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SOUTH FLORIDA VEGETABLE PEST AND DISEASE HOTLINE

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A cold front that moved across the state this past weekend bought South Florida what very well could be our last taste of deliciously cool weather until next November. Following the last cold front that affected the area two weeks ago, mostly warm temperatures have prevailed with daytime temperatures reaching the low to mid 80's across most days. Nighttime lows have been in the mostly in the 40's, 50's and 60's.

Conditions have been mostly dry with most areas reporting less than a half-inch rainfall for the period. Drier conditions have assisted growers in some areas in reducing disease pressure and allowing them to can control. Dry conditions have also lead to an increase in salt related problems in some places. Irrigation restrictions are in place in a number of locations in South Florida – see News You Can Use.

Crops coming to market include cabbage, celery, cucumbers, eggplant, endive, escarole, lettuce, okra, parsley, peppers, radishes, snap beans, squash, strawberries, sweet corn, tomatoes, and specialty items. Quality has mostly been good but some cold related problems continue to affect fruit quality.

FAWN Weather Summary

Date	Air Temp °F		Rainfall	Hours Below Certain Temperature (hours)							
	Min	Max	(Inches)	40°F	45°F	50°F	55°F	60°F	65°F	70°F	75°F
Balm											
3/6 – 3/19/2007	**38.6**	**81.5**	**0.50**	**3.8**	**11.7**	**9.5**	**7.7**	**7.3**	**46.9**	**2.0**	**43.7**
Ft Lauderdale											
3/6 – 3/19/2007	**56.6**	**84.0**	**0.17**	**0.0**	**0.0**	**0.0**	**1.4**	**20.1**	**29.5**	**26.6**	**8.9**
Fort Pierce											
3/6 – 3/19/2007	**41.1**	**84.4**	**0.36**	**0.0**	**4.0**	**7.5**	**18.8**	**45.3**	**46.3**	**15.1**	**30.4**
Homestead											
3/6 – 3/19/2007	**52.5**	**83.8**	**0.01**	**0.0**	**0.0**	**0.0**	**7.9**	**3.7**	**54.8**	**51.4**	**5.4**
Immokalee											
3/6 – 3/19/2007	**39.6**	**84.5**	**0.17**	**0.8**	**11.6**	**20.0**	**1.1**	**14.9**	**87.9**	**35.4**	**7.5**

The short-term forecast from the National Weather Service in Miami calls for a warming trend following this weekend's cool down. Temperatures will return to the low to mid 80's. A series of weak troughs moving across the state beginning on Tuesday will bring a chance of showers each day for most of the remainder of the week. For additional information, visit the National Weather Service in Miami website at **http://www.srh.noaa.gov/mfl/newpage/index.html**

Insects

Whiteflies

Whitefly numbers are increasing in a number of locations around Southwest Florida. Numbers have been extremely variable with counts as high as 30 or more being reported around some edges and field margins and in places where fields are being harvested nearby. Given the incidence and occurrence of virus it appears that many of these whiteflies are viruliferous. Some scouts report that nymphs are developing in older tomatoes, peppers, potatoes and eggplants. Whitefly-induced silverleaf has also been observed in a number of squash fields around SW Florida indicating high whitefly numbers. Whiteflies have also reached high numbers in some pepper plantings where they are causing problems with sooty mold on fruit.

Respondents on the East Coast indicate that whitefly numbers increasing in a number of crops including tomato, squash, cucumbers and pepper especially those located near older tomato fields. Some problems with silverleaf have been noted in squash.

Reports from Homestead indicate that whitefly pressure remains heavy in a number of locations. TYLCV and Bean Golden mosaic are prevalent.

Around Manatee County, respondents note that whitefly activity is increasing but with the winds the last few days it was hard to find any on plants. Whitefly numbers are especially high around potato harvesting which is typical. The same often happens in fields near cabbage being harvested.

Growers are reminded that pesticide applications alone will not be adequate to control whitefly vectored TYLCV problems. Below are the current whitefly control recommendations from IFAS.

Recommendations for Management of Whiteflies, Begomovirus, and Insecticide Resistance for Florida Vegetable Production

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, **both biotype B and biotype Q (if present)**, and lower the initial infestation level during the cropping period.

1. Establish a minimum two-month crop free period during the summer, preferably from at least mid-June to mid-August.

2. Use a correct crop destruction technique, which includes destruction of existing whitefly populations in addition to the physical destruction of the crop.

a. Promptly and efficiently destroy all vegetable crops **within 5 days of final harvest** to maximally 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 quickly kill whiteflies.
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, **both biotype B and biotype Q (if present)**, by strictly adhering to cultural practices.

1. Use proper pre-planting practices.

a. Plant whitefly and virus-free transplants.

1) Do not grow vegetable transplants and vegetatively propagated ornamental plants (i.e. hibiscus, poinsettia, etc.) at the same location, especially if bringing in plant materials from other areas of the US or outside the US.
2) Isolate vegetable transplants and ornamental plants if both are produced in the same location.
3) Do not work with or manipulate vegetable transplants and ornamental plants at the same time.
4) Practice worker isolation between vegetable transplants and ornamental crops.
5) Avoid yellow clothing or utensils as these attract whitefly adults.
6) Cover all vents and other openings with whitefly resistant screening. Use double doors with positive pressure. Cover roofs with UV absorbing films.

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 crop season.

e. Use TYLCV resistant tomato cultivars (see additional information below for list) where possible and appropriate, especially during historically critical periods of virus pressure. Whitefly control must continue even with use of TYLCV resistant cultivars because these cultivars are able to carry the virus.

f. Use TYLCV resistant pepper cultivars (see additional information below for list) when growing pepper and tomato in close proximity.

g. Use ultraviolet light reflective (aluminum) mulch on plantings that are historically most susceptible to whitefly infestation and TYLCV infection.

2. Use proper post-planting practices.

a. Apply an effective insecticide to kill whitefly adults prior to cultural manipulations such as pruning, tying, etc.

b. Rogue tomato plants with symptoms of TYLCV at least until second tie. Plants should be treated for whitefly adults prior to roguing and, if nymphs are present, should be removed from the field, preferably in plastic bags, and disposed of as far from production fields as possible.

c. Manage weeds within crops to minimize interference with spraying and to eliminate alternative whitefly and virus host plants.
d. Dispose of cull tomatoes as far from production fields as possible. If dumped in pastures for cattle feeding, the 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 and, if present, they should be controlled by mowing or with herbicides.

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.

C. Insecticidal Control Practices.

1. Use a proper whitefly insecticide program. ***Follow the label!***

a. On transplants in the production facility, do not use a neonicotinoid insecticide if biotype Q is present. If biotype B is present, 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 neonicotinoids in the field **only during the first six weeks of the crop**, thus leaving a neonicotinoid-free period at the end of the crop.
c. As control of whitefly nymphs diminishes following soil drenches of the neonicotinoid insecticide or after more than six weeks following transplanting, use rotations of insecticides of other chemical classes including insecticides effective against biotype Q. 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 because this can kill natural enemies, thus interfering with biological control, and because this can select for biotype Q, if present, which is more resistant to many insecticides than biotype B.

2. Soil applications of neonicotinoid insecticides for whitefly control.

a. For best control, use a neonicotinoid as a soil drench at transplanting, preferably in the transplant water.
b. Soil applications of neonicotinoids through the drip irrigation system are not recommended.
c. Do not use split applications of soil drenches of neonicotinoid insecticides (i.e. do not apply at transplanting and then again later).

3. Foliar applications of neonicotinoid insecticides for whitefly control.

a. If foliar applications of a neonicotinoid insecticide are used instead of or in addition to soil drenches at transplanting, **foliar applications should be restricted to the first six weeks after transplanting.** Do not exceed the maximum active ingredient per season according to the label.
b. Follow scouting recommendations when using a foliar neonicotinoid insecticide program. Rotate to non-neonicotinoid insecticide classes after the first six weeks and do not use any neonicotinoid class insecticides for the remaining cropping period.

D. Do unto your neighbor, as you would have them do unto you.

1. Look out for your neighbor's welfare.

This may be a strange or unwelcome concept in the highly competitive vegetable industry but it is in your best interest to do just that. Growers need to remember that should the whiteflies develop full-blown resistance to insecticides, especially the neonicotinoids, it's not just the other guy that will be hurt—everybody will feel the pain!

2. Know what is going on in the neighbor's fields.

Growers should try to keep abreast of operations in upwind fields, especially harvesting and crop destruction, which both disturb the foliage and cause whitefly adults to fly. Now that peppers have been added to the list of TYLCV hosts, tomato growers will need to keep in touch with events in that crop as well.

For additional information:

IRAC (Insecticide Resistance Action Committee) Website – http://www.irac-online.org.

More suggestions for breaking the whitefly/TYLCV cycle and a list of TYLCV resistant pepper cultivars can be found in articles by Dr. Jane Polston in the 2002 and 2003 Proceedings of the Florida Tomato Institute: http://swfrec.ifas.ufl.edu/veghort/docs/tom_inst_2002_091202.pdf and http://gcrec.ifas.ufl.edu/TOMATO%202003.pdf, respectively.

A listing of TYLCV resistant tomato cultivars can be found in an article by Dr. Jay Scott in the 2004 Florida Tomato Institute Proceedings: http://gcrec.ifas.ufl.edu/TomatoOptimized.pdf

Thrips

Respondents on the East Coast continue to battle western flower thrips (*Frankliniella occidentalis*) in numerous locations from Fort Pierce to Boca Raton. Sources indicate that the thrips species have been positively identified by reputable sources.

Growers and scouts are reporting problems with heavy infestations on beans, pepper, eggplant, tomato, cucurbits and specialty items like basil and cilantro. One scout indicated that watermelon seems to be the only crop they do like. Damage includes etching and russeting of fruit and foliage. Reports indicate that growers are able to beat them back but have had difficulty in obtaining long-term control. Problems are said to be worse in planting close to older existing fields.

Around Immokalee, thrips are increasing on pepper with counts from 10 –20 per bloom being reported in places. Reports indicate that these are primarily Florida flower thrips (*Frankliniella bispinosa*).

A few thrips are also showing up around Manatee County.

Leafminer

Respondents in Southwest Florida report that leafminer pressure has dropped off in most places and that few treatments are currently being applied for control.

Reports from Palm Beach and surrounding counties report that leafminer pressure has eased up in most places over the past few weeks, but growers are still spraying young tomato and pepper in some places.

Growers and scouts in the Manatee/Ruskin area report that leafminers continue to cause problems on tomatoes at this time.

Around Homestead leafminer are widely present and causing problems in tomato, squash, bean and other crops.

Reports from around Belle Glade indicate that leafminers are causing problems with full season leafy vegetables, as well as on baby leafy greens and leafy brassica crops.

Worms

East Coast growers and scouts report that worm pressure remains low with a few loopers and beet armyworm showing up here and there. Some problems with pinworm have been reported these appear to be concentrated in one area.

Around Southwest Florida, worm pressure is mostly low with a few southern armyworms and loopers around. There have been some problems with pickleworm in squash.

Respondents around Manatee County report finding a few pinworms but otherwise worm pressure has been low with a few loopers and southern armyworms in places.

Reports from the Glades indicate that worms are building up in sweet corn around the EAA.

Pepper Weevil

Around Southwest Florida, pepper weevil numbers are increasing and becoming a problem in some older fields and new infestations are beginning to show up in spring plantings. Occurrence has been patchy.

Pepper weevils are present in a few locations on the East Coast, primarily in older pepper in locations where they are a perennial problem.

Reports from the Ruskin area indicate that some peppers are coming under early weevil pressure.

Aphids

Around Immokalee, aphids are present on a variety of crops and are building up on potato in particular.

Reports from Palm Beach County indicate that aphids are widely present and are trying to build in a number of crops including eggplant, pepper squash and specialty items including oriental brassicas.

A few aphids have been reported around Manatee County but numbers remain mostly low.

Spider mites

Growers and scout on the East Coast indicate that spider mites continue to be persistent and are causing some problems on cucumbers, eggplant and especially in specialty crops including herbs.

Around Southwest Florida, spider mites are continuing to cause a problem on eggplants and are starting to buildup on a number of crops including tomato and watermelon.

Respondents in Manatee County note some scattered problems with mites in double cropped melons where the pests appear to be coming off old crop stubble.

Diseases

TYLCV

Around Southwest Florida, tomato yellow leaf curl remains a major problem in tomato. Many fields are in the 20 –40% infection range at second tie. There are several hotspots around Immokalee where incidence has risen to 90 - 100% - some of these at second to third tie!

Growers and scouts note that in a number of cases, symptoms in the younger spring tomatoes (fields around 2nd tie) appear to be increasing 10 % per week. Growers have been questioning where the virus is coming from – see discussion above under whitefly.

As development continues to gobble up farm land in Florida and more growers move into southwest Florida and existing operations move closer together, tomato producers may be facing a new reality with regard to TYLCV. For many years farms in this part of the state where relatively isolated and growers watched as producers in more populated areas struggled with this disease. With the arrival of the new university and town of Ave Maria west of Immokalee, there has been a major shift in tomato acreage eastward bringing producers ever closer in relative proximity to each other. This has also been compounded by the fact that compared to past years there is little or no break between fall and spring tomato crops as tomatoes are now planted from August to February.

This situation is not likely to rectify itself and in fact promises to get worst unless some changes are made.

Growers can make a major start by paying attention to the UF/IFAS Recommendations for Management of Whiteflies, Begomovirus, and Insecticide Resistance for Florida Vegetable Production – see above under whitefly. Growers should try to keep abreast of operations in upwind fields, especially harvesting and crop destruction, which both disturb the foliage and cause whitefly adults to fly. Lastly a mechanism for area-wide cooperation between tomato producers should be explored to help maximize separation of crops in both time and space.

Growers and scouts in Manatee County report that TYLCV incidence is beginning to increase in field borders in some locations indicating movement of viruliferous whiteflies.

Respondents on the East Coast report TYLCV is increasing everywhere and is high in some young plantings where it will be a problem.

Reports from Homestead indicate that TYLCV remains a major issue in tomato.

Downy Mildew

Around Immokalee downy mildew continues to be a problem cucumbers and squash and has reached moderate to high levels in some older fields. Organic growers are having particular difficult in achieving control and disease is a limiting yields.

On the East Coast, downy mildew remains a threat on cucumbers and squash especially around older infected plantings.

Around Homestead, reports indicate lots of downy mildew on cucumbers and melons

Leaf symptoms can be used to diagnose downy mildew in the field in most cases. On cucurbits other than watermelon, small yellowish areas occur on the upper leaf surface. Later, a more brilliant yellow coloration occurs with the internal part of the lesion turning brown.

Usually the spots will be angular as they are somewhat restricted by the small leaf veins. When the leaves are wet, a downy white-gray-light blue fungus growth can be seen on the underside of individual spots (lesions). As the disease develops an exaggerated upward leaf curling will often occur.

Downy mildew is a very destructive disease and progresses rapidly under favorable conditions. Fungicides are much more effective when applied well before symptoms are visible. Initiating a downy mildew control program after symptoms have been detected is much more likely to fail.

The most effective spray programs in trials performed by Dr Gerald Holmes, Plant Pathologist at NCSU included the fungicides Tanos, Previcur Flex, and Gavel, tank mixed or alternated with Curzate, Manzate and/or Bravo.

In designing a fungicide program growers should also observe pre-harvest intervals and practice resistance management by alternating products belonging to different fungicide groups.

Product & Formulation	Pre-harvest Interval (days)	Fungicide Group
Tanos 50WG	3	11+27
Previcur Flex 6F	2	28
Ranman 400SC	0	21
Gavel 75DF	5	22+M
Curzate 60DF	3	27
Manzate 75WG	5	M
Bravo 6SC	0	M

The following is a sample fungicide program for cucumber downy mildew that incorporates field-tested efficacy, observes pre-harvest intervals and practices sound resistance management:

Tanos 50WG, 8 oz + Manzate Pro-Stick* 75DG, 2 lb alternated every 5 to 7 days with Previcur Flex 6F, 1.2 pt + Bravo Weather Stik* 6SC, 2 pt.

*Other labeled formulations of mancozeb include Penncozeb and Dithane; other labeled formulations of chlorothalonil include Echo and Equus.

Some growers around South Florida are reporting good control using high rates of Previcur alternated with Ranman. They stress that it important to begin application early before symptoms are seen, even as early as the first true leave stage.

Beginning near harvest and based on the frequency of harvest, use a product(s) with the appropriate pre-harvest interval.

Late Blight

It appears that we have finally turned the corner on late blight in Southwest Florida where reports from growers and scouts indicate that drier weather has allowed growers to get a leg up on the disease. Most reports indicate that lesions are mostly dry with little new spread being reported on conventional crops although organic producers are still reporting some problems.

Respondents on the East Coast report that late blight is mostly low in a number of widely scattered locations. Little new activity has been noted.

Respondent in Homestead report that late blight is present in several locations around Homestead.

Very little late blight is present around Manatee County and most is dry and inactive.

Management of Sweet Corn Foliar Diseases

Dr Rick Raid, Pathologist UF/IFAS/EREC reports that common rust, caused by *Puccinia sorghi*, and northern corn leaf blight, caused by *Exserohilum turcicum*, have both been reported in the Glades, though levels have been lower than normal due to the cold snap in February. Climatic conditions favoring infection should be very favorable over the comings weeks, so growers and scouts are urged to be on the lookout for these important diseases. Common rust typically likes to infect young, expanding tissues and plants, while NCLB usually starts with older, fully expanded foliage. For this reason, rust is usually the disease of primary concern during the early part of the season, and NCLB is the disease of primary concern later in the season. Both rust and NCLB can be controlled with timely applications of strobilurin or sterol inhibitor fungicides. These should be tank-mixed with an EBDC fungicide and also alternated as a strategy for slowing the development of fungicide resistant strains of the pathogens. Due to limitations on the number of applications of the sterol inhibitors and strobilurins, a recommended management strategy is to apply EBDC fungicides early in the cropping cycle, and then incorporate the sterol inhibitors and strobilurins into a program as the plant matures and develops significant foliage. In scheduling sprays, keep in mind that the preharvest interval for sterol inhibitors is 14 days, while it is only 7 for the strobilurins.

Powdery Mildew and Rust of Snap Beans

Powdery mildew and rust are both diseases of primary concern on spring snap beans. Both are now being seen routinely in the Glades. While rust can be controlled quite effectively using resistant varieties, powdery mildew can attack a majority of bean varieties currently grown in Florida. Sulfur is a good economical candidate for powdery mildew control unless temperatures get too warm and then phytotoxicity may occur. In that case, there are a number of different fungicides that have been shown to be effective. As a rule, the strobilurins and sterol inhibitors are more effective against powdery than the broad-spectrum protectants. As for rust, sulfur is only marginally effective against it, so the strobilurins and sterol inhibitors would be a first choice in this regard. With an effective scouting program to prevent massive disease buildup, both of these diseases can be controlled with relatively few applications of a sterol inhibitor and/or a strobilurin.

Lettuce Downy Mildew

Downy mildew has been reported in the Glades but has been of minimal impact due to preventative applications of maneb and phosphonic fungicides. IPM specialists recommend that translaminar fungicides, such as Reason, Forum, Previcur, and Tanos be incorporated into a program occasionally to relieve pressure on the phosphonics. These too provide good control. Read labels for potential plant-back restrictions.

Seed-borne Diseases of Spinach

Spring mix growers should be on the lookout for two very important foliar diseases of spinach. These are Stemphyllium leafspot and spinach anthracnose. Both diseases may be seed-borne. As with many seed-borne diseases, early disease foci often appear to be randomly scattered throughout plantings. Although the foliar lesions may appear somewhat similar, the two diseases may be easily differentiated microscopically, with dark brown fungal structures called setae being present with anthracnose but not Stemphyllium.

Although both fungal diseases are favored by long periods of leaf wetness, a common occurrence in Florida with nightly dews, anthracnose is much more reliant on rainfall and/or overhead irrigation for dissemination.

Strobilurin fungicides have proven instrumental in the control of Stemphyllium, while not as much is known about chemical control of spinach anthracnose. Research trials are being conducted by Richard Raid at the EREC on both diseases this spring. Look for further updates.

Foliar Diseases of Parsley and Dill

It used to be that both parsley and dill were grown in Florida with no or few fungicide applications. However, powdery mildew has been observed on parsley for the third year in a row and for the second on dill. Sulfur or a strobilurin fungicide are the best bets for controlling this disease. Alternaria leafspot, caused by Alternaria radicina, is another disease of economic potential and growers should be on the lookout for its presence. Now observed on an annual basis, the strobilurins are definitely the compounds of choice for this disease.

Fusarium

Around Immokalee, incidence of fusarium crown rot and fusarium Race 3 continues to wilt up susceptible varieties in a number of places.

Scattered problems with fusarium have been reported on the East Coast primarily in older fields where growers are keeping fields and water tables high in response to dry conditions.

A few scattered with crown rot have been reported around Manatee County.

Bacterial Spot

Growers and scouts on the East Coast indicate that bacterial spot is still active on pepper and tomato. Younger crops especially tomato are still being affected.

Around Immokalee, bacterial spot is present in mostly low levels in tomato and peppers with little new activity being reported.

Reports from Homestead indicate moderate bacterial spot pressure continues to be present in a number of tomato fields.

Around Manatee County bacterial spot is mostly low and staying low in the bush.

Powdery Mildew

Growers and scouts around Southwest Florida are reporting increasing problems with powdery mildew on beans, cucumbers, melons and squash. Incidence and severity is high in some older fields. Powdery mildew is more wide spread and a bigger problem in squash.

Reports indicate that powdery mildew is also widely present on cucurbits on the east Coast. Reports of indicate that powdery mildew is heavy on pepper in several locations powdery mildew

Powdery mildew is also widely present on squash around Homestead.

Powdery mildew is a serious disease of cucurbits in Florida. All cucurbits are susceptible to powdery but the disease is less common on watermelon than on other cucurbits. Powdery mildew of okra, squash, cucumbers, muskmelons, honeydews, pumpkins, and watermelons is caused by the fungus *Sphaerotheca fulginea* or, occasionally, *Erysiphe cichoracearu*m.

Symptoms of the disease typically appear on older leaves and stems. The yields of many of the infected vegetables are reduced due to pre-mature foliage loss. In melons severe leaf infection can result in lower fruit sugar content and subsequent reduction of fruit quality. In addition to reducing plant vigor from leaf infection, mildew can attack the calyx and reduce the marketability of fruit.

The fungus first appears as subtle, small, round, yellowish or whitish spots on leaves and sometimes stems. These spots enlarge and coalesce rapidly. As the white, fluffy mycelium grows over plant surfaces and produces spores, it gives the lesions a powdery appearance resembling talcum powder, which is evident on the upper surface of older leaves or other plant parts. Young leaves are almost immune.

A large part of the talc-like powder on the leaf surface is composed of spores. These spores are easily blown by winds to nearby susceptible plants. Heavily infected leaves appear dull and chlorotic and eventually become dry and brown. Extensive premature defoliation of the older leaves can occur if the disease is not controlled. Yield reduction from defoliation is proportional to the severity and length of time plants are infected.

Powdery mildew fungi can reproduce under relatively dry conditions. Increased humidity can increase the severity of the disease, and infection is enhanced during periods of heavy dew. Unlike downy mildew, powdery mildew can become severe during periods of low rainfall in the winter and spring months in Florida.

The fungus survives on wild cucurbits such as balsam apple and other weeds year round and the light powdery spores can be carried long distances by air currents.

Crop rotation and many other cultural practices have little effect on the incidence and development of powdery mildew. It has been noted however, that healthy, vigorous leaves and stems are less prone to infection. Plants under nutritional stress in most cases will develop powdery mildew much sooner than plants the same age grown under a good nutritional program.

Tolerance or resistance to powdery mildew is available in some vegetable crops. Most commercial cucumber varieties grown in Florida have acceptable levels of resistance.

Many varieties of cantaloupe used in Florida, display some tolerance to powdery mildew. Tolerance to powdery mildew is beginning to be available summer squash and zucchini varieties and it is expected that in the future most new cultivars in the will incorporate some level of tolerance to powdery mildew.

In addition to resistance, economic control can be achieved with chemicals. Under low disease pressure, some materials applied for downy mildew may provide satisfactory control of powdery mildew. However, under moderate to heavy mildew disease pressure, micronized sulfur (Thiolux) and the strobulurin fungicides such as Flint, Nova and Quadris are recommended. When using strobulurin fungicides growers should be sure to follow manufacturers recommendations and practice resistance management by avoiding consecutive applications. Growers should be aware that sulfur could injure plants, especially at higher temperatures.

Gummy Stem Blight

Gummy stem blight is increasing on watermelon at number of locations around Southwest Florida.

In Florida, gummy stem blight is a serious disease that occurs annually on watermelons. Other members of the cucurbit family may also be infected with gummy stem blight.

Infection and symptoms may occur on all plant parts and at any stage of development from seedlings to maturity.

Symptoms appear as light to dark brown circular spots on leaves or as brown to black, often gummy, lesions on stems. Prior to the occurrence of chlorosis or necrosis, tissues may appear water soaked. Wilting, followed by death of young plants may occur. Stem lesions enlarge and slowly girdle the main stem resulting in a red-brown-black canker that cracks and may exude a red to amber gummy substance. Vine wilting is usually a late symptom. Use of a hand lens will reveal small, clear white (when young) to black (when old), pycnidia embedded in older diseased tissue.

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

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

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

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

Growers often comment on this disease occurring "overnight." What they are actually seeing are the results of secondary spread, which is more difficult to control than primary spread simply because of increased spore numbers with increased diseased tissue.
Temperatures and moisture conditions are often ideal for development during watermelon season in Florida. Gummy stem blight is most severe in wet years since moisture is necessary for spore germination. The optimum temperature for infection is 61 to 75^{o}F. After a spore germinates on a susceptible host, the fungus penetrates the plant tissue and symptoms can appear in 7 to 12 days.

Gummy stem blight can be successfully managed using a combination of control strategies. Control of primary sources of inoculum is important. Growers should purchase clean seed and avoid transplants that have gummy stem blight or other diseases.

In addition to seed, the most important source of primary inoculum is organic debris from previous crops. After harvest, crops should be plowed under to reduce inoculum. Volunteers and wild cucurbits provide an additional source of inoculum. Crop rotation and destruction of weed hosts are important for gummy stem blight control.

Multiple applications of fungicides are necessary to control gummy stem blight. It is important to begin a fungicide program prior to the first sign of gummy stem blight. In south Florida, the spray program should be initiated soon after emergence. In other areas of the state, fungicide spray programs can be initiated when the vines begin to "run." When vines are small, band applications of fungicide over the crown area are effective and help reduce application costs.

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 materials.

Scouts report that gummy stem blight is also causing problems in cucumbers on the East Coast.

Cucurbit leaf crumple virus

Dr Jane Polston reports that a new cucurbit virus for Florida - *Cucurbit leaf crumple virus* (syn. *Cucurbit leaf curl virus*) has been found in squash this past fall in 2 locations, Citra and Hastings. It is highly likely that it was introduced on watermelon transplants from California and probably in multiple locations around the state. There are some pictures on the web – go to http://ucanr.org/delivers/impactview.cfm?impactnum=140

The symptoms are "somewhat different on zucchini and yellow summer squash. The virus caused the leaves to be thickened and distorted on both types of squash, however, as well as curled and crumpled. Yellow squash leaves became rounded on the edges. The zucchini fruit did not show obvious symptoms but yellow squash was streaked with green virus." Reports indicate that symptoms look different that other virus symptoms seen in cucurbits in Florida.

We do not know if it has established in the state, but UF/IFAS scientist are working on this and hope to find out soon. We also do not know the distribution with in the state but hope to address this soon as well.

Diagnosis would be: association with whiteflies, and then lab analysis using PCR with begomovirus primers followed by sequencing at least for first reports from various counties. Inclusion body visualization should also work well, but again would not be definitive without PCR and sequence analysis. AgDia can do hybridization and PCR for detection of a Begomovirus, but they don't separate it further.

Birds

A number of growers are reporting significant problems with blackbirds damaging crops this season possibly due to freezing weather, which killed off natural food sources. Peppers have been particularly hard hit around southwest Florida where some growers have resorted to netting. Around Belle Glade, birds are a huge problem in sweet corn where growers are employing helicopters, cannons and guns in an effort to drive them off.

News You Can Use

WATER MANAGERS DECLARE WATER SHORTAGES, IMPOSE MANDATORY WATER RESTRICTIONS

Severe Water Shortage Order declared for Lake Okeechobee Service Area, imposing more stringent Phase II mandatory water restrictions

Moderate Water Shortage Order declared for Lower East Coast, imposing Phase I mandatory water restrictions

Water Shortage Cease Withdrawal Order declared for St. Lucie County Agricultural Area, terminating withdrawals by permitted users from the C-23, C-24 and C-25 canals and imposing Phase I mandatory water restrictions for residential non-permitted users from the three canals

West Palm Beach, FL – Below average rainfall over the past several months and rapidly receding Lake Okeechobee levels prompted the South Florida Water Management District Governing Board to issue three water shortage orders today, imposing new or more stringent mandatory water restrictions. The three orders, signed today by District Executive Director Carol Ann Wehle, declare a severe water shortage for the Lake Okeechobee Service Area, a moderate water shortage for the Lower East Coast and residential areas in the St. Lucie County Agricultural Area, and a water shortage cease withdrawal order for consumptive use permit holders the St. Lucie County Agricultural Area. The orders go into effect March 22, 2007.

"The District took responsible, proactive steps in October and November 2006 by declaring mandatory restrictions for users around Lake Istokpoga, Lake Okeechobee and a warning for the Lower East Coast," said Governing Board Chairman Kevin McCarty. "However, the lingering dry conditions have forced us into more aggressive action. Our regional water supply indicators are unusually low, and water conservation should now be the aim of all water users across the District -- businesses, the public sector and individuals alike."

With today's level at 10.9 feet above sea level, Lake Okeechobee is approximately 4 feet below its historical average for this time of year. Meanwhile, rainfall is the primary source for the region's freshwater supply, and at only 40.75 inches, District-wide rainfall for 2006 was the sixth lowest on record dating back to 1932. The dry trend has continued, as rainfall through the first two months of 2007 was only 2.01 inches District-wide -- less than half of what is normal for this time of year -- leaving many areas of the District in prolonged 1-in-25-year dry spells. So far this month, only two one hundreds of an inch of rain has fallen District-wide compared to the 1.17 inches considered normal for the same time period.

"Water conservation is critical now through the dry season to protect our water resources and help ensure that adequate freshwater supplies are available for people, businesses, farms and the environment," said District Executive Director Carol Ann Wehle. "Due to record dry conditions, we are tightening existing and putting new mandatory water use restrictions in place with today's water shortage orders."

Lake Okeechobee Service Area

Classified as a Phase II severe water shortage declaration, the Lake Okeechobee Service Area order will predominantly impact agricultural, industrial, commercial water users in the Everglades Agricultural Area, and parts of Hendry, Glades, Okeechobee, Palm Beach and Martin counties; withdrawals from the Caloosahatchee River; and a relatively small number of residential users whose water source is Lake Okeechobee or any of the surface water canals recharged by the lake.

Agricultural water users in these areas are required to reduce their consumption of surface water by 30 percent. These users will be notified personally of the specific nature of restrictions pertaining to this order and are encouraged to voluntarily exercise additional water conservation measures as practicable.

Residential users in the Lake Okeechobee Service Area who irrigate from surface water canals will be required to limit outdoor irrigation times to two days per week. Residents with odd home addresses will be allowed to water between the hours of 4 a.m. and 8 a.m. on Wednesdays and Saturdays, while residents with even home addresses will be allowed to water between the hours of 4 a.m. and 8 a.m. on Thursdays and Sundays. In addition, residential users will be asked to wash vehicles only within these specific times and also are asked to observe more aggressive water conservation practices within the home. No domestic water use for outdoor irrigation will be allowed on Mondays, Tuesdays and Fridays.

Groundwater sources such as wells are not restricted by this order, and users are allowed to utilize groundwater in accordance with their permits. The use of water for firefighting, safety, sanitation, health, medical and other essential purposes is not restricted.

If water levels in Lake Okeechobee reach 10.2 feet, the force of gravity will no longer direct the flow of water through existing structures. The District is expediting the installation of temporary forward pumps to mitigate the impact of drought on the area's agricultural users.

Lower East Coast

Classified as a Phase I moderate water shortage declaration, the Lower East Coast order will primarily impact areas of eastern Monroe, Miami-Dade, Broward and Palm Beach counties -- highly populated urban areas that depend on Lake Okeechobee for backup water supply.

Because lawn irrigation accounts for half of drinking water used in South Florida, Phase I water restrictions require water users to limit outdoor water use. Phase I restrictions allow lawn watering and car washing three days a week: Mondays, Wednesdays and Saturdays from 4 a.m. to 8 a.m. for addresses that end in an odd number; Tuesdays, Thursdays and Sundays from 4 a.m. to 8 a.m. for even-number addresses. Water restrictions do not apply to the use of 100 percent reclaimed water (reuse).

These and other actions and are intended to produce a 15 percent reduction in overall demand on our water resources by all uses, including agricultural, industrial, commercial, golf course, landscaping and residential water users who get their water from public utilities, private wells, canals, ponds and lakes.

The Phase I restrictions do not mean that public utilities must reduce the amount of water they sell by 15 percent.

"It's up to everyone to get us to the overall 15 percent reduction, not just people who get their water from public utilities," Wehle said.

Essential services for public health and safety are exempt from water shortage rules.

The primary source of surface water supply and aquifer recharge for the Lower East Coast are the Everglades water conservation areas, with backup supply from Lake Okeechobee. El Niño did not produce above normal rainfall during this dry season as predicted, and March and April are typically the driest months of the year with the highest demands. Water levels in the Everglades water conservation areas are declining and their storage capability may not be sufficient to meet Lower East Coast demands without water deliveries from Lake Okeechobee.

"We must decrease our overall water use or we will be hard-pressed to ensure that regional water will be available to recharge South Florida's supplies for both area residents and to protect our natural resources, including the Everglades, from the devastating impacts of drought," Wehle said. "The water restrictions are designed to make conserving water easy -- simply cut back your lawn watering to three days a week or less and only water between 4 and 8 a.m.," Wehle said. "We have no assurances that it will rain over Lake Okeechobee, so we must take matters in our own hands."

Counties, cities and homeowner associations may have year-round local irrigation ordinances already in place. Residents are asked to check with their local officials and adhere to whichever restrictions are more stringent.

St. Lucie County Agricultural Area

Classified as a water shortage cease withdrawal declaration, the St. Lucie County Agricultural Area order will impact primarily permitted agricultural users who draw water directly from the C-23, C-24 and C-25 canals in St. Lucie County and portions of Martin County. Permitted users in these areas are required to terminate withdrawals from the canals when they drop below the minimum stage of 14 feet. Today's canal levels are 15.19 feet, 14.96 feet and 14.5 feet in the C-23, C-24 and C-25 canals respectively, and are expected to continue to decline through the remaining dry season. The District will work with users to identify alternative sources of water.

Water levels in these canals have a natural tendency to fluctuate in response to rainfall runoff into the canals. These fluctuations may increase levels above 14 feet. The District will monitor the water levels to determine whether limited withdrawals may occur if levels rise above 14 feet. The affected users will be notified personally of the specific nature of restrictions pertaining to this order.

Residential users (non-permit holders) with homes along the C-23, C-24 and C-25 may irrigate their lawns by withdrawing water from these canals. Under today's order, classified as a Phase I moderate water shortage, such

withdrawals are limited. Phase I restrictions allow lawn watering and car washing three days a week: Mondays, Wednesdays and Saturdays from 4 a.m. to 8 a.m. for addresses that end in an odd number; Tuesdays, Thursdays and Sundays from 4 a.m. to 8 a.m. for even-number addresses.

Compliance/Enforcement

Over the coming weeks, the District will intensify its aerial and ground inspection program on weekends to ensure that consumptive use permit holders, such as farms, nurseries, golf courses and recreation areas, are complying with the new restrictions in the Lake Okeechobee Service Area, Lower East Coast and St. Lucie Agricultural Area. Warnings and fines may be imposed for violators. Enforcement for non-permit holders, such as residential users, is the responsibility of local government through its law enforcement or zoning and code enforcement agencies.

The District continues to monitor water levels throughout the District daily and is proactively planning in the event any additional water shortages must be declared.

In addition to the mandatory water use restrictions where applicable, residents in all areas of the District are encouraged to voluntarily save water both inside and outside the home. For additional information, residents can call the District's toll-free Water Conservation Hotline at (800) 662-8876 or contact their regional South Florida Water Management District Service Center.

Water restriction information and other helpful water conservation tips are also available at www.sfwmd.gov/conserve.

Nutsedge – Can't Keep It Down?

Have you noticed nutsedge coming through the plastic at the ends of some rows, or on the shoulders of some beds? This problem seems to be more prevalent than in the past.

What's happening? There are a number of factors that could be causing problems

- While most growers do a good job of keeping the plastic rig close behind the gas rig, this is still the easiest thing you can control to ensure a good gas job.

- If the soil is too wet, fumigants will generally not move as well and thus may be less effective. If the soil is too dry, the fumigant comes out of the soil about as fast as you put it in so poor pest control results.

- If you are using a Raven or some other radar-controlled unit on your fumigation rig, keep in mind that there is a delay in that the unit has to sense movement before fumigant delivery begins. Thus, there may be a lower dose injected at the beginning of the row before the rig gets going.

- If you are using lower rates of fumigants in combination with high barrier films, remember that you MUST replace the tubing from the manifold to the chisels with smaller diameter poly tubing to compensate for the reduced flow capacity and to increase line back pressure needed to insure accurate, uniform flow. (i.e., yellow or red poly tubing).

- It is also helpful to install individual sight gauges to observe uniformity of fumigant liquid flow to each chisel outlet. Install a low pressure gauge (0-30 psi) immediately upstream of the manifold or flow divider to insure at least 15 psi of backpressure.

Thanks to Phyllis Gilreath for these pointers.

Survey on Pesticide Residues as Trade Barriers

You should have received a survey from FFVA requesting information on chemical use on your various crops recently. What is this about? FFVA is an active participant in the Minor Crop Farmer Alliance which has been working with EPA and PMRA (Canada's EPA) on trying to resolve discrepancies in pesticide residue tolerance levels between the US and Canada. These discrepancies have caused problems for growers in the past, but this issue is not limited to Canada and may include other trading partners such as Japan, Taiwan, the EU, etc. In addition, this situation will only get worse as PMRA's proposed revocation of the 0.1 ppm "default" Maximum Residue Level (MRL) is implemented.

Why is it important for you to complete and return this survey? Because the information will be confidential and will only be used by FFVA as they try to get a better handle on what is grown and what crop protection chemicals are being used and how important each of these chemicals is to you in growing that crop (i.e. is it a must have or are there alternatives, etc.?) They will then use this information to work with EPA to develop a priority list of commodity/residue problems that are causing these barriers to trade, beginning with Canada, and then work to develop potential solutions.

A copy of the spreadsheet is posted on FFVA's website (see below) for downloading. Note that this link is restricted to FFVA members. **This information is needed by March 28!**

http://www.ffva.com/publications/bulletins/trade_irritant_survey.xls

If you have additional questions, please don't hesitate to contact the following individuals:
Daniel.botts@ffva.com
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Mike.Aerts@ffva.com

Topsin M Fungicide and Watermelon Vine Decline

In a recent communication from Cerexagri regarding Topsin and vine decline, I have been asked to provide a clarification regarding statements on the Topsin label indicating effectiveness against vine decline.

Growers should be aware that there are several different watermelon diseases that are referred to as vine decline in various parts of the country.

Topsin M has been labeled for many years for the suppression of the fungal pathogen, *Monosporascus*, sometimes-called root rot and vine decline.

This disease is completely distinct from the watermelon disease commonly referred to as watermelon vine decline that first appeared in Florida in 2003 and has since caused significant losses to growers.

Watermelon producers are advised that local watermelon vine decline is a caused by a virus and is not controlled by Topsin M.

Topsin M does have a place in watermelon disease control and has locally systemic activity on cucurbits for powdery mildew, gummy stem, anthracnose, target spot, belly rot and charcoal rot.

Worker Protection Standard (WPS) Inspection Form. This form is very useful as a checklist to make sure that you have addressed all the topics that would be covered in a WPS inspection. If you can go through this list and answer yes to most of these questions, or at least know what they are talking about, you will likely be in

pretty good shape. Phyllis Gilreath has posted the WPS Inspection Form in pdf format at http://manatee.ifas.ufl.edu/Vegetables/WPSInspectionForm.pdf or you can give Phyllis or myself me a call and we would be happy to fax or mail you a copy.

Up Coming Meetings

Manatee County

June 12, 2007 — **Private Pesticide Applicator Training and Testing.** 9:00 AM.

Manatee County Extension Service
Palmetto, Florida

2 CORE CEUs offered for those who have a current license.

Note: Testing for all categories is by appointment.
Please call Linda Means at 941-722-4524 to schedule an exam.

Palm Beach County

April 2, 2007

General Standards/Core Test Review (2 CEUs)	8:00 – 10:00 AM
Private Applicator Test Reviw (2 CEUs)	10:00 AM - Noon
Ornamental and Turf (2 CEUs)	1:00 – 3:00 PM

Clayton Hutchinson Ag Center
559 N Military Trail
West Palm Beach, Florida

Contact 561-233-1700 – select option, 1 then option 3

April 4, 2007

General Standards/Core Test Review (4 CEUs)	8:00 – Noon
Ag Row Crop Test Review (2 CEUs)	1:00 pm - 3:00 PM

Belle Glade Extension Office
2976 State Road 15
Belle Glade, Florida

Contact 561-996-1655

April 17, 2007 — **WPS Overview and Train the Trainer Workshop** 9:00 am - 3:30 pm

Clayton Hutchinson Ag Center
559 N Military Trail
West Palm Beach, Florida

Contact Darrin Parmenter at 561-233-1712

Southwest Florida

March 27, 2007 **Terrestrial and Aquatic Weed Control Video Conference 8:30 AM – 3 PM**

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

5 CEU's in Ag Row Crop, Aquatic, Natural Areas, Private Applicator, and Right of Way

Space is limited so you must RSVP

Contact Gene McAvoy at 863-674-4092 for details,

March 29, 2007 **Vegetable Growers Meeting – Late Blight and Dow Product Update**

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

Contact Gene McAvoy at 863-674-4092 for details

Other Meetings

June 3 –5, 2007 **Florida State Horticultural Society Annual Meeting**

PGA National Resort & Spa
Palm Beach Gardens, FL.

Go to http://www.fshs.org/default.htm for details and registration

Websites

USDA Agricultural Marketing Service Fruit and Vegetable Marketing News website – this new and improved site provides real-time produce, ornamentals and specialty crops, price and supply data and will allow you to run custom reports, such as querying one location for prices on multiple commodities or multiple locations for prices on a single commodity among other options, go to - **http://marketnews.usda.gov/portal/fv**

The National Organic Program website – this USDA website provides information on certifying agencies, regulations and guidelines and much more. Check it out at **http://www.ams.usda.gov/nop/indexIE.htm**

Quotable Quotes

Democracy is a device that ensures we shall be governed no better than we deserve. - George Bernard Shaw

Hope is a good breakfast, but it is a bad supper. - Sir Francis Bacon

Gardens are not made by sitting in the shade. - Rudyard Kipling

I keep six honest serving-men, they taught me all I knew; their names are What and Why and When and How and Where and Who. - Rudyard Kipling

If you can keep your wits about you while all others are losing theirs, and blaming you . . .. The world will be yours and everything in it; what's more, you'll be a man, my son. - Rudyard Kipling

If we could sell our experiences for what they cost us, we'd all be millionaires - Abigail Van Buren

On the Lighter Side

How Big is Wal-Mart?

1. At Wal-Mart, Americans spend $36,000,000 every hour of every day.

2. This works out to $20,928 profit every minute!

3. Wal-Mart will sell more from January 1 to St. Patrick's Day (March 17th) than Target sells all year.

4. Wal-Mart is bigger than Home Depot + Kroger + Target + Sears + Costco + K-Mart combined.

5. Wal-Mart employs 1.6 million people and is the world's largest private employer.

6. Wal-Mart is the largest company in the history of the World.

7. Wal-Mart now sells more food than Kroger & Safeway combined, and keep in mind they did this in only 15 years.

8. During this same period, 31 Supermarket chains sought bankruptcy (including Winn-Dixie).
9. Wal-Mart now sells more food than any other store in the world.

10. Wal-Mart has approx 3,900 stores in the USA of which 1,906 are Super Centers; this is 1,000 more than it had 5 years ago.

11. This year, 7.2 billion different purchasing experiences will occur at a Wal-Mart store. (Earth's population is approximately 6.5 billion).

12. 90% of all Americans live within 15 miles of a Wal-Mart.

The Anniversary

A woman awakes during the night to find that her husband is not in bed. She puts on her robe and goes downstairs to look for him. She finds him sitting at the kitchen table with a hot cup of coffee in front of him. He appears to be in deep thought, just staring at the wall. She watches as he wiped a tear from his eye and takes a sip of his coffee.
"
What's the matter, dear?" she whispers as she steps into the room, "Why are you down here at this time of night?" The husband looks up from his coffee, "Do you remember 20 years ago when we were dating, and you were only 16?" he asks solemnly. The wife is touched to tears thinking that her husband is so caring and sensitive.

"Yes, I do" she replies. The husband paused. The words were not coming easily. "Do you remember when your father caught us in the back seat of my car?" "Yes, I remember," said the wife, lowering herself into a chair beside him.

The husband continued. "Do you remember when he shoved the shotgun in my face and said, "Either you marry my daughter, or I will send you to jail for 20 years?"

"I remember that too" she replied softly.

He wiped another tear from his cheek and said... "I would have gotten out today."

The Service

One Sunday morning, the pastor noticed little Alex standing in the foyer of the church staring up at a large plaque. It was covered with names with small American flags mounted on either side of it.

The seven year old had been staring at the plaque for some time, so the pastor walked up, stood beside the little boy, and said quietly, "Good morning Alex."

"Good morning Pastor," he replied, still focused on the plaque. "Pastor, what is this?" he asked.

The pastor said, "Well, son, it's a memorial to all the young men and women who died in the service."

Soberly, they just stood together, staring at the large plaque.

Finally, little Alex's voice, barely audible and trembling with fear, asked, "Which service, the 8:30 or the 10:45?

Contributors include**:** Joel Allingham/AgriCare, Inc, Karen Armbrester/SWFREC, Bruce Corbitt/West Coast Tomato Growers, Dr. Phyllis Gilreath/Manatee County Extension, Michael Hare/Drip Tape Solutions, Fred Heald/Farmers Supply, Sarah Hornsby/AgCropCon, Cecil Howell/Taylor &Fulton, Loren Horsman/Glades Crop Care, Keith Jackson/SWFREC, Bruce Johnson/General Crop Management, Dr. Mary Lamberts/Miami-Dade County Extension, Leon Lucas/Glades Crop Care, Bob Mathews, Glades Crop Care, Mark Mossler/UF/IFAS Pesticide Information Office, Gene McAvoy/Hendry County Extension, Alice McGhee/Thomas Produce, Jimmy Morales/Pro Source One, Chuck Obern/C&B Farm, Teresa Olczyk/ Miami-Dade County Extension, Dr. Aaron Palmateer/TREC, Darrin Parmenter/Palm Beach County Extension, Dr. Ken Pernezny/EREC, Dr. Pam Roberts/SWFREC, Dr. Nancy Roe/Farming Systems Research, Wes Roan/6 L's, Dr. Dak Seal/ TREC, Kevin Seitzinger/Gargiulo, Jay Shivler/ C&B Farm, Ken Shuler/Stephen's Produce, Ed Skvarch/St Lucie County Extension, John Stanford/Thomas Produce, Mike Stanford/MED Farms, Dr. Phil Stansly/SWFREC, Eugene Tolar/Bright Star Farms, Mark Verbeck/GulfCoast Ag, and Alicia Whidden/Hillsborough County Extension.

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

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