



SOUTH FLORIDA VEGETABLE PEST AND DISEASE HOTLINE

November 22, 2017

A cold front which moved through South Florida on October 23 dropped temps into the mid 40's in many places sweeping away the oppressive heat and humidity of our long hot summer and spelling the end of the rainy season about a week later than usual.

Just because the dry season is here, doesn't mean the rain comes to a screeching halt. A tropical disturbance in the southwestern Caribbean, interacted with a second cold front bringing unsettled weather and rain to most locations. Many areas of South Florida have received 3-4 inches of rain since late October.

Daytime temperatures have been mostly in the mid-80's with nighttime temps in the mid – upper 60's.

FAWN Weather Summary

Date	Air Temp °F		Rainfall (Inches)	Ave Relative Humidity (Percent)	ET (Inches/Day) (Average)
	Min	Max			
Balm					
10/23 – 11/21/17	43.19	88.41	0.35	79	0.08
Belle Glade					
10/23 – 11/21/17	46.67	88.14	4.15	76	0.09
Clewiston					
10/23 – 11/21/17	48.88	88.93	5.02	85	0.09
Ft Lauderdale					
10/23 – 11/21/17	53.87	86.83	6.51	78	0.09
Homestead					
10/23 – 11/21/17	49.55	86.90	3.26	83	0.09
Immokalee					
10/23 – 11/21/17	47.59	90.27	3.30	85	0.08
Okeechobee					
10/23 – 11/21/17	43.54	88.70	4.44	84	0.08
Wellington					
10/23 – 11/21/17	48.6	88.93	5.16	83	0.09

Wishing you and yours all the best for a Happy Thanksgiving

Light volumes of a range of vegetables including cucumbers, eggplant, green beans, herbs, lettuce, peppers, squash, sweet corn, tomatoes and specialty items are beginning to come into the market in time for the Thanksgiving holiday.

The National Weather Service forecast indicates the front which moved through South Florida yesterday stalled out near the southern tip of the peninsula bring a few showers across the area as remnants of the front moved northward.

Medium range models call for showers and scattered thunderstorms, into late Friday.

By the weekend, cooler drier air should invade the region, bringing clearing skies Saturday and allowing low temperatures to fall into the lower 50s northwest to lower 60s by Sunday morning.

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

Insects

Worms

Producers on the East Coast are reporting moderate worm pressure in pepper and fairly low pressure in cucurbits. Diamondback moths have been active in crops such as collards, kale, arugula, and broccoli.

In the Manatee Ruskin area, worm pressure remains steady and scouting reports reveal findings of beet armyworm, southern armyworm, loopers, as well as some yellow-striped armyworms and hornworms.

Melonworms continue to cause problems on cucurbits around Homestead.

Fall army worms continue to cause problems in sweet corn in the Glades.

Around Immokalee, respondents indicate that worms are gradually increasing, mostly southern armyworms and loopers but growers are also seeing a few fruitworms. Melons worms are also active on cucurbits.

Melonworm is restricted to feeding on cucurbits and is one of the most important pests of vine crops in Florida. Both wild and cultivated cucurbits may be attacked. Summer squash and the winter squash species are favored hosts. Cucumbers and cantaloupe are attacked but not preferred. Watermelon is a rare host.

Melonworm feeds principally on foliage, especially if foliage of a favored host plant such as summer or winter squash is available. Usually the leaf veins are left intact, resulting in a lace-like appearance. If the available foliage is exhausted, or the plant is a less preferred species such as cantaloupe, the larva may feed on the surface of the fruit.

In one study of melonworm damage to summer squash conducted in south Florida, melonworm caused a 23 % yield loss due to foliage damage and a 9 to 10% yield reduction due to fruit damage.

The moths are relatively small with a wingspan of about 1 inch. The wings are white and edged with dark brown. The eggs are very small, and flattened ovals in shape. They are white or greenish initially but quickly turn yellow.

Newly hatched larvae are colorless but after molting become yellow-green. The last instar has two white stripes running the length of the body. The stripes disappear when the caterpillar pupates. The pupa is dark brown and often found in a loose cocoon in a fold of leaf.

Melonworms are present throughout the year in South Florida but and disperses northward each year as the weather warms up.

Growers should check plants regularly for signs of feeding damage to leaves and for the presence of larvae.

Many excellent materials for these lepidopteran pests are present on the market so growers have a number of options available. Consult UF/IFAS recommendations for currently labeled insecticides for melonworm control. *Bacillus thuringiensis* (Bt) can be very effective on young instars.

****Since pollinators, particularly honeybees, are very important for good fruit set in cucurbits, insecticides applied for melonworm control must be applied when bees are not actively foraging.**

Leafminer

Growers in Manatee and Hillsborough counties continue to battle with leafminers and note pressure has been constant.

Respondents on the East Coast indicate they are seeing low levels of leafminer activity in eggplant.

Around SW Florida, growers and scouts report that leafminers are starting to show up and approaching threshold levels in a few places.

Some leafminer activity has also been reported in Homestead as well.

Leafminers are particularly damaging on celery, crucifers, cucurbits, okra, potato and tomato. In south Florida, populations peak between October and March while in central Florida they are problematic in spring and fall.

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

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

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

An integrated pest management program that stresses conservation of natural enemies is important for the successful control of leafminer. Chemical control can be difficult due to the feeding habits inside the leaf of the host plant. Insecticides that specifically target the leafminer are recommended as use of broad-spectrum materials may decimate beneficial insects including those that attack leafminer. This often results in a larger leafminer problem if the pesticide reduces numbers of leafminer parasites.

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

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

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

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

Newer chemistries which have added to the grower's arsenal of control include Coragen (rynaxpyr), Exirel and Verimark (cyazypyr) which have given good results and have greatly reduced leaf miner pressure on many farms.

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

Field sanitation is another important control tactic. Weeds and abandoned crops can serve as reservoirs for this pest. After harvest crops should be destroyed as soon as possible to avoid having them serve as reservoir for new infestations.

Whiteflies

Whitefly number remain mostly low in the Manatee Ruskin area and scouts report finding a few nymphs in tomatoes. Growers report seeing a significant amount of TYLCV in the fall crop.

Around SW Florida, whitefly populations remain low. Respondents continue to report finding low numbers of whitefly adults in cucurbits and occasional whiteflies scattered through eggplants and tomatoes but remark that they are beginning to see a few more adults around.

Growers and scouts on the East Coast indicate that whiteflies remain a non- issue in most locations at present.

Reports indicate that whiteflies are also showing up on some crops around Homestead.

Tomato growers in the Quincy area are having a terrible problem with whiteflies and virus and whitefly numbers have been astronomical in South Georgia as well causing issues in a wide range of crops.

Even though populations of many insect pests such as whiteflies were negatively affected by the hurricane and rainy weather which followed and are present in low numbers, they can build up quickly, so growers should still scout regularly to avoid being surprised by unexpectedly high numbers later in the season. Preventative soil applications of either imidacloprid, thiamethoxam, dinotefuran, flupyradifurone or cyantraniliprole should be used as normal in tomato and cucurbits.

Consider the use of metalized (UV reflective) mulch as an additional management practice for day-flying pests such as whiteflies, thrips, aphids, pepper weevil and even broad mites, the last of these which use flying insects to move around.

Table 1; Systemic insecticides applied to soil for whitefly control

Common name	Mode of Action	Trade Names	Rates
Imidacloprid	4A	Various	Check Label
Thiamethoxam	4A	Platinum 75 SG	1.66 - 3.67
	4A	Venom 70% Scorpion 35 SL Certador 10%	5 - 7.5 oz/ac 9 - 1 0.5 fl oz/ac 32.5 - 47.5 fl oz/ac
Flurpyradifuron	4D	Sivanto 200 SL	21-28 fl oz/ac
Verimark	28	Verimark 18.7%	5-10 fl oz/ac

Efficacy Ratings for Insecticides and Miticides on Tomato

MOA	Active Ingredient	Whiteflies	Other pests controlled			
		Whiteflies	Southern Armyworm	Spider mites	Stinkbugs	Leafminer
4A	dinotefuran	E**			G	
4A	imidacloprid	E**				
4A	thiamethoxam	E**			G	
4D	flupyradifurone	E**				
23	spiromesifen	E†		E		
23	spirotetramat	E†		G		
7C	pyriproxyfen	E†				
28	cyantraniliprole	E**	E			E
1B	malathion	G*				
3A	beta-cyfluthrin	G*	F		G	
3A	bifenthrin	G*			G	
3A	esfenvalerate	G*	G			
3A	fenpropathrin	G*	F		F	
3A	lambda cyhalothrin	G*	F			
3A	permethrin	G*	G			
3A	zeta-cypermethrin	G*	G		F	
4A	acetamiprid	G				
9	pymetrozine	G†				
16	buprofezin	G†				
21 A	fenpyroximate	G		G		
4A	clothianidin	F**				
Unk.	horticultural oil	F†		G		
Unk.	Azadiractin	F†				
Unk.	Soap, insecticidal	F†				

* OP+Pyrethroids tank mix. † Effective primarily against nymphs ** Most Effective as a drench. Check labels before using any pesticide.

For more whitefly management tips – see:

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

Aphids

Respondents on the East Coast indicate that winged aphids are becoming numerous in some squash but remain mostly low otherwise with a few blowing around in a variety of crops.

Spotty aphids have also been reported showing up in some watermelon.

Around SW Florida some aphids are starting up in some cucurbits and in peppers.

Elsewhere a few winged aphids are blowing around through a variety of crops but remain at very low numbers.

Pepper Weevil

Growers and scouts in all areas are beginning to report seeing mostly low levels of pepper weevil in older pepper.

Since adults will migrate readily from old fields to new plantings, populations generally build up during the season so that populations are greatest in later spring plantings.

Since adults tend to move to lower, more protected and less visible plant parts as temperatures increase, scouting efforts should concentrate on a search for adults in leaf whorls, flowers and fruit during morning hours.

Commercially available pheromone traps may also aid in early detection. Fruit and flower buds should be examined for damage and fallen fruit and buds examined for presence of larvae.

Infested fruits can be recognized before they fall by the yellow calyx and the presence of oviposition punctures that look like small dimples. Hot peppers like Jalapeno and Serrano's are often the first peppers to be affected. Fruit and flower buds should be examined for damage and fallen fruit and buds examined for presence of larvae. If possible, all damaged and fallen fruit should be removed and destroyed.

Chemical control is difficult because all stages but the adult are protected within the fruit, so that only the adult weevil is vulnerable to insecticides. Frequent sprays may be necessary starting in the initial stages of infestation in order to avoid unacceptable levels of damage.

Spraying should commence at the first sign of weevils or with flowering in fields with a history of problems. Vydate has been the standard control and has given pretty good results when sprayed weekly in trials at the Southwest Florida Research and Education Center. A total of 24 pts can be applied for the season.

Other products that have performed well in trials include Capture (bifenithrin), Kryocide (cryolite) and Actara (thiomethoxam). Unfortunately, applications are limited to two per season and growers are still trying to work out the timing of applications to achieve the best results.

Many of the currently labeled materials are difficult to work into an IPM program once plantings begin to be harvested due to the 7-day PHI in force for all of them. This is particularly true for hot peppers which are often harvested multiple times during the course of a week. Consult UF/IFAS recommendations for currently labeled insecticides for pepper weevil control in Florida vegetables.

Some growers report limited success with Neemix and fish oil both of which seem to be most effective when used preventatively before weevils become established.

In addition to chemical controls, a complete IPM approach is recommended for pepper weevil management. Adjacent or nearby sequential plantings should be avoided. Sanitation is important. Crops should be deep plowed immediately following harvest and after treating with insecticide to reduce adult movement into nearby fields and to reduce survival over the summer. A crop free period is essential in helping in reducing populations between crops. Crop destruction is probably the best option for older plantings where weevils become unmanageable.

Here's a link to a short video revealing how one bell pepper producer in Canada has enlisted the help of man's best friend as part of their IPM program: <https://www.goodnewsnetwork.org/chili-just-became-first-ever-dog-certified-save-bell-peppers/>

Spider mites

Growers in Palm Beach County report seeing some spidermite activity in eggplant.

Low levels of spidermite activity is also being reported on eggplants and some cucurbits around SW FL.

Broad Mite

Mostly low numbers of broad mites are beginning to be reported in peppers in all areas of South Florida.

Respondents indicate that pressure is reaching moderate levels in some East Coast locations.

Thrips

Melon thrips are fairly common on susceptible crops around Homestead.

On the East Coast, growers report very low thrips numbers showing up in some bell pepper blossoms. All appear to be Florida flower thrips with no reports of western flower thrips at present.

Diseases

Target spot

Around Immokalee target spot is starting to show up in bottoms in older tomato plantings as more fields develop bigger/thicker bushes.

Target spot is emerging as a major concern in the Manatee Ruskin area where growers are reporting significant fruit infection despite relatively low disease incidence in some fields.

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.

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

In trials, wounding was essential for reproduction of the fruit symptoms. Wind-blown sand is probably important in outbreaks of target spot on tomato fruit in the field.

Strategies for the management of this disease require an integrated approach for best results.

Growers should rotate fields to avoid carryover on crop residue and avoid rotations among solanaceous crops. Eliminate any volunteers and weed species that can act as a host.

Start with clean, healthy transplants and maintain proper fertility as nitrogen deficiencies favor the development of 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.

Widespread resistance has been documented to QoI fungicides including both strobilurins and non-strobilurin fungicides in FRAC Group 11 and their use is not recommended for target spot control.

In addition, moderate resistance has been documented in the SDHI fungicides FRAC Group 7 which includes boscalid, penthiopyrad, fluopyram and fluxapyroxad. These should be used with caution and attention paid to rotating with alternative modes of action.

In recent efficacy trials, at the University of Florida – Approvia Top, Inspire Super, Luna Tranquility, Revus Top, Rhyme, and Scala were top performers. Contact protectant fungicides like mancozeb and Bravo are effective and should be used early in the crop cycle switching to more efficacious materials once disease is present.

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

Bacterial spot

Around Southwest Florida, bacterial spot is widespread in tomato and some susceptible pepper but appears to be slowing down in some locations.

Respondents in the Manatee Ruskin area report that bacterial spot continues to be an issue in tomato and they note that recent foggy morning have helped keep it active.

Bacteria spot incidence is high in some tomatoes on the East Coast tomato especially where it came in on transplants.

Bacteria is also widespread in tomato in Homestead.

Bacteria is most prevalent in plantings that either went through the hurricane or were grown from transplants that went through the storm in the greenhouse. In most cases, plant growth is keeping up with the pace of the disease, but growers could benefit from some extended cool/dry weather.

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

It is important to apply sprays before and during rainy periods. Spraying wet plants can actually assist in the spread of bacterial spot. If conditions are favorable, frequent spraying may not be sufficient to maintain bacterial spot below damaging levels.

The traditional recommendation for bacterial spot control consists of copper and maneb or mancozeb. The effectiveness of copper is limited, because of the widespread occurrence of copper tolerance among strains of *Xanthomonas*.

In the past few years, a number of products have come on the market that have given good results in research trials when used in rotation or together with traditional controls such as copper. These include Tanos (Dupont) as well as the SAR elicitor Actigard (Syngenta), Leap (Valent), Double Nickel 55 (Certis), Regalia (Maronne Bioinnovations) and Serenade and Sonata (AgraQuest). Leap is unique among the products mentioned above as it contains two active ingredients providing growers with disease management and caterpillar control. Some growers claim good results combining an SAR with a bacteriophage such as AgriPhage.

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

Bacterial Soft Rot

Bacterial Soft Rot is causing some issues in pepper on the East Coast aided by frequent daily showers over the past couple of weeks.

Phytophthora

Growers in Miami Dade County report that Phytophthora blight caused by *P. capsici* continues to cause problems in some squash fields due to wet conditions. Yellow squash seems to be more affected than zucchini.

Very levels of *Phytophthora* were seen in some pepper following last month's rains with somewhat higher levels being reported in eggplant around Palm Beach, Martin and St Lucie counties.

Growers and scouts report that *Phytophthora* is taking out some pepper plants in scattered locations around Southwest Florida.

Current options for pre-transplant applications include a Ranman (cyazofamid, 21) drench up to one week before transplanting or as a seedling tray drench at transplanting for Pythium and Phytophthora in tomato, pepper, and eggplant. Previcur Flex (propamocarb HCL, 28) has a label for the suppression of Pythium and Phytophthora in tomatoes and peppers. Phosphite fungicides such as ProPhyt, Rampart, and K-Phite

(FRAC code 33) can also be applied as a pre-transplant drench in the greenhouse. Additionally, there are a number of biologicals such as Trichoderma, Streptomyces, and Bacillus products which can also be used in the greenhouse as drenches or incorporated in to the soilless mix to help suppress soil-borne pathogens. Remember, biologicals typically need to be applied without conventional fungicide.

At transplanting applications include Ranman (cyazofamid, 21) in the transplant water or through drip irrigation for Pythium control. There is a section 2ee for the use of Previcur Flex (propamocarb HCL, 28) + Admire Pro (imidacloprid) in transplanting water for fungus and insect control.

Presidio (fluopicolide, 43) has a label for drip application for Phytophthora control when conditions are favorable for disease development. Additionally, phosphite fungicides, Pro-Phyt, Rampart, and K-Phite (FRAC code 33) can also be applied through drip irrigation at transplanting to help suppress Phytophthora blight.

Pythium

Growers and scouts report that Pythium is widely present at low levels in tomato, pepper, squash and other crops planted after Hurricane Irma but surprisingly not as bad as some folks expected.

Pythium has been a major issue on green beans in the wet muck soils of the Glades.

While other fungi such as *Fusarium spp.* and *Rhizoctonia spp.* may also cause damping off of seedlings, the majority of damping-off diagnosed at the UF/IFAS SWFREC Plant Disease clinic is due to *Pythium spp.*

Growers may consider applying a fungicide to help limit damage of damping off caused by *Pythium spp.*

For Pythium root rot or other diseases of concern, currently labeled fungicides can be found in the Vegetable Production Handbook for Florida,

- **Chapter 7, Eggplant** at <http://edis.ifas.ufl.edu/cv124>
- **Chapter 12, Pepper** at <http://edis.ifas.ufl.edu/cv130>
- **Chapter 17, Tomato** at <http://edis.ifas.ufl.edu/cv137>

As always, it is recommended that a disease diagnostic clinic assist with determining the pathogen associated with the problem in order to make an effective fungicide management recommendation.

Fusarium

Grower and scouts in Manatee County report that *Fusarium* is starting to blow up in some fields with a history of the disease.

Southern Blight

Growers are also finding some southern blight showing up in tomato around Manatee County and in SW Florida – not at high levels but more than is normally seen in the fall.

Since many growers in SW Florida lost plastic due to the Hurricane and re-bedded and laid plastic without a fumigant, be on alert for the possibility of increased levels of such soil borne diseases.

Rhizoctonia

Growers in the Glades continue to report problems with *Rhizoctonia* on green beans planted in wet soils.

Bacterial brown spot

Dr Richard Raid, pathologist at UF/IFAS EREC reports that bacterial brown spot caused by *Pseudomonas syringae* pv. *syringae* is now showing up on some beans in the Belle Glade area.

The initial foliar symptom of bacterial brown spot is small water-soaked spots that develop into distinctive necrotic brown spots about 3-8mm in diameter, often with a narrow, diffuse yellow margin These lesions may enlarge, coalesce, and fall out giving the leaves a tattered appearance. Sunken brown spots can form on the pods. If infection occurs early in pod development, the pod may become bent or twisted at the infection site.

Halo Blight

Dr. Shoaun Zhang, Pathologist at UF/IFAS TREC reports that green bean growers in Homestead are experiencing some problems with halo blight. Halo blight is caused by the bacterium *Pseudomonas syringae* pv. *phaseolicola*.

Symptoms of halo blight initially appear as small water-soaked spots on the underside of the leaflets, eventually developing into numerous small, reddish-brown lesions on the leaves. Greenish-yellow halos, highly variable in size, subsequently develop around these spots. During severe infections the disease may become systemic and cause yellowing and death of new foliage. At temperatures above 80°F halos are very small or absent. Pod symptoms first appear as small water-soaked spots and streaks on the pod surface. The water-soaked areas enlarge and are sometimes surrounded by a narrow reddish zone. Light, cream-colored bacterial exudate may be present on the lesions under moist conditions.

Infected bean seed is the most important source of both bacteria. Growers should plant only certified, disease-free seed.

Varieties differ greatly in their susceptibility to different bacterial diseases. Growers should choose bean varieties with tolerance or resistance to the bacterial diseases that occur frequently in the growing area if possible.

Copper-based bactericides can help reduce populations of bacterial pathogens on bean foliage, and also reduce disease severity when applied as a preventative. These compounds, however, cannot eradicate the pathogens once the plants are infected. If wet weather is persistent, bacterial populations can increase very quickly and are difficult to arrest unless several applications of copper-based bactericides are made.

Southern corn leaf blight

Growers and scouts continue to have issues with southern corn leaf blight in sweet corn around Belle Glade.

Southern corn leaf blight is caused by the fungus *Bipolaris maydis*. Seedling blights can be caused by *B. maydis*, however, symptoms of southern corn leaf blight typically occur on leaves. Mature foliar lesions can be rounded on the sides but they tend to be parallel-sided, often restricted by the veins.

Lesions are light tan in the center with a reddish-brown border. A greenish growth near the center of the lesion may be evident if spores are present. Mature lesions range from 1/4 to 1 1/2 inches in length and may be

tapered, flat or serrated on the ends. Typically, lower leaves are infected first progressing upward to higher leaves over time.

Spray programs with recommended fungicides should commence at the first sign of disease if favorable weather is likely. Strobilurin and triazole fungicides work well but should be used in a program with the broad-spectrum protectant mancozeb. Several sprays may be required if conditions are conducive to disease development.

Tomato Yellow Leaf Curl Virus

Reports from the Quincy area indicate that growers are facing major challenges with TYLCV in fall tomato.

TYLCV is showing up widely around Manatee and Hillsborough Counties with some fields reaching as high as an 8 - 10% infection rate.

Mostly low levels of TYLCV are also being reported around SW Florida and is increasing in some fields.

Cucurbit Leaf Crumple Virus

Low levels of cucurbit leaf crumple virus continue to show up in watermelon around SW Florida. ID has been confirmed in the lab.

Crumple leaf virus has also been reported on cucurbits in the Homestead area.

Mosaic Virus

Low levels of mosaic virus is also being reported on watermelon around SW Florida

Tomato Chlorotic spot virus.

There have been a few isolated reports of tomato and pepper plants showing TCSV symptoms in Palm Beach County.

Cucumber mosaic virus

Some cucumber mosaic virus showing up on pepper around SW Florida. Incidence and occurrence is low.

Gummy stem blight

Mostly low levels of gummy stem blight continue to be reported in fall watermelon around SW Florida.

Anthracnose

Anthracnose is showing up on some fall watermelons.

This disease is favored by high temperatures and frequent rains and high humidity which promote disease development and spread.

All aboveground plant parts can be infected. Symptoms vary among the species of cucurbits infected. Leaf lesions begin as water soaked and then become yellowish circular spots. On watermelon foliage the spots are irregular and turn dark brown or black. On cucumber and muskmelon, the spots turn brown and can enlarge

considerably. Stem lesions on muskmelon can girdle the stem and cause vines to wilt. Stem cankers are less obvious on cucumbers.

The most striking diagnostic symptoms are produced on the fruit, where circular, black, sunken cankers appear. On watermelon the spots may measure 1/4 to 1/2 in. (6 to 13 mm) in diameter and up to 1/4 in. (6 mm) deep. When moisture is present, the black center of the lesion is covered with a gelatinous mass of salmon colored spores. Cankers lined with this characteristic color can never be mistaken for any other disease. Similar lesions are produced on muskmelon and cucumber.

Anthracnose (*Colletotrichum* spp.) is also causing major issues on some herbs such as oregano and rosemary.

Leaf symptoms begin as small, pale yellow or water-soaked lesions that rapidly enlarge and turn tan to dark brown or irregular and black. As lesions merge, large areas of the leaf may appear blighted or entire leaves may die.

Choanephora blight

Scouts report finding some *Choanephora* on pepper on the East Coast exposed to rainy weather over the past few weeks. Choanephora blight or wet blight, caused by the fungus *Choanephora* sp., is an occasional problem on beans and pepper plants during wet periods.

Symptoms are visible on apical growing points, flowers and fruits. Initially, water-soaked areas develop on leaves and leaf margins, leaf tips and apical growing points become blighted. Older lesions appear necrotic and dried out. Later the fungus grows rapidly downward causing dieback. The dark-gray fungal growth is apparent on some lesions. Close inspection under magnification will reveal silvery, spine-like fungal structures and dark spores.

Symptoms may be confused with Phytophthora blight (*Phytophthora capsici*) when young or spray burn on bean plants with older symptoms.

Dense plantings can lead to poor air circulation and extended periods of leaf wetness. Fungicidal sprays applied for the control of other diseases will provide some control of this disease also. Good spray coverage where dense foliage occurs is important.

Powdery mildew

Low levels of powdery mildew are starting to show up on cucurbits in all areas of south Florida.

Downy Mildew

Growers and scouts are also beginning to find low levels of downy mildew on cucurbits around south Florida.

Black rot

Respondents in Palm Beach County report find mostly low levels of black rot on cabbage and other crucifers.

Black rot is caused by the bacterium, *Xanthomonas campestris* pv. *campestris*. Cabbage, broccoli, cauliflower, kale, collards, radish, and other members of the cabbage family are susceptible.

In the field, the disease is easily recognized by the presence of large yellow "V"-shaped areas extending inward from the margin of a leaf, and by black veins in the infected area. Usually only a few of the outer leaves are involved.

Diseased areas enlarge and progress toward the base of the leaf, turn yellow to brown, and dry out. The veins of infected leaves, stems, and roots turn black as the pathogen multiplies. On cauliflower, black rot commonly appears on the leaves as numerous, minute brown specks. The infected lower leaves of cabbage and cauliflower are usually stunted, turn yellow to brown, wilt, and drop prematurely. Occasionally, diseased plants have a long bare stalk topped with a small tuft of leaves. In extreme cases, heading may be prevented.

Although the distribution of diseased plants in the field may be uniform, symptoms are often more severe in wet or shaded areas. If infected seedlings were set in the field, scattered pockets of diseased plants often appear. Diseased plants may appear in rows as a result of spread during cultural operations.

Black rot can be controlled by utilizing an integrated control program. The control of this disease is based the use of clean seed, and sanitation. Spraying with copper fungicides may help limit spread.

News You Can Use

Management Tips for Florida Vegetable Growers from Dr. Phil Stansly, Entomologist at UF/IFAS SWFREC

Many of you noticed low populations of perennial pests on our late planted crops post Irma. They are coming back! It's time to start thinking about them again if you haven't already.

1. **Whiteflies:** Soil applied systemic insecticides still give the longest lasting control. Still, it is more important than ever to rotate modes of action. If you started out with a 4A neonicotinoid, available rotation options are Sivanto (4D) or Verimark (28). Both have their advantages (efficacy) and disadvantages (long PHI and high cost respectively). Check the label on the first point. Of course, you will also rotate modes of action with your sprays. Once into the season, the main battle will probably be against the nymphs, so be sure to fully utilize products such as Movento and Knack that are especially good against those life stages.
2. **Pepper weevil.** Populations typically go way down in the summer and start slow in the fall. Don't be lulled into complacency; if you generally see them in the spring they are probably already in your crop. Use pheromone traps along field borders to provide the first heads up, and start spraying at the first sign. Don't hold crops any longer than you have to and turn them under as quickly as possible. Control nightshade both in and around your crop. Help may be coming in the form of a new attract and kill product that we hope to start testing this season. Meanwhile, don't slack up on all your chemical and cultural control options including reflective mulch for the spring crop when pressure is always worse.
3. **Diamondback moth.** If you grow any type of brassica crop, this is for you. DBM is the champion among all insect pests in its ability to develop insecticide resistance. The good news is that it will lose resistance quickly to most any insecticide except pyrethroids if not exposed for a good while. The best strategy is to rotate modes of action on a monthly basis. In this system, any insecticide with the same IRAC number can be used during a given month and then not again until a year has elapsed. This program has worked well in Hawaii and can work in Florida. Also, try and separate successive brassica crops as much as possible to reduce movement of moths from crop to crop. Feel free to consult with us and let us know of any apparent control failures. And remember, for all these pest footprints in your crop are key to success.

Lack of Crop Insurance a Risky Business for Vegetable Growers

By John VanSickle
Growing Produce
November 20, 2017

It may seem a little late to reflect on crop insurance in light of the damages caused by Hurricane Irma, but Irma serves as a wake-up call on many fronts. Damage to Florida agriculture has been significant with estimates of sales losses ranging to as high as \$2.5 billion. A large portion of that damage fell on citrus in the loss of fruit from hurricane force winds and to tree damage from wind and excess rain that flooded groves.

Vegetable growers did not suffer as great because the planting season was only beginning for many crops with field preparation being the most significant cause of loss. However, another factor weighing in on Florida vegetable growers is the impact it had on market windows for many growers.

Because most fresh vegetable crops cannot be stored, growers plant their crops over an extended market window to meet a fairly constant market demand that is highly inelastic, meaning there is a volume of crop that can be marketed each week with reasonable expected returns. When crop volumes exceed those levels, market prices fall quickly. Hence, events like Irma tend to disrupt the normal flow of crop into the market and prices deteriorate below break-even levels. There is no insurance for this type of impact on vegetable crops unless they are part of a revenue policy that insures crop revenue rather than production volume.

Federally Speaking

Federal crop insurance is a key risk management tool for many producers, providing protection so that events like Irma do not critically impact the financial sustainability of the farm. Nationally, 86% of U.S. crop acreage was insured in 2015. Risk protection was provided across the U.S. for 89% of principal farm program crop acres, 63% of the acres of other field crops, and 74% of the acres of fruit and nut crops.

In contrast, only 34% of the eligible vegetable crop acreage was enrolled in crop insurance programs. Nationally, green peas had the highest market penetration for vegetables with crop insurance covering 76% of the acres planted. By comparison, only 19% of the acres planted to fresh market tomatoes were covered by insurance, while onions stood at 71%, fresh market sweet corn at 18%, and peppers at 16%.

The federal crop insurance program operates at a 0.85 long term loss ratio, which means that 85% of the premiums paid (by farmers and federal crop insurance subsidies) were paid back to farmers as indemnities (e.g., insurance claims). The federal crop insurance program is actuarially sound because of the subsidies provided by the federal government to keep premiums affordable to farmers. By encouraging farmers to use crop insurance, federal budget requirements for disaster aid following events like Irma are significantly less than they otherwise would be.

Rolling the Dice

The recent impacts of disease and increased competition in fruit and vegetables have left many growers struggling to survive. Many have cut back or eliminated their crop insurance coverage to trim expenses. When playing poker, the general rule of thumb is that you should never risk more than you can afford to lose. Without crop insurance, that is what farmers do every year. Crop insurance will not eliminate the risk to losing money, but it should eliminate some of the risk to losing more than you can afford to lose.

The portfolio of federal crop insurance products is reviewed on a regular basis by USDA with new products added that do a better job of providing growers what they need to sustain their operations. The loss of income and wealth in Florida agriculture over the last decade may justify a review of these policies to insure they meet

the needs of growers. Federal crop insurance subsidies are one of the few federal programs that directly benefit Florida growers, but you do not receive these subsidies unless you buy crop insurance.

John VanSickle is a professor in the Food and Resource Economics Department at the University of Florida in Gainesville.

<http://www.growingproduce.com/vegetables/lack-of-crop-insurance-a-risky-business-for-vegetable-growers/>

Is the Water Supply in Florida Headed for Deep Trouble?

Frank Giles

Growing Produce

November 21, 2017

Water — too much, too little and its quality is never far from the farmer's mind. It is the most important determining factor in a crop's success. With more than 1,000 people moving into Florida every day, the question of adequate availability of water to support agriculture and urban development will grow in importance with every passing year.

To get a better handle on the question, the Florida Department of Agriculture and Consumer Services (FDACS), UF GeoPlan Center, and 1,000 Friends of Florida sponsored a study called "Water 2070 Mapping Florida's Future — Alternative Patterns of Water Use in 2070."

The study looked at a 2010 baseline from the U.S. Geological Survey of per capita gallons per day (GPD) demand for each Florida county in the area of urban-development related usage. Agricultural irrigation demand for the baseline was determined from data prepared for FDACS. Then a Water 2070 Trend was developed based on the addition of 15 million new residents, assuming 2010 development patterns continue. A Water 2070 Alternative assumed 15 million new residents with more compact development patterns and increased protected lands with no development of irrigated agricultural lands.

Both future predictions of water demand put Florida's daily usage at jaw-dropping levels as the state's population is projected to grow to 33.7 million people by 2070. The 2070 Trend reveals the most water usage at slightly more than 8 trillion GPD. That is driven by a combination of population growth and increased development-related irrigation, which drives usage up by more than 100% of the 2010 baseline. The Alternative 2070 would put development-related usage 50% higher than the 2010 baseline. The total water usage under the alternative approach would be just less than 7 trillion gallons per day.

Agricultural water use under the 2070 Trend model puts demand at 24% less than the 2010 baseline due to agricultural lands lost to development. Under the 2070 Alternative Trend, water demand for agriculture would be slightly greater than the 2010 baseline because of less urban development.

The study further noted that both 2070 scenarios put too great a strain on the state's water resources. As a summary stated: "Given existing water shortages in some areas of the state, the 54% increase in total demand from 2010 to the 2070 Trend, and even the 30% increase from 2010 to 2070 Alternative, are clearly not sustainable. Modest water conservation of 20% and a modest increase in in development density are not sufficient."

The study suggests the state must go beyond the steps laid out by the 2070 Water Alternative approach by promoting even more compact development and increasing water conservation efforts if it ever hopes to accommodate 15 million more residents and maintain agricultural productivity by 2070.

Central and South Florida Shows Highest Demand

According to the report, the central and southern parts of Florida will face the largest demands on water resources. Central Florida comes in with highest usage under all scenarios because population growth is

predicted to be highest in the region and urban, sprawling development the greatest. The 2010 baseline for the region is just slightly more than 2 trillion GPD. The 2070 Trend pushes usage to more than 3 trillion GPD and the 2070 Alternative comes in at just more than 2.5 trillion GPD.

South Florida is the only region in which the baseline scenario has a higher agricultural demand than development demand. This is attributable to the large acreage in the region under irrigation, which includes the Everglades Agricultural Area. While the 2070 Trend shows development demand outstripping that of agriculture, the Alternative Trend shows demand for agricultural water growing beyond the 2010 baseline.

A Look at Two Approaches

While one future path looks at following current trends and the other considers more conservation, both paths are not sustainable as the state barrels toward nearly 34 million residents and water demand grows.

- Water 2070 Trend is based on the addition of 15 million new residents, assuming 2010 development patterns continue.
- Using the same baseline per capita gallons per day (GPD) demand for each Florida county and the assumption that suburban/rural census block groups use more water than urban census block groups, each county's water demand quantity is increased to reflect its population increase and the spatial distribution of that population.
- Agricultural lands are lost to development, but the same per acre irrigation demand is assumed resulting in a decrease in agricultural demand.
- In Water 2070 Alternative, the projected 15 million new residents are accommodated with more compact development patterns and increased protected lands.
- Per capita rates of development-related water demand for each county are conservatively reduced by 20% to capture the potential impact of water conservation measures.
- Agriculture irrigation demand is based on data from a study prepared for the FDACS, which estimates water demand for crops, livestock, and aquaculture in 2035. No irrigated lands identified in this study were allowed to develop under this scenario.

Recommendations

The report suggests the single most effective strategy to reduce water demand is to significantly reduce the amount of water used for landscape irrigation. According to Florida-Friendly Landscaping, at least 50% of water used by households is for outdoor landscape irrigation.

Two state initiatives already exist with the goal reducing water demand. Florida Water Star is the state's certification program for new and existing homes and commercial developments that address both outdoor and indoor usage. Florida Friendly Landscaping is a joint program between UF/IFAS and the Florida Department of Environmental Protection that provides residents, developers, and landscapers with conservation strategies to protect Florida most precious resource.

The report concludes that as population grows, less water will be available for per capita human usage. Now is the time to move forward with serious water conservation efforts before it is too costly or too late.

To see the full report, visit <http://1000friendsofflorida.org/water2070/>

Up Coming Meetings

November 22, 2017 **Vegetable Growers Meeting – whiteflies and target spot** **12 – 2 PM**

UF/IFAS SW Florida Research and Education Center
SR 29
Immokalee Florida

To RSVP, contact Debra at 863-674-4092 or email dcabera@ufl.edu

November 30, 2017 **2017 Suwannee Valley Watermelon Institute** **9:30 AM – 7:00 PM**

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

Register online at <http://2017watermeloninstitute.eventbrite.com>

December 11, 2017 - Pesticide Applicators Core Examination Class.

December 11, 2017 - Private Agricultural Pest Control Category Class

December 12, 2017 - Commercial/Public Pesticide Applicator – Aquatic Weed Control Category class.

December 12, 2017 – Natural Areas Weed Control Category class.

UF/IFAS Hendry County Extension Office
1085 Pratt Boulevard
LaBelle, FL 33935

Classes are \$10 per session.

To register, contact Debra at 863-674-4092 or email dcabera@ufl.edu

December 5 - 6, 2017 **2017 Florida Protected Ag and Hydroponics Conference**

UF/IFAS Gulf Coast Research and Education Center
14625 CR 672
Wimauma, FL 33598

For more information - go to:

http://smallfarms.ifas.ufl.edu/calendar/2017_1205_Protected%20Ag%20Workshop%20Brochure.pdf

Register today at <https://2017protectedaghydroponicsconference.eventbrite.com>

Websites

NRCS assistance can help producers integrate high tunnels into their operations and provide financial assistance through the Environmental Quality Incentives Program (EQIP). Learn more at <https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/organic/?cid=nrcseprd1364702>

WPS Compliance Suite — Training Materials

Under the newly-revised Worker Protection Standard (WPS), training materials must be EPA-approved when officially training workers, handlers, and trainers.

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

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

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

CEU Series: Mix and Load Pesticides Safely

CEU Series: Protect Crops and the Environment

CEU Series: Make Sure to Stow Your Pesticides Before You Go

CEU Series: Avoid Mishaps When Handling Pesticides

CEU Series: Be Aware of Bees When Applying Pesticides

CEU Series: Place Priority on Preventing Pesticide Poisoning

CEU Series: Learning About Pesticide Resistance Is Anything but Futile

Go to <http://www.growingproduce.com/?s=CORE+CEUs>

Check out Southwest Florida Vegetable Grower on Facebook

<https://www.facebook.com/pages/South-Florida-Vegetable-Grower/149291468443385> or follow Gene

McAvoy on Twitter @SWFLVegMan - <https://twitter.com/SWFLVegMan>

Hoping you & yours have a
HAPPY THANKSGIVING!!

Contributors include: Joel Allingham/AgriCare, Inc, Javier Soto/West Coast Tomato Growers, Gordon DeCou/Agri Tech Services of Bradenton, Dr Nick Dufault/ UF/IFAS, Carrie Harmon/UF/IFAS Plant Disease Clinic, Sarah Hornsby/AgCropCon, , Bruce Johnson/General Crop Management, Barry Kostyk/SWFREC, Leon Lucas/Glades Crop Care, Chris Miller/Palm Beach County Extension, 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, Ryan Richards/The Andersons, Dr Pam Roberts/SWFREC, Dr. Nancy Roe/Farming Systems Research, Wes Roan/6 L's, Dr. Dak Seal/ TREC, Kevin Seitzinger/Gargiulo, Crystal Snodgrass/Manatee County Extension, Dr. Phil Stansly/SWFREC, Dr. Josh Temple, DuPont Crop Protection, Dr Gary Vallad/GCREC , Mark Verbeck/GulfCoast Ag, Dr. Qingren Wang/Miami-Dade County Extension, Alicia Whidden/Hillsborough 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

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: <http://discover.pbcgov.org/coextension/Pages/default.aspx>

Phone: 561-233-1718

Email: cfmiller@ufl.edu

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

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

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

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

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

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

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

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

Dr. Nancy Roe

Farming Systems Research

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

Ed Early

DuPont Crop Protection

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

Adama

229 881 9757 cell
justin.powell@adama.com

Bart Hoopingarner

Gowan Company

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

**Sponsored by Orondis® fungicide &
*Syngenta Crop Protection***

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

OmniLytics - *AgriPhage*

Safe Natural Effective
Vegetable Bacteria Control
Dave Cole - 561-261-1545
Tony Swensen - 801-808-2132

Dave Owens

Marrone Bio Innovations

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

Brent Beer

***Beer Leveling &
Land Development***

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

Certis USA

Bio-Pesticides for Crop Production

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

Scott Houk

Dow AgroSciences LLC

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

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

FMC
FMC Corporation
Eric Johnson
Cell 352-281-2325
EJ.Johnson@fmc.com www.fmccrop.com

Steve Mike Dave
Jamerson Farms
Growers, Packers and Shippers of
Florida's Finest Vegetables
Phone 239-229-5734 Fax 239-368-0969

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

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

BioSafe Systems LLC
OxiDate®
TerraClean®
StorOx®
info@biosafesystems.com
Jarod Huck
352-789-9363
Luis Hansen
305.793.9206

PUT YOUR NAME HERE

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

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

Valent USA
"Products That Work
From People Who Care"
Sarah Markle 863-673-8699

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

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

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

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

Arysta Life Science

Richard Royal 352 434-8774

Shaun Yule 386 561 0493

Richard Roles
Roles Marketing International

Distributors of Agrigro and Super

Cal 10% Calcium

richard@rmiint.com www.rmiint.com

Cell 561-644-3511

Dr. Henry Yonce

KAC Agricultural Research

Scouting, Consulting

Research

386-736-0098 work 386-527-1124 cell

HDYONCE@msn.com

Grower's Management, Inc

P.O. Box 130

Belle Glade, FL 33430

Phone: 561-996-6469

www.growersmanagement.com

PUT YOUR NAME HERE

PUT YOUR NAME HERE

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