

## Whitefly Alert- New Biotype to Watch Out for in 2005

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We are in the middle of poinsettia production and we are receiving several calls from growers who are having trouble controlling whiteflies this season. If you are a grower having trouble controlling whiteflies with applications of the IGR pyriproxyfen (Distance), reduced susceptibility to the IGR buprofezin (Talus) and a reduced susceptibility to the neonicotinoids insecticides imidacloprid (Marathon or Merit), and thiamethoxam (Flagship), then you might be dealing with “Q” biotype of whitefly.



Back in 1986 a “B” biotype of silver leaf whitefly, *Bemisia tabaci*, caused major losses in vegetable crops and ornamental plantings. It was quickly recognized that this biotype B was causing damage different than any ever attributed to whiteflies. This damage caused many plants to show signs of being infested because the plants turned yellow, white or silver depending on the specific host plant. Because various squash species turned silver when infested with the B-biotype (also known as *Bemisia argentifolii* Bellows & Perring) this biotype was given the common name, silverleaf whitefly (SLWF). New pesticides were introduced into the market place and the “B” biotype became more manageable. Since the neonectionoids were introduced into the marketplace it has become the preferred class of chemistry for control of most biotypes of whitefly for the last 19 years.. The newly discovered “Q” biotype has reduced susceptibility to neonicotinoids and some of the new insect growth regulators (IGRs).

In March 2005, Dr. Tim Dennehy (University of Arizona) reported the detection of the Q-biotype of *Bemisia tabaci*. This detection came after testing whiteflies collected from poinsettias in a retail outlet and were collected in December of 2004 as part of a pesticide resistance monitoring program in Arizona. Drs. Judy Brown, Tim Dennehy (University of Arizona) and Frank Byrne (University of California) independently verified the whitefly as being the 'Q-biotype'. This is the first time this particular strain has been found in the United States. The Q-biotype is suspected to have originated from the Mediterranean region and has been associated with whitefly control problems. Since the original report the “Q” biotype has been reported in several states. Since whitefly have such a wide host range and can have detrimental impact on many ornamentals crops and vegetable crops it is important to identify which biotype is present in order to select appropriate control materials.

A national, USDA-coordinated survey is currently underway to estimate how widely the Q biotype is distributed. If growers are having trouble controlling whiteflies there is a list of some of the suggested chemicals that can be used against the “Q” biotype. To confirm whether it is the Q biotype it must be tested by an independent lab. **We currently do not have a testing lab at the University of Maryland. Adult whiteflies are sent to an outside lab for testing. There is a charge for the test (approx \$100 to test three adult whiteflies). It took about 3 weeks after submitting samples to receive results from a lab.**

## **How do they do the tests:**

We asked Judith Brown to explain the testing procedure and here is what she wrote back:

*“I use a method developed in my lab that relies on sequencing of the mitochondria cytochrome oxidase I gene; it varies sufficiently between biotypes and when compared among a set of reference sequences for known populations or biotypes, permits accurate identification.*

*Growers should contact one of these labs prior to shipment of samples, to make sure correct sampling and shipping procedures are followed. THE RESULTS WILL BE PROPRIETARY TO YOUR BUSINESS AND WILL REMAIN CONFIDENTIAL, IF YOU SO REQUEST.*

*Currently, this pest is not rated as a pest with quarantine status which means there are no legal requirements for these labs to report their findings to government agencies. This will help reassure most growers worried about being spot-lighted.”*

Here is a list of labs that can test for the “Q” biotype:

### **LABORATORIES AUTHORIZED TO TEST TO DETERMINE Q-BIOTYPE FROM B-BIOTYPE**

There are a number of specifics concerning how one collects a sample and preserves it for evaluation. For these specifics, scheduling and pricing information you **MUST** contact the individual laboratories.

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Usually can run sample in 7 -10 days.

Tentative:  
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## **For Poinsettia Growers**

**We have a complete management of whitefly using biological control, use of microscreening and chemical control options in the new publication EB 363, Total Plant Management for Greenhouse Production. Call our office at 301-596-9413 for a copy.**

It is important to recognize that scouting is a critical component of whitefly management regardless of biotype, and that without a rigorous scouting program, it is difficult to take full advantage of the "Best Guess" pesticide program that is presented below. For example, several pesticides (ex. IGR insecticides that have strictly contact activity) listed in the program are much less effective once pest populations are established, and/or will take longer to work. In addition, once poinsettia begins showing color, pesticide options are very limited due to labeling restrictions. Therefore, it is vital for poinsettia growers to be proactive with respect to whitefly management, and to initiate control programs when pest populations are first detected. **Bract coloration will be starting very soon so the options for spraying will soon be very limited.** Monitor whitefly population by trapping winged adults on yellow sticky cards. Inspection for immature stages will have to be by flipping over foliage and looking for immature stages of whiteflies. Strategically place yellow sticky cards throughout the greenhouse, especially near doors and among new plants to provide information about the presence and movement of whiteflies. Detect whiteflies on plants by randomly selecting 10 plants per 1,000 square feet of greenhouse space and thoroughly examining these plants on the underside of leaves, using a 10X hand lens, for the presence of whitefly adults, nymphs and eggs.

At this point in time, this "Q" biotype has not been tested for susceptibility to the other materials registered for whitefly control in ornamentals. It must be noted, that this information is generated using laboratory bioassays and that no field efficacy work has been conducted to determine how these data relate to controlling the Q-biotype in the field, at least in the United States. This biotype is known to have resistance to pyriproxyfen (Horowitz *et al.* 2003), buprofezin and reduced susceptibility to the neonicotinoid insecticides imidacloprid and acetamiprid in other regions of the world.

**At this point this is a list of "best guess" at materials (develop by University of Florida- Dr. Lance Osborne) that will hopefully control this biotype of whitefly. Pesticides are being test at the University of Florida to determine which ones will most effective control the Q biotype.**

- a. Foliar Spray Rotations as needed. Resistance is a very real concern and every effort should be made to rotate chemicals each time an application is made and don't rely on any one product or chemical class for whitefly control.
  1. Insecticidal soap – spray must be directed to undersides of foliage. Do not make more than 3 applications or can cause phytotoxic burn. Do not apply once bracts show color on poinsettias.

2. *Beauveria bassiana* (requires repeated applications at 3 – 5 days intervals.)  
Use a high volume sprayer for applications. This fungus controls immature stages of whiteflies.
3. Horticultural oil – must use high volume sprayer to apply and direct spray to the bottom of foliage, making contact with the sessile stages of whiteflies
4. Potassium bicarbonate – must use high volume sprayer and direct spray to the bottom of the foliage
5. Spiromesifen Judo – newly registered material for whitefly. Translaminar (carried to bottom of foliage when applied as foliar application.)
6. Abamectin (Avid) Can be used up to the bract coloration stage for poinsettias.
7. Azadiractin (Azatin, AzaDirect, Ornazin) – works on immature stages of whiteflies. Direct sprays to the undersides of foliage.
8. Endosulfan (Thiodan) this has a 24 hr REI. Direct sprays to the undersides of foliage. Use before bract coloration.
9. Acetamiprid (Tristar)
10. Dinotefuran (Safari)
11. Clothianidin (Celero)
12. Thiamethoxam (Flagship)
13. Imidacloprid (Marathon)
14. Flonicamid (Aria) – blocks stylet of whiteflies.
15. Kinoprene (Enstar II) Works on the immature stages of whiteflies
16. Novaluron (Pedestal) – insect growth regulator
17. Potassium bicarbonate
18. Pymetrozine (Endeavor) – acts as a stylet blocking material.
19. Pyridaben (Sanmite) – direct spray to undersides of foliage.
20. Pyrethroid (Tame, Mavrik, Talstar) + Acephate (Orthene) – apply before bract formation on poinsettia
21. Pyrethroid (Tame, Mavrik, Talstar) + Azadiractin (Azatin, AzaDirect, Ornazin)

Sources cited:

*Total Crop Management for Greenhouse Production*, Bulletin 353, University of Maryland Cooperative Extension

[www.mrec.ifas.ufl.edu/LSO/benmisia/bemisiam.htm](http://www.mrec.ifas.ufl.edu/LSO/benmisia/bemisiam.htm)