



UNIVERSITY OF  
FLORIDA

E X T E N S I O N

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# SOUTH FLORIDA VEGETABLE PEST AND DISEASE HOTLINE

March 3, 2008

A strong cold front passed through the area this past week dropping temperatures in many places into the mid to low 30's. Some patchy frost was reported in some of the normally cooler areas mostly north of the Caloosahatchee River on the morning of February 28<sup>th</sup>. With the exception of this brief cool down, temperatures have been unseasonably warm with daytime temperatures ranging from the mid 70's to the mid 80's with most night in the 50's and 60's.

Most South Florida growing areas reported between 1.30 to over 4 inches of rain in February with the exception of Fort Pierce with totals just under an inch. Most areas also experienced heavy fogs and night dews which helped keep disease active.

### FAWN Weather Summary

Date	Air Temp °F		Rainfall (Inches)	Ave Relative Humidity (Percent)	ET (Inches/Day) (Average)
	Min	Max			
<b>Balm</b>					
2/8 – 3/2/08	34.81	84.33	1.38	68	0.09
<b>Belle Glade</b>					
2/8 – 3/2/08	41.89	85.66	4.60	76	0.1
<b>Clewiston</b>					
2/8 – 3/2/08	37.84	87.33	1.60	73	0.11
<b>Ft Lauderdale</b>					
2/8 – 3/2/08	46.96	88.29	4.49	76	0.1
<b>Fort Pierce</b>					
1/14 – 2/08/08	39.13	86.59	0.84	77	0.1
<b>Homestead</b>					
2/8 – 3/2/08	42.88	84.70	1.65	73	0.1
<b>Immokalee</b>					
1/14 – 2/08/08	35.95	87.73	2.19	74	0.1

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**Vegetables coming to market include snap beans, cabbage, celery, eggplant, endive, escarole, lettuce, pepper, radishes, squash, strawberries, sweet corn, tomatoes, and various specialty items coming to market.** Packinghouses are reporting some quality issues and higher culls associated with weather related injury as plantings affected by the January freeze and high winds are harvested.

**The short-term forecast from the National Weather Service in Miami calls for an increasing chance of showers over the Atlantic waters and southeast coast as early as tonight with an even higher of showers Sunday night and Monday as moisture is drawn in downstream of a powerful long wave developing over the central plains.** Widespread showers and thunderstorms will be spawned by the moist warm air mass before the cold front passes early Wednesday morning bringing a refreshing cool down to the area on Wednesday. The southeast return flow will begin to develop once again by Thursday ahead of next trough to develop over the central plains. Shower and thunderstorm chances will increase once again from Thursday night into Friday. For additional information, visit the National Weather Service in Miami website at <http://www.srh.noaa.gov/mfl/newpage/index.html>

**Some reports indicate that with the continuing drought, water is becoming an issue in a number of places with some wells running out and coughing and ditches drying out.** Many land owners have curtailed leases and growers are reducing acreage in anticipation of increasing problems this spring.

## **Insects**

### **Whiteflies**

**Growers and scouts around Immokalee report that whitefly pressure is increasing and many locations are now under enough pressure to require multiple sprays per week.** Numbers are reported to be up and down as growers spray they go away and a few days later they are back. Whiteflies are also building in crops other than tomatoes including watermelons, peppers, potatoes and squash. Organic producers report high pressure. Some reports indicate that traditional adulticides (Endosulfan, Baythroid, Warrior, and Monitor) do not seem to be as effective as before.

**Reports indicate that watermelon growers are concentrating on whitefly control in response to findings that vine decline and other cucurbit viruses are whitefly vectored.**

**Around the Hillsborough/Manatee County area, respondents indicate that whitefly adults were increasing in some fields before the recent cold front.**

**Reports from Homestead indicate that whiteflies numbers which had been relatively low are beginning to build.**

**For current management recommendations – see Management of Whiteflies, Whitefly-Vectored Plant Virus, and Insecticide Resistance for Vegetable Production in Southern Florida -**  
<http://edis.ifas.ufl.edu/IN695>

### **Pepper Weevils**

**Growers and scouts on the East Coast report that pepper weevils are widespread and causing problems in a number of locations.**

**Around Southwest Florida, pepper weevil numbers are building and continue to be one of the most challenging pests in pepper production.** Pressure is said to be very high in some areas of concentrated pepper production.

## **Leafminer**

**Respondents around Immokalee report that leafminers pressure has been sporadic for the most part numbers have been low but there are still locations around reaching a treatable thresholds.** Reports indicate that some watermelons are being treated for leafminer.

**Leafminers are active in Homestead and are reported to be causing problems in tomatoes, squash and other crops.**

**Growers in the Glades report leafminers are active.**

**In the Manatee Ruskin area leafminer numbers are increasing.**

## **Worms**

**In Palm Beach County, respondents note some increase in mostly southern armyworm numbers.** Reports indicate that melon and pickle worm just won't quit and pressure remains high. Control has been problematic due to the worms tendency to move quickly into the blooms were they are protected.

**Around Southwest Florida, worm numbers are mostly low but scouts report some hatches and are finding some beet and southern armyworms in tomato and pepper.** Pickle worms are still active in squash and scouts report finding a few tomato pinworm moths in traps.

## **Aphids**

**Growers and scouts around Immokalee report that aphids are present at mostly low levels, with a few colonies in some peppers.**

**On the East Coast, reports indicate that aphid numbers are present in eggplant, pepper and tomato.**

**Producers of leafy brassicas are reporting problems with cabbage aphids and melon aphids in Devils Garden and the Glades.**

## **Thrips**

**Scouts on the East Coast report variable thrips pressure ranging from low to high depending on the location.** Species present include Florida flower thrips as well as western flower thrips and *Thrips palm*.

**Some East Coast locations are reporting problems with control where western flower thrips is present.** In some older pepper pressure is extremely high with dozens of thrips present on fruits.

**Respondents in Southwest Florida report that thrips remain very low but they are starting to be seen a little more frequently in pepper as citrus begins to bloom.** At present reports indicate most appear to be the Florida flower thrips, *F. bispinosa*.

## **Broad Mites**

**East Coast respondents indicate that broad mites are still present in eggplant and peppers.**

**Around Southwest Florida while broad mites continue to cause scattered problems.**

## Spider Mites

Growers and scouts around Immokalee report that spider mites are present in low levels in a few more fields and crops such as tomato and watermelons; but most of the pressure continues to be in eggplants.

Reports from Palm Beach note scattered problems with spider mites on cucumbers, eggplant and tomato.

Around Homestead spider mites are causing some problems in squash.

## Diseases

### Late Blight

Late blight has been reported on tomato and potato in several locations around Fort Pierce.

Late blight is also present in at least one location around Immokalee where multiple infections have been reported since the initial finding last week.

Dr Pam Roberts reports that preliminary characterization by a single test of the strain of *P. infestans* from Immokalee has the same pattern of strains found in 2005-06 and 2006-07 growing season but not the particularly aggressive strain from 2005. Full genotyping should be available later in the season.

Isolates from the east coast did not produce enough material for testing efforts are underway to obtain another sample.

An unconfirmed report of late blight from Manatee County has also been received.

Late blight is caused by the fungus *Phytophthora infestans*, which is a pathogen of potato and tomato. Very few vegetable diseases cause more concern to growers. The disease can spread quickly and devastate a tomato or potato field within a few weeks if not properly controlled.

**The disease thrives under cool and wet conditions.** Temperatures between 50 and 80°F combined with moist conditions such as rain, fog, heavy dews, or relative humidity above 90 percent are conducive for disease development. Night temperatures in the mid-fifties with daytime temperatures from the mid-fifties to mid-seventies are ideal for this disease.

**Since the disease can spread so rapidly, growers should scout their fields thoroughly each day, especially when cool and wet conditions conducive to disease development prevails.**

**Late blight symptoms on leaves appear as irregularly shaped brown to purplish lesions with indefinite border lesions that can span veins.** The lesions may be seen any time of day, on any stage of plant growth and on leaves of any age. Velvety, white fungal growth may appear on the lower surface of affected leaflets early in the morning before leaves dry and/or in the lower canopy.

**On stems, purplish lesions may be found any where on the stem.** Cottony, white growth of fungus on stems with lesions can often be seen early in the morning and/or in the lower canopy. Stems with lesions are brittle and break easily. Lesions are confined to epidermis and cortex. Leaf rolling and wilting is often associated with stem lesions and purpling of leaflets may occur in some varieties.

**Several control measures plus observation are absolute necessities if late blight is to be properly controlled.** In addition to cultural means, begin a spray program with fungicides if late blight is in your area or weather conditions are suitable for late blight development. After harvest, kill infected foliage to minimize tuber infection.

**Tomato growers should purchase disease-free transplants. Observe your fields thoroughly each day, especially when cool and wet weather prevails.**

**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.** 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 conducive environmental conditions.

**Dr Pam Roberts, Pathologist at SWFREC is interested in obtaining samples in an effort to characterize races occurring in Florida.** She can be contacted at 239-658-3400.

### **Bacterial Spot**

**Around Southwest Florida, bacterial spot is still the big disease in tomatoes and to a lesser extent in pepper.**

**Respondents in Homestead report widespread bacterial spot causing problems in tomato.**

**Growers and scouts on the East Coast report that bacteria is widespread especially in pepper where scatter showers and wet nights have kept the disease active.** Some fruit lesions are present.

**In a recent talk to vegetable growers in Immokalee, Dr Ken Pernezny presented finding from copper resistant bacterial spot surveys which showed almost all tested races as being virtually insensitive to copper alone.** In his tests, addition of Mancozeb or maneb improved bacterial spot control in a number of instances.

### **TYLCV**

**Around Southwest Florida, tomato yellow leaf curl virus continues to spread.** For the most part, TYLCV is lower than last spring but still a problem. There are several fields around that reached 10-20% during second tie and will probably reach 30-50% infection by first pick. Some organic fields are reportedly experiencing higher infection rates. Some growers have reported moved to using resistant varieties for the spring crop.

**Respondents in Homestead indicate that tomato yellow leaf curl virus is widely present at low to moderate levels.**

**On the East Coast, reports indicate that TYLCV is reaching high level in some hotspots but remains low in many others.**

**Around Manatee County, reports indicate that tomato yellow leaf curl virus is present at mostly low levels.**

### **Target Spot**

**Growers and scouts around Immokalee report that target spot continues to work on interior foliage and is causing some problems on the crown fruit when the bush grows thick and full.**

**Target spot is widely present around Palm Beach and respondents are reporting target spot damage on tomato fruit.** Dr Ken Pernezny notes that he is seeing foliar damage but it is almost impossible to separate the bacterial spot from target spot on leaves. The symptoms on fruit range from little flecks to the typical deep, pitted areas.

### **Alternaria**

**Growers and scouts across the area report that Alternaria is widely present in a number of locations.**

### **Downy Mildew**

**Cucurbit producers around Southwest Florida report that downy mildew continues to be a major problem in squash and especially in cucumbers.**

**Downy mildew is also causing problems on the East Coast especially in cucumber.**

**Around Homestead, respondents note that downy mildew is increasing in squash.**

**Respondents around Belle Glade are reporting lots of downy mildew on both leaf and head lettuce in the Glades.**

### **Powdery Mildew**

**Powdery mildew is wide spread in squash and cucumbers in Homestead.** In many fields, incidence is surpasses that of downy mildew. Some problems have also been noted with powdery mildew on tomato.

**On the East Coast, powdery mildew is high in some squash.** Powdery mildew is also present on pepper in scattered locations. Incidence is high in a few places.

### **Gummy Stem Blight**

**Gummy stem is present on watermelons at low levels around Southwest Florida.**

**Respondents in Palm Beach County report that gummy stem is present on cucumbers and squash in several locations.**

### **Cladosporium leaf mold**

**Cladosporium leaf mold is common in some locations around Immokalee and resulting in premature yellowing of foliage and defoliation in some fields.**

**Leaf mold, caused by the fungus *Fulvia fulvum*, is usually considered to be a disease of greenhouse tomatoes, and appears infrequently under field conditions in Florida.**

**Symptoms typically begin on older lower leaves.** Initially, pale green spots with diffuse margins appear that later turn yellow appear on the upper leaf surface. The spots are often so diffuse that the yellowing often looks like nondescript mottling. The most distinctive symptom is on the underside of leaves, where patches of olive-green, fuzzy mold consisting of masses of conidia and conidiophores can be observed.

**As lesions coalesce infected leaves curl up, wither, and may eventually drop from the plant.** Occasionally, other aboveground plant parts, including fruit, can be attacked; fruit infections result in black, leathery lesions primarily on the stem end.

**High relative humidity and warm to high temperatures favor disease development.** To infect tomato plants and spread in the field, the fungus requires very high humidity - in excess of 85% - for prolonged periods. These conditions occur frequently greenhouses with poor air circulation, especially at night, but less frequently in the field.

**The pathogen can survive for at least one year in the soil on infested debris or as sclerotia.** Conidia are dispersed by rain or wind. The fungus can also be spread by machinery and by workers.

**The pathogen is known to be carried on seed and can give rise to infested seedlings.**

**Several precautions will help avoid problems from leaf mold.**

**Sanitation is important.** Clean up and destroy debris from infested fields and greenhouses to discourage overwintering of the pathogen. In the greenhouse, it is advisable to sterilize production areas once debris has been removed, either with steam or with an approved disinfectant.

**Since the disease may be seed borne it pays to purchase quality seeds and transplants that have been certified disease-free.** Resistant cultivars are available, but the pathogen continues to develop new races.

**Humidity control is important in greenhouses.** In the field, staking and pruning helps improve air flow and can reduce humidity.

**Leaf mold can be controlled effectively with fungicides applied on a preventative basis.**

### **Sclerotinia**

**White mold is widely present on beans in a number of locations around South Florida.**

**Around Southwest Florida, sclerotinia is present in several pepper, potato and tomato fields.**

**Respondents indicate that sclerotinia is also present on pepper at mostly low levels around Palm Beach County.**

**Sclerotinia is typically a cool and moist-weather disease and quite possible being encouraged by the cool foggy mornings over the past few weeks.** Free moisture is important in the disease cycle. The fungus overwinters in special survival structures call sclerotia which look like mouse droppings. Affected plants often wilt either the whole plant or just certain stems, depending on where infection started.

**White mold growth can be seen on the tan stem lesions and if the stem is split, the sclerotia can be found inside.** These sclerotia can survive for up to 7 years in the soil without a host until conditions are right for

germination. The disease is then spread by airborne ascospores, carried by wind currents to potential host tomatoes (or other hosts which include peppers, beans, eggplant, potatoes and many other crops).

**The disease requires dead plant tissue for infection to occur, quite often dropped flower blooms or leaves which lodge in leaf axes.** One reason that the disease is seldom seen in the Ruskin area is that during the time environmental conditions are right, plants in the area are still young. Pre-bloom infection may sometimes occur in tomato, but usually this is a result of frost damage or some other mechanical damage that serve as substrates for initiation of the disease.

**Typical protective fungicides will do little for control of this disease.** Topsin M has a Section 18 label for fruiting vegetables in Florida and has shown good control of Sclerotinia. Good control has also been obtained with Endura. Amistar, Cabrio and Quadris are also labeled for Sclerotinia.

## **Mosaic**

**Reports from Homestead indicate that mosaic is widespread in squash.**

**Mosaic is widely present on squash around Southwest Florida.** In at least one location, nearly 100% infection has been reported on young seedlings prompting growers to destroy the crop and replant.

**Some mosaic is also being reported in watermelon around SW Florida.**

**Papaya ringspot virus type W (PRSV-W), previously known as watermelon mosaic virus one (WMV 1), and watermelon mosaic virus two (WMV 2) are the most common mosaic viruses affecting watermelon in Florida.**

**PRSV-W occurs in tropical climates and predominates in the southern half of the state.** PRSV-W may occur in the northern half of the state but usually appears during the late spring, summer, or fall months. Host weeds include two cucurbitaceous weeds, balsam apple and wild or creeping cucumber.

**WMV 2 is more common in north Florida.** It has a broad host range and infects over 160 species. Many legumes including showy crotalaria and hairy indigo are susceptible.

**Symptoms caused by PRSV-W and WMV 2 typically include interveinal chlorosis with a characteristic green/yellow mosaic pattern.** In addition, runners often rise above the canopy in a characteristic snake-like fashion and fruit may be bumpy and display abnormal coloration.

**In Florida a large number of aphid species are known to vector mosaic viruses in watermelon.** It is important to note that many of these species do not reproduce on watermelon, but they may land and probe while searching for their preferred host.

**Typically, large flights of aphids occur during warm dry periods.** This commonly occurs in south Florida during the late fall and in south, central and north-central Florida during the spring.

**Primary inoculum of the virus comes from weed hosts, nearby or abandoned cucurbit fields, and volunteers cucurbits.** Viruses are introduced into the crop by aphids.

**While aphid-transmission is the most important way of transmitting these viruses, spread by mechanical means is possible.** This may be a factor where multiple harvests occur. Seed transmission has not been demonstrated for PRSV-W or WMV 2.



**Insecticidal sprays are not effective in controlling watermelon mosaic viruses.** By the time the aphid has received a lethal dose, the virus has been transmitted. Most studies have demonstrated no control, slight control, or even increased disease when aphids are agitated and pushed to unaffected crops.

**Oil sprays, such as JMS Stylet Oil, may reduce progress of aphid-transmitted diseases.** Multiple sprays must be applied at high pressure (400 psi) using special nozzles.

### **Fusarium crown rot**

**Reports from SW Florida note some increase in Fusarium crown rot following the recent rains.**

**Some fusarium wilt is also being reported on tomatoes around Homestead.**

### **Cucurbit Leaf Crumple Virus**

**Cucurbit Leaf Crumple Virus has been diagnosed on squash in Hendry County.** Beans have also been implicated as a host – see below.

### **New Cucurbit Viruses in Florida**

Over the last couple of years, the number of whitefly-transmitted viruses in some cucurbit fields has increased to almost epidemic proportions. Growers and scientists are now dealing with 3 major viruses in cucurbits, all of which are transmitted by the silverleaf whitefly, *Bemisia tabaci*. The host range is similar (mostly cucurbits) but the symptoms differ.

**Most growers are aware of Squash Vein Yellowing Virus (SqVYV).** Symptoms of this Ipomovirus were first seen in watermelon in Florida in the mid 1980's. It is widely distributed in SW and West Central Florida and has also been reported from southern Indiana. It is probable that this virus is native to Florida. Cucurbits are hosts, especially squash and watermelon, but *Momordica charantia* (balsam-apple) is also a known host and potentially an excellent reservoir of SqVYV. Symptoms of SqVYV in watermelon are death of young plants, death of vines of older plants and necrosis in the fruit, especially just inside the rind. **This virus is the cause of watermelon vine decline (WVD) which Florida watermelon growers have been battling since 2003.** Trials for resistance to SqVYV are being conducted by grafting watermelon germplasm onto gourd rootstock and evaluating the watermelon scions for symptoms. Several potential sources of resistance in wild type watermelons have been identified. Also being evaluated are insecticides and use of silver plastic mulch to manage SWV and thus WVD.

**Cucurbit Leaf Crumple Virus (CuLCrV) is a begomovirus first seen in Florida in 2006 in squash.** At the same time it was found in grafted watermelon transplants received in Georgia from the Western U.S. Known hosts include tobacco and bean. Like the other viruses, SqVYV and CYSDV (see below), CuLCrV is able to infect most cucurbits including watermelons, cucumbers, squash, and pumpkin. Weed hosts are being investigated, but it is possible that balsam apple may be a host as it is in SqVYV. Initial symptoms include a chlorotic mottle pattern on foliage and crumpling of leaves. Plants which are infected early are stunted. In squash, leaves can be thickened and distorted as well as curled and crumpled. Fruit symptoms vary but severe color break was observed in yellow summer squash in 2006.

**Cucurbit Yellow Stunting Disorder Virus (CYSDV) was not seen in Florida until 2007.** It infects melons, cucumbers, gourds and winter and summer squash. Symptoms appear first on older leaves toward the center of the plant, progressing outward along vines toward growing points. Symptoms often mimic water stress. Then a yellowing between the leaf veins appears and the leaves later turn bright yellow. On some, small green spots develop on leaves of certain varieties. Older leaves drop as the plant's internal transport system breaks down. This virus does affect fruit quality by reducing fruit size and sugar content, plus shortening the product's shelf

life. It was first identified in cucumber and melon crops in the Middle East more than 15 years ago and in cucumbers and melons in Spain about 10 years ago. In 2003-04, it was identified in Central America and the Rio Grande Valley, Texas, and 2006 in Arizona and California where it and CuLCrV caused significant yield losses. It is not known if this virus infects wild cucurbits or other uncultivated hosts. As with some other viruses, it may cause symptomless infections in some hosts.

**Management recommendations for these viruses are similar to recommendations for tomatoes and TYLCV.** They include:

- Select the most vigorous and well adapted varieties
- When using transplants, use pathogen-free, whitefly-free transplants. Use caution when buying transplants that were produced in the western U.S.
- Use reflective mulches
- Treat prior to planting with nicotinoids to manage whiteflies in the field
- Apply appropriate insecticides for whitefly control during production in the field
- Don't plant in old established fields. Volunteers, especially cucurbits and balsam apple, can be a significant reservoir for these viruses.
- Post-production sanitation – pull up the plastic and plow fields under. Prevent growth of volunteers or remove all volunteers
- Maintain a host-free period between spring and fall crops

Excerpted from UF/IFAS Vegetarian, December, 2007, for photos, go to

<http://www.hos.ufl.edu/vegetarian/07/December%2007/Triple%20Threat%20for%20Cucurbits.htm>

## News You Can Use

### Considerations for Vegetables as Rotational Crops Following Citrus

In the past decade, the combination of tristeza virus, low fruit prices and canker have made citrus production challenging. The appearance of seemingly “new” available cropland as a result of tree destruction has generated interest among vegetable growers seeking hard-to-find “new land”. In the past 16 months, more than 64,000 acres of citrus have been removed in Florida due to citrus canker. With increasing urbanization, growers are finding it more difficult to find land for rotation crop use or purchase, and are thus watching with interest as these parcels become available.

In the past few months, several issues have come to light in terms of problems associated with planting vegetable crops on land that was in citrus production before canker put an end to that use. The most obvious issue that immediately comes to mind is that of herbicide residue. This is a very valid concern, but not the only thing that should be considered. A potential lessee or buyer needs to take a hard look at the property and ask a number of questions about management of the previous crop in order to make informed decisions.

Some of the more commonly used pre-emergence herbicides in citrus would include Krovar® (bromacil + diuron), Princep® or Princep Caliber 90® (simazine), Solicam® (norflurazon) and Direx® or Karmex® (diuron). Some of these may pose very real concerns if sensitive crops are planted too soon after the last application of herbicide.

General considerations would include the application method, frequency of application, and environmental conditions since the last application, especially temperature and rainfall. Higher temperatures generally mean faster breakdown of herbicides. Increased rainfall means more herbicide may have leached to lower levels beyond the root zone. Keep in mind, however, that the type of irrigation system utilized for the vegetable crop may affect the chances of injury. Drip irrigation pushes water down. Seep irrigation brings water up and with it

any solubilized chemicals that may have leached down to the spodic layer. Also, since one of the main methods of herbicide breakdown in the soil is by microbial action, fumigation prior to planting a vegetable crop will kill more microorganisms, thus leaving fewer to help degrade the herbicide.

Residues that cause crop phytotoxicity also will likely show up in a non-uniform pattern, as most herbicide applications in groves are banded applications; thus, residues will likely be much higher in those banded areas and, even after disking operations, patterns will likely not be uniform across the field. Also, many groves on flatwoods soils are bedded. Disking and other operations to level the soil often involve movement of soil from the bedded areas into the 'ditch' areas. In this case, soil compaction will likely vary and this will affect water movement, particularly in seep irrigation fields, which may in turn influence the damage pattern from soil residual herbicides. Since weeds also vary in their sensitivity to herbicides, the presence of weeds does not insure that herbicide residues are gone.

Research has indicated that some herbicides, principally the triazines (atrazine and simazine), are affected by soil pH. Smaller amounts of these herbicides are adsorbed to the soil at higher pH, so they remain in the soil solution. Herbicides in the soil solution are more available for plant uptake. Chemical and microbial breakdown are often slower in soils of higher pH. Thus, vegetable growers may want to pay attention to the soil pH and avoid over-liming in these situations.

Samples from commercial sites in central Florida where bromacil and diuron had been applied in combination for 7-8 years showed low levels of both at various soil depths to 60 cm. Only a small amount of bromacil was detectable one year after application, but diuron levels were higher.

Another consideration is that when citrus trees are pulled, it is almost impossible to the entire root system, particularly when trees were in poor condition. Tillage operations may actually spread root residue and herbicides that may be present in this residue. Many pre-emergence herbicides sprayed in a citrus grove are not incorporated. While incorporation by disking exposes the herbicide to more soil particles, it also makes it less susceptible to losses by volatilization and photodecomposition.

Testing for herbicide residues usually involves either soil testing or bioassays. The limitation of soil testing is first the expense and secondly, even when you get a result in lbs./acre there are few guidelines that are available to translate this amount of residue into potential crop injury. The only really useful information a test can provide is that there is no soil residue. Bioassays may be done in the field or in pots utilizing soil taken from the field. Use sensitive plants that will show injury quickly. For triazine herbicides, oat or ryegrass plant bioassay is a good choice. Injury symptoms should be apparent within 10-14 days after emergence and will vary depending on the herbicide. If the site of action of the herbicide is known, then a procedure can be developed utilizing this information. The desired rotational crop is also a good bioassay plant to include, and it is best to compare growth of bioassay plants in the suspect soil versus untreated soil of the same type.

One final but very important consideration is the fact that most vegetable crops do not have residue tolerances for many citrus herbicides. If a residue is found in a routine residue inspection analysis, the crop may then be unmarketable. With many citrus herbicides in Florida soils, a waiting time of one to three years or more may be sufficient, depending on the herbicide, application methods, soil type and environmental conditions, particularly temperature and rainfall. Growers must take into consideration the above factors, ask questions and possibly conduct bioassays in order to make an informed decision to minimize damage to vegetable crops.

Excerpted from article by : P. R. Gilreath, Manatee County Extension Service (retired), S. H. Futch, CREC Lake Alfred , [shf@crec.ifas.ufl.edu](mailto:shf@crec.ifas.ufl.edu) , A. J. Whidden, Hillsborough County Extension Service, [AJ1@ufl.edu](mailto:AJ1@ufl.edu) : J. P. Gilreath, GCREC – Wimauma, (retired)

## **Winter of 2007-2008 set to be Second Warmest**

The National Weather Service reports the three winter months of December, January and February will likely be the second warmest winter for Miami since records are available. The average temperature of those three months will likely be around 73.1 degrees. Weather records for Miami extend back to 1895. The only warmer winter was in 1931-1932 when the average temperature of those three months was 73.4 degrees. February 2008 will also likely be in the top three or four warmest Februaries on record at Miami. I

It is interesting that the same statistic does not appear to hold at West Palm Beach, where the average temperature for 2007-2008 is not in the top five although it is warmer than normal and February 2008 is not in the top ten warmest Februaries. Records for West Palm go back to 1888.

## **South Florida Water Management District Happenings**

District-wide rainfall for the past week was 0.37 inches. Dry conditions will move over the District and remain throughout the week. Another cold front is expected to bring another round of rain next Tuesday. The rainfall outlook for the next seven days is near average.

Lake Okeechobee measured 10.13 feet NGVD 29 on Tuesday, which is same the as it was on that day last week and 0.03 feet higher than it was a month ago. The current water level is 1.15 feet lower than it was a year ago and 4.48 feet below its historical average for this time of year. Water clarity is typical for this time of year. In some areas, February water clarity is better than it has been since the 2004 hurricanes.

During the last week, the upper Kissimmee Basin received 0.37 inches of rain, and the lower basin received 0.58 inches. Water levels in the upper basin lakes are at or below their regulation schedules. Lake Kissimmee continued discharging to the Kissimmee River. Releases also are being made from Lake Tohopekaliga and from East Lake Tohopekaliga to allow a more gradual water level recession during the snail kite nesting season. No other releases are being made in the upper basin.

Average salinity changed very little throughout the St. Lucie Estuary this week. Based on the salinity tolerance of oysters, salinity conditions in the estuary are good. Average salinity in the Caloosahatchee Estuary declined over the past week. Conditions in the upper estuary east of Ft. Myers are poor; salinity conditions downstream of Cape Coral are fair.

After the previous week's heavy rainfalls, water depths in most of the water conservation areas rose to levels too deep for wading bird foraging. Water depths range from 0.4 to 2.0 feet at all reporting gauges. Stages in WCA-1 and WCA-3 are about at regulation, while the WCA-2A marsh has risen higher above regulation than it was last week.

## **Pesticide Registration and Actions**

- The Florida Department of Agriculture and Consumer Services (FDACS) has approved the special local needs (SLN) registration of hexythiazox (Savey® 50 DF) ovicide/miticide with a reduced plantback interval (30 days for snap beans or cucurbit vegetables and 60 days for fruiting vegetables) after application to strawberry on plastic mulch. The registration is FL-080001. (PREC Agenda, 2/7/08).
- Based on requests by Nippon Soda and IR-4, the EPA has approved tolerances for the insecticide acetamiprid (Assail®). Tolerances of importance in Florida include blueberry and onion. (Federal Register, 1/16/08).

- Based on a request by IR-4, the EPA has approved tolerances for the herbicide dimethenamid (Outlook®). Tolerances of importance in Florida include radish, turnip, and winter squash. (Federal Register, 12/28/07).
- Based on a request by Valent U.S.A., the EPA has approved tolerances for the fungicide fluopicolide (proposed name Presidio®). This is a member of the acylpicolides, a new chemistry and mode of action with systemic properties. It is active against water molds and downy mildew. Tolerances of importance in Florida include: fruiting vegetables (group 8), cucurbit vegetables (group 9), leafy vegetables except brassica (group 4), and tuberous and corm vegetables (subgroup 1D). (Federal Register, 1/30/08).
- Based on a request by Syngenta, the EPA has approved tolerances for the fungicide mandipropamid (proposed name Revus®). This is a carboxamide - which binds with the wax layer in plant tissue and is stable for a longer period of time. It is active against water molds (except Pythium). Tolerances of importance in Florida include: fruiting vegetables (group 8), cucurbit vegetables (group 9), leafy vegetables except brassica (group 4), head and stem brassicas (subgroup 5A), leafy green brassicas (subgroup 5B), tuberous and corm vegetables (subgroup 1C), okra, onion, and potato. (Federal Register, 1/16/08).
- Based on a request by Syngenta, the EPA has approved tolerances for the fungicide difenoconazole (Dividend®). Tolerances of importance in Florida include: sweet corn, cotton, fruiting vegetables (group 8), and tuberous and corm vegetables (subgroup 1C). (Federal Register, 1/9/08).

### **New Development on the Cucurbit Virus Front**

Dr Scott Adkins, Virologist USDA ARS USHRL cautions that cucurbit growers may need to watch hosts other than cucurbits as potential reservoirs of these viruses.

Scott reports that in mid-December, he and Dr Bill Turechek USDA ARS USHRL collected some green bean plants with virus-like symptoms from a bean field adjacent to a watermelon field with confirmed Squash vein yellowing virus and Cucurbit leaf crumple virus (CuLCrV) infections in Hendry County.

Curious to see if CuLCrV was making its way into beans in Florida, as has been reported in western states, they took and tested bean samples for the virus. Symptoms on beans included leaf deformation/rugosity and mosaic, including a chlorotic mosaic. All bean samples were tested by ELISA for potyviruses and Cucumber mosaic virus. All were negative.

Nucleic acid was subsequently extracted from all samples and used in RT-PCR with begomovirus primers. PCR products were generated from all eleven of our symptomatic bean samples but from none of our non-symptomatic samples. They then cloned and sequenced three of these PCR products and found them to be virtually identical to prior CuLCrV sequences we generated from infected cucurbits.

Thus, it seems that green beans (and potentially other legumes) could become an important reservoir host of CuLCrV in Florida, and something that merits watching. To Dr Adkin's knowledge, this is the first report of CuLCrV infecting any host other than a cucurbit in Florida.



## Southwest Florida

**March 11, 2008**

### **Vegetable Growers Meeting – Factors affecting the Cost of Fertilizers and Strategies for Lowering Fertilizer Costs in Vegetable Production**

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

Contact Gene McAvoy at 863-674-4092 for details

**March 18, 2008**

### **Irrigation Restrictions: Production Implications 4:00pm – 6:00pm.**

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

Contact Gene McAvoy at 863-674-4092 for details

## **Websites**

**Discover the cosmos!** Each day a different image or photograph of our fascinating universe is featured, along with a brief explanation written by a professional astronomer. Check out these awesome photos at <http://antwrp.gsfc.nasa.gov/apod/archivepix.html>

**Cost of Production for Florida Vegetables** – This UF/IFAS web page presents estimated costs of production major vegetable crops produced in one or more of 8 producing areas in Florida. Go to <http://www.agbuscenter.ifas.ufl.edu/cost.php>

## **Quotable Quotes**

All of us tend to put off living. We are all dreaming of some magical rose garden over the horizon - instead of enjoying the roses that are blooming outside our windows today. - Dale Carnegie

Any fool can criticize, condemn, and complain - and most fools do. - Dale Carnegie

Take a chance! All life is a chance. The man who goes furthest is generally the one who is willing to do and dare. - Dale Carnegie

You can make more friends in two months by becoming interested in other people than you can in two years by trying to get other people interested in you. - Dale Carnegie

Be courteous to all, but intimate with few, and let those few be well tried before you give them your confidence. True friendship is a plant of slow growth, and must undergo and withstand the shocks of adversity before it is entitled to the appellation. – George Washington

## **On the Lighter Side**

### **I AM A FORTUNATE MAN**

Few others enjoy the freedom that I sometimes take for granted. On this farm, I answer to only one man-the same man I look at in the mirror at the beginning of every day! I spend my days doing what I love and my nights surrounded by family and friends. I am truly blessed.

I do not own this land anymore than it owns me. I am only its steward. I will use the land wisely, and do my part to improve it. Caring for it until the time has come to pass it on to the next generation. And I will do my part to teach them the same respect that I have learned.

I have learned the nature of business and strive to understand the business of nature. Peaks and valleys compose the natural cycle of farming. I won't get carried away by a peak, or destroyed by a valley. I will move steadily on. Tomorrow, I will return to finish what I didn't accomplish today. I will rest when the work is done.

I have never asked for recognition. Not even a thank you. I am proud of what I do, and that is all I need. I don't farm with the hope that I will get noticed. I farm because it is what I was called to do, and I can't imagine doing anything else.

I must plan and prepare for the future even though I can only imagine what it will bring. I will keep an eye on the future and a foot in the past. To continue to feed a growing world, I must seek out and embrace new, more efficient technologies and business practices. Everyday, more people depend on me and what I grow. I will not only survive: I will succeed. I will hold my head high, because I am a farmer - A VERY FORTUNATE MAN.

### **COWBOY IN CHURCH**

One Sunday morning an old cowboy entered a church just before services were to begin. Although the old man and his clothes were spotlessly clean, he wore jeans, a denim shirt and boots that were very worn and ragged. In his hand he carried a worn out old hat and an equally worn out Bible.

The church he entered was in a very upscale and exclusive part of the city. It was the largest and most beautiful church the old cowboy had ever seen. The people of the congregation were all dressed with expensive clothes and accessories.

As the cowboy took a seat, the others moved away from him. No one greeted, spoke to, or welcomed him. They were all appalled at his appearance and did not attempt to hide it.

As the old cowboy was leaving the church, the preacher approached him and asked the cowboy to do him a favor. 'Before you come back in here again, have a talk with God and ask him what he thinks would be appropriate attire for worship.'

The old cowboy assured the preacher he would. The next Sunday, he showed back up for the services wearing the same ragged jeans, shirt, boots, and hat. Once again he was completely shunned and ignored. The preacher approached the man and said, 'I thought I asked you to speak to God before you came back to our church.'

'I did,' replied the old cowboy.

'If you spoke to God, what did he tell you the proper attire should be for worshipping in here?' asked the preacher.



'Well, sir, God told me that He didn't have a clue what I should wear. He said He'd never been in this church before.'

**Note: The hotline is now available by subscribing to the South Florida Vegetables LISTSERV. Get the latest pest and disease updates and news in a timely fashion -the e-version is automatically sent to you as soon as it is published.**

**If you want to switch over just drop me an email and help save a tree.**

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

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