GROWERTALKS

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Whiteflies & Biotyping

Dr. Jill Calabro

As with most years, there will most likely be issues with whiteflies this spring and into the fall during poinsettia season. Some reports out of the Southeast have indicated increasing populations already. Biotype Q is still a big problem in greenhouse production and is considered a major threat to cotton, tomato and pepper production. In fact, tomato transplants are considered to be of greatest concern in movement of Q from controlled environment production to outdoor establishment.

Along with Q, Biotype B whiteflies are increasingly reported resistant to insecticides. Here's a quick refresher from Dr. Lance Osborne of the University of Florida and Dr. Cindy McKenzie, USDA-ARS, sent through AmericanHort:

Knowing the biotype

Three main whiteflies exist in both greenhouse and nursery production—sweet potato whitefly (*Bemisia tabaci*), greenhouse whitefly (*Trialeurodes vaporarorium*) and banded winged whitefly (*T. abutiloneus*). The three types share characteristics, such as:

- They feed on plant sap or phloem
- They lay eggs on the undersides of leaves
- Their life cycle can be as quick as three weeks if conditions are favorable
- They have no dormant stage and cannot tolerate freezing temperatures
- They have a very wide host range

Though they share some commonalities, some key differences exist. Sweet potato whitefly is the one that raises most concerns because it has distinct, biologically different biotypes, biotype B (also called MEAM1) and biotype Q (also called MED).

Biotype B can be controlled using regular methods and even some biologicals. Fortunately, B is the most common biotype in the U.S. Biotype Q, on the other hand, is resistant to many classes of insecticides, such as some insect growth regulators, pyrethroids and some neonicotinoids.

Pictured: Sweet potato whitefly (Bemisia tabaci) adults on the leaf underside of a gerbera daisy.

Control of biotype Q isn't necessarily more difficult than B, but may require different products. Some of Lance and Cindy's latest research indicates the following, newer insecticides are effective against biotype Q:

Resistance management is essential. "We've been lucky over the last few years to get some new compounds that are effective for Q control, but we need to be diligent in our resistance management programs to preserve their utility," said Lance.

On the other hand, products such as bifenthrin, pyriproxyfen, acephate, pymetrozine and others have reportedly failed to control Q, but still control B in many sites. Biological controls can be effective against whitefly if they're applied preventively. They can help you stay ahead of whiteflies, but don't provide the needed quick knockdown of large populations.

Active Ingredient	Common Name	IRAC Class	Application Method
acetamiprid	TriStar	4A	Foliar
cyantraniliprole	Mainspring	28	Soil drench
dinotefuran	Safari	4A	Soil drench
flupyradifone	Altus	4D	Foliar and/or Soil drench
pyrifluquinazon	Rycar	9B	Foliar
spinetoram + sulfloxaflor	XXpire	4C + 5	Foliar

*This research was partially funded through FNRI. AmericanHort and HRI do not endorse any specific products. Please consult product labels before using.

The clear benefit of knowing which biotype is present is being able to better select the proper control measures. Some growers have opted to bypass the step of biotyping and rely on using only those products that are effective against both biotype B and Q. While effective, they reported significantly greater costs in their chemical programs as a result. Making the effort to find out which biotype is present can save you money and reduce the number of spray applications (through the use of biologicals).

So how do you know? Most importantly, B cannot be differentiated from Q without molecular tools, so specialists, such as Dr. McKenzie, are crucial for identification help. Fortunately, biotyping is a free service provided through Floriculture and Nursery Research Initiative (FNRI) funding, administered by USDA-ARS.

Why we should care

Biotype B is widely distributed throughout the U.S. in greenhouse, outdoor vegetable and cotton production. Until last year, biotype Q was only known to exist in greenhouse production—not in outdoor agriculture. That changed in 2016, when several outdoor, landscape sites in Palm Beach County, Florida, tested positive for a Q infestation. Other sites in Florida were identified as well.

This is alarming, as biotype Q would be especially problematic in vegetable and cotton production in southern regions. Q's insecticide resistance would severely burden those industries, potentially limiting our food and fiber supplies. Not surprisingly, the vegetable and cotton industries are carefully monitoring these new developments.

State regulators are as well. USDA APHIS has responded with the reinstatement of the whitefly biotype Q task force (acronym WTF-Q) with the goal of bringing together folks from industry, research and regulatory units to address

the concerns. AmericanHort and Horticultural Research Institute (HRI) participate on the task force, representing the green industry.

More than anything, the risk of biotype Q spreading in outdoor agriculture and to other crops justifies the need for diagnosis to ensure proper treatment. It's more difficult to control than other whiteflies, especially biotype B. **GT**

FACT or FICTION: How much do you know about the reasons to biotype whiteflies (or not)?

There are more (and cheaper!) tools available for managing biotype B.

FACT: Older materials and those off-patent are generally cheaper than new insecticides, and many are effective against B.

Biological controls are encouraged in systems where virus transmission is not a concern or where biotype Q is not a concern.

FACT: Biologicals have been shown to effectively control whiteflies when their populations are low.

My crop consultant says biotyping isn't necessary.

FICTION: It is irresponsible not to biotype. The green industry must take the lead and work to prevent spread of Q to other commodities.

Biotype Q is not currently regulated by state or federal agencies but could be if other industries (such as vegetable and/or cotton) feel that the green industry is not doing its best to manage the issue.

FACT: Both vegetable and cotton industries are closely monitoring this issue.

You and/or your crop will be quarantined if biotype Q is positively identified.

FICTION: Infestations of biotype Q are treated in the same regard as other pests and will only be quarantined if their levels are unusually high.

Dr. Jill Calabro is Research & Science Programs Director for AmericanHort.