

Q-Biotype



Update

Integrated pest management is the key to keeping this new pest under control.

By Scott Ludwig
(swludwig@ag.tamu.edu)
and Peter Ellsworth

There is a new version of an old pest that is now appearing in ornamental production facilities. In 2005, a new biotype of the sweetpotato whitefly, *Bemisia tabaci*, was identified in the United States by a team of scientists at the University of California and University of Arizona. A population of whiteflies was collected from poinsettias at a retail nursery and identified as being Q-biotype. This population was found to have had reduced susceptibility to pyriproxyfen, acetamiprid, buprofezin, imidacloprid, and thiamethoxam relative to U.S. populations of our existing biotype of the sweetpotato whitefly (B-biotype, which is also sometimes referred to as the silverleaf whitefly).

Biotype Background

You are probably asking, “What is a biotype, and why should I care?” A biotype is a race of a species that is genetically different and generally reproductively isolated from the rest of the species. Unfortunately, Q-biotype whiteflies are not distinguishable from the B-biotypes by visual examination. The only way

the two can be distinguished is by analytical techniques in a laboratory.

As of March 2006, the Q-biotype whitefly had been found in 21 states. Most finds were on poinsettia, but established populations were also found on other ornamental greenhouse crops and greenhouse-grown spearmint. At the present time, we are not certain how successful the Q-biotype will establish in field situations in the United States. It cannot be assumed that all Q-biotype whiteflies will behave the same way. Some laboratory studies have shown that under no insecticide pressure, the B-biotype out-competed the Q-biotype. However, once certain insecticides were used, the Q-biotype out-competed the B-biotype. These and other studies have suggested that the Q-biotype is not as “fit” as the B-biotype, except where there is a very resistant Q-biotype population and a heavy reliance on and frequent use of certain insecticides.

Management Methods

Since the B-biotype whitefly is still the dominant whitefly in ornamental production, whiteflies should be managed as if they are the B-biotype. To avoid resistance, it is important to properly select, apply, and rotate insecticides. The

many and varied trade names used for insecticides can sometimes lead to a common error: rotating between compounds in the same chemical class or with the same mode of action. In the worst case scenario, the impact of this error is ineffective control and even an increase in selection for resistance in the insect. The best way to determine the product’s mode of action is to follow the Insecticide Resistance Action Committee’s numbering system (see www.irac-online.org). Remember to review the labels for restrictions and local guidelines on how often a material can be applied and to develop your integrated plan according to other pests that you need to manage.

Scouting is essential to the success of any pest management program. Good sanitation is key. By starting clean, you will oftentimes be able to stay clean. Remove weeds from in and around the production areas, “pet plants,” and anything else that might serve as a refuge for insects or diseases.

Insecticide Evaluations

At present, the Q-biotype is a manageable pest on floricultural crops if best management practices are employed. Researchers in California, New York, and Georgia evalu-

ated insecticides against Q-biotype whiteflies in 2005.

In the California trials, several products worked very well against the Q-biotype. Foliar applications of Avid, Avid plus Talstar, Sanmite, and Judo provided greater than 90% control. Some of the neonictinoids also provided excellent control. Flagship (drench), Safari (drench and foliar), Celero (drench), Marathon II (drench), and TriStar all provided good to excellent control. Results from an additional trial showed that while Distance will provide 100% control of B-biotypes, only 60% to 70% control was achieved against the Q-biotype.

In Georgia, similar results were observed for immature control with some insecticides. Avid, Judo, Safari (drench), and Tristar all provided excellent control of the Q-biotype. Botanigard and Naturalis, two formulations of the insect pathogen *Beauveria bassiana*, also provided excellent control of immature white-

flies. Trials conducted in New York found that Safari and Judo provided excellent control of the Q-biotype.

Many products provide greater than 70% control, and should be used in a rotation program to assist in the prevention of insecticide resistance. A "Management Program for Whiteflies on Propagated Ornamentals with an Emphasis on the Q-biotype" and related information can be found at www.mrec.ifas.ufl.edu/LSO/bemisia/bemisia.htm.

There are populations of Q-biotype around the world with varying levels of susceptibility to a wide range of chemistries. While some populations demonstrate very severe resistances, others are susceptible, for example, to pyriproxyfen, imidacloprid, or many of the other compounds used to control whiteflies. There is no such thing as a "typical" Q-biotype whitefly in the United States. Until we know more, we cannot make a blanket statement regarding what products uniformly will and

will not provide effective control. What we do know, however, is that some of the most severe resistances ever detected in whiteflies have been found in populations of this biotype.

Take-Home Message

Take measures now to prevent the establishment of this new biotype in your production areas. Review all aspects of your whitefly IPM program. Use the proper monitoring techniques, application methods, choice of insecticides, etc., and rotate modes of action. If you notice that whitefly populations are not responding to properly applied insecticide treatments, be ready to modify your management program. Insects that do not respond may be B-biotype whiteflies that are developing resistance, or they may be Q-biotype. ■

Scott Ludwig is an Extension program specialist-IPM in the department of entomology, Texas Cooperative Extension, in Overton, TX. Peter Ellsworth is a specialist and state IPM coordinator in the department of entomology, University of Arizona, Maricopa Agricultural Center in Maricopa, AZ.

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