



SOLUTIONS

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2015 Revised WPS is to be in effect in February 2018

Alicia Whidden, Hillsborough Extension Service

Last year, the 2015 revised version of the Worker Protection Standards (WPS) was put on hold by the Federal government. Now it is coming back again. Florida expects to adopt it as rule by late February so growers need to start training based on the 2015 version of WPS. At first the inspectors will be helping you to comply and get up to speed with the new revisions instead of being in a regulatory mode but they plan to start enforcing the new rule as soon as it becomes rule.

There are still several areas that EPA is making decisions about:

The Application Exclusion Zone (AEZ)

Minimum age 18 years of age

Definition of designated representative and that this causes a 2 year record keeping requirement.

There is a fourth concern in Florida and that is the change in the definition of enclosed structure and the restrictions on what can be sprayed in an enclosed structure. Hoop house and high tunnels would now be considered an enclosed structure. One of the restrictions of concern is that fumigants cannot be used in an enclosed structure which could limit what growers are doing in these other types of structures.

One big change is that all workers will be trained annually and records are to be kept for 2 years. There is no grace period like before- workers are to be trained before they go into the field and could possibly come into contact with any pesticide residue. For a list of the changes between the "old" WPS and the 2015 revised version this website has the information. https://www.epa.gov/sites/production/files/2017-01/documents/comparison_chart_wps_011117_cwpb.pdf

Also training content for workers and handlers is to be expanded and was to start in 2018 but it has not been released yet and it could be we will have to wait till 2020 for that. This brings up the issue of the training material you are using now. On a conference call with EPA we were told the materials used for training needed to have EPA approval number for you to be in compliance with what you are using to do the trainings. If you are using old materials that were produced many years ago they may not have an EPA approval number and you may be out of compliance using them. At this time I do not have a list of approved materials but will be trying to get a list so check back with me if you need to be sure your training materials are approved.

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This is a link to the new safety poster that needs to be displayed. <http://pesticideresources.org/wps/cp.html> You can print the posters yourself or purchase them.

Watch out for more information on the 4 areas that decisions are being made on and the new training content information.

Broad mite in strawberry

Justin Renkema, Assistant Professor, Small Fruit Entomology, GCREC-UF

Introduction: Since first reports in Florida strawberry in winter 2016, broad mite (*Polyphagotarsonemus latus*) has continued to damage strawberries, with an increasing number of plant samples infested with broad mite brought into the GCREC diagnostic clinic each season.

Appearance: Broad mites are extremely small and difficult to see even with a good hand lens. Adults, nymphs and larvae are oval and whitish to golden in color, and in general resemble the cyclamen mite (*Phytonemus pallidus*), a better-known pest of strawberry. Eggs of broad mite are covered in whitish spots and are firmly attached to young leaves. On the other hand, cyclamen mite eggs are cylindrical and smooth, and loosely attached to young leaves. The presence and appearance of small, “spotted” eggs are diagnostic of a broad mite infested plant.

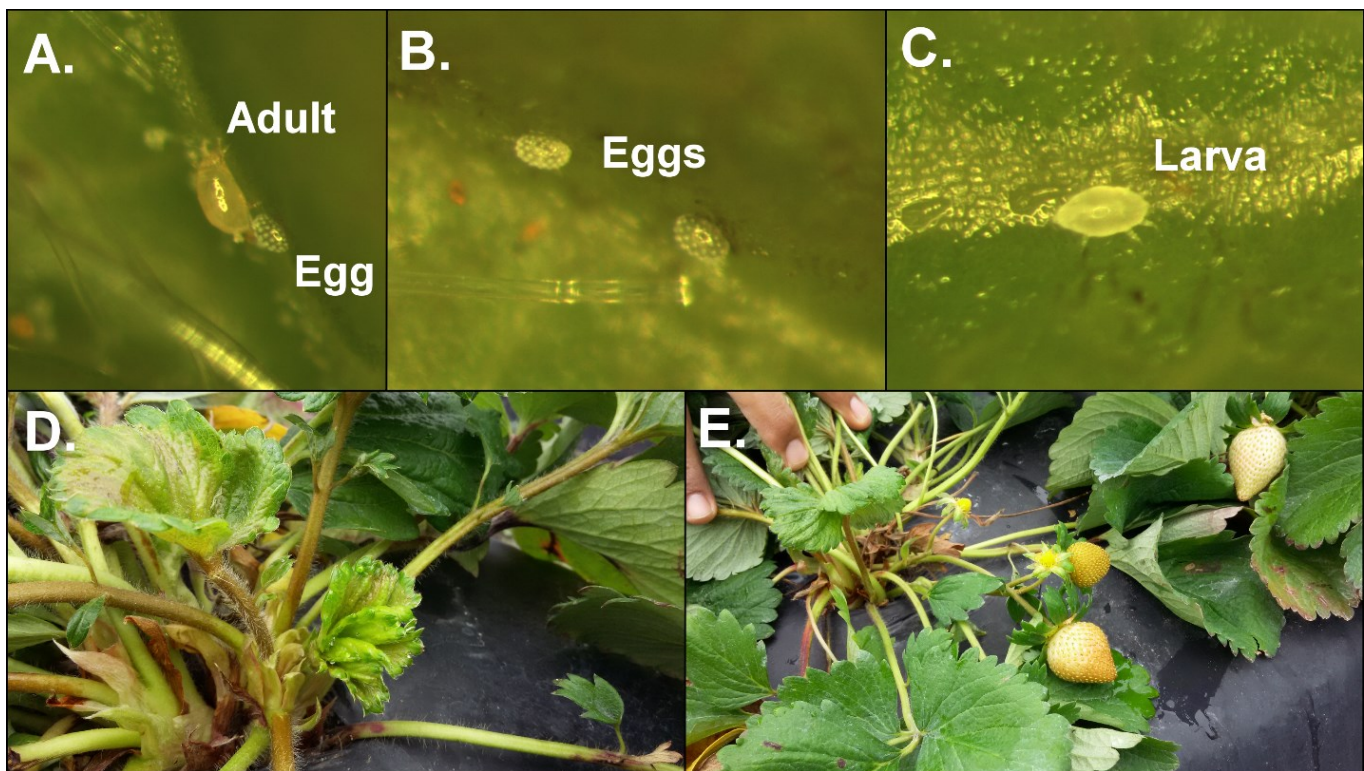


Photo 1. A. – Broad mite adult and egg; B – Broad mite eggs; C – Broad mite larva; D – Broad mite damaged strawberry leaves; E – Broad mite damaged berries.

Damage: Broad mites occur worldwide and can damage a wide variety of food and ornamental crops. Damage in strawberry is most apparent on young expanded or unexpanded leaves. Leaf tissue becomes yellow and brown, with necrotic/black flecks or markings where mites have fed. Leaves become curled and may appear shriveled, blistered, or rigid. Fruit is also affected, becoming bronzed or russeted and unmarketable. Damage symptoms are very similar to those caused by cyclamen mite and chilli thrips;

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Photo 2. Small, bunched strawberry plants damaged by broad mites.

therefore, identification of the pest is important before taking control actions.

Scouting: In strawberry, plants will appear stunted, sometimes only slightly, and will have darkened petioles and leaves. When a plant with suspected broad mite damage is located, new, unexpanded leaves should be removed, unfolded, and the upper surfaces examined under magnification for broad mites and broad mite eggs. To date, only 1-2% of plants have been reported to have broad mite damage in infested fields. It is not yet clear how rapidly broad mites colonize new plants and how quickly damage can spread in a field. However, it is important to scout frequently and recognize early symptoms of broad mite damage.

Management: Broad mites can be controlled with miticides. The following products may be used in strawberry. Always follow label instructions.

Product	active ingredient	IRAC Code	PHI	Effect on predatory mite – <i>Phytoseiulus persimilis</i>	Comments
Agri-Mek SC or generics	abamectin	Group 6	3 d	Highly toxic	Agri-Mek is labelled for spider mites and other mites in strawberry, but is labelled for broad mite in vegetables. May provide some control of thrips.
Oberon 2 SC	spiromesifen	Group 23	3 d	Moderately toxic	Oberon has supplemental label for broad mites in Florida strawberry. It is also labelled for whiteflies and spider mites.
Portal XLO	fenpyroximate	Group 21A	1 d	Moderately to highly toxic	Portal is labelled for broad mite and other pests in strawberry.

For more information:

<http://edis.ifas.ufl.edu/in340>

<http://edis.ifas.ufl.edu/in1053>

Questions or suspected broad mite issues, please contact:

Justin Renkema | justin.renkema@ufl.edu | 813-419-6585

Please remember...

The use of any 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.

We can now grow artichokes in Florida's subtropical climate!

Shinsuke Agehara, Assistant Professor, GCREC Plant Physiology

You may not be familiar with artichokes, but a lot of us know artichokes in our favorite appetizer – spinach and artichoke dip. This delicious appetizer is not all artichokes are good for. In fact, artichokes are a superfood in so many ways. They can be grilled, steamed, tossed in pasta, used as a pizza topping, and more. They are rich in cancer-fighting antioxidants, including anthocyanins, quercetin, cynarin, and many other phenolic and flavonoid compounds. It has been reported that the antioxidant content of artichokes ranks fourth out of more than 1000 food products, with more antioxidants than widely known antioxidant-rich foods, such as dark chocolate, blueberries, and red wine.

Currently, California grows nearly 100 percent of the nation's artichokes. At GCREC, we have been studying the potential of artichokes as a viable alternative crop in Florida since 2015. The main reason why we are interested in this crop is its high profit potential. One artichoke plant can produce several buds, which retail price ranges from \$1 to \$5 per bud. The production value is higher than many major vegetable crops in Florida, including watermelon, squash, cantaloupe, and snap beans (Table 1).

Table 1. Grower prices and production values of artichoke and major specialty crops in Florida.

Crop	State	Grower price (\$/lb)	Production value (\$/acre)
Strawberry	Florida	2.05	42,025
Pepper, Bell	Florida	0.55	16,255
Bueberry	Florida	3.35	15,109
Tomato	Florida	0.53	13,650
Artichoke	California	0.88	11,853
Cabbage	Florida	0.18	6,256
Watermelon	Florida	0.16	5,555
Cucumber	Florida	0.30	5,393
Squash	Florida	0.45	5,187
Cantaloupe	Florida	0.19	5,157
Sweet Corn	Florida	0.32	4,640
Snap Beans	Florida	0.72	3,960
Potato	Florida	0.16	3,784

Source: USDA-NASS (2014-2016).

The main limiting factor for growing artichokes in Florida is the warm, subtropical climate. Artichokes are adapted to temperate climates with cool winters (EDIS publication HS1289: Production Guidelines for Globe Artichoke in Florida, <http://edis.ifas.ufl.edu/hs1289>). To induce bud formation, they generally require 250 to 500 cumulative hours below 45°F. In Balm, chill hours from 2008 to 2017 ranged from 132 to 612 hours, averaging 245 hours (Table 2, Page 5).

Our first approach is to select early cultivars with low chilling requirements. We are currently testing 6 cultivars (selected cultivars are shown in Fig. 1, Page 5), and we found that 'Imperial Star' has significantly lower chilling requirements than other cultivars.

However, natural chill hours in our area are not sufficient even for 'Imperial Star'. Our second approach is, therefore, to overcome this genetic limitation using a natural plant hormone called gibberellic acid. This plant hormone can induce the expression of the same genes activated by cold weather to induce flowering in many plant species. For artichokes, plants should be treated with gibberellic acid (ProGibb LV Plus, Valent) at early growth stages (Table 3, Page 5). Our results show that the yield of 'Imperial Star'

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artichokes can increase more than three-fold, and the first harvest date can be advanced by up to 2 weeks.

Using ‘Imperial Star’ and gibberellic acid, we have achieved as high as 6,000 pounds of artichokes per acre. Optimization of the artificial bud induction method by gibberellic acid has high potential to further increase artichoke yields in Florida. We are currently conducting field trials at GCREC to test different application rates and times of gibberellic acid, as well as cultivars, planting dates, planting densities, and nitrogen fertilization rates.

Our goal is to achieve 13,500 pounds of artichokes per acre, which is California’s average commercial yield. Artichokes could provide new market opportunities for growers to cultivate a niche, profitable crop and for consumers to enjoy locally grown fresh taste that are loaded with nutrients and antioxidants.

We are planning to have a field day of artichoke trials at GCREC this March or April. If you are interested, please email me at sagehara@ufl.edu or Alicia Whidden at awhidden@ufl.edu. We will send out more details shortly!

Table 2. Chill hours in Balm and Dover from 2008 to 2017.

Year	Balm	Dover
2008	249	372
2009	269	339
2010	612	667
2011	188	243
2012	192	223
2013	220	310
2014	292	327
2015	132	165
2016	157	211
2017	138	324
Average	245	318

Chill hours = 32 to 45°F.

Table 3.

Application #	Timing	Application rate	Spray volume
1 st	6-8 leaf stage (5-6 weeks after transplanting)	5-10 fl oz/acre*	100 GPA
2 nd	2 weeks after 1 st application	5-10 fl oz/acre	100 GPA
3 rd	2 weeks after 2 nd application	5-10 fl oz/acre	100 GPA

*5-10 fl oz product/acre = 10-20 grams of active ingredient (gibberellic acid) per acre.

GPA = gallons per acre.

‘Imperial Star’

- Green
- Low chill
- Up to 100% budding with GA

‘Opal’

- Red
- Low chill
- 60-80% budding with GA

‘Green Globe Improved’

- Green
- Moderate chill
- 40-60% budding with GA

‘Madrigal’

- Green
- High chill
- 0% budding with GA



Fig. 1. Selected artichoke cultivars tested in a field trial at GCREC. GA = gibberellic acid. The percent bud formation data will be updated after the completion of this season’s field trial.

New Blueberry Research Coordinator now Housed at GCREC

My name is Doug Phillips, and I am the new University of Florida blueberry research coordinator, based out of the Gulf Coast Research and Education Center in Balm. I recently graduated with a master's degree in horticultural science from UF in the blueberry breeding program, working under Patricio Munoz. Prior to that I received a bachelor's degree in horticultural science, with a minor in soil science, from North Carolina State University. This is a second career for me, following a career in accounting which provided me with a strong business background.

My thesis research for the master's degree involved both breeding and pathology, focusing on susceptibility to a stem lesion form of anthracnose in southern highbush blueberry, so I have knowledge and practical experience working with blueberry disease, as well as breeding for specific traits.

My role in this new position will focus on blueberry production and issues in Florida, especially in the central and south-central parts of the state. I will act as a liaison between commercial blueberry growers and UF blueberry researchers (breeding, pathology, entomology, horticulture, weed science, etc.) to communicate new developments to the grower community, and grower issues, concerns and successes to the UF researchers. This will help to facilitate successful blueberry production in the state, and focus UF research efforts where they will provide the most benefit.

I look forward to meeting and working with blueberry growers throughout the area in the coming weeks. If you have any questions or concerns I can assist with, please contact me (dal64372@ufl.edu, 813-300-7220).

Managing 'Florida Beauty'

Vance Whitaker, Strawberry Breeding, UF/IFAS GCREC

'Florida Beauty' is a new strawberry variety being grown for the first time at commercial scale in central Florida during the 2017-18 season. This variety is day-neutral, a unique flowering habit compared to all other Florida varieties which are short-day flowering. Day-neutrality combined with low-chill Florida genetics results in very early bloom and yield for this variety. 'Florida Beauty' is also notable for its excellent fruit shape, rain tolerance and flavor.

This article is a summary of lessons I have learned about how to manage this variety. These recommendations arise from the results of trials conducted at UF/IFAS GCREC, trials at FSGA and from many observations and conversations with growers during the 2017-18 season to date.

Disease Resistance and Susceptibility

Understanding the disease susceptibilities of a variety can be crucial to managing diseases effectively. Below is a table comparing 'Florida Beauty' to 'Florida Radiance' and Sweet Sensation® 'Florida127' in terms of disease resistance and susceptibility.

Disease	Radiance	Sensation®	Beauty
Anthracnose (<i>C. acutatum</i>)	R	R	S
Angular leaf spot	MS	MS	MS
Botrytis fruit rot	MS	S	S
Charcoal rot	MS	MR	MS
Coll. crown rot (<i>C. gloeo.</i>)	MS	MR	MS
Phytophthora root rot	S	S	MR
Powdery mildew	MR	S	S

S = susceptible; MS = moderately susceptible; MR = moderately resistant; R = resistant

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Note that 'Florida Beauty' is susceptible to anthracnose diseases caused by *Colletotrichum acutatum* but is resistant to *Phytophthora cactorum*. This is the opposite of the other varieties. Therefore, early season crown necrosis and plant decline are most likely to be a result of anthracnose. Thus, according to GCREC Plant Pathologist Dr. Peres, Ridomil application is not likely to be helpful. Instead, regular sprays of Captan beginning immediately after plant establishment are most likely to be helpful. Pre-plant dips in Captan can be effective if an anthracnose infection in nursery plants is known or suspected.

Note also the susceptibility of 'Florida Beauty' to powdery mildew. This disease must be managed proactively from the very beginning of the season.

Other Management Recommendations

Aside from disease management, there are other crucial management considerations for 'Florida Beauty' that I strongly encourage you to consider:

1. Growers are encouraged to experiment with planting dates between Sept 25 and Oct 5. Planting dates earlier than Sept 20 have resulted in fruit size that is too small, as well as more elongated fruit. Later planting is discouraged because the variety has a small and compact plant and may not grow large enough to support the desired amount of yield.
2. Growers that have had the most success with 'Florida Beauty' have adjusted for the day-neutrality of this variety by trimming bloom twice, first a few days after establishment and a second time when leaves are trimmed. Trimming bloom increases fruit size later in the season, which is a critical consideration for this variety.
3. In general, plug transplants of this variety have not performed as well as bare-root transplants during the 2017-18 season. This is likely due to insufficient vigor of plug plants due to the small, compact nature of 'Florida Beauty' plants. Thus, plug plantings have sometimes resulted in lower yields and smaller fruit sizes. Given the higher cost of plug transplants, bare-root transplants are likely to be more profitable.
4. Depending on the planting date, closer in-row spacing may be possible for 'Florida Beauty' compared to other varieties due to its compact plant habit. In-row spacing of 14" should be easily accomplished, possibly closer for plantings on light soils or those planted after October 1. Higher plant densities will usually increase early yields.

Summary

As with any new variety, we are learning quite a bit about 'Florida Beauty' this season. Because of its day-neutral flowering habit and disease resistance package that differs significantly from other varieties, success with 'Florida Beauty' will be highly dependent on management practices. Growers with questions are encouraged to contact me directly at 813-419-6608.