:AgCropCon@aol.com)

Donald Allen  
**AGLIME SALES INC**  
PO Box 60  
Babson Park, Florida 33827-0060  
Office 863-638-1481 Fax 863-638-2312  
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Central Florida Regional Sales Manager  
407-405-4982 cell  
tgeltz@agraquest.com

Garry Gibson  
**BASF Corporation**  
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Vero Beach, Florida 32966  
Office 772-778-4646 AGNET 21726  
w.garry.gibson@basf.com

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

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

Jay Hallaron  
***Chemtura Corporation***  
321-231-2277 cell 407-256-4667 cell  
[jay\\_hallaron@cromptoncorp.com](mailto:jay_hallaron@cromptoncorp.com)

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Distributors of Agrigro and Super Cal  
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Cell 561-644-3511

Dr. Henry Yonce  
***KAC Agricultural Research***  
Scouting, Consulting  
Research  
386-736-0098 work 386-527-1124 cell  
[HDYONCE@msn.com](mailto:HDYONCE@msn.com)

***Grower's Management, Inc***  
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Belle Glade, FL 33430  
Phone: 561-996-6469  
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