



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

November 11, 2014

A cold front moved across the area at the beginning of November dropping temperatures in the low 40 and upper 30's in many of the normally cooler interior locations. This front was accompanied by blustery winds and growers reported tattered foliage and damage from cold winds on the tops of a variety of sensitive crops from Hillsborough County down to Homestead.

The past few weeks have been relatively dry giving growers some relief from the wet conditions and pythium which affected some early plantings.

A gentle all day rain over the weekend into Monday dropped from 0.50 to an inch or more of rain across

FAWN Weather Summary

Date	Air Temp °F		Rainfall (Inches)	Ave Relative Humidity (Percent)	ET (Inches/Day) (Average)
	Min	Max			
Balm					
10/16 – 11/9/14	40.30	85.59	1.46	77	0.09
Belle Glade					
10/16 – 11/9/14	39.28	89.22	2.10	83	0.09
Clewiston					
10/16 – 11/9/14	39.46	88.00	1.35	80	0.09
Ft Lauderdale					
10/16 – 11/9/14	-----	85.93	2.36	75	0.1
Homestead					
10/16 – 11/9/14	46.08	88.93	4.12	82	0.09
Immokalee					
10/16 – 11/9/14	38.66	91.40	1.28	79	0.09
Okeechobee					
10/16 – 11/9/14	37.62	88.72	0.99	83	0.09

“Remember, when in doubt - scout.”

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much of the area while heavy rains toward the end of October remained over the tip of south Florida hitting Homestead but missing most of the rest of the area. Temperatures have been seasonable in the low to mid 80's in the day and high 50's and 60's at night.

Harvesting is beginning to ramp up across most South Florida growing areas in advance of the upcoming Thanksgiving Holiday

The National Weather Service forecast indicates cool dry air presently sweeping across the peninsula behind yesterday's rain will usher in a benign pattern across the region with dry weather and seasonal temps prevailing. The impressive trough up north across the upper Midwest will not dig far enough south to bring any cold air down this way, so despite winter making an early entrance up north, seasonal warmth will continue across Florida through the forecast period.

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

Insects

Worms

Respondents in Southwest Florida report that southern armyworm numbers exploded towards the end of October with scouts report finding up to 3 to 4 egg masses on single plants and across wide areas. Growers are also finding beet armyworms, fruitworms and hornworms. Melon worms which had been numerous earlier appear to be declining in number in recent days.

On the East Coast, worms are active and pressure has increased to moderate levels in many crops including corn, beans, tomato, leaf, brassicas, and cucurbits. Leaf growers in the Glades report finding lots of armyworm eggs in recent days but drier weather has allowed growers to stay on top of sprays limiting any significant hatch-outs. Sweet corn producers report worm pressure is generally low compared to past seasons.

Respondents in Homestead report finding fall and beet armyworms, loopers and leaf rollers in beans.

In the Glades, worm pressure has been high in leafy greens but lower in corn and beans although growers are still sizeable numbers of fall armyworms in tasseling corn.

Around the Manatee/ Hillsborough area worm pressure remains high with a mixed bag of species causing problems in a variety of crops. Scouts report that cabbage loopers have been steady and hard to kill, and are also finding beet armyworms and hornworms as well.

Over the past few years, chemical manufacturers have produced a variety of new tools in the battle against armyworms so that growers now have a wide array of excellent worm control materials in their arsenal. Growers are reminded to rotate between products of different chemical classes to avoid the buildup of possible pest resistance. The range of materials to choose from and the use of IRAC numbers make this task relatively easy to do.

Traditional chemicals and the various *Bacillus thuringiensis* compounds (Bts) both have a place in the grower's toolbox for worm control and the Bts should not be overlooked in the light of newer chemistries.

Bts can control worm pests just as traditional chemicals, but also provide added benefits.

Some benefits of Bt insecticides:

- Very low impact on beneficial insects.
- Avoidance of secondary pest problems.
- Not toxic to bees and predatory mites.
- No preharvest interval required after application.
- No restrictions on use.
- Resistance to Bts is slower to develop than resistance to chemicals.

Commercial Bt products contain endotoxin crystals or a mixture of crystals and Bt spores. Bt is not a contact pesticide. Susceptible insects must ingest Bt δ -endotoxins to be affected. In insects, the toxin acts as a selective stomach poison. Spores contribute to their toxicity by causing blood poisoning and providing environmental persistence.

When an insect pest ingests Bt toxins from treated leaves, feeding stops within minutes after the crystals are solubilized in the gut and gut cells are damaged. After toxin damage to the gut occurs, spores enter through the gut wall and germinate rapidly in the body cavity causing blood poisoning. Larvae stop feeding within minutes and die in 1-3 days. Smaller larvae die more quickly, so precise timing can measurably improve the performance of the application.

Various *Bacillus thuringiensis* strains occur naturally in soil and on plant leaves. Literally thousands of Bt strains exist within the various Bt subspecies. Each individual strain produces its own insecticidal protein toxin mix targeting specific groups of pests.

There are more than 80 different subspecies of Bt, but the following are used commercially:

Bt kurstaki: Used for caterpillar control

Bt aizawai: Used for caterpillar control with specific activity on armyworms

Bt tenebrionis: Used to control beetle larva

Bt israelensis: Used to control mosquito, black fly and fungus gnat

Some pest species are difficult to control with toxin alone. Germinating Bt spores provide an additional control mechanism. Spores germinate in the midgut and spread throughout, ultimately causing death of the target insect. This effect is especially apparent in armyworm larvae, which can be difficult to control with toxin alone. Products with viable spores (such as DiPel and XenTari) have a distinct advantage over products without spores.

Since different species have different susceptibilities to Bt toxins and different Bt products have different profiles of these toxins, it is important to match the Bt insecticide to the pest being targeted.

There are at present two Bt strains available for control of worms (caterpillars) in vegetables; *Bt kurstaki* and *Bt aizawai*. Each strain contains a different combination of toxin proteins, and some protein combinations are more effective than others, depending on the target insect pest species. The strain name is located on the product label, under "Active Ingredient." Examples of product trade names containing proteins from the kurstaki strain are Javelin, Dipel, and Biobit. Some products containing proteins from the aizawai strain such as XenTari. Crymax and Agree contain proteins from both *Bt kurstaki* and *Bt aizawai*. Both strains have activity against a wide range of worm species, including loopers, imported cabbageworm, hornworms, European corn borer, armyworms (beet and fall), diamondback moth larvae and fruitworm.

The toxin proteins in the aizawai strain have demonstrated better control of armyworms (e.g., beet and fall armyworm), and also diamondback moth larvae that have developed resistance to proteins contained in the kurstaki strain of Bt, or to pyrethroid insecticides.

Because of their unique modes of action, Bt insecticides have been a key component in pesticide resistance management programs around the world. Rotating formulations (*kurstaki* and *aizawai*) will help in warding off resistance problems. Through proper scouting and application of the appropriate Bt insecticides at strategic points in the crop season growers can reduce reliance on traditional chemicals and often improve their control program.

Because insect pests like the diamondback moth are capable of developing rapid resistance to insecticides, including Bts, applications should be alternated with synthetic insecticides so that resistance to any one class of insecticide does not develop. Based on experiments to study the development of insect resistance to Bts, some researchers have recommended that the kurstaki strain should be used before the aizawai strain.

It is important to remember that most Bt formulations have better activity against young compared with mature insect larvae. This means that the initial Bt application should be made immediately before or just after the eggs have hatched and the larvae are still small. This is particularly critical with an insect like tomato fruitworm, which bores into the plant after hatching. The best way to apply Bts at the proper time is to monitor plants for worm eggs. Pheromone traps may be useful to determine when adult moths are in the area and when egg laying is likely to occur.

It is also important to remember that insects must eat Bt-treated foliage for activity to occur. Therefore, good spray coverage of the plant is essential for satisfactory control. This is best accomplished using adequate spray volume (at least 40 gpa) and pressure (at least 150 psi).

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

Whiteflies

In Homestead, growers and scouts report that whiteflies remain “ridiculously high”.

Around Palm Beach County, whiteflies remain mostly low. Growers are applying control measures on older planting of eggplant and tomato to manage “blow in” pressure. Whiteflies are more problematic in organic eggplant and tomato where levels are moderate.

In the Manatee/Ruskin area report whiteflies are beginning to buildup and scouts are reporting finding a few pupae in older plantings. Respondents indicate virus has been mostly low and patchy in occurrence but is increasing and a few hot spots are present.

Around Immokalee, whitefly pressure is increasing with nymphs building in some older crops now. TYLCV incidence and is also starting to increase slowly.

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 in south and south central Florida.
2. Disrupt the virus-whitefly cycle in winter by creating a break in time and/or space between fall and spring crops, especially tomato.
3. Destroy crops quickly and thoroughly after harvest, killing whiteflies and preventing re-growth.
 - a. Promptly and efficiently destroy all vegetable crops within 5 days of final harvest to decrease whitefly numbers and sources of plant begomoviruses like TYLCV.
 - b. Use a contact desiccant (“burn down”) herbicide in conjunction with a heavy application of oil (not less than 3 % emulsion) and a non-ionic adjuvant to destroy crop plants and to kill whiteflies quickly.
 - c. Time burn down sprays to avoid crop destruction during windy periods, especially when prevailing winds are blowing whiteflies toward adjacent plantings.
 - d. Destroy crops block by block as harvest is completed rather than waiting and destroying the entire field at one time.

B. Other Cultural Control Practices.

Reduce overall whitefly populations, regardless of biotype, and avoid introducing whiteflies and TYLCV into crops by strictly adhering adherence to correct good 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. Do not plant new crops near or adjacent to old, infested crops.
 - d. Use determinant varieties of grape tomatoes to avoid extended cropping season.
 - e. Use TYLCV resistant tomato cultivars (see additional information below for list) where possible and appropriate, especially during historically critical periods of high virus pressure. Whitefly control must continue even with use of TYLCV resistant cultivars because these cultivars can still carry host the virus.
 - f. Use TYLCV resistant pepper cultivars (see additional information below for a source of a list) when growing pepper and tomato in close proximity.
 - g. Use UV reflective (aluminumized) mulch on plantings that growers find are historically most commonly infested with whiteflies and infected with TYLCV.
2. Use proper post-planting practices.
 - a. Scout for whitefly adults and apply a short reentry interval insecticide if necessary 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.
 - d. Dispose of cull tomatoes as far from production fields as possible. If deposited in pastures, fruit should be spread instead of dumped in a large pile to encourage consumption by cattle. The fields should then be monitored for germination of tomato seedlings, which should be controlled by mowing or with herbicides if present.
 - e. Avoid u-pick or pin-hooking operations unless effective whitefly control measures are continued.
 - f. Destroy old crops within 5 days after harvest, destroy whitefly infested abandoned crops, and control volunteer plants with a desiccant herbicide and oil.

- g. Plant non-host cover crops such as Sudex during summer fallows or rye grass during winter to discourage weeds and volunteer crop plants from growing and being infested by whiteflies.

C. Insecticidal Control Practices.

1. Delay resistance to neonicotinoid and other insecticides by using a proper whitefly insecticide program. Follow the label!
 - a. On transplants in the production facility, apply a neonicotinoid one time 7-10 days before shipping. Use products in other chemical classes, including Fulfill, soap, etc. before this time.
 - b. Use a soil application containing a neonicotinoid (group 4A) or cyantraniliprole (group 28) only once during each crop. Do not repeat with a foliar application of either mode of action. If only foliar applications of these insecticides are to be made, than restrict each mode of action to a single 6-week period within any crop cycle.
 - c. As control of whitefly nymphs diminishes following soil applications, use rotations of insecticides of other chemical classes as needed based on scouting recommendations. Consult the Cooperative Extension Service for the latest recommendations.
 - d. Use selective rather than broad-spectrum control products where possible to conserve natural enemies and enhance biological control.
 - e. Do not apply insecticides on weeds on field perimeters. These could kill whitefly natural enemies and, thus, interfere with biological control, as well as select for biotype Q, if present, which is more resistant to many insecticides than biotype B.

After the residual effects of soil-applied neonicotinoids abate, growers may turn to a variety of materials to suppress whitefly populations. These include insecticidal soaps and oils, IGR's such as Knack. In recent trials, pymetrozine – (Fulfill- Syngenta) has been demonstrated to be effective in preventing viral transmission by whiteflies. Movento (spirotetramat – Bayer) and Oberon (spiromesifen – Bayer) have given excellent control of whiteflies in University trials.

It's important to note that Belt (flubendiamide) and Coragen (chlorantraniliprole) are diamide insecticides used to manage caterpillar pests on tomato and other horticultural crops, and Coragen is also used for leafminer control. Durivo® (Syngenta) contains chlorantraniliprole and thiamethoxam, the same active ingredients as Coragen and Platinum. With the registration of Verimark, diamide insecticides are now available to target pests of tomato at each stage of its development: nursery, at-planting, through vegetative and fruiting stages. The risk is high that sweetpotato whitefly and other pests of tomato will develop resistance to diamide insecticides if they are overused. Growers using Verimark for early season protection against sweetpotato whitefly and TYLCV should not use Group 28 insecticides for management of leafminer and caterpillars in the same crop, or at a minimum should avoid the use of this mode of action for at least five weeks after the application of Verimark.

Organic growers can use biocontrols like Mycotrol- *Beauveria bassiana* , insecticidal soaps, oils and Neem based materials (note: use of Neem products is provisionally allowed but regulated – check OMRI for status) for whitefly management.

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

Leafminer

On the East Coast, leafminer pressure is building and growers are beginning to treat weekly for control in tomato and eggplant.

Growers and scouts in the Manatee/Ruskin area report leafminers pressure is steady at moderate levels.

Around SW Florida, leafminer numbers remain low but are beginning to spike up in some fields. Scouts report leafminer parasites are widely present. N Growers should be vigilant as leafminer numbers often explode in Southwest Florida around Thanksgiving.

Respondents in the EAA note that leafminer pressure is low but is beginning to increase on a variety of crops.

Reports from Homestead indicate that leafminers are fairly common.

Silk fly

In the Glades, silk fly numbers in sweet corn declined from fairly high adult counts in early Oct. to lower counts in recent weeks. This may be attributed to dry weather helping to reduce potential breeding sites and the fact that as corn has started silking growers have paid more attention to silk fly and have adjusted spray programs to target this pest.

Pepper Weevil

Around Southwest Florida, pepper weevils are increasing and many pepper fields have been infested in past week or so.

Respondents indicate weevil numbers remain low in Palm Beach County.

Broad Mites

Around Southwest Florida broad mites continue to be a problem in some peppers and eggplants.

Reports from Palm Beach County indicate that patchy broad mites are showing up on some pepper around bloom especially where there are nearby “sources” or farms not doing a good job of control. Broad mites are also present on eggplants and basil.

Broad mites are also present and increasing on pepper in the Manatee/Hillsborough area.

Malformed terminal buds and stunted growth is often a telltale sign that broad mites are present. Broad mites are extremely tiny and are difficult to see without a 10X or stronger hand lens. The mites may crowd into crevices and buds. Mites prefer the shaded side of fruit and the underside of leaves, which usually faces the plant, so scouts must be diligent and carefully inspect affected plants to detect these tiny creatures.

A number of products including AgriMek and Oberon are labeled for control of this pest. For organic growers, sulfur, insecticidal oils or soaps may be effective. Due to short life cycles, frequent repeated sprays may be necessary to obtain control.

Spider mites

A few spider mites have been reported on eggplants in Palm Beach County.

Growers around Plant City indicate that spider mites are already showing up on some northern strawberry nursery stock.

Aphids

Aphids are beginning to move around Southwest Florida and some colony formation has been noted in a few places.

Growers and scouts report that aphid numbers are starting to pick up around the EAA. Both green peach and red potato aphids have been reported in low numbers in all leaf crops as well as cilantro and parsley.

Cucumber beetles

Reports from the EAA indicate that six-spotted cucumber beetle has been very aggressive this fall with Napa and cabbage showing the most feeding damage. They have also been rough on some corn and beans as well.

Diseases

Bacterial Spot

Around SW Florida, respondents report that bacterial spot is still present but has dried up in most fields. No fruit infection has been noted.

In the Manatee/Hillsborough area, bacterial spot which was widespread earlier in the season seems to have largely been replaced by bacterial speck which came in hard behind the cold front a few weeks ago.

Bacterial spot remains mostly low on the East Coast and is primarily in tomato and is still rare in pepper.

Bacterial spot is present on pepper around Homestead.

Dr Gary Vallad, Plant Pathologist at the Gulf Coast Research and Education reports that many forms of copper, which historically has been used to fight bacterial spot in tomatoes, appear to have become ineffective and at times may actually be detrimental.

After conducting four trials over two seasons at CGREC, he says would not recommend using most forms of copper to control the disease in tomatoes.

“My advice would be no (copper) for bacterial spot,” he says. “For other diseases, particularly with speck, we haven’t sorted that out yet because they have resistance issues with speck as well.

He says he based his recommendation against using copper for bacterial spot control on two factors. Copper really only suppressed the disease years ago and never really did provide what could be considered effective control. That was before the numerous strains found in the state became resistant to copper.

During 2011-12, Vallad and colleagues collected 175 samples of bacterial spot in Florida and south Georgia and assayed them for resistance. Of those, 133 came from fields and 43 from greenhouses.

All but one was resistant to copper, and populations had also shifted during the past several seasons to the more aggressive T4 strain from the milder T3 strain.

The concern is the T4 strain may cause aggressive spotting on the fruit, depending on weather conditions.

The results also mirror those obtained in 2006-07, when 377 samples were collected by a group led by Diana Horvath. All of those samples showed resistance to copper.

Vallad's trials were conducted in 2012-13 at GCREC and involved 20 different treatments and four replicates apiece. One of the treatments was an untreated check.

What the trial revealed was when Actigard, an SAR—or systemic activated response—material was used alone or in combination with non-copper products, it produced the best results.

And when copper was added to any of the treatments, more fruit ended up with lesions than even the untreated check.

“Anything that had copper did worse than anything that had Actigard,” he said. “Whenever you had copper, you had significantly reduced yields compared to when you left copper out.”

Two antibiotics, both of which are not registered for use on field-grown tomatoes, provided good control of the bacterial disease. But Vallad says they may never be approved because of concerns about antibiotic resistance in humans.

Streptomycin is labeled for use in greenhouse production. But resistance already is a concern as 86 percent of bacterial spot samples collected from transplant houses were tolerant to the antibiotic compared with only 14 percent of samples collected from the field.

As part of the trial, Vallad calculated costs for each treatment. The cost of a program that used eight sprays of copper-mancozeb was comparable with one using weekly Actigard treatments, \$113 per acre versus \$114 per acre, respectively.

See more at: <http://www.thegrower.com/news/274752851.html?view=all#sthash.qq66ecsy.dpuf>

Bacterial Speck

Bacterial speck is widely present on tomato in the Manatee Ruskin area. Incidence and severity is moderate to severe in some places and fruit infections have been reported. The disease moved in rapidly behind the cold front a few weeks ago.

Bacterial speck of tomato, caused by *Pseudomonas syringae pv. tomato*, is a disease of increasing importance to Florida fresh-market tomato production.

Tentative field diagnosis of bacterial speck is best accomplished by inspection of fruit symptoms. Speck lesions on green fruit are small, sunken, black spots surrounded by darker green haloes. On ripe fruit, spots are dark brown to black, superficial flecks.

Foliage symptoms of bacterial speck are much more difficult to distinguish from other diseases. The leaf spots are small, black lesions surrounded by prominent chlorotic (yellow) haloes. These haloes are quite large, averaging twice the size of the necrotic tissue they surround. Bacterial speck lesions are very superficial and do not crack or become scaly like spot.

Lesions in the stems are dark brown to black and shaped like elongated ovals in severe cases extensive stem lesions may result from a wash of many bacterial cells over stem sections producing large blighted areas.

Target spot

Around Immokalee, target spot is beginning to fire up on tomato inside dense canopies and then is jump onto fruit a few days before harvest starts.

Target spot is also widely present and increasing around Manatee County.

On the East Coast, target spot is common on some older tomato.

Growers often focus on bacterial spot management early in the season and fail to target spot as canopies develop and conditions become more conducive to target spot. Typically as we transition from the wet to the dry season, bacterial spot declines only to be replaced by target spot as the major foliar tomato pathogen. Tank-mix sprays of copper fungicides and maneb targeted against bacteria do not provide acceptable levels of target spot control (and are not much use on bacteria either) and growers should consider rotating in protectant sprays of Bravo and then moving to more efficacious materials once target spot is found in the field – see-below.

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.

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.

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 Southwest Florida, downy mildew has become widespread on cucurbits in the past week or so and is being reported on watermelon, squash and cucumbers.

Downy mildew is also present on cucumbers in Palm Beach County.

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.

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.

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. This disease can become very severe if crops are not protected with a rigid fungicide program.

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

Around Hillsborough County, powdery mildew is showing in melons and strawberries.

Growers and scouts around Southwest Florida report that powdery mildew remains low on watermelons.

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

Gummy stem blight

Growers and scouts around Southwest and West Central Florida report that gummy stem blight continues to move in watermelon fields and is also causing some problems in other cucurbits.

In recent years, strains resistant to the strobilurin fungicides have been detected throughout the Southeast, so it is important that growers practice resistance management and avoid repeated applications of these and all fungicides. Materials such as Folicur (Tebuconazole), Pristine (BASF) a mixture of boscalid and pyraclostrobin, and Topsin (thiophanate methyl) have shown good efficacy against resistant strains of the disease.

Newer materials such as Fontelis (penthiopyrad), Inspire Super (cyprodinil and difenoconazole) and Luna Experience (fluopyram) have all shown excellent control in trials.

Southern Blight

Southern blight continues to cause some issues around South Florida. Incidence and occurrence is mostly low. Some increase was noted behind the recent cold front where growers raised water tables to warm fields.

Recent trials show that Fontelis - DuPont (penthiopyrad) applied at plant, pre-plant incorporated, as a transplant drench or through the drip has provided good control of southern blight.

Pythium

Pythium is still active on some beans in the EAA but is declining with dry weather.

Sclerotinia

We have had the first report of sclerotinia (drop) in lettuce in the EAA.

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.

Bottom Rot

In the EAA, low levels of bottom rot are starting to show up 5 to 7 days prior to harvest in some leaf crops in EAA.

Bottom rot is caused by the soil-borne fungus *Rhizoctonia solani*, and is found wherever lettuce is grown.

Infection occurs when sclerotia (dormant resting structures) germinate and produce mycelium that penetrates healthy or wounded tissue. The pathogen infects lettuce over a wide range of temperatures, but is favored by warm (77 to 81°F), moist conditions.

Bottom rot symptoms typically develop first on lower leaves in contact with the soil, and appear as small, rust-colored brown spots, primarily on the underside of leaf midribs.

Symptoms generally are most pronounced at heading. Bottom rot can rot midribs and lettuce leaf blades rapidly when conditions are favorable; stems are relatively more resistant to bottom rot and are the last portion of the head to decay. Decaying heads are at first slimy and brown, but become dark brown to black as they collapse and dry. A webbed network of white to brown mycelium often grows over lesions, and small gray brown sclerotia later are apparent.

Early Blight of Celery

Low levels of early blight (*Cercospora apii*) are being reported on celery in the Glades.

Small yellow spots, visible on both sides of the leaf, are the first symptom of early blight. Later the spots grow into gray, circular lesions that may be 0.25 to 0.75 inch in diameter. As leaf spots dry out, the tissue becomes papery in texture and often splits and cracks. Elongated lesions may develop on petioles. Under favorable conditions (temperatures between 60° and 86°F), the lesions will coalesce and cause a blighting effect on the leaves. Under humid conditions, the gray, fuzzy growth of the fungus may be observed in the centers of leaf and petiole lesions. This is not related to early blight of tomato (*Alternaria* sp.).

Southern Corn Leaf Blight

Around Belle Glade, southern corn leaf blight remains light in sweet corn.

Bacterial Blight

Respondents in Homestead continue to report some problems with bacterial blight (both common and halo blight) on beans.

Symptoms on leaves first appear as small, water-soaked spots which are usually more evident on the underside of the leaves. These lesions become larger and develop into dry, brown spots with distinct, rather narrow, yellow halos. As infection proceeds, the spots may coalesce, and the yellowing of leaves becomes more general.

Growers should avoid movement through and work in fields when plants are wet. This simple cultural practice can greatly reduce disease development and spread.

Applications of copper may provide some control once disease appears.

Tomato Yellow Leaf Curl Virus

Around the Manatee/Ruskin area, TYLCV is starting to increase in a number of areas and has become common in some fields.

Reports from Immokalee indicate that TYLCV incidence is beginning to increase slowly.

Tobacco Streak Virus

Dr Shouan Zhang, plant pathologist at UF/IFAS TREC in Homestead reports that Tobacco streak virus was positively identified on squash following an investigation into an unusual mosaic disorder on the leaves of zucchini squash in Homestead in May 2013.

Symptoms occurred primarily on top young leaves including mosaic, leaf curling, yellowing, and stunting of plant tissues. Young leaves were usually small and distorted showing narrow and pointed “fern leaf” symptoms.

Tobacco streak can also infect tomato causing downward curling of leaf blades on tomato plants. Leaf veins become necrotic and can lead to necrotic blotches, especially on young leaves. Fruit may develop necrotic ringspots. Necrotic streaks on young stems extend to flowers and lead to flower drop.

A few tobacco streak (ilaravirus)infected tomato have been found around Palm Beach County and the lower east coast where they appear to be more common than the tospoviruses like groundnut ringspot this season.

Spread of the virus is associated with thrips (including western flower thrips, *Frankliniella occidentalis*, and the onion thrips, *Thrips tabaci*). The host range for this virus is wide and includes common weeds such as mustards, radishes and thistles.

News You Can Use

USDA Natural Resources Conservation Service Farm Bill Program Funding Deadline

The primary program we administer that offers assistance to growers is the Environmental Quality Incentives Program (EQIP). Through the EQIP program incentive payments are being offered for vegetable crop growers with resource concerns. A few examples are provided here. If you have irrigated a minimum of two of the last five years, you irrigate for a minimum of 9 out of 12 months, and you are willing to install soil moisture monitoring devices and keep records then you could earn up to \$8 per acre per year. Installing a micro-irrigation system that uses a well water source can earn up to \$1,863 per acre. Applying precision nutrient management will earn cost share of \$32/ acre. (Based on 2014 cost-share rates, subject to 2015 revisions)

The Conservation Stewardship Program (CSP) is a program that encourages agricultural producers to maintain existing best management conservation activities and adopt additional enhancements on their operations. If you are accepted into the nationally competitive program you may receive base payments of up to \$15 per acre for 5 years, subject to 2015 revisions.

For more information visit: www.fl.nrcs.usda.gov/programs <http://www.nrcs.usda.gov/programs/> or call your local USDA-NRCS office.

Deadline: To be considered for 2015 funding, an application must be on file in the NRCS office by close of business on November 21, 2014.

FSMA listening session – Nov 21

The Florida Department of Agriculture and Consumer Services will conduct a listening session on the Food and Drug Administration's Food Safety Modernization Act proposed rules. The session will be held Nov. 21 from 10 a.m. to 2 p.m. at the University of Florida's Institute of Food and Agricultural Sciences' Gulf Coast Research and Education Center, Wimauma.

The session will include presentations by the FDA regarding updated revisions to two proposed FSMA rules: Standards for the Growing, Harvesting, Packing and Holding of Produce for Human Consumption; and the Foreign Supplier Verification Programs for Importers of Food for Humans and Animals. A question-and-answer session will follow the presentation.

If you cannot attend in person, you may access the session online.

Register on Eventbrite to attend in person at <http://www.eventbrite.com/e/fda-listening-session-on-the-produce-safety-and-foreign-supplier-rules-tickets-13731157261> or click here to register to attend via your computer and phone. <https://attendee.gototraining.com/r/2056556597121809666>

Mapping U.S. Agriculture

Lee Ebinger, Cartographer
National Agricultural Statistics Service
October 28, 2014

Ag Census Web Maps tool helps you create a visual overview of data for U.S. farm demographics, economics, crops, and livestock.

Agricultural data are valuable for analysis, and thanks to the Census of Agriculture and other surveys, NASS has plenty of data available. As a cartographer, however, I obviously prefer to present the data in map form. A map gives anyone a chance to visualize data for multiple geographic areas as a cohesive image, providing a graphic overview of the agricultural phenomena. It also allows map readers to visually compare regions, and discern patterns and relationships in the data across regions, topics, and time.

When it came to the ag census, for each of the past eight editions, NASS produced an atlas of thematic (statistical) maps illustrating various aspects of U.S. agriculture. While great for their time, with the evolution of digital technology, these paper maps are no longer sufficient on their own. The component missing from them is the data behind the maps, so what better way to depict and also convey a myriad of county-level statistics than through a web map application?

To address this issue, we decided to add a new web tool – Ag Census Web Maps application – which features numerous 2012 Census of Agriculture Atlas maps and also provides access to the data associated with the maps, along with an API for developers. This web map application enables users to interact with the maps – navigate to an area of interest, print a map or save an image of the area, select a county to view and extract its data, and download a spreadsheet containing all of the data for the maps.

There are some caveats, however. The published ag census data are summary statistics (totals), whereas, the maps present ratio values, which are in turn grouped into classes to create a visual representation of significant characteristics of U.S. agriculture. Also, keep in mind that some county data are not available to protect respondents' confidentiality; however, every county on the map is represented by a class.

So if, like me, you are a visual person, the 2012 Ag Census Web Maps application and accompanying data let you see a complete picture of U.S. agriculture which is not available elsewhere. It is a great resource for exploring agricultural themes and data, and for using the maps and data with other mapping software and web services. And this is just the beginning as we plan on continuing to make new and innovative tools available. –

See more at: <http://blogs.usda.gov/2014/10/28/mapping-u-s-agriculture/#sthash.fBdL6jrx.dpuf>

OPERATION CLEANSWEEP 2014

Statewide Pesticide Pick-up

Operation Cleansweep is a mobile pesticide collection program that provides a safe way to dispose of cancelled, suspended, and unusable pesticides at NO COST for the first 500 lbs. for: Farms/Groves, Nurseries, Pest Control Services, Greenhouses, Forestry, Golf Courses

Pesticide manufacturers/distributors can participate at the contracted rate.

For more information Contact:

Shannon Turner
Florida Department of Agriculture and Consumer Services
Toll-Free Number: (877) 851-5285
Email: Cleansweep@freshfromflorida.com

CLEANSWEEP WEBSITE: <http://www.dep.state.fl.us/waste/categories/cleansweep-pesticides/>

Up Coming Meetings

November 17 - 18, 2014 HACCP training for Florida Fresh Fruit and Vegetable Packinghouses

UF/IFAS- Citrus Research and Education Center
Lake Alfred, FL.

ABOUT THE PROGRAM

Food Safety is critical to the fresh produce industry. In addition to being a major public health issue, food safety issues have had an adverse economic impact on growers, packers, processors and shippers of fresh produce.

In addition to a discussion of current and proposed legislation, the latest research on produce safety and Good Manufacturing Practice (GMPs), the workshop will cover the elements of putting together a comprehensive food safety program.

The hands on course will teach participants how to develop and document a food safety management program based on the principles of Hazard Analysis and Critical Control Point (HACCP) for their specific operations.

Breakout sessions are structured to teach participants how to identify and prevent food safety hazards, monitor hazard reduction procedures, develop control measures and methods to document and verify the results of their efforts.

The workshop, accredited by the International HACCP Alliance, is targeted to produce packers, to assist in the development and customization of food safety programs for their facilities, using a HACCP-based approach.

PACKINGHOUSE HACCP PROGRAM AGENDA

Monday Nov 17

8:00 Registration
8:30 Welcome
Introduction to Food Safety and the HACCP System Hazards
Prerequisites to HACCP – GAPs, GMPs, SOPs, SSOPs
Hazard Analysis (Principle 1)
Identification of Critical Control Points (Principle 2)
Establishment of Critical Limits (Principle 3)
Critical Control Point Monitoring (Principle 4)
5:00 Adjourn

Tuesday Nov 18

8:00 Coffee

8:30 Review

Corrective Actions (Principle 5)

Verification (Principle 6)

Recordkeeping (Principle 7)

Regulations – Food Safety Modernization Act

HACCP Review

HACCP Exam

5:00 Adjourn

The fee for the course is \$400 for industry participants; additional participants from one facility/farm who do not require course materials may register for a fee of \$100. A reduced fee of \$250 is available for government/academic employees that make prior arrangements.

Register online - <https://www.eventbrite.com/e/haccp-for-florida-fresh-fruit-and-vegetable-packinghouses-tickets-12332582085>

Note this class is full and a second session has been scheduled for November 17 - 18, 2014 in Lake Alfred. See below.

Registration is available online at: <http://haccpforfreshfruitandvegetablepackinghouses.eventbrite.com>

November 17-20, 2014 **22nd International Pepper Conference**

**Viña del Mar
Chile**

For more details, go to <http://www.pepper2014.cl/en/>

December 2, 2014 **2014 Suwannee Valley Watermelon Institute 10 AM - 7 PM**

Straughn IFAS Extension Professional Development Center
2142 Shealy Drive
Gainesville, FL 32611

To register, call 386-362-1725, ext. 101

December 5, 2014 **UF/IFAS SWFREC Open House** 10 AM - 3 PM
Lunch – 11 AM – 1 PM

UF/ IFAS SWFREC
2685 SR 29 North
Immokalee, FL 34142
<http://swfrec.ifas.ufl.edu>

Come and learn more about the Southwest Florida Research and Education Center

RSVP: call: (239) 658–3400 or email: rdecker54@ufl.edu

December 8, 2014 **Fall Vegetable Field Day** 9 AM - 1 PM

UF/ IFAS SWFREC
2685 SR 29 North

RSVP: call: (239) 658-3400 or email: ozores@ufl.edu

Websites

The Future of Food – how will we feed a hungry planet? This fascinating National Geographic website explores a multitude of food and agricultural related topics. Go to <http://food.nationalgeographic.com/>

The Agricultural Disconnect - there is consensus that the need to produce more food for a growing global population in an environmentally sustainable way will be an important challenge in the next decade. However, there are conflicting opinions about how best to address this challenge, and about the likely impact of increased production on the environment and on the people who grow the food and work on the farms. Read the report at http://www.syngenta.com/global/corporate/en/goodgrowthplan/Documents/pdf/Syngenta_The_Agricultural_Disconnect.pdf

Ethnic Crops - Spicy, bitter or hot: new flavors are offered by ethnic varieties. Find information about those fruits and vegetables customarily valued by people with common racial, national, tribal, religious, linguistic or cultural origin or background. - <http://afsic.nal.usda.gov/alternative-crops-and-plants/specialty-heritage-and-ethnic-fruits-and-vegetables/ethnic-crops>

Quotable Quotes

The problem with political jokes is they get elected. - Henry Cate, VII

We hang the petty thieves and appoint the great ones to public office. - Aesop

Politicians are the same all over. They promise to build a bridge even where there is no river. -Nikita Khrushchev

When I was a boy I was told that anybody could become President; I'm beginning to believe it. - Clarence Darrow

Politics is the gentle art of getting votes from the poor and campaign funds from the rich, by promising to protect each from the other. - Oscar Ameringer

I have come to the conclusion that politics is too serious a matter to be left to the politicians. - Charles de Gaulle

On the Lighter Side

LAYMAN'S TEN COMMANDMENTS

1. Prayer is not a "spare wheel" that you pull out when in trouble, but it is a "steering wheel" that directs the right path throughout the journey.
2. So why is a car's WINDSHIELD so large and the Rear View Mirror so small? Because our PAST is not as important as our FUTURE. So, Look Ahead and Move on.
3. Friendship is like a BOOK. It takes a few minutes to burn, but it takes years to write.
4. All things in life are temporary. If they're going well, enjoy them... they will not last forever. If they're going wrong, don't worry... they can't last long either.

5. Old Friends are Gold! New Friends are Diamond! If you get a Diamond, don't forget the Gold! Because to hold a Diamond, you always need a Base of Gold!
6. Often when we lose hope and think this is the end, GOD smiles from above and says, "Relax, friend, it's just a bend, not the end!"
7. When GOD solves your problems, you have faith in HIS abilities; when GOD doesn't solve your problems HE has faith in your abilities.
8. A blind person asked St. Anthony: "Can there be anything worse than losing eye sight?" He replied, "Yes, losing your vision!"
9. When you pray for others, God listens to you and blesses them, and sometimes, when you are safe and happy, remember that someone has prayed for you.
10. WORRYING does not take away tomorrow's TROUBLES... it takes away today's PEACE.

In Flanders Fields

In Flanders Fields the poppies blow
Between the crosses row on row,
That mark our place; and in the sky
The larks, still bravely singing, fly
Scarce heard amid the guns below.

We are the Dead. Short days ago
We lived, felt dawn, saw sunset glow,
Loved and were loved, and now we lie
In Flanders fields.

Take up our quarrel with the foe:
To you from failing hands we throw
The torch; be yours to hold it high.
If ye break faith with us who die
We shall not sleep, though poppies grow
In Flanders fields.

By: Lieutenant Colonel John McCrae, MD Canadian Army (1872-1918)

Thank you to all our Veterans past and present for your service to County!

All gave some, some gave all!

Let us not forget them.



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.

Check out Southwest Florida Vegetable Grower on Facebook

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

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

Gene McAvoy

Gene McAvoy

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