



Berry/Vegetable Times

February 2011



Calendar of Events

Feb. 8 Pesticide Testing at Hillsborough Co. Extension office. 9:00 am. For more information contact Susan Haddock at 813-744-5519 ext. 103.

Feb. 11 Florida Strawberry Expo at GCREC. See article.

Feb. 8-11 North American Strawberry Growers Association and North American Strawberry Symposium Joint Meeting. Tampa. For more information go to www.nasga.org.

March 1 Pesticide Testing at Hillsborough Co. Extension office. 9:00 am. For more information contact Susan Haddock at 813-744-5519 ext. 103.

Note this is a different day- this is the first Tuesday of the month instead of the second!

Strawberry Field Day is now the Florida Strawberry Expo

The Univ. of Florida/IFAS Gulf Coast Research and Education Center will be hosting the Florida Strawberry Expo on Friday, February 11th and there is still time to register online at <http://2011strawberryfieldday.eventbrite.com> or by emailing ccooley@ufl.edu.

This year's Florida Strawberry Expo will be part of the North American Strawberry Growers Association conference being held in Tampa this year, so there will be a large crowd in attendance. The event will start at 11:30 a.m. with registration and lunch. The program begins promptly at 12 noon and will include research updates on new varieties, major strawberry diseases, pest control, methyl bromide and fertilizer management. For more details see Page 8 and 9 of this newsletter.

From Your Agent - New CORE CEU Webpage

Growers now have another place they can go to get CORE CEUs. The Hillsborough Co. Ornamental Production agent, Shawn Steed, has set up a webpage for Pesticide CORE articles and question sets for growers. This website is courtesy of industry sponsorship and the University of Florida/IFAS and Hillsborough Co. Extension. All you have to do is go to the website and click on an article to read. Then click on the button to take a short quiz about the article. A passing score is 70%. The test will be graded and you will be e-mailed a CEU credit. Thanks to Audie Ham and Diamond R Fertilizer for sponsoring the first article. There is no charge for the website. The first article is "Harmful Effects of Pesticides and Emergency Response" by Alicia Whidden and Shawn Steed. The website is <http://hillsborough.extension.ufl.edu/Ag/AgOrnProd/OnlinePesticideCEUs.html>



**Mark your calendar for the
2011 Florida Ag Expo
Wednesday, November 9, 2011**

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Insecticides to Control Adult Sap Beetles in Strawberries

James F. Price and Curtis A. Nagle

Following are results of research funded by FSGA to identify effective chemical sprays for adult sap beetles in strawberries that would complement favorable sanitation practices and larval sap beetle control offered by Rimon[®] (novaluron).

Materials and Methods

A laboratory colony of *Haptoncus luteolus* sap beetles that could provide 1,500 adult insects at any one time was established from field populations and maintained on apple.

Laboratory experiments were conducted during 2010 to discover the most effective adult sap beetle insecticides among likely candidate insecticides applied with and without insect excitant insecticide, Natural Pyrethrin Concentrate (pyrethrins formulated with piperonyl butoxide):

Assail[®] 30 SG (acetamiprid)

Presently available for strawberries
Brigade[®] WSB (bifenthrin)

Presently available for strawberries
Coragen[®] (RYNAXYPYR[®] or chlorantraniliprole)

Presently available for strawberries
DPX-HGW86 10 SE (cyantraniliprole)

Not presently available for strawberries

Insects were exposed to treated field conditions for 2, 5, and 24 hours in order to examine insecticides' effects on adults moving from the treated plastic mulch surface and into a ripe berry quickly (2 hours) to slowly (contacting the treated plastic mulch surface while feeding under a ripe berry for 5 or 24 hours).

Conditions of adults (active, moribund, or dead) exposed to insecticide treated mulch surfaces were evaluated 0, 24, and 48 hours after the end of the above insecticidal exposures.

Results

There was very little difference in results when evaluated 0, 24, or 48 hours after the end of insecticidal exposure. Therefore only results determined 48 hours after the end of insecticidal exposure are discussed.

There was no additional effect on percent of active (thus potentially damaging) adults, imparted to any of the insecticides by the addition of insect excitant insecticide, Natural Pyrethrin Concentrate[®].

There was never any significant effect on adult sap beetles from exposures to Coragen[®].

- ◆ After 2 or 5 hours of exposure to DPX-HGW86 there was no significant effect on percent of active (thus potentially damaging) adults as compared to the untreated check.
- ◆ After 2 hours of exposure to Assail[®] about 4% of the adults were active as compared to about 87% active in the untreated checks.
- ◆ After 2 hours of exposure to Brigade[®] about 33% of the adults were active as compared to about 87% active in the untreated checks. There were significantly greater active adults among those exposed to Brigade[®] for 2 hours as compared to those exposed to Assail[®] for 2 hours.
- ◆ After 5 hours of exposure to Assail[®] or to Brigade[®] about 11% (Assail[®]) or 10% (Brigade[®]) of the adults were active as compared to about 95% active in the untreated checks.
- ◆ After 24 hours of exposure to Assail[®] or to Brigade[®] about 2% of the adults were active as compared to about 86% active in the untreated checks.

- ◆ After 24 hours of exposure to DPX-HGW86 about 45% of the adults were active as compared to 86% active in the untreated checks.

Impact of Results on Strawberry Production

There is no need to pursue the use of Natural Pyrethrin Concentrate[®], Coragen[®], or DPX-HGW86 as agents for control of sap beetle adults.

Brigade[®] and Assail[®] are the best agents known at this time, for control of adult sap beetles. Of those two, *Assail[®] has an advantage to disable adult sap beetles after a shorter period of exposure to treated mulch surfaces. This favorable characteristic could be useful on the occasions when adults reach strawberry plant beds and quickly protect themselves inside ripe fruit.*

Programs of sap beetle management should include the continued removal of all ripe berries from the field for sale or disposal, the use of the larvacide Rimon[®] and the adulticides Assail[®] and Brigade[®]. Pyrethroids such as Brigade[®] can contribute to increased presence of the problematic western flower thrips and probably should be withheld in favor of Assail[®] until the last few weeks of harvest. At that time it is unlikely that applications of a pyrethroid could sufficiently promote western flower thrips to inflict losses.

Rimon[®] can be applied four times (if at 9 oz/A), Assail[®] six times (if at 6 oz/A), and Brigade[®] five times (if at 16 oz/A) during the cropping season.

Please remember...

The use of trade names in this publication is solely for the purpose of providing specific information. It is not a guarantee or warranty of the products named and does not signify that they are approved to the exclusion of others of suitable composition. Use pesticides safely. Read and follow directions on the manufacturer's label.

The End of Endosulfan (Thiodan[®], Thionex[®], etc.) is Near

James F. Price

Endosulfan (Thiodan[®], Thionex[®], etc.) has been very important to Florida's strawberry industry to manage cyclamen mites, but its availability is soon to be past.

EPA has announced the voluntary cancellation of endosulfan (Thiodan[®], Thionex[®], etc.) registrations. The cancellations will occur in waves, the first took place December 31, 2010. On that date manufacturers ceased to produce endosulfan for affected crops. Then on May 31, 2011 distributors will no longer be able to sell the products for use on affected crops and on July 31, 2012 growers will be unable to use the products on affected crops.

Affected vegetable crops of importance in Florida that are involved in the first wave of cancellations include Brussels sprouts, carrots, cauliflower, celery, collard greens, egg plant, kale, kohlrabi, mustard greens, annual **strawberry**, sweet potato, and turnip.

The second wave will prohibit the sale of endosulfan products for affected crops after May 31, 2013 and the use of those after July 31, 2013. Affected vegetable crops of importance in Florida that are involved in the second wave of cancellations include cabbage, cucumbers, lettuce, summer melons (cantaloupe, honeydew, and watermelon), and summer squash.

This means that endosulfan is no longer being produced for Florida strawberries and that by the end of May 2011 (about 4 months from now) distributors will not be able to sell any remaining endosulfan for strawberry use. None can be applied to Florida's strawberries after 31 July, 2012.

Cold La Niña surprises meteorologists and growers

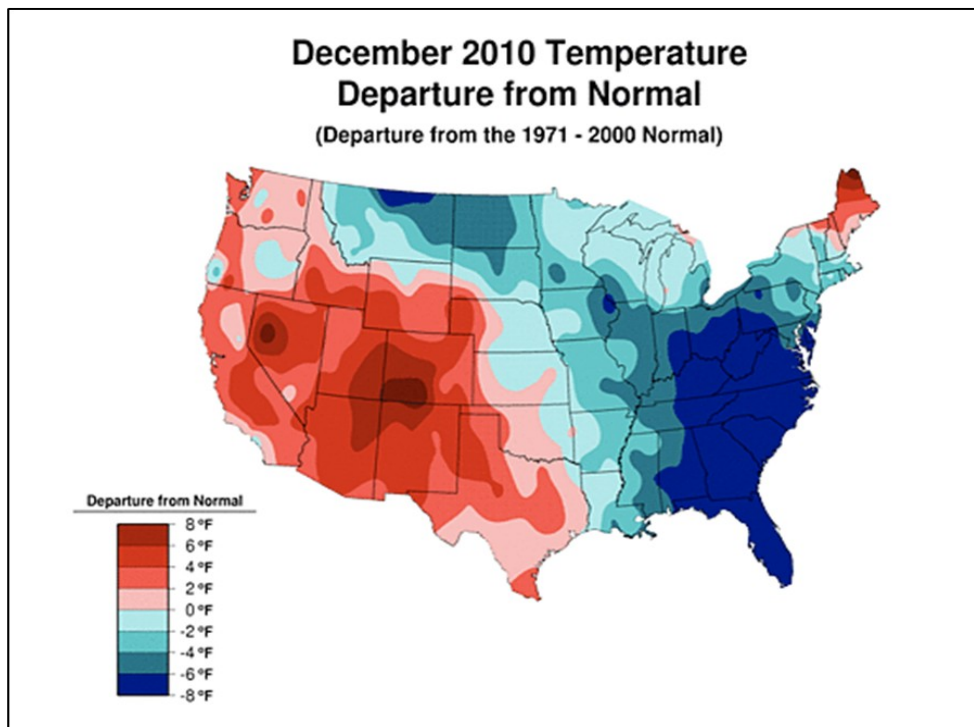
Clyde Fraisse, Agricultural & Biological Engineering Department, and Natalia Peres, GCREC

According to the NOAA National Climatic Data Center (NCDC), 2010 was the 3rd coldest December on record in the Southeast U.S. and the coldest on record in Florida and Georgia. The statewide temperature for December in Florida was more than 9°F (5°C) below the 20th century average. In addition, several cities including Miami, West Palm Beach, Ft Lauderdale, Daytona, Orlando, Tampa, and Tallahassee had their coldest December on record.

A federal disaster declaration has been issued for two-thirds of Florida's counties due to losses caused by frosts and freezes that occurred between Nov. 5 and Dec. 17, including Citrus, Hillsborough, and Polk counties. Farmers have eight months to apply for loans. Revenue assistance applications will be accepted later this year when the 2010 farm data are available.

The pattern that brought us the cold weather last winter in early January and February is the same one affecting us this year, the North Atlantic Oscillation (NAO). The NAO is a measure of surface pressure differences between the North Atlantic Ocean over Iceland and the tropical Atlantic near the Azores. The NAO has been consistently in what scientists call its "negative" or "cold" phase, causing Arctic air to surge farther south into the central and eastern USA. Circulation patterns over the higher latitudes of the northern hemisphere are also tracked with another index known as the Arctic Oscillation (AO), which has also been strongly and consistently negative. When the NAO index is strongly negative like we have seen in the last two months, it can overwhelm the effects of the more well known El Niño/La Niña climate patterns. For this season, we had expected above average temps due to La Niña.

(Continued on Page 5)



December temperature departure from normal - NOAA National Climatic Data Center. December 2010 was the third coldest December on record in the Southeast U.S. and the coldest on record in Florida and Georgia.

You may be asking why no one predicted this. Unfortunately, NAO is more an indicator of the jet stream pattern over the eastern U.S. and the North Atlantic, not a direct physical driver like El Niño/La Niña and temperatures of the Pacific Ocean. Unlike El Niño and La Niña events, which can be predicted 6 months in advance, the NAO changes are not yet predictable on seasonal time scales. This causes problems with seasonal forecasts in general and in particular for the winter-season temperature forecast. Medium-range weather prediction models are forecasting a break from this negative NOA pattern for much of the next month, which would allow the strong La Niña to re-establish its influence over the weather patterns in the Southeast. Researchers are actively working on models that may eventually better predict the NAO shifts.

What does this mean regarding disease pressure this season? Well, in our newsletter article last August, we wrote that the dry weather during La Niña years generally decreases fungal and bacterial diseases. While this is still true, because of the colder weather that we have been experiencing, we ended up turning on the overhead irrigation for freeze protection many times this season which increases pathogen spread and specially the development of angular leaf spot. Thus, we thought that this would be a good time to review what we know about this disease.



Angular leaf spot, a bacterial disease of strawberry

Jim Mertely and Natalia Peres

Angular leaf spot (ALS) is again causing problems for the Florida strawberry industry. Disease epidemics this season may be related to the amount of water the crop has received, both from overhead irrigation for frost protection and from natural rainfall. In addition, weather conditions last summer may have been favorable for disease spread in some strawberry nurseries. ALS is caused by *Xanthomonas fragariae*, a bacterium that spots and blights the leaves (photos 1 & 2). The fruit cap (calyx) may also be infected (photo 3). During severe outbreaks, spotted caps eventually turn brown, leading to rejection of fruit shipments.

ALS was first discovered in Minnesota in 1960, and has since been spread to many areas where strawberries are grown. ALS commonly occurs in strawberry nurseries, but does not occur every year in every nursery. Working on her Ph.D. research at the University of Florida, Dr. Pam Roberts detected ALS on transplants purchased from Canadian nurseries as early as 1993. This pattern continues today, since the disease is at least as difficult to control in the nursery as it is in the production field. ALS may begin with the purchase of infected mother plants by the nursery operator. In addition, plant debris in the field and plants kept overwinter at the nursery may harbor the pathogen and serve to infect newly planted spring crops. Subsequent disease development depends on weather conditions as daughter plants multiply over the summer.

X. fragariae enters the leaf through tiny pores (stomata) that are most abundant on the lower surface of the leaf. Infection is most likely to occur during the day when the stomata are open, and when water from rain, dew, fog, or overhead irrigation is present on the leaf surface. Frequent use of overhead

irrigation for freeze protection helps to increase ALS by keeping the leaf surface wet for long periods and by forcing water and bacterial cells into the stomata. Spray oils, wetting agents, and spreader stickers also help the pathogen enter the leaf and increase the frequency of infection.



Photo 1. ALS leaf spotting



Photo 2. ALS leaf blighting

ALS can be suppressed by some cultural practices. An ideal control measure would be to plant only disease-free transplants. Since this is often not possible, growers should try to minimize overhead irrigation, both for establishment and frost protection. *X. fragariae* is also spread by pickers. Therefore, harvesting operations should be avoided as much as possible when the plants are wet. When ALS is a threat, the

use of surfactant-type spray adjuvants should be avoided.

A number of copper products are labeled for ALS control on strawberry. These products are formulated with copper hydroxide, copper oxychloride, basic copper sulfate, cuprous oxide, and various other copper compounds. All of these active ingredients will suppress ALS, but it is important to apply the correct amount. Too little will not adequately control the disease, whereas too much will slow plant growth, decrease yield, and turn older leaves red. Phytotoxicity symptoms may occur when higher label rates are applied at short intervals (photo 4). Actual plant damage is related to the “metallic copper equivalent” that the product supplies. For example, if your product contains 30% metallic copper and the lowest recommended rate of 1 lb/A is used, you would actually be applying 0.3 lb/A of metallic copper. This is a reasonable rate which should not cause problems. However, if the highest recommended rate is 2 lb/A, the metallic copper equivalent (0.60 lb/A) may be excessive and may cause phytotoxicity. ***In general, most products are safe to use between 0.2 to 0.4 lb/A of metallic copper.*** In the absence of experience with a particular copper product, the lowest label rate should be tried first.

Most seasons, it is difficult to justify the use of copper products on Florida strawberries. During a normal season when disease pressure is low to moderate, the use of copper sprays did not significantly improve yield in our experiments. However, when environmental conditions are consistently favorable for infection and spread (such as this season), copper products can increase yield and decrease the possibility of fruit rejection.

When should coppers be applied? Chemical control programs are most effective when started early, before the disease has reached epidemic levels. Unfortunately, predicting a severe ALS season in advance is problematic. This season, we are making

experimental applications before anticipated rains and freezes and comparing their effectiveness to standard calendar sprays.

Actigard is a plant resistance activator that Florida growers have used to control bacterial spot disease on tomatoes. Experimental trials with ‘Strawberry Festival’ at GCREC have shown that low rates of Actigard suppress ALS as well as copper. It is not currently approved for use on strawberry, but the registration materials are being submitted by Syngenta and IR4. Hopefully, Actigard may be available for use next season.



Photo 3. ALS spotting of fruit cap (calyx)



Photo 4. Symptoms of copper phytotoxicity

Jim Sumler is Retiring!

Many strawberry growers know that Dr. Craig Chandler’s right-hand man was Jim Sumler. Now that Dr. Chandler has retired, Jim will be following suit and leaving GCREC after 27 years of service. Unassuming and often behind the scenes, Jim has been instrumental in the strawberry breeding program working on such varieties as ‘Festival’ and ‘Radiance’. His dedication and exacting work has helped bring the UF/GCREC strawberry breeding program much success throughout the world. Breeding strawberries can be a tedious and challenging job, which requires patience and vast concentration. Jim’s fortitude and appreciation of agriculture will always be remembered here at GCREC.

Jim worked diligently with countless volunteers over the years who came to the center on Mondays and Thursdays to harvest fruit - and Jim never missed either of those days during the week so he could be available to help them, most of whom were senior citizens. Now that he has his retirement years to look forward to, all the faculty and staff at GCREC hope that Jim will remember how much we appreciated all his hard work.

Thanks Jim and best of luck from all of us at GCREC.



Register today
[http://2011.strawberryyieldday.
eventbrite.com](http://2011.strawberryyieldday.eventbrite.com)

This year's Florida Strawberry Expo will be part of the North American Strawberry Growers Association conference in conjunction with the North American Strawberry Symposium. Attendance will be very strong with growers from all over the country as well as scientists from around the world.



From I-75, take Exit #246 1 mile east to US 301. Turn right and travel south 1.5 miles to C.R. 672. Turn left and travel east 6 miles to GCREC.

GCREC Mission Statement

- To develop and disseminate new scientific knowledge and technology regarding commercial agriculture that will assist Florida's producers to be competitive in the world economy;
- To maintain and enhance the quality and sustainability of our natural resources and agriculture;
- To excel in the teaching, research and extension functions of the University of Florida/IFAS.



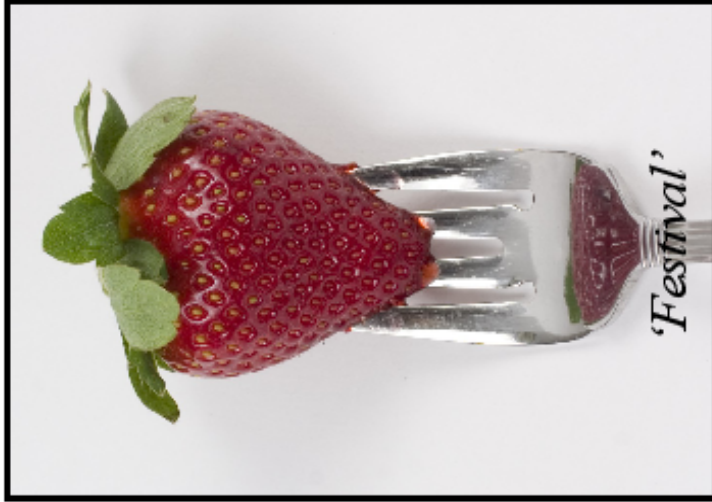
In partnership with:



Register today

<http://2011.strawberryyieldday.eventbrite.com>
Questions? Call Christine Cooley (813) 634-0000
ccooley@ufl.edu

Pesticide CEU's
and CCA Credits
will be available.



UF/IFAS Gulf Coast
Research & Education Center's
Florida Strawberry Expo

Register today
<http://2011.strawberryyieldday.eventbrite.com>

Friday February 11, 2011
11:30 a.m. to 4:30 p.m.

14625 CR 672, Wimauma, FL 33598
(813) 634-0000

<http://gcrec.ifas.ufl.edu>

Educational Sessions and Field Tours - Moderator: Crystal Snodgrass, Manatee Co. Ext.

- 11:30 a.m. Registration
- 12:00 p.m. Lunch
- 12:15 p.m. Opening Remarks and Welcome
Dr. Jack Reckigt
Center Director
- 12:20 p.m. Extension Remarks
Dr. Joan Dusky
Associate Dean
- 12:25 p.m. Breeding for the Florida strawberry industry
Dr. Vance Whitaker
- 12:40 p.m. Control strategies for major strawberry diseases
Dr. Natalia Peres
- 12:55 p.m. Recent research to control sap beetles, spotted wing drosophila and spider mites in strawberries
Dr. James Price
- 1:10 p.m. Strawberry herbicide research update
Dr. Andrew MacRae
- 1:40 p.m. Sting nematode and methyl bromide alternatives in a newly regulated environment
Dr. Joe Noling
- Current issues on protected agriculture, water and fertilizer management for strawberries
Dr. Biedanski Santos



- 1:55 p.m. Field Tours - 5 stations of 20 minutes each (10 minutes between stops)
 - Group 1
 - Nematology - MacRae
 - Pathology - Peres
 - Entomology - Price
 - Horticulture - Santos
 - Breeding - Whitaker
 - Group 2
 - Horticulture - Santos
 - Breeding - Whitaker
 - Pathology - Peres
 - Entomology - Price
 - Weed Science - MacRae
 - Nematology - Noling
 - Group 3
 - Pathology - Peres
 - Entomology - Price
 - Weed Science - MacRae
 - Nematology - Noling
 - Breeding - Whitaker
 - Horticulture - Santos

Thanks to the following companies for sponsoring lunch for the 2011 Florida Strawberry Expo

