UNIVERSITY OF FLORIDA

EXTENSION

Institute of Food and Agricultural Sciences

Hendry County Extension PO Box 68 LaBelle, Florida 33975-0068 Phone (863) 674-4092

SOUTH FLORIDA VEGETABLE PEST AND DISEASE HOTLINE

March 5, 2007

As is often said in Florida, "If you don't like the weather just wait a bit it will change!" A few days after the back-to-back frosts that hit South Florida on the weekend of February 17 –19, skies were clear and daytime temperatures back in the mid 80's across much of the area. Mostly warm temperatures have prevailed for the past two weeks although a front moving down across this peninsula this past weekend has again dropped temperatures bringing a few more days of cooler weather.

Most areas received only trace rainfall for the period with Homestead reporting the highest accumulation of 0.40 of an inch. A number of mornings saw heavy dews and fog blanketing many locations. Daytime temperatures have been mostly in the 60's, 70's and 80's with nighttime lows in the 30's, 40's and 50's.

With the exception of Belle Glade, where extensive damage to crops corn, beans and leaf crops was experienced on the weekend of February 17 –19, growers in much of the rest of South Florida were able to raise water levels and cover crops to avoid major problems. There have been scattered reports of frost burn of the tops of plants as well as some bloom drop and fruit quality issues related to the cold.

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
Balm											
2/20-3/6/2007	36.2	79.9	0.11	8.6	9.6	15.4	0.1	3.3	11.3	1.1	49
Ft Lauderdale											
2/20-3/6/2007	52.9	89.2	0.11	0.0	0.0	0.0	7.9	16.9	25.3	31.2	16
Fort Pierce											
2/20-3/6/2007	Na	Na	0.18	0.2	13.0	13.7	11.8	20.4	13.9	24.2	26
Homestead											
2/20-3/6/2007	46.3	86.7	0.42	0.0	0.0	9.8	15.6	14.6	20.8	3.5	18
Immokalee											
2/20-3/6/2007	39.5	86.5	0.00	1.3	11.7	10.8	37.4	24.1	12.8	51.8	9.8

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Mostly dry weather allowed growers to maintain planting and harvest schedules with watermelon planting moving into high gear in the southern peninsula. 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. Beans have been selling in excess of $30 per box.

The short-term forecast from the National Weather Service in Miami calls for a gradual warming trend following this weekend's cool down. Temperatures will gradually rise into the low 80's and skies will be mostly clear with a chance of showers towards weekend. For additional information, visit the National Weather Service in Miami website at **http://www.srh.noaa.gov/mfl/newpage/index.html**

Insects

Whiteflies

Reports from Homestead indicate that whitefly pressure remains heavy in a number of locations and growers continue to report difficulty in obtaining control. TYLCV and Bean Golden mosaic are prevalent.

Respondents on the East Coast indicate that whitefly numbers are moderate to heavy in tomato and on newly planted squash and cucumbers especially those located near older tomato fields. Some problems with silverleaf have been noted in squash.

Around Manatee County, mostly low whitefly numbers are being reported but respondents note that based on the incidence of virus observed many of these whiteflies must be viruliferous.

Around Immokalee, whitefly numbers are low to moderate depending on the location with numbers increasing in many locations. Growers and scouts indicate that whiteflies appear to be moving around between fields and farms with higher adult populations being observed on some days in some locations. TYLCV symptoms are also becoming more common and a number of fields have reached 100 percent infection rates. Some scouts report that nymphs are developing in older tomatoes, peppers, potatoes and eggplants.

High incidence of whitefly-induced silverleaf has also been in a number of squash fields around SW Florida indicating high whitefly numbers.

Several growers around Immokalee have commented that whiteflies appear to be coming out of the woods and that TYLCV incidence is often surprisingly high in relatively isolated fields.

Commenting on this observation, Dr Phil Stansly, Entomologist at UF/IFAS Southwest Florida Research and Education Center in Immokalee comments while this may seem to be the case to growers that in a two year study using yellow sticky traps, whitefly movement was generally from crops to weeds except at the beginning of the fall planting season.

Given that TYLCV has a relatively broad host range that does include some weeds, but with whiteflies generally going the other direction, weeds are probably not a primary sources of virus except possible in the very early season.

Phil comments further that while whiteflies and other small plant feeding insects are able to make short flights from plant to plant within a given field on their own, they are forced to attempt longer flights when they find themselves surrounded by senescing plants. This often results in them being carried up in air currents including thermals to where they are carried pretty much passively in the breeze with no more control than either to fly or not.
Cypress heads and wooded areas act as barriers to the wind current a good distance above the ground, reducing air velocity and causing turbulence and downdrafts. The whiteflies then settle around these obstacles just like fine sand around a stone in a stream. Following the fall harvest, whiteflies carrying virus from infected fields become airborne moving long distances in the winds to later descend around cypress heads and tree lines – seemingly coming out of the woods to initiate new foci of virus infection.

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

Leafminer

Growers and scouts report they continue to battle leafminers in a number of locations around Southwest Florida and that they remain vigilant as pressure has been up and down depending on the location.

Reports from Homestead, indicate that leafminer are widespread and causing problems in tomato, squash, bean and other crops.

Around the Manatee/Ruskin area, leafminers are the early season major pest on tomatoes at this time.

Respondents in Palm Beach report that leafminer pressure has eased up in most places over the past few weeks.

Reports from around Belle Glade indicate that leafminer adults are working overtime on sensitive leafy vegetables. Respondents indicate that several of the spring mix type leafy vegetables are showing elevated levels of stippling due to female leafminers.

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. Spinosad (Spintor, Entrust) has also given good results and is labeled on a wide range of crops. Some other materials that may be used to conserve beneficials include azadirachtin (Neemix) and insecticidal oils. Neemix and Entrust are approved for use by organic growers.

Doug Restom Gaskill of the FDACS Cooperative Agricultural Pest Survey (CAPS) Program reports the California pea leaf miner (*Liriomyza langei* - formerly *L. huidobrensis*) is not established in Florida, but is a serious pest of many crops in California where it has become difficult to control. Unlike leaf miners known from Florida, which produce irregular serpentine mines in the leaf, the California pea leaf miner mines on the lower surface of the leaf near the midrib and lateral veins. Frass is deposited in a thin line down the middle of the mine. The host range is broad and includes tomato, pepper, potato, melon, pea, bean, celery, lettuce (see links below for full host list).
http://www.doacs.state.fl.us/pi/enpp/ento/entcirc/ent378.pdf
http://www.doacs.state.fl.us/pi/enpp/ento/pealeafminer.html
http://www.doacs.state.fl.us/pi/enpp/ento/peamin.html

If you believe you have the California pea leaf miner, please contact your local extension agent or the Cooperative Agricultural Pest Survey: http://www.doacs.state.fl.us/pi/caps/index.html

Worms

Around Southwest Florida, growers and scouts indicate worm pressure is low. There have been some problems with pickleworm in squash.

On the East Coast growers and scouts report s indicate that worm pressure is mostly low with a few exceptions. Some problems have been noted with pickleworms in cucumbers planted close to older fields and scouts report that pinworms are building in a few places on tomato and eggplant.

Respondents around Manatee County report that worm pressure also remains low.

Pepper Weevil

Around Southwest Florida, pepper weevil numbers are building in several older fields and new infestations are showing up in spring plantings.

Reports indicate that weevil numbers are being to build around Palm Beach County.

Aphids

Around Immokalee, a few winged aphids are being seen here and there.

Reports from Palm Beach County indicate that a few winged aphids are being detected but note that colony formation is present in a number of crops including eggplant, pepper squash and specialty items including oriental brassicas.

Spider mites

Growers on the East Coast have reported a few problems with spider mites on eggplant.

Around Southwest Florida, spider mites are continuing to cause a problem on eggplants and there have been some reports of spider mites showing up on young watermelon.

Thrips

Respondents on the East Coast are reporting serious problems with 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 pepper, eggplant, tomato, cucurbits and specialty items like basil and cilantro. 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 becoming a little more common but so far counts per bloom have been very low and crop damage negligible. Unlike the situation on the East Coast it appears like nearly all are Florida flower thrips (*Frankliniella bispinosa*).

A few thrips are also showing up around Manatee County.

Chilli thrips (*Scirtothrips dorsalis*) was detected in Florida in 2005. It has since been found throughout South and Central Florida mainly on ornamentals. It has been recorded throughout the world from over 100 hosts including tomato, pepper, strawberry, soybean, peanut, banana, bean, eggplant, castor beans (see http://www.doacs.state.fl.us/pi/enpp/ento/chillithrips.html for full host list).

It is extremely difficult to differentiate chilli thrips from other thrips in the field. Feeding can severely deform leaves and/or fruits, leaves and flower buds can drop, or leaf tissue can look scraped. Leaf symptoms can resemble broad mite damage. This thrips has also been reported to transmit several viruses. If you believe you have chilli thrips, please contact your local extension agent or the Cooperative Agricultural Pest Survey: http://www.doacs.state.fl.us/pi/caps/index.html

Note: Chilli thrips (*Scirtothrips dorsalis*) feeding damage at times resembles broadmite damage. If you are having difficulty with broadmite damage, you may want to check to see if you are having problems with chilli thrips.

Diseases

TYLCV

Around Southwest Florida, tomato yellow leaf curl virus symptoms are becoming more common and growers and scouts are reporting the start of the typical spring increase in the incidence of this virus.
There are several hotspots around Immokalee where incidence has risen to 90 - 100% in a number of planting.

Growers and scouts note that in a number of cases, symptoms in the younger spring tomatoes (fields around 2nd tie) have increased significantly over the past week – many have doubled. 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 implementing 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 note that they have detected TYLCV coming on transplants in some cases and are now starting to see in field transmission in some places

Respondents on the East Coast report TYLCV also beginning to increase but remains mostly low with a few hotspots around especially around older plantings.

Reports from Homestead indicate that TYLCV is a major issue in tomato. High incidence of TYLCV has led at least one grower to question whether they will be able to continue to grow tomatoes.

Late Blight

Late blight remains widespread around Southwest Florida on tomatoes and potatoes but lack of rain, sunshine and somewhat drier air over the past few weeks have allowed growers to catch up on control efforts to some extent. Over all late blight activity appears to have slowed but there are still reports of hotspots and new lesion being found.

Although many growers report that they have been successful in keeping late blight "contained", this is a relative term as disease occurrence and severity is a function of the presence of a pathogen (late blight innoculum is wide spread at this point), a susceptible host (plenty of tomatoes and potatoes out there) and a favorable environment. Environmental conditions for the development of late blight have been very favorable since Thanksgiving with heavy dew, numerous foggy morning and scattered showers at frequent intervals, which has undoubtedly contributed to the severity of the outbreak. Under such conditions, even seeming dry inactive lesions are capable of flare back up and becoming active when environmental conditions change.

Respondents on the East Coast report that they are also beginning to find late blight infections in a number of widely scattered locations from potatoes in Martin County to tomatoes from St Lucie County down to Palm Beach.

Respondent in Homestead report that late blight is present in several locations around Homestead and is spreading rapidly in tomato.

Presence of late blight has also been confirmed in West Central Florida.

Currently, fungicides are the most effective means of controlling late blight and will remain the primary tool until cultivars with resistance to this disease become available. Fungicides slow the rate at which the disease develops in the field by creating a protective barrier on the foliage. Just applying a chemical, however, does not necessarily equate with effective disease control. Relative effectiveness of a product, coverage, and timing must be factored into the equation for maximum benefit.

Numerous fungicide products are registered for late blight control. Protectants, as the name implies, protect foliage from infection by spores. Protectant chemicals must be well distributed over the leaf surface and must be applied before spores land on leaves. They are ineffective against established infections.

Systemic products become distributed locally within plant tissues and protect foliage from infection by spores. Newer products such as Curzate (DuPont) boast “kick back” action that can help arrest infestation if applied within 48 –72 hours of initial infection. They may kill some established infections and may suppress production of new spores.

Even a short break in spray schedules, despite what is said regarding some of the newer fungicides, can result in a dramatic increase in blight under the conditions we have had during the past two weeks.

In light of the widespread presence of the disease across much of South Florida, growers should be alert for the appearance of symptoms in their fields as well as be sure to apply protective fungicides such as chlorothalonil. In addition, it may not a bad idea to put out an application of the late blight fungicide of your choice - Previcur Flex (Bayer Crop Science), Reason (Bayer Crop Science), Curzate (DuPont), Forum (BASF) to help prevent possible infections. No other disease will find an unprotected field as rapidly as late blight.

Dr. Pam Roberts, Plant Pathologist at UF/IFAS SWFREC has launched a website that pulls together current information on late blight from various sources and which will help keep growers appraised of the late blight situation in Florida. You can check out the Late Blight Information Center at http://swfrec.ifas.ufl.edu/plant/late_blight/

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 is widely present on cucumbers affecting many planting by the 2-3 leaf stage. Incidence and severity is heavy in some double crop situations.

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.

Fusarium

Around Immokalee, incidence of fusarium crown rot and fusarium Race 3 has increased dramatically in several tomato fields. Growers and scouts report that in a number of instances where the water table was pumped up for cold protection, a high percentage of plants start dropping from crown rot 7-10 days later.

Scattered problems with fusarium on pepper have also been noted on the East Coast.

Bacterial Blotch

There have been several reports of bacterial blotch affecting watermelon transplants around South Florida over the past two months. At least one confirmed report resulted in the loss of several houses full of plants before it was contained. Infection in this case seems to have been the result of a lot of contaminated seed, which subsequently spread to adjacent plants.

The bacterium that causes bacterial fruit blotch is *Acidovorax avenae* subsp. *citrulli*. Bacterial fruit blotch can also infect honeydew and cantaloupe.

Initial symptoms on seedlings appear as a dark, water-soaking on the lower surface of cotyledons and leaves followed by necrotic lesions, which may have chlorotic halos.

Foliar symptoms can develop throughout the season. In many cases foliar lesions are neither numerous nor distinctive and may be confused with other disorders. Leaf lesions are light brown to reddish-brown in color and are typically located along the midrib of the leaf.

Leaf lesions in the field do not result in defoliation, but are important reservoirs of bacteria for fruit infection.

Fruit symptoms begin as small, water-soaked areas. These enlarge rapidly to become dark green, irregular water-soaked lesions several inches in diameter. Within days, these lesions may expand to cover the entire upper surface of the fruit. In cultivars with dark green striped rinds, symptoms may be restricted, resulting in smaller lesions on the lighter green stripe. With age, the lesions may turn brown and crack, and a total fruit rot may develop.

Fruit blotch may be introduced into a field by infested seeds, infected transplants, volunteer watermelons, or infected wild cucurbits.

Symptom development and spread is most rapid during periods when the weather is hot, humid, and sunny with afternoon thundershowers. In Florida, this usually coincides with the spring crop, and in the more northerly production areas such as Georgia, South Carolina, and Indiana, later in the summer.

Once present in a field, the disease can be spread by wind-driven rain and mechanical means. Initial symptoms may not be very conspicuous and careful inspection of plants is essential for early detection of this disease.

Two to three week-old fruit are most susceptible to bacterial invasion. The bacterium enters stomata on the fruit surface and lesions develop 3-7 days later. Mature fruit are covered with a wax layer that prevents entry of the bacteria into the fruit. Mature watermelons can be invaded by the fruit blotch bacterium only after wounding.

The primary control is to use seed that has been tested and found to be free of the fruit blotch bacterium and obtain transplants from transplant houses free of the disease. Diseased transplants can cause severe problems because the bacterium may spread in the transplant house and result in high numbers of infected plants going into the field. Some of these transplants may harbor the bacterium, but show no symptoms.

Applications of copper fungicides can reduce the incidence of fruit blotch symptoms if initiated before fruit set. For control of other foliar diseases, copper-containing fungicides should be used in combination with broad-spectrum fungicides as labeling permits.

Applications should begin at first flower, or earlier, and continue until melons are mature. Thorough coverage is essential for good disease control. Copper may cause marginal yellowing of watermelon foliage and slight stunting of the vines but field studies have indicated no detrimental effect on **yield.**

Bacterial Spot

Growers and scouts on the East Coast continue to report widespread problems with bacterial spot on pepper and tomato. Incidence and severity is moderate to high in many places. Bacteria is reported to be especially bad on pepper in places.

Around Immokalee, bacterial spot is present in mostly low levels in tomato and peppers with a few new lesions being reported here and there.

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 to very low.

Target Spot

Respondents on the east Coast indicate that target spot is increasing and is widely present in tomato. Incidence and occurrence is high in some older plantings.

Around Southwest Florida, target spot continues develop on the inner foliage of tomato in a number of fields as plants reach maturity. Plum types appear to be more susceptible.

Downy Mildew on Lettuce

Dr. Raid notes that lettuce downy mildew, caused by *Bremia lactucae*, is present in south Florida and all lettuce growers should be on a strict preventative spray program and scouting heavily for this disease. So far, it has not been reported on muck-grown lettuce.

Fungicide programs that have proven very effective when applied in a preventive mode have been tank-mixtures of a phosphonic fungicide and maneb, rotated with a fungicide of an activity dissimilar to the phosphonics. Rotational prospects are dimethomorph (Forum or Acrobat), Previcur Flex, Reason, and Tanos. Manidipropamid (Revus) has also shown good activity in trials and may soon have a label for this particular crop and disease, but as of this moment, registration is still pending.

Powdery Mildew

Growers and scouts around South Florida are reporting increasing problems with powdery mildew on squash and cucumbers. 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. A few reports of powdery mildew on pepper have also been received.

Powdery mildew is also widely present on squash around Homestead.

Sclerotinia

East Coast growers and scouts continue to report some problems with Sclerotinia on pepper, eggplant and tomato. Dr. Ken Pernezny reports that finding Sclerotinia in pepper is a little surprising considering how warm it has been. He advises that scouts and others should look for the tell-tale black sclerotia inside the stems of wilted pepper plants. In response to questions about the source of inoculum, he reports little if any direct germination and infection occurs from sclerotia. Most all of the inoculum occurs from ascospores which form in specialized structures called ascocarps that develop off the sclerotia. These then become **windborne** and are transported to susceptible hosts such as pepper, tomato, and eggplant. Growers need to look to special exemption uses such as Topsin-M for control, as many general-purpose fungicides are not that good for Sclerotinia.

Around Immokalee, Sclerontinia has been showing up in a number of crops including tomato, pepper, potatoes, beans and watermelons. Incidence and occurrence is mostly low.

Gummy Stem Blight

Gummy stem blight is present on cucurbits at mostly low levels in a number of locations around South Florida. There have been some reports of infected transplants.

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

Pythium

Growers and scouts in several locations including SW Florida and Manatee reports some problems with pythium following recent rains.

News You Can Use

Florida Farm Bureau Update on the South Florida Drought

Most portions of South Florida remain in the grips of a 1 in 25 year drought with little relief in sight as we approach our 'typical' 3-4 month dry season. The Lake Okeechobee water level continues to drop at a rate of about 0.5' per month and is presently at 11.5', which is three feet below its historical average for this time of year and 2.5' from the record low of 8.97' on May 24, 2001.

Mandatory phase 1 restrictions (15% cutback) remain in force for the Lake Okeechobee Service Area as well as the Northern Indian Prairie Basin. These areas include the Everglades Agricultural Area, portions of Hendry, Glades, Lee, Okeechobee, Palm Beach and Martin Counties. Also included are agricultural areas south of Lake Istopoka in Highlands County. A formal water shortage warning (voluntary reductions) remains in place for the Lower East Coast Service Area.

South Florida Water Management District Staff have notified the Governing Board that phase 2 restrictions (30% cutback) may be needed by mid-March when the anticipated lake level will be 11 feet. The forward pumps will probably be needed by late March or early April to remove water from the lake and with the limited capacity of the pumps, full delivery of allocation is not expected therefore cutbacks will be greater than 30%.

Although phase 1 has minimal financial impact to agriculture, phase 2 restrictions can cause a severe financial loss and should be used only when absolutely necessary. Over the past several years, farmers have implemented Best Management Practices, reducing daily demands and saving millions of gallons for environmental and municipal use. This change in irrigation practices has made the crops more susceptible to water restrictions and thus any cutbacks can carry a larger financial burden than in the past.

On a final note, lake levels may demand a phase 3 restriction (45% cutback) before the summer rains begin in June. All of this is in the midst of the peak irrigation demands being in April and May.

For additional information, growers can check the District's toll free Water Conservation Hotline at 1-800-662-8876 or contact their regional service center.

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.

CAPS Needs Your Help

The Cooperative Agricultural Pest Survey (CAPS) Program is a combined effort by state and federal agricultural agencies to conduct surveillance, detection, and monitoring of exotic plant pests of agricultural and natural plant resources and biological control agents. Survey targets include plant diseases, insects, weeds, nematodes, and other invertebrate organisms.

If you think you may have a new pest, please contact your local extension agent or a CAPS representative:
http://www.doacs.state.fl.us/pi/caps/index.html

Pesticide Labeling Issues and Food Safety

Dr Phyllis Gilreath, Vegetable Agent in Manatee County reports that a situation came up recently where a tomato grower underwent a third party audit and he was questioned and threatened with crop rejection because he did not have the correct label.

In this case, the product happened to be Monitor. The primary Monitor label does not have tomatoes on the label.

The label, which does include Monitor for tomatoes, is a Section 24C label that is issued as a supplemental label based on a special local needs registration.

You MUST have this supplemental label in your possession to be legal! This is also true for other materials with a Special Local Need registration and labeling.

Make sure your pesticide distributor provides you with any supplemental labeling that you will need. Sometimes if you buy jugs that come in a carton, look in the bottom of the carton before you discard it. The supplemental label may be there.

In today's world of extreme scrutiny, especially in food safety issues, you can't overlook anything. This is one requirement that is not hard to meet. Growers - make sure you ask for supplemental labeling. Suppliers - make sure you give your customers supplemental labeling when required.

Up Coming Meetings

Manatee County

March 13, 2007 **CORE/Private Applicator and Ag Restricted** 9:00 – 11:00 AM

Pesticide Applicator License Training and Testing.

Manatee County Extension Office
Palmetto, Florida
Contact Phyllis Gilreath at 941-721-4524 for more information.

Palm Beach County

March 5, 2007 **General Standards/Core Test Review** (4 CEUs) 8:00 - Noon

Aquatic Weed Control Test Reviw (2 CEUs) **1**:00 pm - 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

March 7, 2007 **General Standards/Core Test Review** (2 CEUs) 8:00 – 10:00 AM

Private Applicator 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

Southwest Florida

March 5, 2007 **General Standards/Core Test Review**
8:00 - Noon

Private Applicator Test Review
1:00 – 5:00 PM

Hendry County Extension Office
1085 Pratt Boulevard
LaBelle, Florida

Contact Gene McAvoy at 863-674-4092 for details

March 6, 2007 **Row Crop /Tree Crop Test Review** 8:00 - Noon

Aquatic Test Peview 1:00 – 5:00 PM

Hendry County Extension Office
1085 Pratt Boulevard
LaBelle, Florida

Contact Gene McAvoy at 863-674-4092 for details

March 12, 2007 **General Standards/Core Test Review (Spanish)**
8:00 - Noon

Hendry County Extension Office
1085 Pratt Boulevard
LaBelle, Florida

Contact Gene McAvoy at 863-674-4092 for details

March 13, 2007 **Private Applicator Test Review (Spanish)**
8:00 - Noon

Hendry County Extension Office
1085 Pratt Boulevard
LaBelle, Florida

Contact Gene McAvoy at 863-674-4092 for details

Other Meetings

March 6-9, 2007 **2007 MSU Greenhouse Tomato Short Course**

Eagle Ridge Conference Center

Raymond, Mississippi.

For more information, see the web site
http://www.greenhousetomatosc.com or contact

Dr. Richard G. Snyder,
Mississippi State University
(601) 892-3731
Email: RickS@ra.msstate.edu

Websites

Summary of Agricultural Pesticide Usage in Florida – 1995 – 1998 and 1999 -2002– This Florida Department of Agriculture website summarizes in a 96 page document Agricultural Pesticide Usage in Florida from 1995 – 1998, go to http://www.flaes.org/pdf/PestUsageSum_1995-1998.pdf and http://www.flaes.org/pdf/PestUsageSum_1999-2002.pdf

Cucurbit Downy Mildew Forecast Homepage – this North Carolina State University website provides timely information on the occurrence of Cucurbit Downy Mildew and the future movement of inoculum (fungus spores) across the North American continent. It also prides information on the disease as well as recommendations for control and other information, check it out at http://www.ces.ncsu.edu/depts/pp/cucurbit/

Quotable Quotes

A weed is a plant that has mastered every survival skill except for learning how to grow in rows. - Doug Larson

Accomplishing the impossible means only that the boss will add it to your regular duties. - Doug Larson

Establishing goals is all right if you don't let them deprive you of interesting detours. - Doug Larson

They say such nice things about people at their funerals that it makes me sad that I'm going to miss mine by just a few days. - Garrison Keillor

Thank you, God, for this good life and forgive us if we do not love it enough. - Garrison Keillor

On the Lighter Side

Dr. Ole, I presume?

A Doctor in the U.P. wanted to get off work and go hunting, so he approached his assistant "Ole, I am going hunting tomorrow and we don't want to close the clinic. I want you to take care of the clinic and take care of our patients".

"Yes, sir!!!" answers Ole.

The doctor goes hunting and returns the following day and asks: "So, Ole, how was your day?"

Ole told him that he took care of three patients. "The first one had a headache so I gave him TYLENOL."

"Bravo ya Ole, and the second one?" asks the doctor.

"The second one had stomach burning and I gave him MAALOX, sir," says Ole.

"Bravo, bravo Ole! You're good at this and what about the third one?" asks the doctor.

"Sir, I was sitting here and suddenly the door opens and a woman enters like a flame, she undresses herself and shouts: HELP ME!! For 5 years I have not seen any man!!!!!"

And what did you do Ole?" asks the doctor.

"I put drops in her eyes."

Value of a University Education…

In the bathroom, an accountant, a lawyer and a farmer were standing side-by-side using the urinal. The accountant finished, zipped up and started washing and literally scrubbing his hands... clear up to his elbows... he used about 20 paper towels before he finished. He turned to the other two men and commented, "I graduated from Harvard University and they taught us to be sanitary."

The lawyer finished, zipped up and quickly wet the tips of his fingers, grabbed one paper towel and commented, "I graduated from the University of Texas with a Law degree and they taught us to be environmentally conscious."

The farmer zipped up and as he was walking out the door said, "I graduated from the University of Iowa. They taught us not to pee on our hands."

Old Goats

A group of Americans were traveling by tour bus through Holland. As they stopped at a cheese farm, a young guide led them through the process of cheese making, explaining that goat's milk was used. She showed the group a lovely hillside where many goats were grazing. "These" she explained, "are the older goats put out to pasture when they no

longer produce."

She then asked, "What do you do in America with your old goats?"

A spry old gentleman answered, "They send us on bus tours!"

Contributors include**:** Joel Allingham/AgriCare, Inc, Karen Armbrester/SWFREC, Bruce Corbitt/West Coast Tomato Growers, Dr. Kent Cushman/SWFREC, 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.

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

Hendry County Extension Office
PO Box 68
Nextel 159*114449*
LaBelle, Florida 33975
Web: http://hchort.ifas.ufl.edu/

863-674-4092 phone
2863-673-5939 mobile -

863-674-4097 fax
GMcAvoy@ifas.ufl.edu