



Berry/Vegetable Times

April 2007



2007 Calendar of Events

April 24 Florida Strawberry Alternatives to Methyl Bromide Chemigation Workshop. FSGA office, 13138 L. Gallagher Rd., Dover. 8:30-3:00. Lunch provided. CEUs applied for.

April 27 & 28 South Central Florida Small Farm and Alternative Enterprise Workshop. Sarasota County. For more information, contact Robert Kluson, 941-861-9900 or go to <http://sarasota.extension.ufl.edu/2007smallfarm.htm>.

April 30 Value Added Producer Grant Workshop. Hillsborough Extension Conference Center, 5339 CR 579, Seffner. 2:00-4:00. For more information, call Alicia at 813-744-5519, ext. 134.

May 8 Pesticide License Testing. Hillsborough County Extension Office, Seffner. 9 am. For more information call Mary Beth Henry, 813-744-5519, ext 103.

June 3-5 Florida State Horticultural Society meeting at PGA National Resort & Spa in Palm Beach Gardens, Fl. <http://www.fshs.org/default.htm>.

Cucurbit Leaf Crumple Virus- A New Virus to Florida

Edited by Alicia Whidden
Taken from EDIS document ENY-447-
“Whitefly-Transmitted Cucurbit Leaf Crumple Virus in Florida”
S. E. Webb, F. Akad, T. Nyoike, O. E. Liburd, and J. E. Polston

Last fall the first findings of the Cucurbit leaf crumple virus was found in north central and northeast Florida on squash. This virus is a begomovirus and has been reported from the western part of the US and northern Mexico.

Cucurbit leaf crumple virus infects most cucurbits- cucumber, muskmelon, squash, pumpkin, and watermelon, and has been reported to infect bean. The silverleaf whitefly and the sweetpotato whitefly both transmit the virus. The adult must feed for a minimum of 30 minutes on an infected plant to pick up the virus and then can transmit the virus after a delay of 6-8 hours. Once the whitefly is able to transmit the

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Squash Silverleaf Disorder

Alicia Whidden and David J. Schuster

Just about every squash grower in Florida has had problems with silverleaf at some time. It is caused by *Bemisia argentifolii*, which is commonly called the silverleaf whitefly for the disorder it causes in squash. Silverleaf was first noted in Florida around 1987. It is a developmental disorder caused by the feeding of immature whiteflies and not a disease that can be spread from one plant to another. Silverleaf is a progressive silvering on the top surface of the leaf due to the molt in



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(813) 744-5519 SC 541-5772
Alicia Whidden, Editor
Gulf Coast Research & Education Center
14625 County Road 672, Wimauma, FL 33598
(813) 634-0000 SC514-6890
Christine Cooley, Layout and Design
Craig K. Chandler, Co-Editor Jack Rechcigl, Center Director
<http://grec.ifas.ufl.edu>

(Continued from page 1 - Crumple Virus Article)

virus it can infect plants for days.

Symptoms are leaves that are thickened, distorted, curled and crumpled. Leaves of yellow squash are rounded on the edges. Yellow straightneck squash fruit are streaked with green but zucchini fruit do not show obvious symptoms.

This spring if you have any plants that look suspicious for this virus please give me a call so samples can be taken to determine if this virus is present in our part of the state. The full article can be obtained from the EDIS website at : <http://edis.ifas.ufl.edu/IN716>. If you are not able to print a copy contact me at 813-744-5519, ext. 134.



CREDITS: S. E. Webb, University of Florida



CREDITS: Chad Hutchinson, University of Florida

(Continued from page 1—Whitefly article)

separation of the epidermis of the leaf from the lower cell layers, thus forming an air space within the palisade cell layer. The leaf still has the same amount of chlorophyll and normal chloroplast development. What we are seeing is the reflection of light by the large airspaces in the leaf. Fruit of both yellow and zucchini squash can be light in color to bleached-out. Fruit quality is lower and fruit are not marketable. Experiments have shown size and weight of the squash do not change – color is what is affected.

The silverleaf whitefly, *Bemisia argentifolii*, was known as the B biotype of the sweetpotato whitefly, *Bemisia tabaci* until 1994 when it was declared to be a new species. Sweetpotato whitefly, *B. tabaci*, is not able to cause silverleaf. Both types are pests in warm climates of over 500 species of plants in 74 plant families. Many vegetable and ornamental crops that we grow in Florida are hosts. Tomatoes, peppers, squash, cucumber, beans, eggplant, watermelon and cabbage are all economically impacted by silverleaf whitefly. Other disorders caused by silverleaf whitefly feeding are lettuce leaf yellowing and stem blanching, pepper streak, tomato irregular ripening, and chlorosis of new foliage in many plants. The whitefly is a vector of several serious plant geminiviruses such as tomato yellow leaf curl virus, tomato mottle virus, and bean golden mosaic virus. Also, silverleaf whitefly vectors another plant virus that is implicated in watermelon vine decline. A new begomovirus called Cucurbit leaf crumple virus also has shown up in squash in north Florida and is vectored by whitefly.

Overview of the whitefly lifecycle:

Whitefly females live from 10 to 24 days and can lay between about 70 and 300 eggs. The eggs are on a short stalk and hatch in six to seven days. The first nymphal instar is called a crawler and can move short distances.

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Crawlers molt two to three days to the second nymphal instar. The second, third and fourth nymphal instars are immobile. The second and third instars last two to three days each. The latter part of the fourth nymphal instar is also called the red-eyed nymphal or pupal stage. Adult whiteflies will emerge in five to six days from this stage. Adults can fly to another part of the same plant or to another plant or field. Whitefly adults may move several kilometers downwind and invade new fields.



Credit: Phil Stansly, Immokalee REC

As stated earlier, silvering of the leaves results from feeding by silverleaf whitefly nymphs. Feeding by adult silverleaf whiteflies on a leaf does not cause leaves to turn silver. It is only when the immature or nymphal stages of silverleaf whitefly are feeding on the plant that the disorder occurs, so the adult whiteflies must be on the plant long enough to lay eggs. Silvering occurs on newly developing leaves. Experiments have shown that silvering symptoms begin to show up following feeding by the second through fourth instar. Most likely it is caused by a component in the digestive system or sheath saliva in the nymphs that causes the squash leaves to develop silvering. Also, experiments have demonstrated that silvering can occur with as few as 3 nymphs per leaf. It is not known if the trigger for leaf silvering is the component in the whitefly saliva or if silvering is the

plant's defense response to the silverleaf whitefly nymph feeding.



Adult silverleaf whitefly

Controlling Silverleaf Whitefly:

Cultural controls are indispensable in managing the silverleaf whitefly. Growers should avoid planting squash next to crops known to be infested with the whitefly. UV-reflective plastic mulch repels whitefly adults and helps plants avoid whitefly infestations for the first few weeks until the reflectivity of the mulch is reduced.

For chemical control, growers can use a soil drench application of Admire Pro (and other generic imidacloprid products), Platinum or Venom. If foliar applications of Venom are used, they should be made early to avoid toxicity to bees. As nymphs appear, growers can alternate Oberon, Knack and Courier. The PHI for these is 7 days, which is a problem when harvest starts. To control whitefly adults pyrethroids, endosulfan/Thiodan and organophosphate such as malathion can be alternated. Combinations of pyrethroids and either endosulfan or malathion provide greater control than the products alone. Products such as soaps, oils and Prev-Am can be added to the rotation. These products work on adults and nymphs, but thorough coverage is essential for maximum effectiveness. Remember to read the label carefully for every product used.

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Check for a product's toxicity to bees and use carefully. If a product is toxic to bees, use early before flowers have formed, as bees are crucial for a successful squash crop.

Strawberries in Brazil

Craig Chandler and Natalia Peres

In November 2006, Natalia and Renato Lauretti and I had the pleasure of visiting strawberry farms in the states of Paraná and Rio Grande do Sul in southern Brazil. Our hosts for this trip were Heitor Pagnan and Valdir Monegat, the Brazilian representatives for Viansa strawberry nursery of Argentina.



Fig. 1 Two row beds covered with plastic tunnels.

Brazil is similar in size to the U.S., but has only about half as many people. It is the largest producer of strawberries in South America. Currently in Brazil, strawberries are produced on about 13,000 acres (5300 ha). Production fields are located between 20 and 32 degrees south latitude (which would be comparable, in the northern hemisphere, to the area between Guantanamo Bay, Cuba and Savannah, Georgia). Given this range of latitudes, and the fact that within the growing areas there is land suitable for strawberry

production at various elevations, up to several thousand feet (~ 1500 meters) above sea level, Brazil can produce strawberry fruit 12 months a year.

The areas we visited have a subtropical climate, but as in central Florida, temperatures can occasionally fall below 32° F (0° C) during the winter. Annual rainfall ranges from 59 to 79 inches (150 to 200 cm), with no distinct dry season.

The standard production system in southern Brazil is the two-row annual plasticulture system (Fig. 1). Clear plastic tunnels are often used over the beds to advance earliness of production and protect flowers and fruit from rain and frost.

Strawberry growers traditionally produced their own transplants, starting originally from foundation stock they had obtained from foreign or domestic sources. But now it is becoming more common for fruit growers to buy certified transplants from licensed nurseries in Argentina and Chile.

EMBRAPA (Brazil's equivalent to the USDA) has done some work to develop new cultivars, but Brazilian growers are still heavily dependent on cultivars from the University of California, and to a lesser extent the University of Florida.

Short day cultivars, such as Camarosa, Oso Grande, Sweet Charlie, and Dover, predominate in the northern or lower elevation (i.e., warmer) growing areas, whereas day neutral cultivars, primarily Aromas, predominate in the southern or higher elevation (i.e., cooler) production areas. The short day cultivars tend to produce higher late fall, winter, and early spring yields than 'Aromas', but 'Aromas' will continue to produce marketable fruit through the summer and into the fall.

Also, 'Aromas' can be maintained in a productive state for two years. Mature plantings of 'Aromas' are renovated in the spring by removing old leaves and crowns from the plants (Fig. 1). And sometimes a

small amount of a dark, soil-like material is sprinkled around the base of each plant to aid in new crown development.

The use of soil fumigant has been banned in Brazil since the late 1990s, so Brazilian strawberry growers have had to depend on crop rotation, clean planting stock, and good cultural practices to control soil-borne pests and pathogens. Even without use of soil fumigants, average yields are about 27,000 pounds per acre.

‘Earlibrite’ and ‘Festival’ (Fig. 2) are currently being trialed in all the major strawberry growing areas of Brazil, and are showing promise compared to some of the older short day cultivars.



Fig. 2. ‘Festival’ grown in a tabletop system.



Dr. Natalia Peres proudly displaying the Brazilian flag.

Highlights on Vegetable Diagnostics and Spring/Summer Outlook

Natalia Peres, Jim Mertely, and Clyde Fraisse

Our Diagnostic Clinic has received very few samples in February and March. Hopefully, that is an indication that there have not been many problems in the field and that the vegetable season is off to a good start. In February, we received only 3 tomato samples; two of them were diagnosed as TYLCV and other was identified as late blight, caused by *Phytophthora infestans*. Only two vegetable samples were received during the entire month of March; one identified as TYLCV and the other as late blight. This low disease pressure reflects the dry weather during February and March which was not conducive to diseases. The weather predictions for April and early May indicate that disease problems should remain low except perhaps for the diseases transmitted by vectors such as TYLCV which is transmitted by whiteflies.

The El Niño of moderate strength last fall failed to bring the predicted excess rainfall and cooler temperatures to Florida this winter. North Florida was the only area that received near-normal rainfall whereas South Florida only saw 50% to 75% of normal winter precipitation. The entire state also had winter temperatures ranging from 1 to 3°F above normal. Water deficits in Florida range from severe to critical and become worse as you go south. Often following an El Niño winter, May and June are 10% - 30% drier than normal. However, the early summer El Niño effects are less consistent than those during winter months. In addition, El Niño ended early this year and should not have any effect in early summer. In the near future (April and early May), we can expect rather dry weather patterns, as is typical at this time of year. Normal rainfall for April averages a little over 2 inches in Florida. For later in the summer (June and July), near-normal rainfall and temperatures are forecasted. With El Niño

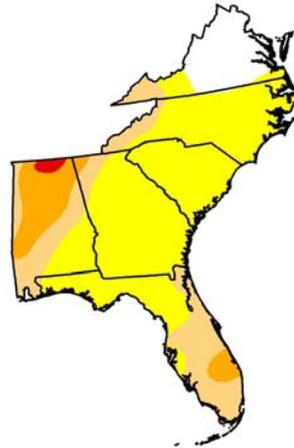
no longer affecting our climate, there is no force in the Pacific Ocean that should either enhance nor delay the onset of the convective rainy season. Even if La Niña were to develop in the next couple of months, it would have little to no impact on summer climate patterns of the Southeastern US.

U.S. Drought Monitor

Southeast

March 27, 2007
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	10.7	89.3	30.1	9.7	0.7	0.0
Last Week (03/20/2007 map)	20.2	79.8	26.0	2.2	0.0	0.0
3 Months Ago (01/02/2007 map)	52.2	47.8	10.2	1.5	0.0	0.0
Start of Calendar Year (01/02/2007 map)	52.2	47.8	10.2	1.5	0.0	0.0
Start of Water Year (10/03/2006 map)	47.0	53.0	33.2	0.0	0.0	0.0
One Year Ago (03/28/2006 map)	44.5	55.5	20.4	2.2	0.0	0.0



Intensity:
■ D0 Abnormally Dry ■ D3 Drought - Extreme
■ D1 Drought - Moderate ■ D4 Drought - Exceptional
■ D2 Drought - Severe

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

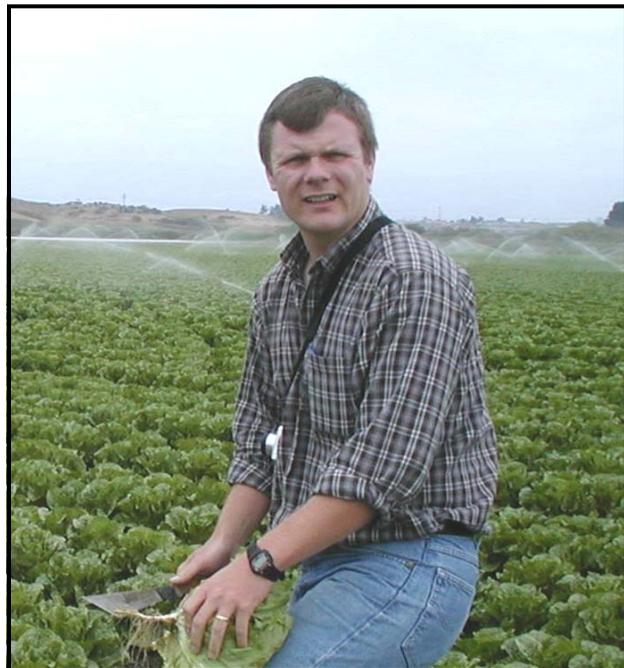
<http://drought.unl.edu/dm>



Released Thursday, March 29, 2007
 Author: Brad Rippey, U.S. Department of Agriculture

Gulf Coast REC Welcomes New Plant Pathologist—Gary Vallad

Dr. Gary Vallad will be joining the GCREC faculty early summer 2007 as the new vegetable plant pathologist. Currently working on diseases affecting lettuce in California, Dr. Vallad will be leaving his position at UC Davis to tackle diseases common to Florida vegetable crops. With experience in both basic and applied research, Dr. Vallad’s expertise is well suited for this research/extension appointment. One of his research interests included understanding the processes underlying plant-microbe interactions and how these interactions influence plant health. GCREC is pleased to have Dr. Vallad become part of our growing faculty.



Florida Strawberry Alternatives to Methyl Bromide Chemigation Workshop

FSGA Office, 13138 Lewis Gallagher Rd, Dover, FL 33527

April 24, 2007

Moderator: Alicia Whidden - UF/IFAS Hillsborough County Cooperative Extension Service.

PROGRAM

8:30 – 9:00 am	Sign-In for CEU's, Coffee and Doughnuts
9:00 – 9:10 am	Shawn Crocker - Exec. Director Florida Strawberry Growers Assoc. - <i>Welcome</i>
9:10 - 10:00 am	J.W. Noling , Extension Specialist, UF, IFAS, CREC <i>Methyl bromide Critical Use Exemptions for 2007 and EPA Reregistration of Soil Fumigants</i>
10:00 - 10:30 am	J.W. Noling, Extension Specialist, UF, IFAS, CREC <i>Effect of Irrigation Volume on wetting patterns in Florida Strawberry Soils: Implications for Soilborne Pest and Disease Control.</i>
10:30 -11:00 am	Mike Herrington -AMVAC Chemical Corporation <i>Chemigational Uses of Vapam and K-Pam</i>
11:00 – 11:30 am	Jerry Nance - Dow AgroSciences <i>Chemigation with InLine and the Science of Chemical Injection</i>
11:30 - 12:00 pm	Discussion, Question & Answer Period
12:00—1:00 pm	Lunch
1:00 – 2:00 pm	Shawn Crocker - Exec. Director Florida Strawberry Growers Assoc. <i>Industry Updates and Information Needs</i>
2:00 – 3:00 pm	FSGA Research Farm -Field Demonstrations 1. Auto Farm and Auto Steering Demo. 2. Earthtecsolutions.com - Weather and Soil Monitoring Demo.

3 Private Applicators CEU's approved



Mark your calendar for the next Florida Ag Expo—December 6-7, 2007

For information call Gulf Coast REC 813-634-0000 or

Florida Grower Magazine's Marc Stockwell 407-539-6552.

Visit the Expo website <http://flagexpo.ifas.ufl.edu> for updates.

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